



**E LIGHT ELECTRIC SERVICES, INC.
2016**

**SAFETY, HEALTH
AND
ENVIRONMENTAL
POLICY**

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HEALTH AND SAFETY POLICY AND GENERAL LOSS PREVENTION RULES

E Light Electric Services is committed to the protection of its employees and property from accidental loss. In fulfilling this commitment we will strive to provide and maintain a safe and healthful work environment as indicated by acceptable industry practices and compliance with legislative requirements and we will strive to eliminate any foreseeable hazards which may result in fires, damage to property and personal injuries or illnesses.

Accidental loss can be controlled through good management in combination with active employee involvement. Loss prevention is the direct responsibility of all management and employees alike. All Management functions will comply with E Light Electric Services loss prevention requirements as they apply to the design, construction, service and maintenance of an Electrical Contractor.

All employees will perform their jobs properly in accordance with established procedures and operating philosophy. We trust that all of you will join us in a personal commitment to loss prevention as a way of life. Safety is an important part of everyone's job and life. It must be a top priority at work and home. Take the time for safety.

E Light is also committed to the preservation of our environment. We believe that we are responsible for attempting to minimize the impact our services and projects have on the environment. We expect all our managers, supervisors and employees to be aware of the environment, be watchful of environmental impacts, recycle waste and take steps to protect the wildlife in the areas where we perform our work. We expect all our employees to be aware of the environmental regulations and laws in the area where they are working and to comply with these regulation and laws. We also encourage our employees to offer suggestions to their supervisor on how we can minimize our impact on the environment.

Perry Herrmann
President and CEO
E LIGHT ELECTRIC SERVICES, INC.





GENERAL LOSS PREVENTION RULES

E Light Electrics Services, Inc. has developed and published the Safety, Health and Environmental Policy. (SHEP) The follow requirements are a summary of the requirements contained within the multiple sections of the Safety, Health and Environmental Policy. (SHEP) The following is not intended to represent all the policies and procedures that may be required for each specific project. Each project shall also have developed and published an Injury and Illness Prevention Program. (IIPP) The requirements listed here, in addition to the requirements in the SHEP and the IIPP for the project shall comprise the Safety Requirements for the employees working on that project or location.

Adherence to these rules and all safety and loss prevention policies and procedures is a condition of continued employment.

- Wearing of personal protective equipment in all areas, at all times is required. E Light Electric Service employees will wear a company issued hard hat and safety glasses at all times at a minimum. This also applies on jobsites that do not require the wearing of hard hats.
- We recommend that all field employees wear 100% cotton fabrics, reduce the amount of metal on their person as much as possible and wear electrically rated insulated footwear to reduce exposure to electrical hazards.
- Body piercing must be kept covered in the field and only non-conductive stud type pierced earrings are allowed in the field. No hoops, dangling or gauge earrings allowed.
- E Light Electric Services encourages all employees to monitor safety and hazards and to assist in finding safe ways to perform our tasks. We have a safety committee which meets every other month. We encourage you to participate in this committee to help share ideas, address concerns and help us work towards continuous improvement.
- Be constantly aware of the hazards around you. Do not take unnecessary risks. Inform a supervisor immediately if you find a hazard and assist the supervisor in finding mitigation to the hazard.
- If you see an employee performing an unsafe act, we expect you to inform them immediately and discuss why you believe the act is unsafe.
- Ask your supervisor or another employee if you are unsure of how to do something you have been asked to do or if you need to operate equipment that you have not been trained to operate.



- Material Safety Data Sheets are provided for your use so that you may understand the hazards of substances that you may come into contact with while on the job site. These MSDS are kept at the job site and are available to you upon request. We encourage you to understand the substances that you come into contact with during your work schedule.
- Each jobsite has an evacuation plan in the event of emergency; ask your supervisor for the evacuation plan when you first report to a job site.
- Follow proper lifting and material handling procedures.
- Do not use machinery and tools until you have received proper instruction and training.
- Powder actuated tools may only be used if you have the manufacturer specific certification card on your person at the time of use.
- Do not use or operate unsafe equipment.
- You shall read the operators manual for any piece of equipment that you will operate. This is manufacturer specific.
- Be sure to follow all maintenance procedures required in the operators manual.
- Do not block access to or misuse fire and other emergency response equipment.
- Strictly adhere to special safety procedures such as fall protection, hot work, excavation safety, etc.
- Abuse or neglect of Company-owned property is prohibited.
- Horseplay and fighting are expressly prohibited.
- Do not smoke in restricted areas.
- Do not handle chemical and hazardous materials unless properly trained.
- Follow all safety rules and regulations.
- Follow instructions - don't take chances.
- **Immediately report all accidents / incidents to your supervisor. This includes minor injuries or near misses. It is important that you report these incidents so that we may continue to evaluate our programs for improvement. It is also important to notify us, even if you do not wish to seek medical attention, so that we have a record in the event the injury should worsen through infection or some other cause.**
- **Employees must contact the Director of Safety and Loss Prevention or the Human Resources Manager before going to the doctor for a work related injury. This contact can be done by phone call and shall be done even on a non-workday, weekend or holiday. If the**



person cannot be reached directly, the employee shall leave a voicemail message on the Director of Training

and Safety's cell phone. The voice mail message shall include the date and time, the employees name, the nature of the doctor's visit and a good call back number.

- Immediately report unsafe conditions / practices to your supervisor.
- Use, possession of, or being under the influence of drugs, alcohol, or other illegal substances / items on company property or projects will not be tolerated.
- Firearms are prohibited on company property.
- Obey all traffic and other posted signs.
- Wear seat belts when riding in vehicles.
- Do not drink water from any source other than the drinking water provided.
- **Our first and foremost thought process is to turn off power prior to working on electrical circuits or equipment. We will strive to perform work in a de-energized state. (Refer to Lock Out, Tag Out Policy and Energized Electrical Work Policy) We also recognize that energized work cannot be completely avoided. We will carefully review all cases of energized work, attempt to find a way to de-energize or find methods and equipment to minimize exposure and hazards to employees. Energized work or work in an area where accidental contact with energized parts could occur may only be performed by licensed journeyman or master electricians and only after a written plan of execution has been submitted and approved. Fourth year apprentices may perform some energized work but only under the direct supervision of a licensed journeyman or master electrician. The licensed electrician must be physically present and observing the apprentice while they are performing this energized work. This provision is intended to allow for the training of apprentice electricians in the safe performance of energized work.**
- Employees will wear appropriate shirts with sleeves, long pants, and sturdy work shoes or boots. All clothing will be of a proper fit and condition so as not to constitute a safety hazard (e.g., no excessively baggy clothing; no excessively frayed or torn clothing). Clothing may not have any derogatory, offensive, sexually suggestive or degrading writing, symbols or pictures or language or logos of other contractors, labor organizations or construction organizations. Employees may wear jewelry as long as the jewelry is appropriate and does not constitute a safety hazard (e.g., no loose or dangling necklaces, bracelets, rings or earrings). Pierced jewelry of a small stud type is allowed for pierced ears only. (No hoop, dangling or gauge earrings). All pierced earrings must be of a nonconductive material. Body piercing (other than earrings) shall not be visible. An excessive amount of visible tattoos may be inappropriate depending upon your job responsibilities and assignment. Similarly, employees will keep their hair and facial hair groomed so as to avoid safety hazards; or they will secure



their hair and/or facial hair (i.e., wear a hair net) so as to avoid safety hazards.

- It is recommended that all employees wear only 100 percent natural fiber clothing while on the jobsite as this can reduce the effects of arc blast damage. We also recommend that all footwear worn on the jobsite be rated for electrical insulation.

E Light Electric Services practices behavior-based safety. We practice behavior based safety in the following ways:

- Each individual has the responsibility to do his or her part correctly and safely.
- Each individual needs to think about his or her actions prior to performing any task.
- Preplanning, preplanning and then preplanning. Identify the hazards; make sure you have everything you need to perform the task safely before beginning. Don't depend on someone else to do this for you.
- Avoiding short cuts or by passing a safety rule because we don't have the time or the task will only take a second. . Take the time to do the job right the first time.
- We, as a company and team, do not allow short cuts, unsafe acts or doing tasks unsafely. Each one of us owes it to ourselves and others to take action speak up or modify the task.
- We believe that the key to a safe work environment is an attitude, shared by everyone, that we can perform a task safely, complete the task profitably and everyone can go home to their friends and family. All we need to do is give it some thought, find a safe and profitable way to accomplish it, and then execute it with focus.

IMPLEMENTATION

E Light Electric Services has six foundational elements to our safety and loss prevention plan. We will continuously evaluate our jobsites, work environments, policies and procedures in order to provide our employees with a safe work environment. The loss control program is self-evolving if fully implemented, it will expand over time into several other elements as the company progresses its safety endeavors, through evolution.

The six foundational elements are:

- Leadership and Administration
- Accident and incident investigation
- Planned audits and inspection
- Safety education and meetings
- Personal protective equipment
- Organizational Rules



The safety and loss prevention program is designed to be modified to meet the company's needs in the workplace. Each employee can make suggestions and recommendations to management of E Light Electric Services. We encourage employees to participate actively in the safety committee to help us make continual improvement to our safety and loss prevention program.

EMPLOYEE SAFETY AND HEALTH RULES

PURPOSE

The purpose of this Section is to assist our employees in establishing basic safety and health practices for all E Light Electric Services employees. Strict enforcement of and compliance with OSHA Safety and Health rules will aid in keeping personnel injuries, occupational illnesses, and equipment and property damage to a minimum. The rules contained herein are not all inclusive. Each work environment and hazard must be evaluated on a case by case basis and work rules established for that work environment. All OSHA regulations must be followed in all cases.

GENERAL SAFETY AND HEALTH RULES

These rules apply to all occupations including employees with supervisory and non-supervisory assignments. Management shall use the General Safety and Health rules to promote accident prevention through indoctrination, safety training and on-the-job application

INDIVIDUAL CRAFT SAFETY AND HEALTH RULES

In addition to the General Safety and Health Rules, Loss Control rules and any specific Company rules, the supervisors and all employees must learn and abide by the General Rules plus the Safety and Health Rules which are applicable to their particular skill or occupation.

NOTE: Individual Safety and Health rules apply not only to supervisors and to the workers, but also to helpers, assistants, apprentices, contract labor employees, subcontractors and anyone else who might be in the work area. Supervisors shall ensure that new workers or visitors are made aware of and abide by the safety and health rules that are in effect. The underlying general safety and health rules are not all inclusive and it is our intent to highlight the most common and pertinent. Each employee must do his or her part to provide a safe work environment.

GENERAL RULES

Alert

Always be familiar as possible and alert at all times to conditions and work processes in surrounding areas and with the presence of other workers and equipment so that you

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can foresee and avoid possible dangers. Each employee shall have on their person a Pre-task card for the work being performed that day. If

any person enters your work area that was not a part of your Job Hazard Analysis training at the beginning of the shift, the first person that sees them enter the area, must stop them, let them know that you need to go over the hazards in the area with them, and then read your Pre-task card to them and have them initial the Pre-task card.

Barricaded Areas

"Roped off areas" or areas enclosed with barricades are considered danger zones and shall be respected as such. Admittance to or passage through such areas is prohibited without permission except to those employees working within the barricaded area.

Barricades

When work requires barricades or floor opening covers to be temporarily removed, keep area secured until the work is finished and then re-install the barricade or floor covering immediately.

Be Sure

- You know how to do the job in a correct, safe manner.
- You know the hazards and how to protect yourself.
- You ask the advice of your supervisor if you are not sure.

Firearms and Explosives

Unless specifically authorized, firearms and explosives are prohibited within the project or on Company property and in or on equipment and other facilities.

Moving Cables

Do not touch or guide moving cables or running wires with any part of your body. Keep your hands and fingers away from blocks and sheaves. Stand clear of all cables, wires and lines, which are under strain.

Safety Meetings

It is a part of every employee's job to attend and take an active part in all safety training meetings and to actively support the company's safety program. Read and abide by all safety materials made available to you. They concern your safety and health and the safety and health of your fellow workers. All employees are required to actively participate in weekly safety meetings.

Speed

Do not try to place speed above safety. An efficient, safe worker is better than a speedy, careless one.

Throwing

Throwing or dropping materials from one area or level to another is prohibited.

Unsafe or Unhealthful Practices and Conditions

Report all unsafe or unhealthful practices and conditions to your supervisor immediately.

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Warning Signs

Be alert for and heed all warning signs at all

times.

Watch Out

If each employee will be watchful of everyone else, as well as him or herself, there will be fewer accidents and the job will be a much safer place to work.

HOUSEKEEPING

Housekeeping

All places of employment, passageways, stairways, storerooms and service rooms shall be kept clean and orderly, free from tripping and slipping hazards, and in a sanitary condition.

Aisles and Passageways

Where mechanical equipment is used, sufficient safe clearances shall be allowed for aisles, at loading docks, through doorways and passages must be made, and kept clear and in good order. **Permanent aisles and passageways shall be appropriately marked.**

Floor Loading Protection

In every building or other structure or part thereof, used for mercantile business, industrial, or storage purposes, the floor loads approved by the building official shall be marked and supplied; they must be legible from ground or floor.

Guardrails

Any time there is a fall of six or more feet, a standard guardrail must be installed or some means of protection for employee. Guardrails shall be installed in accordance with OSHA requirements. The fall protection competent person shall inspect and approve all guard rail systems prior to employees be approved to enter those areas. (See Fall Protection Policy)

Standard Guardrails

Consists of top-rail, intermediate rail, and posts, and shall have a vertical height of 42 inches nominal from upper surface of top-rail to floor, platform, runway or ramp level. No opening greater than 19 inches.

Stair Rails

A stair rail shall be constructed similar to a standard railing but the a vertical height shall be not more than 34 inches from the upper surface of the top rail to surface of tread in line with face of the riser at the forward edge.

Both railings must support 200 pounds of pressure in any direction with a maximum of 3 inches deflection.

Clean-Up

Keep your work area clean and safe at all times. Always keep yourself, the equipment you operate or are using and your place of work as clean as practicable. Each employee is responsible for cleaning his area daily. Each employee is responsible keeping their



tools and materials organized in compliance with the jobsite procedures in order to minimize safety hazards and maximize efficiency. Good

housekeeping and organization will reduce confusion on the project and will result in a safer, more efficient operation.

Employee Facilities

Cooperate in keeping change rooms, toilets, first aid and drinking facilities in clean, sanitary condition.

Nails

Protruding nails, screws or other metal in form lumber, boards, etc., must be immediately removed, bent over or guarded to prevent puncture injuries.

Oily Rags and Wastes

Oily rags, waste or other combustible debris shall be kept in metal container provided for that purpose.

Removal of Debris/Garbage

When cleaning up, do not throw or drop materials from upper levels to lower levels unless the area below is properly barricaded and adequate warnings are posted.

Slipping Hazards

Clean up or eliminate slipping hazards such as grease, oil, water, ice, snow or other liquids on walkways, ladders, stairways, scaffolds or other access ways or working areas.

Trash and Debris

Deposit trash, refuse, debris, lunch papers and other waste in the proper refuse containers.

Tripping Hazards

Help keep the work area, especially roadways, access ways, aisles, stairways, scaffolds and ladders, clear of obstructions, which may cause tripping or other accident hazards.

ELECTRICAL

Energized Electrical Work

Only licensed journeyman or master electricians may perform energized electrical work. NFPA 70E Standard for Electrical Safety in the Workplace shall be the guideline for performing energized electrical work. A written plan must be submitted for approval by the project manager prior to any energized electrical work. Fourth year apprentice electricians shall be permitted to perform energized electrical work for training purposes with the approval of the project manager and only under the direct supervision of a licensed journeyman or master electrician. The licensed electrician must be present with the apprentice and observe the apprentice perform the work. All field employees shall successfully complete a 2 hour energized electrical work and lockout/ tag out refresher training course once per 12 months.

Batteries

When handling acid or batteries, wear face shields and protective clothing such as



rubber gloves and aprons. Immediately flush with water, any acid coming into contact with your skin. Avoid breathing acid vapors.

Danger Signs and Tags

Be alert to and strictly obey all warning and danger signs around electrical apparatus. Do not close a switch that has a danger tag on it signed by or placed there by someone else.

Electrical Hazards

Do not use extension cords or any power tools or equipment when the cords are frayed, worn out or the wires are bare. Report such hazards to your foreman or turn the equipment in for repair.

Grounded

Do not use electric power tools or equipment that is not properly grounded.

Qualification

Only qualified electricians are permitted to install, repair or remove electrical wiring or equipment.

Respect Electricity

Electricity must be respected at all times. Remember even a little electric current can be a killer. It is our intention to perform all work in an electrically safe work condition.

Temporary Lighting

Report all unguarded or broken light bulbs. Do not hang lights by their cords unless the Light Electric Services was designed to be suspended in that manner.

Marking of Flexible Cords and Cables

All flexible cords and cables (Extension cords) on a construction site must be hard or extra hard usage, they are marked with S, ST, SO, STO, SW, SJW etc. This means that they are 18 gauge or better.

Strain Relief

Flexible cords need to be connected to devices and fittings so that strain relief is provided.

GENERAL MOTOR VEHICLE SAFETY

Only authorized employees may operate company trucks, vans and equipment

- The parking brake must be set whenever the vehicle is parked.
- All persons shall properly fasten safety belts.
- E Light Electric Services employees shall not allow passengers unrelated to E Light Electric Services projects to ride in company vehicles.
- Do not ride in the bed of a truck.
- Do not back up any vehicle or equipment when the view to the rear is obstructed. If you must back a vehicle and your view is obstructed, you must use a spotter.



- Immediately report all motor vehicle violations or accidents to your supervisor. The operator is personally responsible for traffic violations and parking violations while driving company vehicles.
- Never operate a vehicle under the influence of drugs, including prescription drugs or alcohol.
- Drivers will immediately report any change in driver's license status including suspension, revocation or restriction.
- Drivers shall report to the Director of Safety and Loss Prevention all moving violations and accidents involving either personal vehicles or company vehicles. Reporting must be completed within 5 business days.
- Any incident involving the use of a company vehicle, whether or not it results in injury or damage, and regardless of fault, must be reported to The Director of Safety and Loss Prevention immediately. The driver shall fill out a motor vehicle incident report and shall submit to an immediate drug screen test. Do not report the incident to the insurance company. The Director of Training Safety shall process all insurance reports.
- Drivers of company vehicles may not text, read e-mails, respond to e mails or have verbal phone conversations while driving a company vehicle. Drivers are to pull the vehicle over to a safe location and park before using a mobile communication device.
- Drivers are responsible for ensuring their vehicles are safe to operate before each use.
- Drivers are responsible for taking their vehicles in for schedule maintenance. This will be paid for by E Light Electric Services.
- Drivers are responsible for reporting any defects with their vehicles to the Director of Training and Safety.
- No modifications shall be made to company vehicles without the prior approval of the Director of Safety and Loss Prevention and the Vice President of Operations.
- Drivers of company vehicles shall be responsible financially for all fines or penalties arising from the improper or incorrect use of a company vehicle.
- You are a representative of E Light Electric Services and your driving should show others that we are a professional organization.
- Personal vehicles shall be parked in designated areas only and only allowed access to jobsites based on each jobsite specific rules. E Light Electric services cannot be responsible for personal vehicles.

EQUIPMENT AND VEHICLES AS DEFINED BY OSHA

Danger Zones

Keep clear of all heavy equipment. Particular points of danger are blind spots to sides and rear of vehicles and in swing radius of cranes and shovels.

Elevated Loads



Be alert to avoid swinging or suspended loads. Keep yourself and your fellow workers in the clear at all times.

Hoists and Elevators

Ride only on authorized personnel hoists or elevators. Do not ride on a material hoist.

Jumping

Jumping on or off equipment or vehicles, either moving or stationary, is prohibited. When climbing on or off machinery, face the unit and use secure hand and foot holds to prevent slips or falls. Look before you step down.

Mechanical Guards

No machine shall be operated until all guards are in place. Guards are not to be removed except when necessary to make repairs and are to be replaced before equipment is again put into operation.

Operating Machinery

Only authorized and properly trained and supervised personnel are permitted to operate equipment, vehicles, valves, electrical switches and other similar machinery.

Seat Belts

If vehicle or equipment is equipped with seat belts, the operator and the passengers shall use them.

Transportation

Ride only in vehicles designated for transporting personnel. Do not ride on running boards, fenders or other projections and do not extend legs, feet, arms, hands or other body parts over the edge of the truck bed.

FIRE PREVENTION AND CONTROL

Cleaning Agents

Explosive liquids will not be used as cleaning agents. Use only approved cleaning fluids.

Combustible Materials

Gasoline and similar combustible liquids will be stored in secure "approved" containers and in an area free from burning hazards. (Approved by ANSI, or Manufacture.)

Combustible Materials

Keep all heat sources away from combustible liquids, gases or other flammable materials. When not in use, store combustible materials in a well-ventilated, cool place.

Fire Extinguisher

Do not remove or tamper with fire extinguisher installed on equipment or vehicles or in other locations unless authorized to do so or in case of fire. A fire extinguisher must be within 50 ft. of 5 lbs. or 5 gallons of a flammable or a combustible.

Fire Fighting Equipment

Firefighting equipment must be kept free from obstacles, equipment, materials and



debris that could delay emergency use of such equipment. Familiarize yourself with the location and use of the project's firefighting

equipment.

Oily Rags and Waste

Discard and/or store all oily rags, waste and similar combustible materials in metal containers on a daily basis.

Safety Cans

Handling of all flammable liquids by hand containers will be in approved type safety containers with spring closing covers and flame arresters. Only approved containers and portable tanks shall be used for flammable or combustible liquids, each container must be metal, vented, with a self-closing lid, and flash arrested for the storage, or use, of a hazardous material.

Smoking and Fires

Extinguish all matches, cigarettes, cigars and pipe tobacco before discarding. Do not smoke while fueling equipment or while in close proximity to refueling areas. Never leave open fires unattended. Smoking and the use of all tobacco products shall be restricted to designated areas only. All cigarette or tobacco product waste materials shall be removed from the premises by the employee.

Storage

Storage of flammable substances on equipment or vehicle is prohibited unless such unit has adequate storage area designed for such use.

Fire Extinguishers

The general contractor, owner, or E Light Electric Services shall provide portable fire extinguishers and shall mount, locate and identify them so that they are readily accessible to employees. Fire extinguishers should be mounted no higher than 44 inches from the floor or ground level and at least 4 inches from the floor or ground level. Portable fire extinguishers shall be subjected to an annual maintenance check.

Fire Prevention when welding

Whenever there are floor openings or cracks in the flooring that cannot be closed, precautions shall be taken so that no readily combustible material on the floor or the floor below will be exposed to sparks, which might drop.

Fire Watch

Firewatcher shall be required to have a fire extinguisher readily available and be trained on its use.

Firewatchers shall be required whenever welding or cutting is performed in locations where other than a minor fire might develop, or any of the following conditions exist:

- Combustible material in building construction or contents, closer than 35 ft. to the point of operation.
- Combustibles more than 35 ft. away but easily ignited by sparks.
- Wall or door openings within 35 ft. radius expose combustible materials in



adjacent areas.

- Combustible materials on adjacent side of metal partitions, walls, ceilings, or roof and are likely to be ignited by conduction or radiation.
- Fire watch must stay in the area for at least 30 minutes after a fire has been extinguished.

FIRST AID / HEALTH / SANITATION

E Light Electric Services shall ensure the ready availability of medical personnel (Preferred Providers) for advice and consultations on matters of company health. E Light Electric Services shall insure that first aid kits are readily available for the use of employees.

Accident and Near Miss Incidents

- Remain calm.
- Notify emergency personnel if necessary immediately.
- Avoid unnecessary moving of an injured person.
- Notify your supervisor immediately, get first aid immediately.
- Supervision must be notified immediately of all accidents, regardless of the severity.
- No employee shall seek medical attention for a work related injury without the notification of the Director of Training and Safety. This notification shall be made immediately unless emergency medical treatment is needed. If emergency medical attention is required, the notification shall be made as soon as it is safe to do so.
- All employees shall use only designated medical providers which are listed on the designated medical providers for worker's compensation list. This list is kept on all job sites. No supervisor shall select a medical provider. The employee shall be shown the list of providers and the employee shall select which provider they wish to use. The supervisor shall offer no opinion or suggestion.
- A supervisor's first report of accident, a written witness statement and an employee's first report of accident shall be prepared and submitted as soon as it is safe to do so. These reports must be complete and submitted to the Director of Safety and Loss Prevention within 8 hours of an incident utilizing the iAuditor process.
- A near miss incident report shall be completed and submitted to the Director of Safety and Loss Prevention within 24 hours of all incidents that do not involve personal injury or property damage utilizing the iAuditor process.

Burns

Immediately treat acid, caustic and thermal burns by flushing with cold water.

Drinking Cups

Do not drink out of a common dispensing cup or ladle. Use only drinking fountains or



individual disposable cups. E Light issues water to our employees in the field utilizing sealed water bottles of water. Please do not share your

water bottle with others.

Drinking Water

Drink water that is specifically supplied and marked for drinking purposes. Stream or river water may look clear and clean but may contain deadly contaminants.

Electrical Shock

Turn electric power off. Do not touch the victim until he or she is free from current contact.

Hygiene

Personal cleanliness is extremely important. Many skin irritations result from careless or incomplete washing or bathing. Wash thoroughly and dry the skin completely to eliminate skin rashes, irritations and infections.

Redressing

If it is necessary to have an injury redressed, report to your supervisor immediately.

Treatment

Follow all advice given by trained first aid attendants, nurses or physicians relating to your injury. Inform your supervisor of all restrictions you may have concerning any injury whether work related or not work related.

Medication

E Light Electric Services will not dispense any medication at any time. Supervisors shall not give any medication to any personnel for any reason. Employees may use first aid kit pain relievers or other over the counter medications at their own risk and only if the medication will not interfere with their ability to perform their work tasks.

Employees shall inform supervisors if they are taking any medications that may affect their work performance and provide medical restrictions associated with that medication. Employees may not be allowed to work until they are no longer taking the medication if their restrictions are prohibitive.

LADDERS

Ladders shall be designed and constructed by approved industrial practices and general specifications. Ladders shall be without structural defects or accident hazards such as sharp edges, burrs, etc. Wood ladders shall not be painted. Ladders shall not be repaired. Defective ladders shall be replaced. All ladders must have a readable load limit sticker. Any ladder missing a load limit sticker or if the sticker is unreadable shall be taken out of service until such time as the sticker is replaced. E Light utilizes stencil markings for load limits on ladders and this is acceptable as a means of identifying load limits.

Ascending and Descending

Face the ladder and use both hands when going up and down ladders. Materials and tools should be lowered or raised by a rope or other mechanical means. A three-point



contact must be maintained on ladders at all times. Maintain three points of contact at all times.

Good Condition

Select the right ladder for the job. Do not use a ladder with missing or defective rungs, split side rails or other weaknesses.

Painting

Do not paint wood ladders as this may cover up defects.

Placing and Securing

- The ladder should be placed so that it extends at least 3 feet beyond the top landing. Make sure the base of the ladder is tied off or otherwise secured to prevent slipping or falling.
- Base of ladder should be set out at least one-fourth of the ladder height measured from bottom to point of bearing.
- All extension type ladders shall be used only as intended by the manufacturer and must be tied off.

Work Safely

When working from ladder, do not overreach or work beyond the second rung from the top.

MATERIAL HANDLING AND STORAGE

Exits

Every building or structure exits shall be so arranged and maintained as to provide free and unobstructed egress from all parts of the building or structure at all time when it is occupied. No lock or fastening device can prevent free escape from the inside of any building. Every exit must be clearly marked. Every access to an exit must be maintained clear of any obstructions and be at least 36 inches wide.

Access

When you store materials, remember to leave adequate access to walk ways. Do not block aisles or exits.

Flammable/Toxic

Flammable and toxic or other harmful materials shall be stored in properly designated, well-ventilated areas. Observe and abide by "No Smoking" and other warning signs.

Heavy Loads

Do not attempt to lift heavy loads without assistance. Learn how to lift properly by bending your knees and keeping your feet together. Avoid strain by lifting with your legs and arms, not your back.

Life Lines

When working with a fall hazard more than 6 feet in general work areas or 10 feet off scaffolding wear a safety harness attached to a lifeline and have somebody standing by

Non-compatible Materials

Avoid stacking non-compatible materials in the same pile.

Stacking

All boxes and shelving should be stacked so that the lowest part is 18 inches above the floor to help prevent low bending while lifting and repetitive bending.

- Wear required Personal Protective Equipment.
- Avoid jagged edges, splinters, burrs, rough or slippery surfaces of materials.
- Watch for and avoid tripping and stumbling hazards.
- Use caution when handling long or large items to prevent striking other objects or people.
- Inspect Material to be handled.
- Inspect travel route and the area around the material.
- Read and follow warning labels on all containers.

LIFTING AND PULLING**Use proper lifting techniques**

- Keep back straight and use leg muscles for support and strength.
- Raise object to waist level before lifting to shoulder height.
- Keep body weight positioned directly over feet.
- Keep feet apart - one beside and one behind the object.
- Do not twist, move feet and body in one motion.

PERSONAL PROTECTIVE EQUIPMENT

To reduce the potential for injuries or detrimental effects on health, that is not controllable by engineering or administrative means to all employees. The use of personal protective equipment for protection from identified hazards is mandatory under the following conditions:

- Where required by law.
- Where exposure to the hazard has the potential for injury or illness to an employee.
- Where the failure to utilize the equipment would expose non-employees to a safety or health hazard.
- Where management or supervision has determined that the work environment



requires the use of personal protective equipment.

In order to avoid confusion, we have determined that all field employees shall wear hard hat and safety glasses at all times while on a job site unless they are in an area that has been set aside for breaks or office areas and has been specifically designated as a "Safe Zone."

COMPANY POLICY

All employees shall use the protective equipment prescribed by the regulatory authorities, such as OSHA and Company rules and regulations to control or eliminate any hazard or other exposure to illness or injury. Any employee who willfully refuses to use the prescribed protective equipment designed to protect him or her or willfully damages such equipment shall be subject to disciplinary action up to and including his or her immediate termination. All personnel shall wear hard hat and safety glasses at all times while present on an E Light Electric jobsite, unless the employee is in an area that has been selected as outside of the construction zone for the purposes of office space or break areas.

Equipment Return

Protective equipment such as hardhat, safety goggles, safety belts, respirators, life vests, rubber clothing furnished by the company will be returned to the job-site office or warehouse when terminating employment with the company or moving to another job. Individuals will be responsible for proper care of safety equipment and will take care not to lose or damage this equipment.

The requirements set forth herein pertaining to personal protective equipment shall apply at all locations, whether permanent or temporary. It is the company's responsibility to provide personal protective equipment, and to ensure its proper use wherever necessary as outlined below.

Eye and Face Protection

The use of safety glasses or face shields is mandatory where there is exposure to a work process that has been identified as OSHA CFR 1910 hazard with potential for injury to the eyes or face. This could include, but not be limited to, grinding, chipping, sanding, sandblasting, or use of chemicals. Safety glasses or face shields must conform to the American National Standards Institute (ANSI), Standard for Occupational and Educational Eye and Face Protection, Z87.1. **E Light Electric Services requires safety Glasses at all times on jobsites.**

Only clear safety glasses shall be worn indoors and while working in low light conditions. No tinting of safety glasses shall be permitted indoors or in low light conditions. Tinted glasses may be worn in outdoor areas only.

Goggles, Safety Glasses, Face Shield, and Helmets



Appropriate eye and head protection will be worn by every employee when:

- Welding, burning or cutting with torches.
- Using abrasive wheels, portable grinders or files.
- Chipping concrete, stone or metal.
- Working with any materials subject to scaling, flaking or chipping.
- Soldering, handling or working with molten metal or hot compounds, handling or working with hazardous liquids, powders or substances (such as glass).
- Drilling or working under dusty conditions.
- Sand or water blasting.
- Waterproofing.
- Using explosive actuated fastening or nailing tools.
- Working with compressed air or other gases.
- Working near any of the operations listed above.

Hearing Protection

The use of hearing protection is mandatory where workplace daily noise levels exist with the possibility that employees receive exposure in excess of the allowable noise, as set forth in the Hearing Conservation Program outlined in this section.

The hearing protection devices chosen for use must conform to all applicable federal, state, and local safety and health regulations.

Ear Plugs or Muffs

Appropriate hearing protection shall be worn in work areas where noise levels exceed established local, State or Federal standards. Note: Earplugs control noises (33 dBA) more effectively than ear muffs (29 dBA).

HEARING CONSERVATION PROGRAM

The hearing conservation program is implemented to minimize the risk of permanent hearing impairment from exposure to occupational noise and to operate in compliance with governmental safety and health regulations. When areas of occupational noise exposure subject to governmental regulations are identified, feasible engineering or administrative controls, or the provision of personal hearing protection equipment when engineering or administrative controls are not feasible, must be used to reduce the employee noise exposure to acceptable levels.

An employee must be placed in a continuing, effective hearing conservation program, as per OSHA Standard 1910.95 (c) through (o) when the employee's exposure to noise has been determined to equal or exceed an eight-hour time weighted average (TWA) of 85 decibels measured on the "A" scale (dBA). The Hearing Conservation Program shall include the following:



Exposure monitoring or noise level measurements will be conducted in all areas suspected of noise levels, which may result in employee exposure at or above the eight-hour time-weighted average of 85 dBA. Affected employees will be given the opportunity to observe the noise measurements.

Audiometric testing will be provided, by the contractor when a necessary or when prior exposure may occur.

Employees involved in the program will be informed of the results of the monitored exposure and be provided with hearing protection devices and training in the use thereof.

Training will also be provided to those involved, regarding the effect of excessive noise on hearing and the purpose, advantages, disadvantages, and effectiveness of hearing protective devices.

The hearing conservation program shall conform to all requirements for such a program, as set forth in federal, state, or local occupational safety and health standards.

HEAD PROTECTION

Hard hats are required in all areas where an overhead hazard exists

Hard hats for the protection of employees exposed to high voltage electrical shock and burns shall meet the specification contained in American National Standards Institute, Z89.2.

Hard Hats

All construction areas will be considered "hard hat areas" during active work periods. All employees and visitors must wear company approved hard hats during work hours while inside construction areas.

Employees may only wear company issued hard hats.

Hard hats shall not be decorated with any writing, painting or stickers other than those required by company policy or jobsite requirement.

RESPIRATORY PROTECTION

When it is determined that effective engineering control of oxygen deficiency or air contaminant exposure is not feasible, as per OSHA CFR 1910, appropriate respiratory protection will be provided for use by the exposed employees. Use will be mandatory whenever a potential respiratory hazard exists and the environment has been designated as an area which requires respiratory protection after air sampling and testing. The selection, use, and maintenance of respirators shall comply with all applicable federal and local laws pertaining to safety and health.

Selection of the respirators shall be made according to American National Standards Institute, Z88.2.



Respirators

Approved respirators (ref: OSHA CFR 1926.103) will be used when excessive dusts, mists, fumes, gases or other atmospheric impurities are determined to be harmful to health. (See Respirators Protection Program in this book.)

All employees must be trained, have a physical, be fit tested, know how to don, maintain, clean and store respirators just to name a few items.

Harnesses, Lifelines, and Lanyards

Where a hazard of falling exists which cannot be controlled through effective, feasible engineering techniques, the use of fall protection devices is mandatory. Lifelines, harnesses, or lanyards shall be designated and used only for employee safeguarding. Any device actually subjected to loading, other than static testing, shall be immediately removed from service as an employee safeguard. Safety Belts are only allowed for movement restriction and shall not be used for fall protection.

The selection, use, and maintenance of the employee safeguard devices shall conform to all applicable federal and local health regulations.

Footwear

All employees working in construction areas should wear appropriate footwear for task being performed. Footwear shall be of a hard sole type with good ankle support. Slick soled shoes shall not be permitted. We also suggest that all footwear be rated for electrical insulation. Steel toed boots shall not be worn if the covering has been worn and the steel is showing.

Gloves

Employees working in the field shall wear gloves at all times unless they are performing a task that requires fine finger manipulation. E Light Electric Services, Inc. issues Cut 3 level gloves to all employees and all employees are expected to wear these gloves at all times.

Snake Chaps

Some areas where employees may be working are located in areas where snakes may be present. In these areas, there may be a requirement for the use of snake chaps. On any site where snake chaps are required, all personnel shall wear snake chaps at all times that they are working in the field.

Employees are expected to care for their issues Personal Protective Equipment. They are expected to bring them to work with them every day and to report any deficiencies that are discovered with their PPE. Failure to have your PPE with you or failure to properly care for your PPE may result in disciplinary action.

SCAFFOLDS

Scaffolding is an integral and important facet of the construction industry. Specific standards need to be followed in accordance to manufactures specifications, OSHA specifications, and ANSI specifications most of the time all the standards match each other's but the Manufactures specifications supersede all other specific specifications.



The Superintendent for E Light Electric Services assigned to the project shall be responsible for inspecting and supervising the erection and use of the scaffolding.

E Light personnel shall not use any scaffolding unless the scaffolding has been inspected that day by a competent person and the competent person has signed an inspection card which is clearly displayed on the scaffolding.

The footing of scaffolds must be sound and rigid; capable of supporting four times the maximum intended load.

Only competent persons shall erect, dismantle or move a scaffold.

Scaffolds in excess of ten feet above the ground must have fall protection. A standard guardrail consists of a top rail at 42 inches high, mid-rail half way in between and a 4-inch toe-board. All guardrails must be capable of withstanding 200 lbs. of force in any direction.

All scaffold components shall be able to support at least four times the maximum intended load.

Any scaffolding that has been damaged or weakened shall be immediately replace or repaired,

All planking or platforms shall be 2 inches by 12 inches by 8 feet. No opening in planking more than 1 inch.

All planking shall be overlapped a minimum of 12 inches.

An access ladder or other safe access shall be provided.

Scaffold planks must extend over their end supports by 6 inches but not more than 12 inches.

The legs or uprights shall be plumb and rigidly braced to prevent swaying. All cross bracing should be used.

Shore or lean-to scaffolding shall not be used.

Scaffold legs shall be set on adjustable bases, plan bases or other foundations adequate to support the maximum rated load.

All pins to secure diagonal braces and to prevent uplifting shall be used.

Screw jack not out more than 12 inch, and scaffolding secured whenever three or more sections are used.



Safe center loads for scaffolding planks

Based on extreme stress of 1300 to 1500 pounds per square inch; planking shall consist of Douglas Fir, Sitka Spruce, White Spruce, Red Pine or Port Orford White Cedar.

Scaffolding has three distinct weight limits, 75 lbs. for 6 foot between up right to upright, 50 lbs. per sq. ft. for 8 foot between upright to upright, and 25 lbs. for 10 ft. between upright and upright. The scaffold must then hold 4 times its maximum intended load. Example: 4 ft. by 6 ft. scaffolding (4 X 6=24) times 75 lbs. per square ft., (24 X 75= 1800 lbs.) then 4 times its maximum intended load (1800 X 4= 7,200 lbs.) The scaffold must be built to hold 7,200 lbs. of weight. This is why mudsills must be 180 sq. inch (2X10X18) and all cross bracing must be used, etc.

SCISSOR LIFTS AND MANLIFTS (JLG) OPERATIONS

- Workers must be trained in the operation and use of the equipment.
- The equipment lifting capacity must be clearly identified.
- Handrails, mid-rails and toe-boards must be in place and free from any damage.
- Operating instructions must be legible. Operators shall read the operators manual before operating the lift.
- The operator shall know the procedure to operate the lift manually in the event of a power failure.
- When welding from lift fire extinguisher must be in the lift basket.
- Travel is only permitted when the lift is in the down position.
- Lifting material, which extends beyond the guardrails, is not permitted.
- The maximum lift capacity shall not be exceeded.

TOOLS

Damaged or Defective Tools

Do not use broken, defective, burned or mushroomed tools. Report defective tools to your supervisor and turn tool in for replacement. Personally supplied tools shall meet all safety requirements, safety rules and OSHA regulations.

Hard Facing

Do not strike two hardened steel surfaces together; i.e. two hammers or a hammer and hardened steel shafts bearings, etc.

Power Tools

Only assigned, qualified operators will operate power, explosive actuated or air driven tools.

Proper Tool



Always use the proper tool and equipment for any task you may be assigned to do. For example: do not use a wrench as a hammer or

a screwdriver as a chisel.

Storage

Keep tools in their proper storage place when not in use. Do not leave tools where they might present a tripping hazard, fall on somebody or be stolen. Do not carry sharp edged tools in your pockets. E Light Electric Services cannot be responsible for personally supplied tools. You may lock your tools in the company gang boxes or office but E Light Electric Services will not be responsible for loss or theft. We recommend that all employees take their personal tools home with them after each shift.

Overhead Hoists

The supporting structure to which to hoist is attached or suspended shall have a safe working load equal to that of the hoist. The rated load of the supporting structure shall be plainly marked and this marking shall be clearly legible from the ground or floor.

Machine Guarding

One or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ongoing nip points, rotating parts, flying chips and sparks.

Grinders

Work rests must be provided and kept adjusted closely to the wheel with a maximum opening of one-eighth inch to prevent the work from being jammed between the wheel and the rest. Tongue guards must be provided and kept adjusted to within one-fourth inch. All periphery guards must be provided and maintained.

Electrical

Marking of Electrical Equipment- Electrical equipment may not be used unless the manufacture's name, trademark or other descriptive marking by the organizations responsible for the product.

Identification of Disconnecting Means

Each disconnecting means includes service feeders, and branch circuits shall be legibly marked to indicate its purpose, unless located and arranged so the purpose is evident.

Clear Access to Breaker Boxes or Disconnects

All breaker box and disconnect shall have clear access of 36 inches. Clear access shall not be used for storage.

Guarding of Live Parts

Live parts of electrical equipment operating at 50 volts or more shall be guarded against accidental contact by approved cabinets or other forms of approved enclosures.

Entrances to Rooms

Guarded locations containing exposed live parts shall be marked with conspicuous signs.



Grounding Path

The path to ground from circuits, equipment and enclosures shall be permanent and continuous. All extension cords must be a three-wire system.

Flexible Cords and Cables

Flexible cords and cables shall not be used in lieu of fixed wiring of a building or structure. Flexible cords and cables cannot be used for more than 90 days except for Christmas decorative Light Electric Servicing, carnivals and similar purposes. Also, they shall be protected from accidental damage. Sharp corners, pinch points and projections shall be avoided.

Lamps Used for General Illumination

Lamps used for general illumination shall be protected from accidental contact or breakage. Protection shall be provided by elevation of at least 7 feet from normal work areas or by a suitable fixture or lamp holder with a guard.

All Switches, Outlets and Pull Boxes

All Switches, outlets and pull boxes shall be provided with suitable covers.

Compressed Air

Compressed air used for cleaning. Compressed air shall not be used for cleaning purposes except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.

Hand and Portable Tools

General requirements - Each employer shall be responsible for the safe condition of tools and equipment used by the employees, including tools and equipment that may be furnished by employees.

All portable tools - must be equipped with positive on - off switches. Each tool must be grounded with a three-wire type plug or double insulated.

Circular Saws - All portable, power-driven circular saws having a blade diameter greater than 2 inches shall be equipped with guards above and below the base plate or shoe.

Jacks

The rated load shall be legibly and permanently marked in a prominent location the jack by casting, stamping, or other suitable means.

Damaged or Defective Tools

Do not use broken, defective, burned or mushroomed tools. Report defective tools to your supervisor and turn tool in for replacement.

Hard Facing

Do not strike two hardened steel surfaces together; i.e. two hammers or a hammer and hardened steel shafts bearings, etc.

Power Tools

Only assigned, qualified operators will operate power, explosive actuated or air driven

Proper Tool

Always use the proper tool and equipment for any task you may be assigned to do. For example: do not use a wrench as a hammer or a screwdriver as a chisel.

Storage

Keep tools in their proper storage place when not in use. Do not leave tools where they might present a tripping hazard, fall on somebody or be stolen. Do not carry sharp edged tools in your pockets.

INDUSTRIAL FORK TRUCKS

Only trained and authorized operators shall be permitted to operate a powered industrial truck. Methods shall be devised to train operators in safe operation of powered industrial trucks.

When a powered industrial truck is left unattended (unattended operator is more than 25 ft. from truck) the load shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes set. Wheels shall be blocked if the truck is parked on an incline. When the operator is within 25 ft. the load must be lowered and the controls neutralized, and the brake set to prevent movement.

Industrial trucks must be kept clean and free of dirt, lint, excess oil, and grease.

Industrial trucks shall be examined before being placed in service, and shall not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Such examinations shall be made at least daily. **See pre-use inspections in the inspection section of this book and the Forklift Safety section.**

COMPRESSED GAS

Compress gas cylinders shall be stored in an adequately ventilated unoccupied room when their possible leakage might affect workers. Cylinders shall be secured in upright positions at all times, except, if necessary, for short periods of time while cylinders are actually being hoisted or carried.

Oxygen cylinders in storage shall be separated from fuel gas cylinders or combustible materials (especially oil or grease) a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high and having a fire resistance rating of at least one-half hour. When parallel lengths of oxygen and acetylene hose are taped together for convenience and to prevent tangling, not more than 4 inches out of 12 inches shall be covered by tape.

Listed and approved caps must be kept on all tanks while not in use.



WELDING AND CUTTING

Only qualified personnel shall operate welders or cutting equipment. Assure that fire-extinguishing equipment is immediately available. Inspect all hoses carrying acetylene, oxygen or any gas, which may ignite.

Ground connections must be mechanically strong, electrically adequate for required current and not grounded to pipelines containing gases or flammable liquids or to conduits containing live electrical circuits.

When welding, cutting or heating metals of toxic significance, proper precautions must be taken to protect employees by using mechanical ventilation and approved respiratory protective equipment as required.

Assure welders and proper filter lens goggles protect other employees in the area and welding screens where applicable.

Operate arc welders at correct amps.

Tank valves must be shut off and all hoses bled off when shut down with caps on all cylinders not in use whether full or empty.

EMERGENCY CONTACT INFORMATION

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Director of Safety and Loss Prevention
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(303) 550-5292 / Cell

Roseanne Mullis
Human Resources Manager
(303) 754-0001 / Office



SAFETY RULES TRAINING, ORIENTATION, AND DOCUMENTATION

I, _____ hereby acknowledge that I have received training and understand the E Light Electric Services' Employee Safety and Health Rules. I also understand that I might be penalized 50% of my workers' compensation benefits, as per Colorado law, if I am injured as a result of willful failure to obey these and any other reasonable rules adopted by my employer.

EMPLOYEE SIGNATURE

DATE

SUPERVISOR / WITNESS

DATE



HEALTH AND SAFETY PROGRAM RESPONSIBILITIES

PROGRAM STANDARDS

Our goal is to reduce Loss through effective Management; this must receive top priority from everyone. Job site safety is everyone's responsibility. Each level of our organization is accountable for Loss Prevention. Responsibilities for all personnel are as follows:

PRESIDENT

- Provide direction, motivation, and accountability to ensure a Loss Prevention Program is developed, implemented and maintained.
- Has overall responsibility for ensuring Loss Prevention is a consideration for all design and construction phases of E Light Electric Services; an attitude of safety is reflected by all agreements, contracts, all sub-contractors, management, employees, vendors, visitors and anyone else connected with this program.
- Establish an adequate budget to fund the Loss Prevention Program.
- Provide annual Loss Prevention goals and objectives.
- Hold each person accountable for the success of the Loss Prevention Program and accountable for their specific responsibilities as described in this program.
- Periodically take part in safety meetings, tours, training classes, and inspections to ensure compliance with this program and ensure the development of a corporate culture of safety and training.
- Provide an annual Loss Prevention letter to all employees and sub-contractors.
- Ensure that Loss Prevention, Health and Safety activities are implemented throughout E Light Electric Services.
- Ensure that all levels of management and sub-contractors exercise positive leadership in orienting and motivating their staff.
- Delegate authority, as needed, to facilitate any and all aspects of this Loss Prevention Program and ensure improvements are made where needed.

PROJECT MANAGER

- Review specifications and drawings for compliance with applicable federal, state, local laws and standards and the company Safety Loss program during the bidding process and construction phases.

- Hold each supervisor and/or sub-contractor accountable for his or her Loss Prevention actions, during pre-qualification reviews, during the project and before close out of any project.
- Include loss prevention history and compliance with this program in reviews of supervisors and journeyman level employees.
- Conduct unannounced Monthly on-site Health and Safety Inspections, to ensure that Loss Prevention is adequately addressed, and determine if any patterns or trends are taking place that may need attention. Report results of inspections to the Director of Education and Loss Prevention.
- Review results of Inspections and Audits semi-annually for compliance with the Director of Safety and Loss Prevention to identify trends and make recommendations for correction and prevention of recurrence, and ensure follow-up measures are taken.
- Conduct a monthly review of all accident / incident reports, inspections / audit reports, and status reports from Supervisors.
- Serve as an advisor to subordinate management on Loss Prevention planning and problems, through meetings, site visits and pre task planning.
- Monitor compliance with the safety loss program, mandatory safety and health laws, standards, and codes.
- Ensure that accidents and incidents are reported, and investigated in a timely manner and to determine basic and intermediate causes in the interest of preventing recurrence.
- Ensure that all accidents and near misses are reported immediately to the Director of Safety and Loss Prevention.
- Perform a minimum of one STOP Action Observation monthly.
- Ensure safety meetings are being conducted weekly on all jobsites and that written reports of safety meetings are filed with the safety coordinator.

SUPERVISORS

- Conduct a daily informal inspection of site, communicating to employees and the project manager the results (recommendations, corrective actions, and follow-up) to ensure full compliance with our safety loss program.
- Conduct site specific Training and Orientation. Assist employees and sub-contractors with safety information and topics, and then monitor all safety meetings. Attend Sub-contractor's safety meetings periodically to ensure compliance with the safety loss program and to help develop a culture of safety and training.

- Assign employees to read weekly safety meeting topics, assist them with the meeting and maintain control of the safety meeting. Report all safety meetings in writing to the project manager.
- Develop Installation Plans and Job Hazard Analysis utilizing iAuditor Templates provided by E Light Electric Services, Inc. and issue to employees daily.
- Provide leadership and guidance for all employees and sub-contractors to ensure compliance with rules, regulations, procedures, and practices to improve the overall performance, by using the safety loss program.
- Maintain Loss Prevention record keeping, jobsite required posting, the Hazard Communications Program and the site Reference Library.
- Develop and maintain an inventory of all hazardous materials on the jobsite.
- Develop and maintain a site specific evacuation program and maintain a daily list of personnel on the job site for which they are responsible.
- Coordinate and assist our subcontractors with implementation of the safety loss program and with their site inspections and safety meetings.
- Conduct a weekly audit and or inspection of their work area forwarding all results and recommendations to the Project Manager and General Contractor
- Report immediately all accidents and near misses to the Director of Safety and Loss Prevention and coordinate with the Director of Safety and Loss Prevention for all accident investigations.
- Conduct accident/incident investigations with the Director of Education and Loss Prevention for and ensure that all sub-contractors conduct accident/incident investigations to ensure correction and prevention of recurrence. Report findings and corrections made to the Project Manager for all accidents or near misses.
- Implement and enforce the Compliance Programs as necessary to encourage a well-functioning safety loss control program
- Encourage pro-active behavior based safety thought processes through weekly safety meetings, personal daily contact with employees, continuous training, STOP Action Observations and employee reviews.
- Ensure all employees are trained in the use of equipment prior to use. Ensure that the proper equipment for a task is available in good repair. Preplan tasks to ensure the proper equipment and training are available .
- Serve as or designate a competent person for tasks requiring a competent person.
- Continuously participate in leadership, skill and safety training to improve knowledge of safety principals, recognized hazards and means to minimize exposure of employees to hazards.
- Encourage employees to continuously participate in leadership, skill and safety training to improve knowledge of safety principals, recognized hazards and means to minimize exposure of employees to hazards.

- Coordinate with the Director of Safety and Loss Prevention to provide task specific, hazard specific, certification, qualification, or competent person training for employees as needed.
- In case of an injury or illness, ensure proper and prompt first-aid treatment is given and medical attention is provided if needed. Ensure that all employees requesting to seek medical treatment are given a choice of at least two medical providers approved by human resources. Substance testing will be required for all employees involved in an accident.
- Perform a STOP Action Observation and complete the report a minimum of once per week.
- Ensure the Job Hazard Analysis is prepared for each task performed and each crew receives the JHA daily and that a daily JHA briefing is done for each task that is performed by the crews.
- Ensure each crew member has a Pre-Task Card on their person at all times during the shift and ensure that employees are challenging personnel that enter their work areas, briefing them with their Pre-card on the hazards in the area and having the person initial their pre- task card.
- Utilize iAuditor templates to perform Daily Supervisors Reports, Rapid Observations Reports, Job Hazard Analysis, Installation Plans and other required forms and reports.

SUB-CONTRACTORS

- Comply with all E Light Loss Prevention programs along with all federal, state, and local governmental agencies and coordinate with the site supervision, project management and the Director of Safety and Loss Prevention to ensure that all requirements of the safety loss control program are met.
- Be responsible for weekly safety meeting, weekly inspections, accident/ incident reporting, and forward copies of all transactions to E Light.
- Provide E Light with all required Health and Safety Programs and Policies, such as the Hazard Communications Program, Respirator Protection Programs and other such information. If any such program is absent, each Sub-contractor will adopt E Light Loss Prevention Programs / Policies.
- Conduct Accident / Incident investigations in coordination with the Director of Education and Loss Prevention and forward investigation results to E Light within 24 hours of occurrence. Notify the Director of Safety and Loss Prevention of all accidents and near misses immediately.
- Will provide a place of employment free from recognized hazards that may cause damage to people, property, or environment.
- Conduct weekly Health and Safety Inspections: Communicating all results, remedial actions, and follow-up procedures to the Supervisor of E Light.

SAFETY MANAGERS

- Work with Operations to ensure that all tasks are performed in a safe manner.
- Coach and train employees continuously on safety procedures, processes, ergonomics, hazards and communication.
- Complete a STOP Action Observation report at least once weekly.
- Provide a work environment free of unacceptable hazards and risk.
- Ensure that all injuries, auto accidents, near miss incidents, fires and unsafe conditions are promptly reported and investigate in accordance with corporate policy.
- Ensure the successful case management of each reported safety violation, incident, accident, near miss, good catch, or observation reported to Safety.
- Manage all accident cases and ensure that employees receive care proportional to their needs. Manage medical care to ensure the employees are over treated, or administered unnecessary medications. Consult with the treating physician and employee to ensure that each fully understands the background of the situation, previous medical history, treatment options, medication options, return to work policies and our corporate philosophy and policies.
- Maintain the SDS Log, Pre-task Card Log, Safety Reporting Log, and Safety Managers Reports daily on the project.
- Ensure the safety statistics are accurately reported to the Regional Safety Manager.
- Be involved in safety awareness, for coworkers, new hires and company employees. Conduct safety training and safety orientation.
- Do everything reasonable and necessary to provide a safe and productive work environment.
- Manage the safety staff.
- Notify the Director of Safety and Loss Prevention of any incidents or accidents which occur on the project.
- Attend the Plan of Tomorrow (POT) meeting daily and open the meeting with a safety briefing.
- Assist operation with the development of Job Hazard Analysis.
- Coach operation on effective JHA writing. Attend daily JHA briefings and privately coach the supervisor on delivering JHA briefings.

EMPLOYEES

- Perform their job properly and in accordance with established procedures and operating philosophy.
- Be accountable for wearing and maintaining all personal protective equipment.
- Comply with all company policies and general rules.
- Report any accidents / incidents to supervisor immediately.
- Notify their supervisor if they have been requested to perform a task for which they have not received adequate training.
- Follow and adhere to any specific Safety and Health rules as they apply to each job site.
- Report unsafe conditions and practices to supervisor immediately. Notify supervisor immediately if they are required to perform any task which they believe may be unsafe and request assistance. Notify supervisor immediately of any unsafe condition as it occurs.
- Maintain and properly use all tools and equipment for which you are responsible.
- Attend and participate in all safety meetings.
- Report all injuries and illnesses to your supervisor immediately.
- Assist in setting the example by setting a high expectation of safety on each and every site.
- Fill out a pre-task card each day at the beginning of the shift while participating in the JHA briefing daily. Keep the pre-task card on your person throughout the day. Record on your pre- task card each bottle of water that you consume during the shift. Challenge any person that enters your work area that was not a part of your JHA briefing. Record any Good Catches and Additional Hazards on your pre-task card.

ALL MANAGEMENT AND EMPLOYEES

- Ensure that safety receives equal consideration with production and profit by developing safety plans and strategies, during all meetings and on every job.
- Provide a work environment free of unacceptable hazards and risk.
- Ensure that all injuries, auto accidents, near miss incidents, fires and unsafe conditions are promptly reported and investigated.
- In case of injury or illness, unless life threatening, each and every employee will utilize E Lights approved medical providers. Each employee will be provided a choice of at least two providers when available.



- Ensure that each jobsite and task has the appropriate tools and each employee has the training required to properly perform the task

safely.

- Communicate what the personal protective equipment is required for each job site and/or task.
- Assist in resolving and discussing safe and or unsafe behaviors when observed.
- Be involved in safety awareness, for coworkers, new hires and company employees.
- Do everything reasonable and necessary to provide a safe and productive work environment.

TRAINING REQUIREMENTS

ALL EMPLOYEES

All Employees shall complete the following safety training:

- New Hire Orientation at Hire
- Site Orientation upon assignment to a site.
- Asbestos Awareness Training- Annually
- Lead Based Products Awareness Training- Annually
- Valley Fever Awareness Training- Annually
- Safety, Health and Environmental Updates Training- Annually
- Topical Safety Briefings- Weekly
- Job Hazard Analysis Briefings- Daily
- Specific Task Training- As Needed
- Supplemental Safety Training- As Needed

MANAGEMENT and SUPERVISION

All management and supervision employees shall complete the following additional training programs:

- E University Module Plan of Tomorrow Meeting and The E Light Way
- E University Module Introduction to Lean Construction
- E University Module Last Planner Method of Construction Management
- Safety Training Module Introduction to Electrical Safety- Annually
- E University Module Understanding Sexual Harassment- Annually
- Drug Awareness and Substance Abuse Recognition Training- Annually
- Defensive Driving- Annually

- Safety Training Module Avoiding Heat Related Injuries
- Safety Training Module Required Global Harmonization System Training for New HazComm Requirements
- Safety Training Module Forklift Safety Module
- Safety Training Module Safe Operation of a Utility Type Vehicle (UTV)
- Safety Training Module Safe Operation of a Skid Steer
- Safety Training Module Basic Rigging
- Safety Training Module Introduction to Fall Protection and Ladder Safety
- Safety Training Module OSHA Regulations for Hand and Power Tools
- Safety Training Module Ramset Powder Actuated Tool Safety Training
- Safety Training Module Introduction to NFPA 70E and Arc Blast
- Safety Training Module Electrical Energized Work Certification
- Safety Training Module Safety and the Supervisor
- OSHA 30 Hour Certification

MANAGEMENT

All management employees assigned to operations, safety, quality and service shall complete the following additional training programs:

- E University Module Introduction to Contracts
- E University Module Making Reliable Promises
- E University Module Understanding Insurance and Risk Management
- E University Module Pull Scheduling and Last Planner

Preplan safety into every task, job, assignment; Safety First and always.



SITE AUDITS AND INSPECTIONS

It is the policy of E Light to conduct complete audits / inspections related to the loss prevention program, in order to control or minimize loss to people, property and process, proactively. We believe that the audit process is the key to successfully managing our projects, continually improving and providing a safe work place for our employees.

The subcontractors have an obligation to conduct daily, and weekly, site inspections of their work areas and to provide written reports to the Safety Manager if a full time safety staff is on site or the Project Manager and Superintendent if a full time safety staff is not on site.

E Light is dedicated to providing a safe and healthy work environment for its employees and subcontractors. In keeping with this policy, **all levels of management must perform safety, health and environmental audits / inspections** of all departments work areas and construction sites in order to detect potential loss exposures in a timely manner. ***The supervisors who are in control of the fieldwork environment must conduct weekly, regular inspections of the job site as required by the OSHA standards. All other levels of management must do their part by also performing site inspections as detailed in the responsibilities section of this program.***

All audits and inspections will be conducted utilizing iAuditor and the approved and developed templates for E Light Electric Services, Inc. Specialized templates may be developed by making a request for a template to the Director of Safety and Loss Prevention.

Inspections / audits are necessary tools in identifying problems and evaluating risk before accidents and incidents happen. The intent of an inspection or audit is to:

- **Identify potential problems.**
- **Identify equipment deficiencies.**
- **Identify improper employee actions.**
- **Identify effects of facility modifications.**
- **Identify inadequacies in remedial actions.**
- **Identify non-compliance with the safety loss control program**
- **Provide management self-appraisals.**
- **Demonstrate management commitment**



- Identify areas of potential improvement

- Communicate with the crew who performs the work to involve them in the process of finding safer and more efficient methods of doing work
- Identify ergonomic issues and find a mitigation
- Evaluate the installation plans and JHAs and ensure compliance with them and find ways to make improvements.
- CONTINUALLY IMPROVE

RESPONSIBILITIES

Equipment operators: (cranes, forklifts etc.) Perform a pre-use inspection before using any mobile equipment. A pre-use inspection should occur during the beginning of each shift if the equipment is to be used. The equipment operators will report any substandard conditions to their supervisor and will immediately cease use of the equipment. Employees will not use any equipment for which they have not received training.

All Employees: Perform a pre-use inspection before using any tools. A pre-use inspection should occur during the beginning of each shift if the equipment is to be used. The employee will report any substandard conditions to their supervisor and will immediately cease use of the tool. Employees will not use any tool for which they have not received training. Notify your supervisor immediately if you have not been trained on a tool.

Foremen: Inspect your crew daily before each shift and ensure that they are in compliance with the dress code and the PPE requirements of the task they are assigned. Ensure that they are fit and ready for the work they are assigned. Ensure that they are not under the influence of any substance which is prohibited or that may interfere with their ability to safely perform their work. Ensure that each crew member has a pre-task card and that it is filled out correctly. Throughout the day monitor and inspect your crew to ensure that they are working safely, following the installation plan, following the JHA, and working efficiently. At the end of the shift inspect the work area and ensure that the tools and equipment are accounted for and that the area has been cleaned. Review each crew members pre-task card, initial their pre-task card. Place all pre-task cards with comments at the top of the stack. Turn the stack into your supervisor and notify your supervisor verbally if there are cards with additional hazards, good catches or comments on them. Complete a Daily Supervisors Report using the iAuditor template.

Superintendents/ General Foremen: Inspect your foremen daily before each shift and ensure that they are in compliance with the dress code and the PPE requirements of the task they are assigned. Ensure that they are fit and ready for the work they are assigned. Ensure that they are not under the influence of any substance which is prohibited or that may interfere with their ability to safely perform their work. Ensure that each foreman has



JHAs and Installation plans for all the tasks their crew will perform that day. Throughout the day monitor and inspect your crews to ensure that

they are working safely, following the installation plan, following the JHA, and working efficiently. At the end of the shift collect the pre-task cards from your foremen. Review any card that has additional hazards or comments. Log the additional hazards or comments and follow up on each one of them with the Safety Manager if applicable or the Director of Safety and Loss Prevention. You must speak to each person that placed a comment on their pre-task card personally and inform them of the follow up results of their comment. Complete a Daily Supervisors Report using the iAuditor template. Once per week, select a crew and perform a STOP action observation. (See Below) Once per week, perform a specific site inspection for safety once per week and complete the Operations: Weekly Safety Walk iAuditor report and email to the Safety and Training Coordinator and the Director of Safety and Loss Prevention.

Project Manager: Visit the project a minimum of once per month and complete a Management: Visiting Managers Quality and Safety Assurance Report. Email the completed report to the Department Director, the VP of Operations and the Director of Safety and Loss Prevention and save a copy in the network job file.

Director of Safety and Loss Prevention: Visit the projects a minimum of once every other month and complete a Management: Field Safety Walk Report. Email the completed report to the President, the VP of Operations, the Department Director, the Project Manager and the Superintendent and save a copy in the network job file.

Director of Construction and Director of Service: Visit the projects a minimum of once every other month and complete a Management: Visiting Managers Quality and Safety Assurance Report. Email the completed report to the VP of Operations, the Project Manager and the Superintendent and save a copy in the network job file.

Vice President of Operations: Visit the projects a minimum of once every quarter and complete a Management: Visiting Managers Quality and Safety Assurance Report. Email the completed report to the Project Manager and the Superintendent and save a copy in the network job file.

President and CEO: The President is to tour projects periodically as needed. The priority of the visits will be determined at his discretion based on the needs of the company and large projects will rotated so that the main focus of manpower is inspected at least annually. The president is not required to complete a report of his findings as this inspection is ensure visibility of the president to employees and to help ensure the continuation of a culture of training and safety. The Director of Safety and Loss Prevention shall report at least monthly to the President safety updates, statistics, trends and accident data. The Director of Safety and Loss Prevention shall report to the Board of Directors at each board meeting.

The Director of Safety and Loss Prevention shall manage the audit process for the SHEP and maintain a log of revisions and updates and shall be responsible for communicating updates to the



employees.

The Director of Safety and Loss Prevention shall be responsible for coordinating and facilitating the Monthly Supervisors and Management Training Meeting.

The Director of Safety and Loss Prevention shall be responsible for managing the weekly safety report and issuing it to clients and projects and executives.

The Director of Safety and Loss Prevention shall be responsible for updating and monitoring the Trello board and ensuring ideas, comments, suggestions and questions are shared with the team.

E Light Electric Services, Inc.

Continuous Improvement Observation Program

STOP Action (Stop, Think about Options and
Plan)

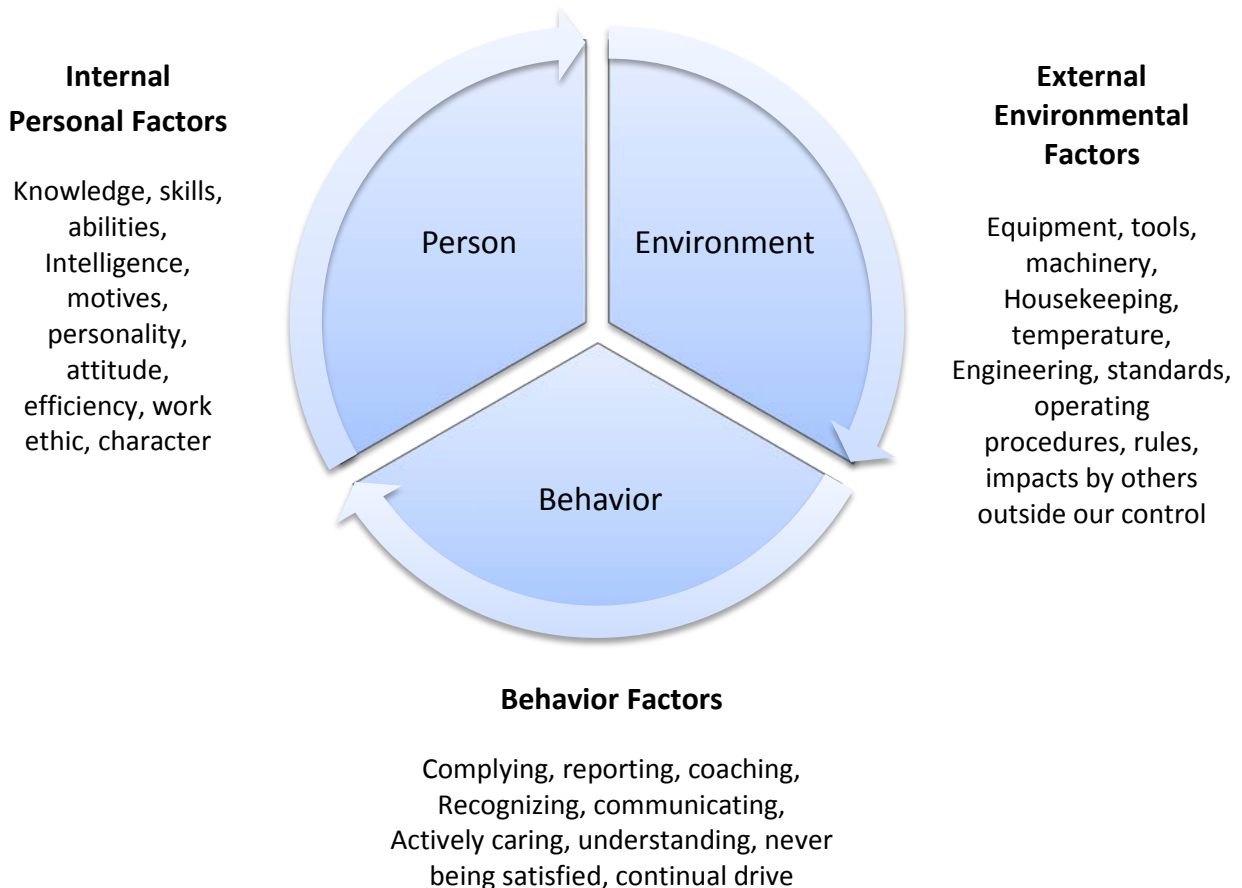
4/21/2014

PURPOSE

The Continuous Improvement Observation Program proactively prevents incidents and injuries and helps us find better, more efficient methods to perform our work through the monitoring, trending, and management of safe vs. unsafe behaviors and effective vs. ineffective behaviours. Effective communication of behavior trends to the management team is critical to a successful program; however the key to this program is the communication from the people doing the work the management team. We often are very proficient at Management to Field communication. In other words, we have no issue with management telling the field what to do. The purpose of the STOP action program is for management to really take time to “STAND IN THE CIRCLE” regularly and really observe what is happening in the field. THEN, AND THIS IS CRITICAL, talk to the crew that was observed and FIRST ask them what they think they can do to improve what they are doing, and THEN AND ONLY THEN, in a positive manner, share your observations with them. Our goal it to continually improve and to understand that it our people that will help us improve and we also want to know exactly why we improved. Not knowing why things get better is a trap that will lead to failure. If it gets better “for no reason,” then later it will probably get worse “for no reason.” The point is; it’s not enough to know that something works, it is vitally important to know why it works.

Total Continuous Improvement and Safety Culture

An “actively caring” Total Continuous Improvement and Safety Culture requires continual attention in three domains:



This program will focus in on the behavior factors of our work force. Focusing on behavior factors is critical to understanding what will make us better. Focusing and correcting the top non-improving behaviors will reduce project injuries and incidents and improve efficiency and quality. We need to focus the program on three things: 1. Is the work safe and how can it be safer 2. Is the work quality and how can the quality be improved and 3. Is the work efficient and how can efficiency and productivity be improved. (Man Minutes and the use of time: Primary Time, Preparation Time, Lost Time.)

SCOPE

This program is intended to be used for all 20 MW and greater construction projects. Each site may vary on selecting their trained controlled group of observer's.

PROCEDURE

Each superintendent and manager will take at least 30 minutes at one time, each week and stand in the circle, observing one task or crew. The observations will note the name of the observer, date and time, area, and number of employees observed. This will be done by recording the observations on the iAuditor STOP form. The observation must be at least 30 minutes and without interference. Simply observe, watch what they are doing, how they are doing it and record it. Then when done, approach the crew and gather them together. Talk to them. Ask them what they think they can do to improve, what they think they do well. Then record those answers. Then share your observations. Some things you can do is Map their Task, observe their ergonomics, discuss man minutes, observe Primary, Preparation, Lost time, make suggestions for them, make suggestion for us, and implement some of their ideas and observe again. Try things, Experiment.

On a weekly basis, the observations are entered into a tracking database from which the behavioral trends of the workforce are determined. The results of the week's observations should be communicated both to the project as a whole, to the client and on individual basis to the sub-contractor. Focus areas from the previous week's data are identified and should be emphasized to the work force.

OBSERVERS

Observers shall be comprised of the following:

Project Manager	Safety Manager	QA Manager
Superintendent(s)	Safety Supervisors	

The observers must have knowledge of the E Light construction safety requirements including but not limited to:

- Fall Protection/Ladder Safety
- Mobile Elevated Work Platforms
- Control of Hazardous Energies/LO/TO
- Barricades

- PPE Guidelines
- Housekeeping Requirements
- Primary Time, Preparation Time, Lost Time

Observation Process:

Step 1: PLAN where and when to make observations and recall what to look for.

Step 2: OBSERVE worker behavior for safe and at-risk/unsafe performance:

- Snapshots of behavior
- Allow no distractions
- Observe people and surroundings
- Stop any at-risk/unsafe behavior immediately
- Stop observing after a minimum of 30 minutes

Step 3: COACH for improved performance by positively reinforcing or redirecting:

- Provide positive reinforcement if safe, give praise
- GET THE CREWS FEEDBACK. THIS IS CRITICAL. THIS IS ABOUT ALLOWING THEM TO HELP US, NOT ABOUT US TELLING THEM WHAT TO DO. A MUTUAL EXCHANGE OF IDEAS
- Coach by shaping behavior if at-risk:
 -
 - Communicate the behavior you saw
 - Check for understanding of the job
 - Coach for improved performance
- Don't ignore what you saw
- Explain why this behavior is right and/or safe
- Encourage continued safe behavior
- Encourage them to tell you what you can do to make their job safer, more efficient, and better quality

Step 4: RECORD what was observed, why it occurred, and now what will be done:

- Keep the worker anonymous, be specific and timely and record on the STOP audit in iAuditor.
- Remember what, why, now what.
-

COACHING TIPS

- Use "I" vs. "you" language
- Appeal to other's interests and goals
- Reflect feelings or emotions that go beyond the words
- Clarify expectations
- Talk about the behavior, not the person

- Keep calm
- Find common ground
- Move to problem solving

The team must know that it is very damaging to the program for an observer to condone behaviors that are unsafe, inefficient, poor quality.

DATA COLLECTION

All observers shall complete two STOP Observation cards per week and turned into the safety office by the end of each week.

The STOP cards will be reviewed by the Loss Prevention team to answer three essential questions:

What behaviors are being observed?

Why are those behaviors present?

Now what will be done to improve the process?

How will we follow up and measure the improvement?

The Loss Prevention team will chart the STOP card information into the following graph examples using the top three unsafe categories and determine corrective action required to correct the system deficiency. This information will be shared with the observation team members for their input and after approval, to the project, client and home office.

When the improvement between observations graphed are displayed for employees to view, it can provide positive reinforcing feedback to the employees.

ACCIDENT INVESTIGATIONS

POLICY AND SCOPE

It is the policy of E Light to investigate all accidents and incidents which are **work related** or related to the construction programs which result in personal injury, illness, damage to property, or equipment, as a result of an accident or natural phenomena. **The Supervisors will have the responsibility to investigate all accidents**, provide all information outlined below, and submit to the Director of Safety and Loss Prevention. The Director of Safety and Loss Prevention shall be responsible for managing the distribution of reports, gathering and analyzing data and managing post-accident follow ups.

PURPOSE

An effective loss prevention program must have a thorough accident / incident investigation program. The accident investigation program must insure:

- All accidents / incidents are reported and investigated **immediately**.
- The contributory and root causes of an accident are determined.
- The recurrence of accidents / incidents of a similar nature are reduced or eliminated.
- Program needs for each area are identified.
- Information for analysis and communication throughout the company and to clients is obtained.
- Compensation claims costs are managed in the most cost effective manner
- Production time is increased.
- All areas are in compliance with Federal, State, and local codes, rules and regulations and laws.

DEFINITIONS

Accident: An undesired event that caused harm or damage to people property, process, materials or environment.

Incident: An undesired event, which, under slightly different circumstances could of, resulted or caused in harm to people or damage to property, process, materials or environment.

Contributory Causes: The events, circumstance or items that contributed to the accident or incident. It is possible to have multiple contributory causes.



Root Cause: The one circumstance, process, or item which was the cause of the accident or incident. There can be only one root cause. The Incident Accident Report Form contains a final section to analyze the Root Cause..

Safety/Loss Control: The control of accidental loss (proactively and reactively) to people, equipment, materials and environment. Control comes in several ways, the control prior to, proactive (things done not to have an accident) and then reactive what to do to control the outcome (after the accident) of the accident in order to minimize loss. i.e. first aid, CPR, Medical Providers, and Modified Duty, the Accident reports to name a few.

Property Damage: Loss or damage to any property (equipment, tools, real property, vehicles, loss to process, etc.) owned by E Light, Customers or its Sub-contractors, resulting from accident, abuse, negligence, act of God, or normal wear and usage.

WHAT TO INVESTIGATE

All accidents and incidents:

- All work related injuries and occupational illnesses
- All OSHA recordable cases
- Lost time injuries and illnesses
- Fatalities
- All property damage and auto accidents
- Fires and explosions
- Hazardous substance discharges and spills
- All incidents (Near Misses, Close Calls)
- All safety concerns, suggestions or Good Catches reports by employees

WHO SHOULD INVESTIGATE AND REPORT

All accidents and incidents are to be reported **immediately** to the supervisor. Failure to report an incident, regardless of the severity, may result in disciplinary action and could potentially affect the employee's benefits as determined by the Workers Compensation Carrier

The Supervisor is required to investigate all items which occur within his/her area of responsibility. The Supervisor will complete an accident / incident report form for all accidents/incidents utilizing the designated iAuditor template. All reports are to be email to the Training and Safety Coordinator. A preliminary report must be filed within 8 hours of the incident. A final report must be filed within 24 hours of the incident. The Safety Manager is responsible for all accident investigations on projects with a full time Safety Manager on site.

Even though he may not be the only investigator, the Supervisor must be actively



involved because:

- He/she is responsible for the people, equipment, material and environment of his/her work area.
- He/she knows those particular employees best and how to communicate with them.
- He/she most likely will be the one to implement follow-up actions.
- He/she will be responsible for communicating back to their employee's causes and corrective actions.
- He/she will be responsible for offering and tracking modified duty.

The Supervisor will immediately report all suspected incidents by calling the Director of Safety and Loss Prevention. This call should be made first unless immediate emergency services are required. If immediate emergency services are required, call 911 first, then immediately call the Director of Safety and Loss Prevention. The Director of Safety and Loss Prevention shall be responsible of managing the notification of all other personnel.

INSTRUCTIONS

1. Determine incident type (see matrix below)
2. Make the initial telephone notifications (911) if appropriate
3. Start investigation and control the scene
 - 3a. Designate someone to take notes for you.
4. Contact or transport to nearest medical providers if needed
5. Complete accident investigation reports with iAuditor
6. Submit Incident Reports w/iAuditor
7. Offer modified duty and track modified duty
8. Forward copies of paperwork, reports, etc. to main office



REQUIRED DOCUMENTATION OR NOTIFICATION	CONTACTS
A. Notification given Immediately	1 Immediate supervisor/ Director of Safety and Loss Prevention
B. Accident report completed within 24 hrs.	2 Superintendent/Project Manager
C. Log on OSHA 300 form	3 Human Resources Notified
D. Police Report required	4 Insurance Company Notified
E. Doctors Release or 1st report needed	5 Vice President Notified
F. OSHA notified @ 1-800-321-OSHA	6 President Notified

INCIDENT TYPE	Reporting and time frames
First Aid/No Doctor	A+1+B
First Aid / Doctor	A+B+1+3+4
Medical treatment given	A+B+1+2+3+4
Restrictions given	A+B+C+E+1+2+3+4+5
Days away from work	A+B+C+1+2+3+4+5
Death	A+B+F+1+2+3+4+5+6
Fire	A+B+(?D)+1+2+3+4
Vehicle accident	A+B+D+1+2+3+4
Property Damage	A+B+1+2+3+4 (>\$2500+5)(>\$5000+6)
Theft	A+B+1 (>\$1500+2)(>\$2500+5)(>\$5000+6)
Spill/ Release Non reportable	A+B+1
Spill/ Release Reportable	A+B+1+2
Incident (Near Miss/Close Call)	A+B+1

STEPS IN INVESTIGATIONS

- 1) Start the investigation promptly and positively.
 - a) Take charge of the situation
 - b) Insure first aid and call for Emergency services
 - c) Control potential secondary accidents
 - d) Direct someone to take notes and be sure to denote key times, events, observations, arrival of personnel, witness names, participants names, notification times, and any other details which may be pertinent.

- 2) Collect pertinent information about the incident.
 - a) Identify sources of evidence.
 - b) What appears to have happened?
 - c) What tools, equipment, material or people are missing?
 - d) What things failed or malfunctioned?
 - e) What do you need to know about training, repair, maintenance etc?
 - f) Preserve evidence from alteration or removal.
 - g) Interview all witnesses.
 - h) Take pictures frequently either directly through iAuditor or into your Pictures Gallery for insertion into iAuditor later.

- 3) Analyze all contributory causes.
 - a) First identify the Loss to People, Property or Process.
 - b) Identify the immediate causes.
 - c) Identify the basic causes.
 - d) Identify any program deficiencies.
 - e) Identify any safety or policy violations
 - f) Identify any deliberate behavior

- 4) Develop procedures and take remedial actions.
 - a) Determine and implement any immediate procedures to prevent further incidents
 - b) Determine and implement any immediate remedial actions that are required.
 - c) Cooperate with Safety Department to implement any long term procedural changes or remedial actions required.

All information gathered during the investigation should be documented with pictures and with detailed, factual information and submitted to the Training and Safety Coordinator utilizing the following iAuditor Designated Templates:

- Safety: Accident or Incident Preliminary Report- To be used as a preliminary report only
- Safety: First Aid Report- To be used only for First Aid Only incidents
- Safety: Injury, Accident and Injury Report- To be used for all accidents involving injuries or property damage
- Safety: Accident Investigation Supplemental Report
- Operations: Theft Report

Follow through on the effectiveness of the actions. The Director of Safety and Loss Prevention shall be responsible for managing the tracking of incidents and the follow up of corrective actions and the management of cases.



Here are some tips and guidelines to keep in mind when conducting an investigation

- In order to stop the accident from happening again conduct a thorough investigation, get all the facts.
- Spend time determining the contributing and root causes (root causes).
 - Ask Why at least five times. Use the system you used when you were young and really wanted to learn everything. You would ask your parents a question. They would give an answer and you would then ask them Why? And you would continue this until you received an answer that satisfied you. Use this process to get to the root cause of the issue, not one of the symptoms.
 - Determine if the root cause is a company problem or employee problem. (Many times it a company problem Sometimes it is an employee problem).
 - Be honest to yourself and the company. Follow up with remedial actions and don't allow it to happen again.
- Take pictures. Take pictures. Take pictures.
- Use the voice recorder on your smart phone to record the testimony of witnesses. This is typically more effective than getting written statements.
- When you are writing your reports do not attempt to sound official or use fancy language. Just write what happened and share the facts.

ACCIDENT / INCIDENT FOLLOW-UP PROCEDURES

Follow-up action is required on all preventative measures stated on an accident / incident investigation report, if not corrected at the time of the initial investigation. The Director of Safety and Loss Prevention shall be responsible for follow up. The department Director, the Project Manager and supervision shall cooperate and assist the Director of Safety and Loss Prevention in the follow up and implementation of corrective actions.

Use the following as a guideline for determining the schedule for implementing corrective actions:

The schedule by which the preventative action should be corrected in order to prevent the accident / incident from occurring again will be according to its loss severity potential:

- Class A - MajorWithin 24 hours**
- Class B - Serious.....Within one week**
- Class C - Minor.....Within two weeks**

Imminent Danger must be corrected as soon as possible!

The Supervisor will be responsible for monitoring the effects of the corrective action.



Each member of supervision on site shall conduct a STOP Action Observation of the work affected by the corrective action once per week for a period of two weeks. The STOP Action report shall be emailed to Director of Safety and Loss Prevention upon completion for review. This is necessary in order to verify that the corrective action has solved the problems identified in the original accident / incident reports and has caused no unanticipated side effects. If the corrective action has not solved the problem or an undesirable side effect is observed, the operations team shall meet with the Director of Safety and Loss Prevention and determine a course of action.

WRITING THE INVESTIGATION REPORT

The report **summarizes** the investigation and maintains a record on how the problem was solved. **All injuries, illnesses, property damage accident / incidents and near misses should be recorded on the above reference iAuditor Templates and emailed to the Safety and Training Coordinator. The Safety and Training Coordinator will distribute the report for review, approval and signature by the VP of Operations and the Director of Safety and Loss Prevention. The Safety and Training Coordinator will ensure the report is entered into the Safety Database and recorded on the OSHA 300 and 300A logs if applicable.**

REPORTING OF FATALITIES AND CATASTROPHES

The Director of Safety and Loss Prevention must report to the OSHA regional office within 8 hours after obtaining information on any Fatalities and accidents that cause an employee to be hospitalized for more than 24 hrs.

The Director of Safety and Loss Prevention shall be responsible for managing the recording, tracking and analyzing of the following:

- **Medical Recordable Accident:** is any treatment that a doctor must authorize, conduct or prescribe. (Such as prescription drugs) It is anything above first aid, but not including diagnostics.
- **Loss time injury or illness:** A loss time injury or illness must be logged on the OSHA 300 form. It is when an employee loses more than eight hours' straight time due to a work related injury or illness. The time is logged according to the OSHA rules and regulations. The employee cannot be logged for normal scheduled days off or for waiting to see a specialist.
- **First-aid Only Incident:** Is when an employee is treated on site or at a near-by clinic and does not receive medical treatment, such as a shot, stitches, therapy, or other treatment that a doctor must authorize.
- **Insurance loss of time:** the insurance company will pay for loss of wages if an employee loses more than 3 days of work due to the Doctor stating the employee must stay home or not return to work.

All medical recordable and loss time injuries and illnesses must be logged on the OSHA 300 form within six days after the accident.



The Director of Safety and Loss Prevention shall be responsible for ensuring that Accidents and Injuries do not lead to either Lost Time or Insurance Loss of Time accidents or injuries. They shall develop and implement aggressive return to work policies and procedures. Accounting and Operations shall assist and cooperate with the Director of Safety and Loss Prevention to ensure accidents and injuries do not become classified as Lost Time or Insurance Loss of Time by utilizing the Modified Duty Return to Work Program

DEFINITION OF MODIFIED DUTY

Due to the result of a work related injury, the employer must change, make less extreme, or limit the employees normal work assignment to insure the employee can work their normal shift per limitations from medical provider. E Light will make an offer of modified duty to any employee that is given work restrictions by a worker's compensation approved medical provider as a result of a work related injury regardless of the extent of the restrictions. E Light will find and create a position that can accommodate any work restriction. If the employee rejects the modified duty offer, their compensation for wages may be affected as determined by the worker's compensation carrier.

Employees may be paid for time spent at Doctors' appointments, recovery time, work from home or hospital or other items at the discretion of the Director of Safety and Loss Prevention based on the wellbeing of company and its employees. A payment for time as described in this paragraph does not constitute an acknowledgement of fault or liability nor does it determine any precedent for payment of wages or liability for payment of wages.

The Director of Safety and Loss Prevention, at their discretion, may elect to utilize the worker compensation carrier Not for Profit program in order to execute the modified duty program.

Any employee that is participating in the Modified Duty/ Return to Work program that has work available to them within their restrictions and does not report for work shall be considered absent for personal reasons and the absence shall not be recorded as lost time and no pay compensation shall be provided for the amount of time the employee was absent.

Implementation

- When an employee has been injured and the Doctor issues work restrictions, regardless of the severity of the restrictions then:
 - The Human Resources Director and the Director of Safety and Loss Prevention will determine a modified duty job that meets the restrictions as detailed by the worker's compensation doctor and will develop a written modified duty offer. (Example: Employee is to return to a modified work in the office. Duties include but are not limited to copying, filing, light lifting under 25 lbs. sitting 75% of the time, standing 25% of the time, light cleaning and other duties as assigned following the Doctors restrictions.)
 - **The Director of Safety and Loss Prevention will ensure that the written**



Modified Duty offer is hand delivered to the employee or sent to them by certified, return receipt letter. The offer should include job outline, hours to be worked, pay rate, date to start, Doctors restrictions, and a statement about refusing modified duty may reduce employee compensation coverage.

- **The employee shall respond to the offer within (24) hours after receipt of the offer.**



EXAMPLE: MODIFIED DUTY LETTER A

Date: July 1, 1991
To: Mr. Employee
From: E Light Company

Re: Employment

Claim: 000000000

Dear Mr. Employee:

We have received a medical report from your physician dated July 11, 1991, which allows you to return to work doing a modified duty. We have a modified duty position, which follows the restrictions given by your doctor. The job and duties are Prefab helper, warehouseman helper and routine activities and other duties as assigned.

If you have any questions, please feel free to contact this office at (111) 111-1111.

Wages will be: The pay rate to be same as prior to your injury.

Hours to be worked: Normal work hours as prior to injury.

As of July 11, 1991, this modified position is available to you.

We are offering you this position according to the Colorado Worker's Compensation Act, the Rules and procedures, Rule VI. Your failure to accept this modified position could/will affect your weekly compensation benefits.

Supervisors name

Date

_____ **Yes**, I accept this modified duty position: _____

Date

(Your Signature)

_____ **No**, I don't accept this modified duty position: _____

Date

_____. (Your Signature)

Mile High Occupational, 1717 Smith Rd. Denver, CO 80544 (Fill in Address)

Doctors Authorization for Modified Duty: _____ Date: _____

Office Phone: (000) 000-0000

(Dr. Signature)

Fax: (000) 000-0000

Comments:

Certificate _____ of _____

Empty box for certificate details.



Service: _____

I _____ hereby certify that I hand delivered a copy of this job offer
to _____ at _____ am./pm on _____ 201____.

Signature

Date

Cc: Insurance Company and Attorney (If represented)



SITE MODIFIED WORK

Site modified work includes above and:

<u>Duty</u>	<u>Weight</u>	<u>Task-repetitive</u>	<u>Frequency</u>
<ul style="list-style-type: none"> ▪ Helper Hold items, hand tools, gluing, nailing, scrapping, measuring, shoveling, raking, polishing, washing, painting, caulking, sanding, cleaning, operation of threading mule, prefab of light weight plastic pipe or light copper, etc. 	25 lbs.	Non	8 hrs.
<ul style="list-style-type: none"> ▪ Trash removal Pickup and remove trash to large containers, shoveling, sweeping, cleaning, carrying, etc. 	<75 lbs.	Non	8 hrs.
<ul style="list-style-type: none"> ▪ Cleaning tools/equip. Washing, scrubbing, cleaning, sorting, waxing, check fluid levels, vacuuming, wiping down, lubricating, light repair of tools, cords, and maintenance of tools and equipment, including filter replacements, inspections, etc. 	<30 lbs.	Slightly	1-8 hrs.
<ul style="list-style-type: none"> ▪ Site Safety Coordinator Site safety inspections, accident investigation, safety observer; for confine space entry, crane operations, safety monitor for fall protection, holds and conducts safety training, assists supervisors, assist journeymen, attends site safety meetings, checks material handling; hand and portable tools and equipment, fall protection, electrical, guarding, and other hazards, etc. 	<50 lbs.	Non	8 hrs.
<ul style="list-style-type: none"> ▪ Inventory Control This task is normally for larger jobs to sign for deliveries, order merchandise, track orders, have material handlers place items in building in proper locations, track materials being installed, deal with police on stolen or missing items, deal with transport companies on damaged or defective merchandise. Conducts some safety spot checks. 	<10 lbs.	Non	8 hrs.
<ul style="list-style-type: none"> ▪ Prefab Helper Prefab helper will assist in assembling merchandise to be installed, up packing, small assembling and prep work, use of hand tools and some power tools used to assist in preparation of merchandise to be installed. May also serve as a safety monitor, spotter, driver and other duties as assigned. 	<40 lbs.	Slightly	8 hrs.



EXAMPLE: RETURN TO WORK VERIFICATION STATEMENT

(This can be sent via email, fax or done by phone.)

Date: _____

Elight Company

Address: _____

Claim Number: _____

Date of Injury: _____

Employee (Joe Henry) has returned to work full time (or Part Time) on (date) _____ and is back to regular hours and wages.

HR or Supervisors Signature

Date

ACCIDENT AND INCIDENT INVESTIGATIONS CAUSE RESOURCE INFORMATION

POTENTIAL CAUSES OF LOSS - PERSONAL

INADEQUATE PHYSICAL / PHYSIOLOGICAL CAPABILITY

- Inappropriate Height, Weight, Size Strength, Reach, etc.
- Restricted range of body movement
- Limited ability to sustain body positions
- Substance sensitivities or allergies
- Sensitivities to sensory extremes (temp or sound.
- Vision deficiency
- Hearing deficiency
- Other sensory deficiency (touch, smell etc)
- Respiratory incapacity
- Other permanent physical disabilities
- Temporary disabilities

INADEQUATE MENTAL / PSYCHOLOGICAL CAPABILITY

- Fears and phobias
- Emotional disturbances
- Mental illness
- Intelligence level
- Inability to comprehend
- Poor judgment
- Poor coordination
- Slow reaction time
- Low mechanical aptitude
- Low learning aptitude
- Memory failure

PHYSICAL OR PHYSIOLOGICAL STRESS

- Injury or illness
- Fatigue due to task load or duration
- Fatigue due to lack of rest
- Fatigue due to sensory overload
- Exposure to health hazards
- Exposure temperature extremes
- Oxygen deficiency
- Constrained movements
- Blood sugar insufficiency
- Drugs or substance abuse

MENTAL OR PSYCHOLOGICAL STRESS

- Emotional overload
- Fatigue due to mental task load or speed
- Extreme judgment / decision demands
- Meaningless or degrading activities
- Confusing directions
- Conflicting demands
- Preoccupation with problems
- Frustration
- Mental illness
- Just don't want to be there
- Other issues on employee's mind
- Mad at supervisor

LACK OF KNOWLEDGE

- Lack of experience
- Inadequate orientation
- Inadequate initial training
- Inadequate update training



- Misunderstood directions

LACK OF SKILL

- Inadequate initial instructions
- Inadequate practices
- Infrequent performance
- Lack of coaching

IMPROPER MOTIVATION

- Improper performance is rewarded
- Proper performance is punishing
- Lack of incentives
- Excessive frustration
- Inappropriate aggression
- Improper attempt to save time
- Improper attempt to avoid discomfort
- Inappropriate peer pressure
- Improper supervisory example
- Inadequate performance feedback
- Inadequate reinforcement of proper behavior
- Improper production incentives

BASIC CAUSES OF LOSS - JOB FACTORS

INADEQUATE LEADERSHIP AND SUPERVISION

- Unclear or conflicting reporting relationships
- Unclear or conflicting assignments of responsibility
- Improper or insufficient delegation
- Giving inadequate policy, procedure, practices or guidelines
- Giving objectives and goals or standards that conflict
- Inadequate work planning or programming
- Inadequate instructions, orientation and/or training
- Providing inadequate reference documents, directives and guidelines or publications



- Inadequate identification of loss exposures(IEDIM)
- Lack of supervisory, management jobs knowledge
- Inadequate matching of job knowledge and qualifications
- Inadequate performance measurement and evaluation
- Inadequate or incorrect performance feedback

INADEQUATE ENGINEERING

- Inadequate assessment of loss exposures
- Inadequate consideration of human factors or ergonomics
- Inadequate standards, specifications and/or design criteria
- Inadequate monitoring of construction
- Inadequate assessment of operational readiness
- Inadequate monitoring of initial operation
- Inadequate evaluation of changes

INADEQUATE PURCHASING

- Inadequate specification on requisitions
- Inadequate research on materials or equipment
- Inadequate specifications to vendors
- Inadequate mode or route of shipment
- Inadequate receiving inspection and acceptance
- Inadequate communications of safety and health data
- Improper handling of materials
- Improper storage of materials
- Improper transporting of materials
- Inadequate identification of hazardous items
- Improper salvage and or waste disposal

INADEQUATE MAINTENANCE

- Inadequate prevention
 - Assessment of needs
 - Lubrication and servicing
 - Adjusting and servicing
 - Cleaning and resurfacing

- Inadequate reparative
 - Communication of needs
 - Scheduling of work
 - Examination of units
 - Parts substitution

INADEQUATE TOOLS AND EQUIPMENT

- Inadequate assessment of needs and risks
- Inadequate human factors or ergonomics
- Inadequate standards or specifications
- Inadequate availability
- Inadequate adjustment and repair or maintenance
- Inadequate salvage and reclamation
- Inadequate removal and replacement of unsuitable parts

INADEQUATE WORK STANDARDS

- Inadequate development of standards
- Inventory and evaluation of exposures and need
- Coordination with process design
- Employee involvement
- Inconsistency standards / procedures / rules.
- Inadequate communications standards
 - Publications
 - Distribution
- Translation to appropriate languages
- Reinforcing with signs, color codes and job codes
- Inadequate maintenance of standards
 - Tracking of work flow
 - Updating
- Monitoring us of standards and procedures or rules

WEAR AND TEAR

- Inadequate planning of use
- Improper extension of service life
- Inadequate inspection and or monitoring
- Improper loading of rate of use
- Inadequate maintenance
- Use by unqualified or untrained person (s)
- Used for wrong purpose

ABUSE OR MISUSE

- *Condoned by supervision*
- Intentional
- Unintentional
- *Not condoned by supervision*
 - Intentional
 - Unintentional



EMPLOYEES RIGHTS

REFUSAL TO ACCEPT MEDICAL TREATMENT

All employees that are injured due to a work related incident have the right to medical attention, evaluation and treatment. E Light Employees shall not discourage, dissuade, or suggest anything to contrary. Members of management and supervision shall make it clear to injured employees that they have the right to medical attention, evaluation or treatment.

No employee may be forced to undergo medical evaluation, treatment or assistance against their will. All employees have the right to refuse medical evaluation, treatment or assistance.

Only a certified and licensed medical professional may make the decision that an employee is not capable of making sound decisions and force medical evaluation, treatment or assistance. E Light Employees are not authorized to make this decision.

If an employee has been offer medical evaluation, treatment or assistance and they refuse this evaluation., treatment or assistance, a Safety: Refusal to Seek Medical Treatment Template iAuditor report shall be filled out, signed by the supervisor and the employee and submitted to the Director of Safety and Loss Prevention.

E Light reserves the right to force an employee to stop work, stop a certain task or leave the project premises if E Light believes it is in the employee's best interest to do so or in the best interest of the company and its employees.

REPORTING OF UNUSUAL BEHAVIOR

All E Light employees have the right and the obligation to report unusual, suspect, unethical or inappropriate behavior by individuals. Employees may report this to their immediate supervisor or they may call the reporting HOT LINE. The reporting HOT LINE is posted on the project with the Employees and Employers Notification Postings. Employees may call 303-754-0001 and ask for Human Resources if they have any questions concerning reporting.

RIGHT TO STOP WORK

All E Light employees have the right and the obligation to stop work that they believe is unsafe. Employees need to inform their supervisor immediately if they feel work is unsafe or if they do not understand the task assigned to them.

RIGHT TO SAFE WORK ENVIRONMENT



All E Light employees have a right to a safe work place. If you believe that your work place is not safe, report this to your immediate supervisor immediately.

DRUG AND ALCOHOL POLICY

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DRUG AND ALCOHOL POLICY

PURPOSE

E Light Electric Services, Inc. is committed to a safe, healthy, and productive work environment for all employees free from the effects of substance abuse. Abuse of alcohol, drugs, and controlled substances impairs employee judgment, resulting in increased safety risks, injuries, and faulty decision-making.

SCOPE

This policy applies to all employees. All employees have been issued upon initiation of this policy or upon hire a copy of the company policy, describing in detail what substances will be tested for and under what conditions employees will be tested.

STATEMENT OF POLICY

To ensure a safe and productive work environment the company prohibits the use, sale, dispensation, manufacture, distribution or possession of alcohol, drugs, controlled substances, or drug paraphernalia on any company premises or worksites. This prohibition includes company owned vehicles, or personal vehicles being used for company business or parked on company property. **NOTE:** The prohibition of usage of alcohol does not apply to company functions in which alcohol is served as part of that function, however, alcohol use at these company functions must be in moderation.

No employee shall report to work or be at work with alcohol in their system above the detectable amount or with any detectable amount of prohibited drugs in the employee's system. A detectable amount refers to the standards generally used in workplace drug and alcohol testing.

Employee shall, when drugs are prescribed by a medical professional, inquire of the prescribing professional whether the drug prescribed has any side effects which may impair the employee's ability to safely perform the employee's job duties. If the answer from the medical professional is yes, the employee shall obtain a statement from the medical professional indicating any work restrictions and their duration. The employee shall present that statement to his or her supervisor prior to going on duty.

Illegal use of drugs off duty and off company premises or work sites is not acceptable. It can affect on-the-job performance and the confidence of the public, and our customers in the company's ability to meet its responsibilities.

Any violation of this policy may result in disciplinary action up to and including termination.

SUPERVISOR TRAINING

Managers and supervisors responsible for field operations are required to complete Drug Recognition and Substance Abuse Recognition training annually.

EMPLOYEE AND APPLICANT DRUG AND ALCOHOL TESTING

To promote a safe and productive workplace, E Light Electric Services, Inc. will conduct the following types of Drug/Alcohol test for all employees:

- Pre-employment
- Reasonable Suspicion
- Post-accident
- Return-to-Duty/Follow-up Testing
- Client testing / Project Specific

CATEGORIES OF EMPLOYEE SUBSTANCE TESTING

Pre-employment Testing

All persons seeking employment with E Light Electric Services, Inc., shall undergo post-offer, pre-employment drug testing. Applicants will be informed that, as a condition of employment, they must pass a drug-screening test.

Applicants who test positive will be notified that they have not met the standards for employment. An applicant who does not pass a drug test may request that the original sample be analyzed again at the individual's expense by a government certified laboratory. All requests for an independent analysis must be made in writing within 72 hours of notification of a confirmed positive test result.

IMPAIRMENT OR SUSPICION OF IMPAIRMENT

In order to maintain a safe working environment, E Light Electric employees shall report to work prepared to perform their job duties safely and efficiently. Employees shall not report to work smelling of the odor of alcohol or marijuana. Supervisors who observe employees demonstrating signs of intoxication, the odor of alcohol or marijuana, or inability to perform their work safely and efficiently shall counsel the employee and determine the appropriate action. The construction industry is hazardous and requires employees to be focused, mentally prepared for work and capable of making sound judgment decisions and

physically able to perform their job assignments. Employees that are not capable of the above, endanger themselves and their coworkers.

Employees may be sent home without pay, suspended or terminated at management discretion for violation of this policy. Absences by employees in order to comply with this policy shall be considered unexcused absences.

Reasonable Suspicion Testing

An employee will be asked to submit to tests for alcohol and/or illegal drugs when the employee is reasonably suspected of being impaired in the performance of his or her job.

Reasonable suspicion testing may result from one of the following examples, but is not limited to the following:

- Specific and personal observations concerning the appearance, behavior, speech or performance of the employee; or
- Violation of a safety rule, or other unsafe work incident which, after further investigation of the employee's behavior, leads the supervisor(s) /manager(s) to believe that the employee's functioning is impaired; or
- Any physical, circumstantial, or other indicators of impairment.
- When a supervisor/manager has reasonable suspicion to request testing, the supervisor/manager will arrange to transport the employee to the collection site, and will arrange for the employee's transport home.
- Employee will be placed in an unpaid status pending the receipt of drug testing results by E Light Electric Services, Inc. If the test comes back negative, the company will pay this employee the time he would have worked.

Post-Accident Testing

An employee must submit to a drug and/or alcohol test after an on the job accident.

- An accident for purposes of this policy is defined as an incident or occurrence in which:
 - (a) a person dies or requires medical treatment or
 - (b) property damage is estimated by the company to be greater than \$200.
 - (c) it involves use of a Company vehicle or
 - (d) it involves an employee in a personal vehicle accident while on the job.
- An employee who is involved in an accident must immediately report the accident to his or her supervisor/manger.
- Whenever a supervisor/manager observes or is notified of an accident as defined above, the supervisor/manager will initiate drug and alcohol testing. The supervisor/manager will order the employee to submit to a urine and/or breath test. The supervisor/manager will arrange to transport the employee to the collection site and will arrange for the employee's transport home.

Return to Duty/Follow-up Testing

If the company elects to allow an employee to return to work following a positive test result, it is mandatory that the employee must first pass a drug test and subsequently submit to a program of unannounced testing for a period of not more that twelve (12) months from the date of return to duty.

CLIENT POLICIES

If you are assigned to a project for which the client has an alcohol and drug policy, you are required to abide by that policy. These policies generally prohibit the use of drugs or alcohol at any time on the client's premises or during meals or breaks if you are returning to work afterward. Further, you are not to report to work showing any effect of drug or alcohol use.

THE KINDS OF SUBSTANCES TESTED FOR WILL INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING SUBSTANCES OR THEIR METABOLITES:

- Marijuana
- Cocaine
- Opiates
- Phencyclidine (PCP)
- Amphetamines
- Alcohol

E Light Electric reserves the right to change the substances that are tested for or add to the above list at any time.

MARIJUANA

An employee who tests positive for marijuana is in violation of E Light Electric's drug policy as outlined in this section, even if the employee is exempt from criminal prosecution under Colorado's medical marijuana laws or is using marijuana recreationally in conformity with Colorado's Amendment 64.

Be advised that a positive drug test for marijuana constitutes a violation of E Light's drug and alcohol policy and may lead to your termination. For more information, please speak with Human Resources.

INSPECTION AND SEARCHES

The company may conduct unannounced inspection for violations of this policy in the workplace, worksites, or company premises. Employees are expected to cooperate in any inspection.

VOLUNTARY TREATMENT

The Company supports sound treatment efforts. Whenever practical and at our discretion, the Company may assist employees in overcoming drug and alcohol, as long as this policy has not already been violated.

If an employee seeks treatment for drug or alcohol use, the employee may be eligible to go into a drug and /or alcohol treatment program either through E Light Electric, Inc.'s medical insurance program or at his or her own expense.

If the employee elects to enter an appropriate treatment program, E Light Electric, Inc. may

place the employee on unpaid status, but will be required to use any accrued vacation time and sick leave while participating in the evaluation and treatment program, so long as the employee is complying with the conditions of treatment. E Light Electric, Inc. can require verification from the health care provider for a release to work and/or verification of treatment as covered in the company's medical leave policies. More information regarding availability of treatment resources and possible insurance coverage for treatment services is available from the Human Resources Department.

SAFEGUARDS AND CONFIDENTIALITY

The drug screen analysis is accomplished through urinalysis testing. Alcohol testing may be through breath testing. Samples will be collected in a sanitary environment designed to maximize employee's privacy while minimizing the possibility of sample tampering. If there is a positive drug and/or alcohol result on the initial screening test, the laboratory or blood alcohol technician will automatically do a second test to confirm the results. The second drug test will be performed using gas chromatography/mass spectrometry or other scientifically accepted method. In the event the drug and/or alcohol test results are a negative dilute, the applicant, or employee will be required to re-test. A positive breath alcohol test will be confirmed by a second breath test.

All drug tests are performed by a government-certified outside laboratory. All government-certified outside laboratories strictly follow chain of custody guidelines to ensure the integrity of the testing process. The company shall use a Medical Review Officer (MRO) who will receive the laboratory results of the testing procedure. The MRO shall be a licensed physician and have knowledge of substance abuse disorders and the appropriate medical training to evaluate positive results, medical histories, and any other relevant biomedical information. The MRO shall review all medical records made available by the tested individual when a confirmed positive test could have resulted from legally prescribed medication.

If the results of the initial test are negative, the testing laboratory will report the results to the MRO retained by the company. The MRO or the testing laboratory reports the negative results to the company. In this instance, no additional tests on the specimen will be done.

If the results of the initial test are positive, that is, if the results exceed the permitted levels for any of the five drugs tested or if the blood alcohol test comes back positive, a second confirmatory test shall be performed. The employee is prohibited from performing any duties if the initial test is positive, and while the confirmatory testing is being performed. Only specimens that are confirmed positive on the second (confirmatory) test are reported positive to the MRO for review and analysis. The MRO will contact the employee personally, in the case of a positive test result. The MRO has the responsibility of reporting to E Light Electric Services, Inc. whether the test results are positive or negative.

An applicant or employee who does not pass a drug test may request that the original sample be analyzed again at the individual's expense by a government certified laboratory. All requests for an independent analysis must be made in writing within 72 hours of notification of a confirmed positive test result.

Each applicant or employee will have an opportunity to discuss the drug and/or alcohol test with a Medical Review Officer in a confidential setting. Each applicant or employee upon his or her request may be provided with a written copy of the positive test result, upon written request. Upon written request within seven days of taking the test an employee may access records relating to his drug and/or alcohol test.

DISCIPLINARY ACTION AND REASONS FOR TERMINATION

- Testing Positive

Employees who test positive for drugs or alcohol are in violation of this policy.

- Refusal to comply

Employees who refuse required testing are in violation of this policy.

- Interference with testing

Employees who adulterate, tamper with or otherwise interfere with accurate testing are in violation of this policy.

- Any employee, who has been observed using or possessing illegal drugs or alcohol during work time, including lunch breaks, or on E Light Electric Services, Inc. premises is in violation of this policy.

AT WILL EMPLOYMENT

Nothing in this policy is to be construed to prohibit E Light Electric Services, Inc. from maintaining a safe and secure work environment or to limit its right to impose disciplinary actions as it may deem appropriate. Such disciplinary actions may include termination of employment. Employment is at-will and subject to termination by E Light Electric Services, Inc., or the employee at any time, with or without notice and with or without cause.



ASSURED GROUNDING PROGRAM

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, shall be visually inspected before each day's use for external defects, such as deformed or missing pins or insulation damage, and for indications of possible internal damage. Equipment found damaged or defective shall not be used until repaired.

The following tests shall be performed on all cord set, 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 shall be tested for continuity and shall be electrically continuous.

Each receptacle and attachment cap or plug shall be tested for correct attachment of the equipment grounding conductor. The equipment grounding conductor shall be connected to its proper terminal.

All required tests shall be 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 shall be tested at intervals not exceeding 6 months.
- One of the methods listed by OSHA as part of acceptable record keeping is to establish a color code for marking cord sets and cord- and plug-connected equipment. The table below lists a color code that is in wide use by electricians and contractors. Colored plastic or vinyl electrical tape is placed on one or both ends of cords and cord- and plug-connected equipment to denote the month that the tests were performed.

Assured Equipment Grounding Conductor Program Color Code		
Month #	Month Tested	Color of tape(s) to apply to cord
1	January	White
2	February	White + Yellow
3	March	White + Blue
4	April	Green
5	May	Green + Yellow
6	June	Green + Blue
7	July	Red
8	August	Red + Yellow
9	September	Red + Blue
10	October	Orange
11	November	Orange + Yellow
12	December	Orange + Blue

As an easy reminder of the color of the tape to place on the newly tested cord, remember the color for the start of each calendar quarter by the season:

- White in January for Winter.
- Green in April for Spring.
- Red in July for Summer, or the 4th of July.
- Orange in October for Fall, or pumpkins.

Then add:

- Yellow for the second month in each quarter.
- Blue for the third month of each quarter.

ASSURED GROUNDING TEST PROCEDURES

Notify personnel working in the area that you are testing the temporary power systems and they may experience power loss and for how long this may last. Be sure to not leave workers in the dark. Always have them leave the area until you are completed with your test.

We need to ensure that all conductors on the cord set are still intact and continuous. There are two methods that can be used to determine this.



Bring both ends of the cord set together and test the ungrounded, grounding and grounded conductors with a continuity meter to ensure there is no breaks in the wire and also to ensure there is not continuity between the ungrounded, grounded and equipment grounding conductors.

Unplug the cord and test the cord with a Cat. III voltage tester. Test the voltage between ungrounded conductors, the ungrounded conductors and the grounded conductor and the ungrounded conductors and the equipment grounding conductor. Ensure there is no voltage between the grounded conductor and the equipment grounding conductor. Record the readings. Plug the cord back in and proceed to the next point on the system Unplug the equipment and proceed to make the same tests. If the voltage readings are close to the same readings at the other end of the cord, this demonstrates continuity. There will be slight variances due to voltage drop. Wear insulated rubber gloves while performing this test. Inspect the entire length of the cord and ensure there are no nicks cuts or frays.

- 1) Ensure all power distribution panels are labeled with cautions signs, are locked and that the area around them is clear of debris
- 2) Ensure all power distribution equipment is connected to an approved grounding electrode. (Water main, building steel or ground bar.)
- 3) Ensure temp power cords are supported correctly and are being protected.
- 4) Ensure all temp. power is being correctly protected from environment and weather conditions.
- 5) Ensure that all plug ends are in good repair and the pins and slots are not damaged and intact.
- 6) Push the test and reset button on all GFCI receptacles and breakers and ensure that they are operating correctly.

- 7) Check all power equipment and ensure that the guards are in place, they are in good repair and the cords are not damaged.
- 8) Mark cords with the appropriate color code if they pass all tests.
- 9) Place a piece of duct tape on all turtles and power distribution units and mark the date of the test, mark as passed if it did and initial.



- 10) Record the tests on the assured grounding test record and submit to the E Light corporate offices and the general contractor.
- 11) Make repairs on equipment if it can be done safely and in a de-energized state and take all equipment that does not pass the test and cannot be repaired out of service.
- 12) Do not work on exposed energized parts.

MONTHLY EQUIPMENT TEST AND RECORD

The monthly equipment check should be performed in the same manner with the exception of steps 1 and 2. The record of the testing monthly will be made on the Monthly Equipment check form instead of the Assured grounding test form and no color coding will be done for the monthly test. Energized work may only be performed by authorized personnel and only after a plan has been developed and approved for the specific test. The testing of a cord cap with a voltage meter is not classified energized work because all safeguards are in place and may be performed by an electrical apprentice who has been trained in this procedure and who is wearing insulated rubber gloves while performing voltage tests.

FALL PROTECTION PLAN / POLICY

The Occupational Safety and Health Administration requires E Light to provide training for employees who might be exposed to a fall hazard. The training shall enable each employee to recognize the hazards of falling and the procedures to minimize these hazards. This program has been created to assist supervisor in selection and use of fall protection and provide an outline of a written program. Specific required training areas by a competent person should be as follows: **The correct procedures for use, care and maintenance of fall protection.**

The Supervisor is the competent persons for each site and is responsible for training the employees on that site or work area. Each employee will be trained in these procedures and strictly adhere to them except when doing so would expose the employee to a greater hazard, several cases are outlined in this program. If, in the employee's opinion, this is the case, the employee is to notify the Supervisor of the concern and the concern addressed before proceeding. Always classify the hazard by evaluating the exposure, the probability, severity or the risk associated.

A Program Coordinator or the Loss Control Director must approve any changes to this Fall Protection Plan.

GENERAL OVERVIEW

Each jobsite may differ slightly, but close adherence to the following guidelines is essential. Any employee working more than **6 foot in height** and / or reaching more than **10 inches** below the walking or working surface must be protected by one or more of the standard means as listed in this section or CFR 29, 1926 Subpart M.

Any employee working off of a scaffolding more than **10 ft. high must be protected** by one or more of the standard means as listed in this section or CFR 29, 1926 Subpart L, also included in this standard; it states in addition to head protection falling object protection must also be provided at 10 ft. **Any employee working off a articulating lift., lift. Must use a (PFAS) harness, and lanyard. (Even if the lift. has guardrails the employee must use a harness with lanyard attached.)**

Wall Openings

Any wall openings in which there is a fall of **6 or more feet**, and the opening is more than **19 inches** wide and less than **39 inch** from the floor will need to be protected by a (top) guardrail.

Walking and Working Surfaces

A standard guardrail must protect any walking or working surface 6 feet or more above lower levels. If conditions dictate and guardrails and safety nets are not feasible, (Nets cannot be used unless you have at least 25 to 30 below them, many cases installation of guardrails exposed employees to a greater hazard.) the use of safety harnesses and lanyards attached to proper anchor point(s) will be used as. Note: if Personal Fall Arrest Systems (PFAS) are used under 18½ ft., they must be used as a positioning device. In some cases when the safety harnesses and lanyards are not feasible (due to the lack of an effective anchor) the employee must maintain a three-point contact until conditions change.

Floor holes are anything greater than 2 inches by 2 inches and must be protected. Covers must be marked "Hole".

When conducting an Inspection, Investigation, and Estimate or when creating a punch list: employees are not required to use fall protection as outlined in (1926.500(a)(1))

FALL PROTECTION SYSTEMS TO BE USED BY E LIGHT

E Light will use the following conventional fall protection unless it creates a greater hazard or is not feasible:

- *Standard guardrails,*
- *Covers over floor openings, walkway openings etc,*
- *Barricades 6 ft. back. (Danger tape, caution tape, orange fence)*
- *Safety Harnesses, lanyard, tie off strap, Rope and rope grab, or retractable. (PFAS/PD)*
- *Three-point contact when climbing or descending ladders.*
- *Safety Monitors*
- *Control Access Zone*
- *Control Lines*
- *STD 3.1A Residential Fall Protection*

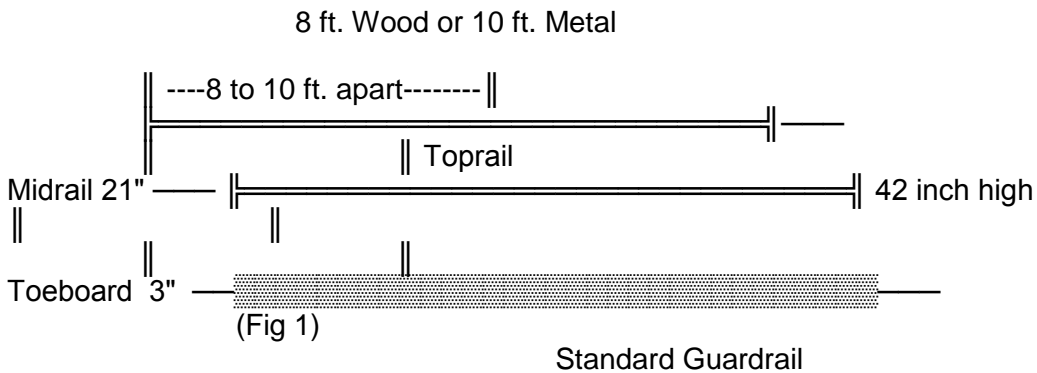
FALL PROTECTION TRAINING OUTLINE

At the beginning of a new site or project the Supervisor must review the fall protection program to ensure that all elements of the program will be consistent with the process of the construction, taking place. A copy of this Program and all approved changes shall be maintained at each work site.

FALL PROTECTION

Training: All E Light employees exposed to fall hazards shall be trained in:

- Guardrails / Barricades.
- Personal Fall Arrest Systems and/or Positioning Devices.
- Warning line systems and safety monitors.
- Control access zones (CAZ) and Control Lines.
- The OSHA Standard for Fall Protection and STD 3.1A.
- In some cases nets and alike products.
- All employees must certify in writing that they have been trained, the date of the training and the trainer.
 - **Guardrails**
 - A standard guardrail is made up of uprights, a top-rail at least 42 inches high, a mid-rail at 21 inches high and a toe-board at least 3 inches high. (Fig 1) The guardrail must be capable of withstanding 200 lbs. of force in any direction without deflecting more than 3 inches.



- **Personal Fall Arrest Systems and Positioning Devices**

Personal fall Arrest Systems (PFAS) can only be used if the fall hazard is over 18½ ft. Explanation: The D ring is in the center of the back at 5' then the lanyard can be 6 ft., we are now at 11 ft., with the shock absorber extends 3½' now we are at 14½' the rope will stretch 3½' now we are at 18 ft. and you still have an anchor or tie strap they allow ½ ft. for a total of 18½ feet, as not to hit the ground. Anything under 18½ foot the PFAS must be used as a positioning device not allowing a fall at all or minimizing the fall to 2 (two) feet.

E Light will supply personal fall protective equipment. The fall protection equipment will be assigned to each Supervisor per site. The personal fall protection equipment comes in kits. There are two types of kits at E Light

Bag, harness, 6 ft. lanyard, tie off strap

Bags, harness, 2 ft. lanyard attached to a rope grab 30 ft. or 50 ft. rope, and a tie off strap. (Some cases retractable lanyards, which are positioning devices.)

- **Donning of Harness**

Supervisor will instruct employees on donning and removal of the Safety Harness and personal fall protection.

Grasp the harness by the back D ring, lifting the harness up in the air; grasp the left shoulder strap with left hand. Put left shoulder strap over left shoulder continue with right strap and right shoulder. Grasp chest straps snug not tight, leave at least two to three fingers between the strap and chest.

Reach for leg straps connect, secure and snug up. Adjust all straps until comfortable. Leave two to three fingers between strap and legs.

- **Removal of Harness**

Unlatch all straps and connections, slip off over shoulders, grasp back D ring, and stow.

- **Maintenance of Harness**

Harness should be kept clean. If exposed to oils, greases or other products clean off with a soapy rag, or immerse all parts in warm water solution, use any available detergent. Parts should be scrubbed gently and rinsed thoroughly. Hang up by back D ring to air-dry. Contact your supervisor with any questions about any replacement parts.

- **Storage of Personal Fall Protection**

All personal fall protection should be stored in the bag and/or kept in a clean dry area. Recheck equipment before each use, your life may depend on it!

- **Limitations**

OSHA enforces that an employee cannot fall over six feet. Personal Fall Arrest System must be used as a positioning device under 18 ½ feet. A positioning device shall be rigged such that an employee cannot free fall more than (2) two feet.

Reasoning: The harness D ring is 5 ft. from the ground, lanyards can be 6 ft. in length, (5+6=11 ft.) and Shock absorbers expand from the fall up to 3 ½ ft. (11+3½ =14 ½ ft.) the rope will expand up to 2½ ft. on a 30 ft. rope and on a 50 foot rope will expand up to 3 ½ ft. (14½+3½= 18 ft.) and lastly the tie strap or anchor point will fold or give up to ½ ft. equaling a total clear distance needed 18 ½ ft.

Employees need to understand that with a rope and rope grab, if not kept snug or if employee allows too much slack an employee can fall over the six feet. Employees need to understand that they must keep the rope grab snugged up as not to allow more than six feet of slack in the rope above 18 ½ ft.

SAFETY MONITORING SYSTEM

(Normally used on roofs under 50 ft. wide and when work is to be completed between the control lines and roofs edge.)

A safety monitoring system means a fall protection system in which a competent person is responsible for recognizing and warning employees of fall hazards. The duties of the safety monitor are to:

- Warn by voice when approaching the open edge in an unsafe manner.
- Warn by voice if there is a dangerous situation developing which cannot be seen by another person involved with product placement, such as a Roof Top Equipment getting out of control.
- Warn employees when they appear to be unaware of a fall hazard or are acting in an unsafe manner.
- Be on the same walking/working surface as the monitored employees and within visual sight and be close enough to communicate with the employees.
- Note: Some GCs requires the use of a High Visible Vest on the safety monitor.

CONTROL ACCESS ZONE

A controlled access zone means an area designated for leading edge and other operations are taking place in a controlled access zone. Where work may take place

without the use of guardrail, safety net or personal fall arrest systems to protect the employees in the area. Control zone systems shall comply with the following provisions:

- **When used to control access to areas where leading edge and other operations are** taking place the controlled access zone shall be defined by a control line or by any other means that restricts access. The control line must be erected not less than 6 ft. but not more than 25 ft. from the unprotected or leading edge.
- **The controlled access zone has been communicated through one of the following:**
- **Control Lines:** There are two types of control lines outlined here:
- As outlined in STD 3.1A (residential fall protection) a control line maybe a painted line 6 ft. from the edge, walking or working surface.
- A control line maybe wire, rope, tapes, or equivalent materials at least 200 lbs. strong, supported by stanchions, and flagged every 6 ft., and shall be rigged not to sag less than 39 inches but not be higher than 45 inches tall, installed 6 ft. from the edge or fall hazard.
- Communicated to all employees by a safety meeting and plans of the area given out with the area marked in a safety color.
- Communicated to all employees through a special meeting and the area marked off in some form, example with paint, tape, ropes, wire or signs.
- Communicated to all employees through chain of command and the area marked off or plans given out to ensure only authorized employees will be allowed into the CAZ.
- Control lines may also be used they are:
- Made of wire, rope, tapes, chains, and in some cases paint
- If wire, ropes, tapes are used **must be 200 lbs. strong**, (less than a warning line of 500 lbs.)
- Be flagged every 6 ft. with high visible material
- Can be mounted on stanchions, each stanchion must hold 16 lbs. of force to be knocked over.
- The rope cannot sag less than **39 inches** but cannot be higher than **45 inches**. (Higher than a Warning line)
- This option of control lines is outlined in STD 3.1A and in subpart M and is made part of this fall protection plan. Since the type construction and the trades are normally the same and do the same job.
- When employees must work between the control line and the edge, Personal Fall Arrest Systems (PFAS), Safety Monitor Systems (SMS) or Guardrails can be used.
- Employees have been instructed of the hazards and the employees to enter the CAZ have no other duties to perform other than the ones in the CAZ.

- The Supervisor as the competent person is to oversee the operations in the controlled access zone. The Supervisor shall have the power to change enforce, modify or do whatever is necessary to ensure the task is completed as safely as possible, they are also knowledgeable of the type of work to be performed.

SCAFFOLDING

The fall protection standard for scaffolding requires guardrails or fall protection at 10 ft. subpart L. It will be our policy to require and use the guardrails as a normal routine. However in some cases such as erection and dismantling the scaffolding, only supervised (qualified and trained) employees will be allowed to assemble or disassemble the scaffolding. Seldom will PFAS be used on scaffolding unless it is in hoisting areas. Falling object protection also starts at 10 ft., a standard guardrail consist of top-rail at 42” and mid-rail at 21” with at least a 3½ inch toe board.

RESIDENTIAL CONSTRUCTION

OSHA Directive STD 3-0.1A supersedes the requirements of the standard and Appendix E if the Construction Company meets the definition of “Residential Construction.” STD 3-0.1A modifies the requirements; it permits employers engaged in certain residential construction activities to use alternative procedures routinely instead of conventional fall protection. No showing of feasibility of conventional fall protection is needed before using these procedures. A fall protection plan is required but does not have to be written, nor does it have to be job specific. Other subparts have not be effected, such as but not limited to scaffolding, electrical, ladders, hand and power tools and other safety and health issues. Group Three activities are what we fall under as electricians, it states; all workers must be:

- Trained qualified workers
- Must have materials staged and adequately supported.
- Be able to change tasks, or stop work due to bad weather (wind, snow, lightning, rain etc.)
- Have no Impalement hazards.
- Be supervised by a competent person
- For specific details see STD 3.01-A along with M-2 under www.osha.gov directives and Interps.

Standard guardrails for residential construction

Framed stud walls 19 inches or less on center (OC) in lieu of guardrails as outline by subpart M. are acceptable for fall protection at outside floor perimeter locations only. Wall openings (windows, doors) require standard guardrails. Rails must be set after the wall has been secured into place.

HOLES

Any opening in a walking or working surface 2 inches or greater that a person could trip, fall into or through, must be protected by personal fall protection, covers, or guardrails. All covers must be secured from displacement and marked “Hole” in a safety color.

Stairwells and mechanical chase openings

Interior stud walls around floor opening if 19 inches or less between studs are considered protected. If the interior stud walls are more than 19 inches between studs they shall not be considered appropriate. Standard guardrails or covers must be installed completely around the opening.

Attics

Only trained workers, materials and equipment shall be located conveniently close. Restricted access in the attic and below, where the work is being performed.

Each contractor has the option of creating a fall protection plan if they do not wish to follow subpart M or STD3.1A. The requirements for a fall protection plan are outlined with examples in subpart M of the OSHA standards, (can use STD 3.1 A as an example), along with the training requirements.

ENFORCEMENT

Constant awareness of and respect for fall hazards, and compliance with all safety rules are considered conditions of employment. Failure to follow the fall protection guidelines will result in disciplinary warnings, and may include termination.

FEASIBILITY / AREAS THAT CREATE A GREATER HAZARD

In some cases the installation of guardrail creates a greater hazard, due to:

- The exposure of the employees to install them.
- In cases where they get in the way of the construction taking place, and employee can get caught between or can't control material handling.
- Exposure when removal of the rails, exposes an employee to a greater hazard than other options
- Can't safely install them to hold 200 lbs. (Do not create a greater hazard with a false sense of security, just to look good)
- Guardrails create damage to construction taking place i.e., floors, roofs, steps, etc.
- Guardrails create a greater hazard by being in the way of work taking place such as installation of ductwork, wiring, piping etc., where material-handling equipment will be used. If in the way they may be destroyed by the process or create additional hazard to the employees by causing them limited room to work, lifting materials and objects over or just plainly not reinstalled after removed to move in materials or equipment.

In some cases Personal Fall Arrest Systems creates a greater hazard, due to the following:

- Falling will cause a swing hazard into objects, walls, windows etc. Obstructions or impact injuries (outline appendix C)
- The lack of a good anchorage point (again do not create a false sense of security.)
- Tripping hazard from/on the ropes.

- Ropes get caught in moving equipment, material handling or rigging.
- Anchor points too far away to do any good
- Ropes pass over sharp edges
- Ropes create a falling object hazards
- Tie off points not strong enough to hold (appendix C)
- Anchor points create damage to construction i.e.: roofs, trim, curbs, glass etc.

Control lines will be used in areas to keep workers from being exposed to the edge or floor holes, when guardrails or PFAS can't be used.

The idea is to keep the workers from being exposed to the fall hazard and keep them back from the edge at least 6 ft. Roof top units normally are 10 ft. from the edge with the use of a control line this gives the roofer, steel worker, painters, HVAC and Electrical workers etc. 6 ft. back from the hazard and a 4 ft. wide work area, as work can be completed safely. In some cases holes are cut into roofs, floors and etc. to run wires, pipe, ductwork etc., these can also be effectively protected with the use of control lines. Control lines may also be used to barricade off areas where the work taking place in the controlled area may create other hazards such as welding operations, certain classes asbestos abatement, grinding operations, elevators being installed, X-raying is taking place. In some case additional signage maybe used to warn of the hazard.

ACCIDENT INVESTIGATIONS

All accidents that result in injury to workers, regardless of their nature, shall be investigated and reported. It is an integral part of any safety programs that documentation takes place as soon as possible so that the cause and means of prevention can be identified to prevent a reoccurrence.

In the event that an employee falls or there is some other related, serious incident occurring, this training plan shall be reviewed to determine if additional practices, procedures, or training need to be implemented to prevent similar types of falls or incidents from occurring.

CHANGES TO PLAN

A Program Coordinator or the Loss Control Manager will approve any changes to the plan. A qualified person as the job progresses to determine if additional practices, procedures or training needs to be implemented by the competent person to improve or provide additional fall protection shall review this plan.

Workers shall be notified and trained, if necessary, in the new procedures or changes.

Note: Changes, modifications do not have to be in writing.

EMERGENCIES

- In case of an emergency the supervisor should call or appoint a person to call 911. Always stay on the line until the 911 operators hangs up first. Give clear instructions of the location, nature of the accident, any equipment needed, and

any other pertinent information the operator may ask. Any accidents or incidents must be reported to E Light within 12 hours by the means of an accident report.

- If an employee has fallen and is hanging by the lifeline, there are several ways to reach the employee to get him / her down. The following is a list of some of the ways:
- Place a scaffold under the employee.
- Use two A frame ladders and build a scaffold under the employee.
- Use a fork truck and a man basket and place it below the employee.
- Pull the employee back up as a last resort.

ITEMS TO REMEMBER:

Try not to cut lanyard, don't do any further harm or damage. Try not to move employee unless he or she is in more danger, always try to build a platform under employee, always have plenty of help. USE YOUR PERSONAL PROTECTIVE EQUIPMENT. Replace the employees Harness and Lanyard they cannot be used again.

References:

29 CFR 1926 subpart M and Appendix A through E

29 VFR 1926 subpart L

STD 3-0.1A

Interps: M-2, and Troxell letter.

The thought process of STD 3.1A and appendix's were used to create this plan. The residential Fall Protection standard can be found on the Web at www.osha.gov and look under directives.

FALL PROTECTION PROGRAM TRAINING RECORD

I certify that I have received a training of this fall protection program. I understand the hazards associated with falls. I received my copy of the fall protection training program and training over the fall protection program on the below date. I understand that I am responsible for Personal Fall Protection Equipment and for maintaining my personal fall protective equipment; I also understand that if any questions arise that I am to contact my supervisor immediately.

NAME: _____ Date: _____

SUPERVISOR OR INSTRUCTOR: _____ Date: _____

NOTE: Send a copy to main office to be maintained in employees file and maintain a copy on the site or at the job trailer.

SILICA POLICY

WHAT IS SILICA?

Sand broken up into small particles such as crystalline silica, there may be several distinct types. Quartz, is a form of silica and most common mineral in the earth's crust, it is associated with many types of rock. Other types of silica include cristobalite and tridymite. Breathing too much of the small particles of sand creates silicosis. (Accumulation of sand; glass in your lungs)

WHAT IS SILICOSIS?

Silicosis is a permanent lung damage caused by breathing dust containing extremely fine particles of crystalline silica. Crystalline silica is found in materials such as concrete, masonry and rock. When these materials are made into a fine dust and suspended in the air, breathing in these fine particles can produce scarring or lung damage. Silicosis can be totally disabling and often lead to death

HOW DO CONSTRUCTION WORKERS GET EXPOSED?

Concrete and masonry products contain silica sand. Since concrete and masonry are primary building products, there are numerous ways to be exposed; here are a few examples:

- Abrasive blasting using silica sand as the abrasive.
- Abrasive blasting of concrete, masonry or tile.
- Chipping, hammering, and drilling concrete or rock.
- Crushing, loading, hauling and dumping rock or rock products.
- Demolition of brick, concrete and/or masonry structures.
- Dry sweeping or pressurized air blowing of the dust.
- Dry cutting or hammer drilling of concrete, masonry, brick or tile.
- Anything that creates a dust from concrete, masonry, brick or tile.

HOW DO YOU PREVENT SILICOSIS?

The key to prevention is to prevent the dust from being in the air. (Dust Control) This can be done effectively several ways. Here are a few examples:

- Water wets the dust, keeping it from being air born.
- Dust control systems and HEPA vacuums.
- When sawing, use water on the blade.
- Local exhaust systems
- Use abrasives containing less than 1-% crystalline silica for abrasive blasting.
- Use floor sweep to help keep dust controlled.
- Use personal protective equipment to keep the dust out of your body or lungs.



RECOMMENDATIONS

Recognize when silica dust maybe generated and plan ahead to control the dust, at the source is always best.

Do not use silica sand or other substances containing more than 1-% crystalline silica as a blasting material.

Use the design or engineering controls to control the hazard of dust such as blast cabinets, wet drilling, wet saws, and ventilation.

Practice good personal hygiene and always wash before eating.

Do not eat, drink, or use tobacco products in dusty areas. Park cars away from the contaminated areas.

Use personal protective equipment including respiratory protection when the source dust cannot be controlled.

- Post warning signs to mark areas with silica dust to warn other workers of the hazard.
- Use floor sweep to help lower the dust levels.
- Training on silica awareness.

PRATICALS

CUTTING: All cutting of brick, block and tile will be cut wet, if at all possible.

DEMO-SAW CUTTING: Work will be cut wet whenever possible vacuums maybe used. On some occasions dry for short periods of time in open ventilation.

HAMMER DRILLS: Will be used with vacuums, or dust collectors, whenever possible.

MISCELANEOUS: Work will be done wet, employees who must chip, cut, scrape, grind may also use a dust mask for additional protection.

OTHER REFERENCE MATERIALS

- NIOSH Silicosis Alerts
- OSHA silica handbook
- Center for Disease Control
- Colorado Health and Human Services

NOTE: Prior to the use of respirators, either mandatory or non-mandatory, review the respirator section in this manual.



AGE and FITNESS POLICY

The intent of this policy is to provide a standardized age policy for all E Light construction sites. For health, safety, labor laws and numerous other reasons, no person under the age of 18 years will be allowed on any E Light job sites. Special permission maybe granted according to the Department of Labor, such as, but not limited to a school or apprentice program or approved Department of Labor program.

E Light Electric Services, Inc will conduct a flexibility, post offer, pre-employment screening by a medical professional to ensure that field assigned personnel are capable of physically performing their job tasks safely and efficiently. This policy applies to all E Light personnel that are hired for work on construction projects.

E Light reserves the right to suspend an employee from continuing work on a construction site if the Director of Safety and Loss Prevention has reasonable cause to believe that employee may not be fit to safety conduct their assigned tasks. The Director of Safety and Loss Prevention shall suspend the employee from working on a construction site until such time as medical professional has evaluated the employee and determined that the employee is fit to safety perform their work tasks.



HAZARD COMMUNICATIONS WRITTEN PROGRAM

This program applies to all work operations in E Light, where you may be exposed to a hazardous substance under normal occupational conditions, or during emergency situations.

The program will be available at each job site and a master file will be kept in the main office. Each Superintendent is acting as the representative of E Light, and has the overall responsibility for maintaining and updating the program as necessary. Any employee can obtain a copy of the Hazard Communications Program or any part of it from site Superintendent during normal working hours.

This program is written with the intention of compliance with OSHA, 29 CFR 1910.1200(g) and Appendix D. United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

All employees are required to complete Hazard Communications Program 2016 training annually. The program will be made available by on line access.

CONTAINER LABELING

The Superintendent for each site has the responsibility to insure all containers on the site are labeled as to what they contain, and note the appropriate hazard warnings and part of body effected. Labeling shall be done in accordance with the new SDS system as detailed below and shall have the new Hazard Communication Pictograms. Labels shall include:

- Name, Address and Telephone Number
- Product Identifier
- Signal Word
- Hazard Statement(s)
- Precautionary Statement(s)
- Pictogram(s)

No container will be released for use until the above data is verified. Labels can be in common name, trade name, and actual name. Example: Window Wash, Window Cleaner, Windex. E Light will rely on manufacturers applied labels whenever possible, and will insure that these labels are maintained.

Pictograms

<p align="center">Health Hazard</p>  <ul style="list-style-type: none"> • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity 	<p align="center">Flame</p>  <ul style="list-style-type: none"> • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides 	<p align="center">Exclamation Mark</p>  <ul style="list-style-type: none"> • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
<p align="center">Gas Cylinder</p>  <ul style="list-style-type: none"> • Gases Under Pressure 	<p align="center">Corrosion</p>  <ul style="list-style-type: none"> • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals 	<p align="center">Exploding Bomb</p>  <ul style="list-style-type: none"> • Explosives • Self-Reactives • Organic Peroxides
<p align="center">Flame Over Circle</p>  <ul style="list-style-type: none"> • Oxidizers 	<p align="center">Environment (Non-Mandatory)</p>  <ul style="list-style-type: none"> • Aquatic Toxicity 	<p align="center">Skull and Crossbones</p>  <ul style="list-style-type: none"> • Acute Toxicity (fatal or toxic)

SDS (Safety Data Sheets) :

The Superintendent of each site is responsible for obtaining necessary SDS's for hazardous materials, so a comprehensive SDS file can be maintained. The SDS shall include only those items on site at the project and shall be verified by comparison to the



chemical and item inventory once per month to ensure accuracy. A SDS log shall be maintained on site and kept in a location that is accessible

to employees.

E Light projects will not provide MSDS sheets on a project for items that are not on that site.

The SDS inventory log shall include the approximate quantity on site and the location of storage.

All employees will be informed of the location of the written program and all Material Safety Data Sheets (MSDS's).

- Copies of the SDS's for all hazardous chemicals to which E Light employees may be exposed on the project will be kept by the supervisor and in the job trailer at each site. The SDS's will be kept in the order they appear on the SDS log and will be available for review to all employees during normal working hours.
- All vendors shall be required to supply an SDS sheet with all orders and the superintendent shall be responsible for ensuring the SDS on site are accurate and up to date. Do not accept deliver of hazardous classified material without a copy of the current SDS attached to the delivery. Ensure the new SDS is entered into the log on site and placed with the log.
- All sub-contractors working on any job site for E Light are required to bring a copy of their hazard communications program to the site before working with any hazardous chemicals. Upon leaving the job site and taking all hazardous materials with them, they may take their copy of the hazard communications program with them.
- The site Superintendent will recommend to all employees, in case of an emergency take a copy of the applicable SDS's to the medical facility, if the emergency is caused by a chemical exposure.
- Field and Service employees can call the office and have any SDS's faxed, emailed to their location. In case of emergency faxed to the doctor's office.

Safety Data Sheets shall conform to the following:

The Hazard Communication Standard (HCS) (29 CFR 1910.1200(g)), revised in 2012, requires that the chemical manufacturer, distributor, or importer provide Safety Data Sheets (SDSs) (formerly MSDSs or Material Safety Data Sheets) for each hazardous chemical to downstream users to communicate information on these hazards. The information contained in the SDS is largely the same as the MSDS, except now the SDSs are required to be presented in a consistent user-friendly, 16-section format. This brief provides guidance to help workers who handle hazardous chemicals to become familiar with the format and understand the contents of the SDSs.

The SDS includes information such as the properties of each chemical; the physical, health, and environmental health hazards; protective measures; and safety precautions for handling, storing, and transporting the chemical. The information contained in the SDS must be in English (although it may be in other languages as well). In addition, OSHA requires that SDS preparers provide specific minimum information as detailed in Appendix D of 29 CFR 1910.1200. The SDS preparers may also include additional information in various section(s).



Sections 1 through 8 contain general information about the chemical, identification, hazards, composition, safe handling practices, and emergency

control measures (e.g., firefighting). This information should be helpful to those that need to get the information quickly. Sections 9 through 11 and 16 contain other technical and scientific information, such as physical and chemical properties, stability and reactivity information, toxicological information, exposure control information, and other information including the date of preparation or last revision. The SDS must also state that no applicable information was found when the preparer does not find relevant information for any required element.

The SDS must also contain Sections 12 through 15, to be consistent with the UN Globally Harmonized System of Classification and Labeling of Chemicals (GHS), but OSHA will not enforce the content of these sections because they concern matters handled by other agencies.

A description of all 16 sections of the SDS, along with their contents, is presented below:

Section 1: Identification

This section identifies the chemical on the SDS as well as the recommended uses. It also provides the essential contact information of the supplier. The required information consists of:

- Product identifier used on the label and any other common names or synonyms by which the substance is known.
- Name, address, phone number of the manufacturer, importer, or other responsible party, and emergency phone number.
- Recommended use of the chemical (e.g., a brief description of what it actually does, such as flame retardant) and any restrictions on use (including recommendations given by the supplier). ¹

Section 2: Hazard(s) Identification

This section identifies the hazards of the chemical presented on the SDS and the appropriate warning information associated with those hazards. The required information consists of:

- The hazard classification of the chemical (e.g., flammable liquid, category¹).
- Signal word.
- Hazard statement(s).
- Pictograms (the pictograms or hazard symbols may be presented as graphical reproductions of the symbols in black and white or be a description of the name of the symbol (e.g., skull and crossbones, flame).
- Precautionary statement(s).
- Description of any hazards not otherwise classified.
- For a mixture that contains an ingredient(s) with unknown toxicity, a statement describing how much (percentage) of the mixture consists of ingredient(s) with unknown acute toxicity. Please note that this is a total percentage of the mixture and not tied to the individual ingredient(s).

Section 3: Composition/Information on Ingredients

This section identifies the ingredient(s) contained in the product indicated on the SDS, including impurities and stabilizing additives. This section includes information on substances, mixtures, and all chemicals where a trade secret is claimed. The required information consists of:

Substances

- Chemical name.
- Common name and synonyms.
- Chemical Abstracts Service (CAS) number and other unique identifiers.
- Impurities and stabilizing additives, which are themselves classified and which contribute to the classification of the chemical.

Mixtures

- Same information required for substances.
- The chemical name and concentration (i.e., exact percentage) of all ingredients which are classified as health hazards and are:
 - Present above their cut-off/concentration limits or
 - Present a health risk below the cut-off/concentration limits.
- The concentration (exact percentages) of each ingredient must be specified except concentration ranges may be used in the following situations:
 - A trade secret claim is made,
 - There is batch-to-batch variation, or
 - The SDS is used for a group of substantially similar mixtures.

Chemicals where a trade secret is claimed

- A statement that the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret is required.

Section 4: First-Aid Measures

This section describes the initial care that should be given by untrained responders to an individual who has been exposed to the chemical. The required information consists of:

- Necessary first-aid instructions by relevant routes of exposure (inhalation, skin and eye contact, and ingestion).
- Description of the most important symptoms or effects, and any symptoms that are acute or delayed.
- Recommendations for immediate medical care and special treatment needed, when necessary.

Section 5: Fire-Fighting Measures

This section provides recommendations for fighting a fire caused by the chemical. The required information

consists of:

- Recommendations of suitable extinguishing equipment, and information about extinguishing equipment that is not appropriate for a particular situation.
- Advice on specific hazards that develop from the chemical during the fire, such as any hazardous combustion products created when the chemical burns.
- Recommendations on special protective equipment or precautions for firefighters.

Section 6: Accidental Release Measures

This section provides recommendations on the appropriate response to spills, leaks, or releases, including containment and cleanup practices to prevent or minimize exposure to people, properties, or the environment. It may also include recommendations distinguishing between responses for large and small spills where the spill volume has a significant impact on the hazard. The required information may consist of recommendations for:

- Use of personal precautions (such as removal of ignition sources or providing sufficient ventilation) and protective equipment to prevent the contamination of skin, eyes, and clothing.
- Emergency procedures, including instructions for evacuations, consulting experts when needed, and appropriate protective clothing.
- Methods and materials used for containment (e.g., covering the drains and capping procedures).
- Cleanup procedures (e.g., appropriate techniques for neutralization, decontamination, cleaning or vacuuming; adsorbent materials; and/or equipment required for containment/clean up)

Section 7: Handling and Storage

This section provides guidance on the safe handling practices and conditions for safe storage of chemicals. The required information consists of:

- Precautions for safe handling, including recommendations for handling incompatible chemicals, minimizing the release of the chemical into the environment, and providing advice on general hygiene practices (e.g., eating, drinking, and smoking in work areas is prohibited).
- Recommendations on the conditions for safe storage, including any incompatibilities. Provide advice on specific storage requirements (e.g., ventilation requirements)

Section 8: Exposure Controls/Personal Protection

This section indicates the exposure limits, engineering controls, and personal protective measures that can be used to minimize worker exposure. The required information consists of:

- OSHA Permissible Exposure Limits (PELs), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available.
- Appropriate engineering controls (e.g., use local exhaust ventilation, or use only in an enclosed system).
- Recommendations for personal protective measures to prevent illness or injury from exposure to chemicals, such as personal protective equipment (PPE) (e.g., appropriate types of eye, face, skin or respiratory protection needed based on hazards and potential exposure).
- Any special requirements for PPE, protective clothing or respirators (e.g., type of glove material, such as PVC or nitrile rubber gloves; and breakthrough time of the glove material).

Section 9: Physical and Chemical Properties

This section identifies physical and chemical properties associated with the substance or mixture. The minimum required information consists of:

- Appearance (physical state, color, etc.);
- Upper/lower flammability or explosive limits;
- Odor;
- Vapor pressure;
- Odor threshold;
- Vapor density;
- pH;
- Relative density;
- Melting point/freezing point;
- Solubility(ies);
- Initial boiling point and boiling range;
- Flash point;
- Evaporation rate;
- Flammability (solid, gas);
- Partition coefficient: n-octanol/water;
- Auto-ignition temperature;
- Decomposition temperature; and
- Viscosity.

The SDS may not contain every item on the above list because information may not be relevant or is not available. When this occurs, a notation to that effect must be made for that chemical

property. Manufacturers may also add other relevant properties, such as the dust deflagration index (Kst) for combustible dust, used to evaluate a dust's

explosive potential

Section 10: Stability and Reactivity

This section describes the reactivity hazards of the chemical and the chemical stability information. This section is broken into three parts: reactivity, chemical stability, and other. The required information consists of:

Reactivity

- Description of the specific test data for the chemical(s). This data can be for a class or family of the chemical if such data adequately represent the anticipated hazard of the chemical(s), where available.

Chemical stability

- Indication of whether the chemical is stable or unstable under normal ambient temperature and conditions while in storage and being handled.
- Description of any stabilizers that may be needed to maintain chemical stability.
- Indication of any safety issues that may arise should the product change in physical appearance.

Other

- Indication of the possibility of hazardous reactions, including a statement whether the chemical will react or polymerize, which could release excess pressure or heat, or create other hazardous conditions. Also, a description of the conditions under which hazardous reactions may occur.
- List of all conditions that should be avoided (e.g., static discharge, shock, vibrations, or environmental conditions that may lead to hazardous conditions).
- List of all classes of incompatible materials (e.g., classes of chemicals or specific substances) with which the chemical could react to produce a hazardous situation.
- List of any known or anticipated hazardous decomposition products that could be produced because of use, storage, or heating. (Hazardous combustion products should also be included in Section 5 (Fire-Fighting Measures) of the SDS.)

Section 11: Toxicological Information

This section identifies toxicological and health effects information or indicates that such data are not available. The required information consists of:

- Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact). The SDS

should indicate if the information is unknown.

- Description of the delayed, immediate, or chronic effects from short- and long-term exposure.
- The numerical measures of toxicity (e.g., acute toxicity estimates such as the LD50 (median lethal dose)) - the estimated amount [of a substance] expected to kill 50% of test animals in a single dose.
- Description of the symptoms. This description includes the symptoms associated with exposure to the chemical including symptoms from the lowest to the most severe exposure.
- Indication of whether the chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions) or found to be a potential carcinogen by OSHA

Section 12: Ecological Information (non-mandatory)

This section provides information to evaluate the environmental impact of the chemical(s) if it were released to the environment. The information may include:

- Data from toxicity tests performed on aquatic and/or terrestrial organisms, where available (e.g., acute or chronic aquatic toxicity data for fish, algae, crustaceans, and other plants; toxicity data on birds, bees, plants).
- Whether there is a potential for the chemical to persist and degrade in the environment either through biodegradation or other processes, such as oxidation or hydrolysis.
- Results of tests of bioaccumulation potential, making reference to the octanol-water partition coefficient (Kow) and the bioconcentration factor (BCF), where available.
- The potential for a substance to move from the soil to the groundwater (indicate results from adsorption studies or leaching studies).
- Other adverse effects (e.g., environmental fate, ozone layer depletion potential, photochemical ozone creation potential, endocrine disrupting potential, and/or global warming potential).

Section 13: Disposal Considerations (non-mandatory)

This section provides guidance on proper disposal practices, recycling or reclamation of the chemical(s) or its container, and safe handling practices. To minimize exposure, this section should also refer the reader to Section 8 (Exposure Controls/Personal Protection) of the SDS. The information may include:

- Description of appropriate disposal containers to use.
- Recommendations of appropriate disposal methods to employ.
- Description of the physical and chemical properties that may affect disposal activities.
- Language discouraging sewage disposal.

- Any special precautions for landfills or incineration activities

Section 14: Transport Information (non-mandatory)

This section provides guidance on classification information for shipping and transporting of hazardous chemical(s) by road, air, rail, or sea. The information may include:

- UN number (i.e., four-figure identification number of the substance)¹.
- UN proper shipping name¹.
- Transport hazard class(es)¹.
- Packing group number, if applicable, based on the degree of hazard².
- Environmental hazards (e.g., identify if it is a marine pollutant according to the International Maritime Dangerous Goods Code (IMDG Code)).
- Guidance on transport in bulk (according to Annex II of MARPOL 73/78³ and the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code (IBC Code))).
- Any special precautions which an employee should be aware of or needs to comply with, in connection with transport or conveyance either within or outside their premises (indicate when information is not available).

Section 15: Regulatory Information (non-mandatory)

This section identifies the safety, health, and environmental regulations specific for the product that is not indicated anywhere else on the SDS. The information may include:

- Any national and/or regional regulatory information of the chemical or mixtures (including any OSHA, Department of Transportation, Environmental Protection Agency, or Consumer Product Safety Commission regulations)

Section 16: Other Information

This section indicates when the SDS was prepared or when the last known revision was made. The SDS may also state where the changes have been made to the previous version. You may wish to contact the supplier for an explanation of the changes. Other useful information also may be included here.

Training is to be formal, at orientation and on-the-job, presented prior to any exposure to hazardous materials, periodically throughout the year during safety meetings. Any time new substances, processes, procedures or equipment is introduced to the work environment; affected employees must be trained in the new hazards.

Training must include:

- Methods of protection
- Location of Haz Comm Program



- Details about the Program
- Labeling and markings
- Methods of detection
- Physical hazards
- Where to obtain more personal protection information
- Emergency phone numbers

Employees must be instructed if they are asked to handle, or use a hazardous material. If they have not been trained on the hazardous material, and are asked to handle, or use it, they must inform the supervisor for needed training.

Safety inspections must be performed periodically and whenever new hazards are presented, or when new substances, processes, procedures or equipment are introduced to the work environment.

Non-Routine Tasks

Since many tasks are not done on a routine basis, they will be handled through the specific training. It will be the supervisor's responsibility to provide training to his employees, on the performance of specific or specialized hazardous non-routine tasks. However, if the product is a common product used routinely at home work on and off the job, at it is not part of a specific task, no SDS or specific training will be required on common products.

Articles

Are manufactured items, which is formed to a specific shape or design during manufacturing, which has end use function dependent in whole, or part upon its shape or design during end use and which does not release or otherwise result in exposure to hazardous chemicals under normal use, such as ballasts, capacitors, conduit, most wire, j-boxes etc.

SUB-CONTRACTORS

E Light will inform the sub-contractor entering the job site of the written hazard communications program, and where to locate any MSDS's. It will be the sole responsibility of the sub-contractor to properly train their employees according to the hazard communications program. Any sub-contractor that will be using a hazardous chemical that may or will expose different contractor's employees MUST immediately notify that contractor of the hazards, avoidance, PPE required and emergency procedures for the hazardous material that will be used.

Training material and pamphlets are available at the main office, the local OSHA office Denver area office is 303- 844-5285 and the Englewood area office is 303-843-4500. Our insurance carriers have training and information on Hazard Communication (Haz Com).

Personal Protective Equipment

Purpose

E Light Electric Services provides all Employees with required PPE to suit the task and known hazards. This Chapter covers the requirements for Personal Protective Equipment with the exception of PPE used for hearing conservation, fall protection and prevention and respiratory protection or PPE required for hazardous material response to spills or releases, which are covered under separate programs.

General Policy

Engineering controls shall be the primary methods used to eliminate or minimize hazard exposure in the workplace. When such controls are not practical or applicable, personal protective equipment shall be employed to reduce or eliminate personnel exposure to hazards. Personal protective equipment (PPE) will be provided, used, and maintained when it has been determined that its use is required and that such use will lessen the likelihood of occupational injuries and/or illnesses.

Responsibilities

Management

- Conduct hazard assessments to identify specific PPE for specific tasks
- Train employees in the selection, use, inspection, storage, cleaning, and limitations of specific PPE

Supervisors

- Monitor use of PPE
- Provide replacement PPE when needed
- Identify any new hazards that would require the use of PPE

Employees

- Properly use and care for assigned PPE
- Immediately inform supervisor if PPE is damaged or not effective

General Rules

Design

All personal protective clothing and equipment will be of safe design and construction for the work to be performed. Only those items of protective clothing and equipment that meet National

Institute of Occupational Safety and Health (NIOSH) or American National Standards Institute (ANSI) standards will be procured or accepted for use.

Hazard assessment and equipment selection

Hazard analysis procedures shall be used to assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the following actions will be taken:

- Select, and have each affected Employee use, the proper PPE
- Communicate selection decisions to each affected Employee
- Select PPE that properly fits each affected employee.

Defective and damaged equipment

Defective or damaged personal protective equipment shall not be used.

Training

All Employees who are required to use PPE shall be trained to know at least the following:

- When PPE is necessary;
- What PPE is necessary;
- How to properly don, remove, adjust, and wear PPE;
- The limitations of the PPE
- The proper care, maintenance, useful life and disposal of the PPE.

Each affected Employee shall demonstrate an understanding of the training and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

Certification of training for PPE is required by OSHA and shall be accomplished by using weekly safety meetings, training department records and employee cards of certification in some cases.

PPE Selection

Controlling hazards

PPE devices alone should not be relied on to provide protection against hazards, but should be used in conjunction with guards, engineering controls, and sound manufacturing practices.

Selection guidelines

The general procedure for selection of protective equipment is to:

- a) Become familiar with the potential hazards and the type of protective equipment that is available, and what it can do; i.e., splash protection, impact protection, etc.;
- b) Compare the hazards associated with the environment; i.e., impact velocities, masses, projectile shape, radiation intensities, with the capabilities of the available protective equipment;
- c) Select the protective equipment which ensures a level of protection greater than the minimum required to protect employees from the hazards
- d) Fit the user with the protective device and give instructions on care and use of the PPE. It is very important that end users be made aware of all warning labels for and limitations of their PPE.

Fitting the Device

Careful consideration must be given to comfort and fit. PPE that fits poorly will not afford the necessary protection. Continued wearing of the device is more likely if it fits the wearer comfortably. Protective devices are generally available in a variety of sizes. Care should be taken to ensure that the right size is selected.

Devices with adjustable features

Adjustments should be made on an individual basis for a comfortable fit that will maintain the protective device in the proper position. Particular care should be taken in fitting devices for eye protection against dust and chemical splash to ensure that the devices are sealed to the face. In addition, proper fitting of helmets is important to ensure that it will not fall off during work operations. In some cases a chin strap may be necessary to keep the helmet on an employee's head. (Chin straps should break at a reasonably low force, however, so as to prevent a strangulation hazard). Where manufacturer's instructions are available, they should be followed carefully.

Eye and Face Protection.

The majority of occupational eye injuries can be prevented by the use of suitable/approved safety spectacles, goggles, or shields. Approved eye and face protection shall be worn when there is a reasonable possibility of personal injury. SAFETY GLASSES SHALL BE WORN AT ALL TIMES WHILE ON AN E LIGHT ELECTRIC PROJECT IN BOTH OPERATIONS AND SERVICE.

- Each employee shall use appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.
- Each employee shall use eye protection that provides side protection when there is a hazard from flying objects. Detachable side protectors are acceptable.

- Each employee who wears prescription lenses while engaged in operations that involve eye hazards shall wear eye protection that incorporates the prescription in its design, or shall wear eye protection that can be worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses. E Light shall provide protection which fits over standard prescription glasses. The employee shall be responsible for prescription safety glasses if they choose to use them opposed to the fit over method.
- Eye and face PPE shall be distinctly marked to facilitate identification of the manufacturer.
- Each employee shall use equipment with filter lenses that have a shade number appropriate for the work being performed for protection from injurious light radiation.
- Employees shall not wear shaded eye glasses indoors unless they are performing a task which requires light filtering.

Typical hazards that can cause eye and face injury are:

- Splashes of toxic or corrosive chemicals, hot liquids, and molten metals;
- Flying objects, such as chips of wood, metal, and stone dust;
- Fumes, gases, and mists of toxic or corrosive chemicals; and
- Aerosols of biological substances.

Prevention of eye accidents requires that all persons who may be in eye hazard areas wear protective eyewear. This includes employees, visitors, contractors, or others passing through an identified eye hazardous area. To provide protection for these personnel, activities shall procure a sufficient quantity of heavy duty goggles and/or plastic eye protectors which afford the maximum amount of protection possible. If these personnel wear personal glasses, they shall be provided with a suitable eye protector to wear over them.

Eye / Face Protection Specifications

Eye and face protectors procured, issued to, and used by employees, contractors and visitors must conform to the following design and performance standards:

- a) Provide adequate protection against the particular hazards for which they are designed.
- b) Fit properly and offer the least possible resistance to movement and cause minimal discomfort while in use.
- c) Be durable.
- d) Be easily cleaned or disinfected for or by the wearer.
- e) Be clearly marked to identify the manufacturer.

f) Persons who require corrective lenses for normal vision, and who are required to wear eye protection, must wear goggles or spectacles of one of the following types:

- 1) Spectacles with protective lenses which provide optical correction. (Employee supplied)
- 2) Goggles that can be worn over spectacles without disturbing the adjustment of the spectacles. (Company supplied)
- 3) Goggles that incorporate corrective lenses mounted behind the protective lenses. (Employee Supplied)

g) Employees engaged in shipping, drilling or scraping of concrete or masonry products shall wear a face shield during these operations.

Eye & Face Protector Use

Safety Spectacles Protective eye glasses are made with safety frames, tempered glass or plastic lenses, temples and side shields which provide eye protection from moderate impact and particles encountered in job tasks such as carpentry, woodworking, grinding, scaling, etc.

Single Lens Goggles Vinyl framed goggles of soft pliable body design provide adequate eye protection from many hazards. These goggles are available with clear or tinted lenses, perforated, port vented, or non-vented frames. Single lens goggles provide similar protection to spectacles and may be worn in combination with spectacles or corrective lenses to insure protection along with proper vision.

Welders/Chippers Goggles These goggles are available in rigid and soft frames to accommodate single or two eye piece lenses.

- 1) Welders goggles provide protection from sparking, scaling or splashing metals and harmful light rays. Lenses are impact resistant and are available in graduated shades of filtration.
- 2) Chippers/grinders goggles provide eye protection from flying particles. The dual protective eye cups house impact resistant clear lenses with individual cover plates.

Face Shields. These normally consist of an adjustable headgear and face shield of tinted/transparent acetate or polycarbonate materials, or wire screen. Face shields are available in various sizes, tensile strength, impact/heat resistance and light ray filtering capacity. Face shields will be used in operations when the entire face needs protection and should be worn to protect eyes and face against flying particles, metal sparks, and chemical/ biological splash.

Welding Shields These shield assemblies consist of vulcanized fiber or glass fiber body, a ratchet/button type adjustable headgear or cap attachment and a filter and cover plate holder. These shields will be provided to protect workers' eyes and face from infrared or radiant light

burns, flying sparks, metal spatter and slag chips encountered during welding, brazing, soldering, resistance welding, bare or shielded electric arc welding and oxyacetylene welding and cutting operations.

<i>Filter Lenses for Protection Against Radiant Energy</i>			
Operations	Electrode Size 1/32 in	Arc Current	Protective Shade
Shielded metal arc welding	Less than 3	Less than 60	7
	3-5	60-160	8
	5-8	160-250	10
	More than 8	250-550	11
Torch brazing			3
Torch soldering			2
<p>Note: as a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxyfuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the (spectrum) operation.</p>			

<i>Selection chart guidelines for eye and face protection</i>		
<p>The following chart provides general guidance for the proper selection of eye and face protection to protect against hazards associated with the listed hazard "source" operations.</p>		
Source	Hazard	Protection
<p>IMPACT - Chipping, grinding machining, masonry work, woodworking, sawing, drilling, chiseling, powered fastening, riveting, and</p>	<p>Flying fragments, objects, large chips, particles, sand, dirt, etc.</p>	<p>Spectacles with side protection, goggles, face shield</p> <p>For severe exposure, use face</p>

sanding		shield
HEAT -Furnace operation and arc welding	Hot sparks	Face shields, spectacles with side. For severe exposure use face shield.
CHEMICALS -Acid and chemical handling, degreasing, plating	Splash	Goggles, eyecup and cover types. For severe exposure, use face shield.
DUST - Woodworking, buffing, general buffing, general dusty conditions.	Nuisance dust	Goggles, eye cup and cover type

Head Protection

Hats and caps have been designed and manufactured to provide workers protection from impact, heat, electrical and fire hazards. These protectors consist of the shell and the suspension combined as a protective system. Safety hats and caps will be of nonconductive, fire and water resistant materials. Bump caps or skull guards are constructed of lightweight materials and are designed to provide minimal protection against hazards when working in congested areas.

Head protection will be furnished to, and used by, all employees and contractors engaged in construction and other miscellaneous work. **HARD HATS SHALL BE WORN AT ALL TIMES WHILE ON A PROJECT FOR OPERATIONS.** . Head protection will also be required to be worn by engineers, inspectors, and visitors at construction sites. Bump caps/skull guards will be issued to and worn for protection against scalp lacerations from contact with sharp objects. They will not be worn as substitutes for safety caps/hats because they do not afford protection from high impact forces or penetration by falling objects.

Selection guidelines for head protection

All head protection is designed to provide protection from impact and penetration hazards caused by falling objects. Head protection is also available which provides protection from electric shock and burn. When selecting head protection, knowledge of potential electrical hazards is important. Class A helmets, in addition to impact and penetration resistance, provide electrical protection from low-voltage conductors (they are proof tested to 2,200 volts). Class B helmets, in addition to impact and penetration resistance, provide electrical protection from high-voltage conductors (they are proof tested to 20,000 volts). Class C helmets provide impact and penetration resistance (they are usually made of aluminum which conducts electricity), and should not be used around electrical hazards.

Where falling object hazards are present, helmets must be worn. Some examples include: working below other workers who are using tools and materials which could fall; working around or under conveyor belts which are carrying parts or materials; working below machinery or processes which might cause material or objects to fall; and working on exposed energized conductors.

Foot Protection

General requirements

Each affected employee shall wear protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and where employee's feet are exposed to electrical hazards.

Selection guidelines for foot protection

Safety shoes and boots provide both impact and compression protection. Where necessary, safety shoes can be obtained which provide puncture protection. In some work situations, metatarsal protection should be provided, and in other special situations electrical conductive or insulating safety shoes would be appropriate. Safety shoes or boots with impact protection would be required for carrying or handling materials such as packages, objects, parts or heavy tools, which could be dropped; and, for other activities where objects might fall onto the feet. Safety shoes or boots with compression protection would be required for work activities involving skid trucks (manual material handling carts) around bulk rolls (such as paper rolls) and around heavy pipes, all of which could potentially roll over an employee's feet. Safety shoes or boots with puncture protection would be required where sharp objects such as nails, wire, tacks, screws, large staples, scrap metal etc., could be stepped on by employees causing a foot injury.

Employees shall wear foot protection which is electrically rated when working on construction sites.

Employees are required to provide their own foot protection. E Light Electric services has an agreement in place with Red Wing Shoes so that E Light Employees receive a 15% percent discount on shoes.

Hand Protection

General Requirements

Hand protection is required at all times while working on a construction site unless the employee is performing work that requires fine hand manipulations. Supervisors are responsible for

ensuring that employees are wearing the correctly fitted gloves, cut rated gloves and that their gloves are in effective working condition.

E Light Electric provides cut level 3 gloves to all personnel. All personnel shall utilize only those gloves approved for use by E Light Electric Services, Inc.

Skin contact is a potential source of exposure to toxic materials; it is important that the proper steps be taken to prevent such contact. Gloves should be selected on the basis of the material being handled, the particular hazard involved, and their suitability for the operation being conducted. One type of glove will not work in all situations.

Most accidents involving hands and arms can be classified under four main hazard categories: chemicals, abrasions, cutting, and heat. There are gloves available that can protect workers from any of these individual hazards or combination of hazards.

Gloves should be replaced periodically, depending on frequency of use and permeability to the substance(s) handled. Gloves overtly contaminated should be rinsed and then carefully removed after use. Employees are required to turn in their previous pair gloves in order to receive a replacement pair of gloves if they are replacing a worn out pair of glove.

Gloves should also be worn whenever it is necessary to handle rough or sharp-edged objects, and very hot or very cold materials. The type of glove material to be used in these situations includes leather, welder's gloves, aluminum-backed gloves, and other types of insulated glove materials.

Careful attention must be given to protecting your hands when working with tools and machinery. Power tools and machinery must have guards installed or incorporated into their design that prevent the hands from contacting the point of operation, power train, or other moving parts. To protect the hands from injury due to contact with moving parts, it is important to:

- Ensure that guards are always in place and used.
- Always lock out machines or tools and disconnect the power before making repairs.
- Treat a machine without a guard as inoperative; and
- Do not wear gloves around moving machinery, such as drill presses, mills, lathes, and grinders.

Selection guidelines for hand protection

Selection of hand PPE shall be based on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified. Gloves are often relied upon to prevent cuts, abrasions, burns, and skin contact with chemicals that are capable of causing local or systemic effects following dermal exposure. There is no glove that provides protection against all potential hand hazards, and commonly available glove materials provide only limited protection against many chemicals. Therefore, it is important to select the most appropriate glove for a particular application and to determine how long it can be worn, and whether it can be reused. It is also

important to know the performance characteristics of gloves relative to the specific hazard anticipated; e.g., chemical hazards, cut hazards, flame hazards, etc. Before purchasing gloves, request documentation from the manufacturer that the gloves meet the appropriate test standard(s) for the hazard(s) anticipated. Other factors to be considered for glove selection in general include:

(A) As long as the performance characteristics are acceptable, in certain circumstances, it may be more cost effective to regularly change cheaper gloves than to reuse more expensive types.

(B) The work activities of the employee should be studied to determine the degree of dexterity required, the duration, frequency, and degree of exposure of the hazard, and the physical stresses that will be applied.

Selection of gloves for chemical hazards

The first consideration in the selection of gloves for use against chemicals is to determine, if possible, the exact nature of the substances to be encountered. Read instructions and warnings on chemical container labels and SDSs before working with any chemical. Recommended glove types are often listed in the section for personal protective equipment.

All glove materials are eventually permeated by chemicals. However, they can be used safely for limited time periods if specific use and glove characteristics (i.e., thickness and permeation rate and time) are known. The safety office can assist in determining the specific type of glove material that should be worn for a particular chemical.

(A) The toxic properties of the chemical(s) must be determined; in particular, the ability of the chemical to cause local effects on the skin and/or to pass through the skin and cause systemic effects.

(B) Generally, any "chemical resistant" glove can be used for dry powders;

(C) For mixtures and formulated products (unless specific test data are available), a glove should be selected on the basis of the chemical component with the shortest breakthrough time, since it is possible for solvents to carry active ingredients through polymeric materials.

(D) Employees must be able to remove the gloves in such a manner as to prevent skin contamination.



ELECTICAL HOT WORK

The purpose of this policy is to ensure that electrical work around or on energized electrical equipment, parts, and circuits is performed only when necessary and only when it is a critical task or for the purposes of troubleshooting and testing. It is the intention of E Light Electric Services to work on equipment and systems while they are in an electrically safe work condition. We recognize that it is not always possible to achieve an electrically safe work condition and it is our intention to have all energized electrical work performed in a safe manner according to this policy and to be compliant with the requirements of The Standard for Electrical Safety in the Workplace [NFPA 70E] 2009 Edition.

DEFINITIONS

Critical Task

Any task requiring work to be performed on electrical equipment or systems where it has been determined that interrupting the electrical power to that equipment or system will cause greater hazard to persons or property. The designation of a work as a critical task must be approved by the electricians performing the work, the electrician's supervisors and project manager, the Director of Education and Loss Prevention and the Vice President of Operations.

Exception: In an emergency situation during other than normal working hours, approval may be granted by the electrician's project manager and one other member of management. Notification must be made to the Vice President of Operations and the Director of Training and Safety via voice mail. This exception may only be utilized if attempts to contact the Director of Training and Safety and the Vice President of Operations have been unsuccessful.

Electrically Safe Work Condition (De-energized)

Equipment and circuitry shall be considered to be de-energized and in an electrically safe work condition if all of the following steps have been successfully completed:

All sources of potential power have been identified.

All sources of potential power have been locked out and tagged according to company lock out and tag out procedures

All circuitry and equipment has been tested to ensure that it is de-energized and no voltage is present.

Energized

For the purposes of this policy energized shall mean that equipment or wiring is a source of or connected to electrical energy in excess of 50 volts. Any equipment or wiring that has not been placed in an electrically safe work condition shall be considered to be energized. See Electrically Safe Work Condition



Energized Electrical Work

Any work on electrical equipment, circuits, devices, systems, or any other energized parts, where an employee is required to deliberately, or could accidentally, place any part of the body, tool or materials into or around electrical devices in excess of 50 volts. Work on electrical equipment or system installed in a building that has an energized service if the equipment or system has not been placed in an electrically safe work condition.

Testing and troubleshooting plans shall be approved by the project manager or service manager responsible for the project.

Energized Work Permit (Standard) must be reviewed and approved by the project manager responsible for the work, the Vice President of Operations or the Area Manager responsible for the work and by the Director of Education and Loss Prevention. In an emergency situation an approval may be obtained by voice communication. This is limited to extreme conditions. In the event a person that is responsible for approvals is not able to be reached, that person's direct supervisor may provide the approval necessary. If the direct supervisor cannot be reached the energized work must be postponed until review and approval can be obtained.

Qualified Person

One who has skills and knowledge related to the construction and operation of electrical equipment and installations and has received training to recognize and avoid the hazards involved. E Light Electric Services recognizes licensed Journeyman and Master Electricians who have successfully completed our "Energized Electrical Work" training program as qualified.

Exception: Fourth year apprentices that have completed the "Energized Electrical Work" training program may participate in energized electrical work under the direct supervision of a qualified person.

ENERGIZED EQUIPMENT PROGRAM

General

Safety-related work practices must be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contact. The requirements of NFPA 70E shall be followed when developing these work practices.

Live Parts of Electrical Equipment

- Live parts to which an employee may be exposed must be de-energized before the employee works on or near them. (See lock out tag out section)
- When this is not possible or certain conditions may cause additional hazards, other safety-related work practices must be used to protect employees from any contact.
- The practices must be suitable for the conditions under which the work is to be performed and for the voltage level of the exposed electrical conductors or circuit parts.
- The practices must be compliant with NFPA 70E



WORKING ON OR NEAR EXPOSED ENERGIZED PARTS OR EQUIPMENT

This section applies to work performed on live parts or near enough to them to be a hazard.

WORK ON ENERGIZED EQUIPMENT

Only qualified persons (see definition) may work on electric circuit parts or equipment that has not been placed in an electrically safe work condition.

WORK PERMITS

Before any work can be done on energized electrical equipment, a work permit must be completed and approved. E Light Electric Services has a Standard Work Permit and a Troubleshooting and Testing Work Permit. The Troubleshooting and Testing Work Permit may only be used for specific tasks involving troubleshooting and testing. Once a problem has been identified and it is determined that further energized work will be necessary to repair the problem a Standard Work Permit will need to be completed and approved. [See attached forms]

Troubleshooting and Testing Plan

All construction sites shall have in place an approved troubleshooting and testing plan. This plan shall be submitted for approval prior to applying power to the building service. This plan must be approved by the Project Manager with review by the Director of Training and Safety. The Troubleshooting and Testing Work Permit may be used to meet this requirement. All troubleshooting and testing on that project shall be done in accordance with the approved troubleshooting and testing plan. All personnel on the jobsite shall be briefed on the troubleshooting and testing plan for the jobsite.

Employees are required to exhaust every possible means to accomplish work in an electrically safe work condition and only after careful planning shall they attempt any energized work.

Employees shall consult NFPA 70E, Table 130.7(C) (9) to determine the Hazard Risk Category and record the Hazard Risk Category on the Work Permit.

Employees shall consult NFPA 70E, Table 130.7(C) (10) to determine the protective clothing that will be used for the energized work based on the Hazard Risk Category. The specific equipment that will be used including the Arc Rating of the Equipment shall be recorded on the Work Permit.

All potential sources of power shall be identified and recorded on the Work Permit.

The reason the work must be performed in an energized state shall be recorded on the work permit.



All potential hazards and risks shall be recorded on the work permit, including but not limited to the following:

- Shock
- Burn
- Arc Blast
- Uncontrolled shut down of system
- Potential damage to equipment
- Potential damage to personnel

The building owner or their designated representative shall sign the work permit to acknowledge they understand the risks involved and authorize the work to proceed.

All electricians and persons involved in the work shall be briefed on the work to be performed, the safe process, the hazards involved and the personal protective equipment required and shall sign the work permit acknowledging this briefing and their understanding of the work to be performed.

All non-qualified personnel and those not directly involved in the energized work shall be kept a minimum of 10 feet from the energized work. Any person coming within 10 feet of the energized work shall be required to wear the same protective equipment as those performing the work. Caution Red Tape and barricades should be used around energized work wherever possible.

Notification must be made that energized work will be in progress and that an uncontrolled shut down could happen. This notification shall be given to all persons that operate equipment powered by the electrical system on which energized work is to be performed. They are to be given instructions on the procedures to follow in the event of an uncontrolled shut down. A single notification given to a building owner or their designated representative shall be sufficient to meet this requirement.

HOUSEKEEPING

Insulating equipment or barriers must be provided where employees must perform housekeeping duties near live electrical parts. Electrically conductive cleaning materials may not be used near energized parts unless procedures are followed that will prevent electrical contact.

BARRICADES

Barricades shall be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas exposing employees to un-insulated energized conductors or circuit parts. Conductive barricades or signs may not be used.

If signs and barricades do not provide sufficient warning and protection for electrical hazards, an attendant shall be stationed to warn and protect employees.



USE OF EQUIPMENT

Visual inspection, all test instruments and equipment and all associated test leads, cables, power cords, probes and connectors shall be visually inspected for defects and or damage before the equipment is used.

- Equipment must be rated for the highest potential voltage that may be encountered
- Testing equipment shall be a minimum of Category III rated and stamped with a minimum of two independent testing laboratories approval seal.
- Insulated gloves shall be tested for air leaks prior to each use.
- Insulated gloves shall not be used if they have not been certified as within 1 year. No insulated gloves shall be used that do not have a stamp indicating the last testing date.
- No insulated tools may be used if the bottom layer insulation is visible unless at the points provided to verify the bottom layer of insulation color.

Interlocks

Only a qualified person following the requirements of this policy may defeat an electrical safety interlock, and then only temporarily, when working on the equipment. The interlock system must be returned to its operable condition when work is complete.

Means of egress

Must be maintained at all times for any work on energized equipment.

Employees involved in energized work shall be informed of emergency contact numbers for medical and fire personnel and shall be briefed on how to direct emergency responders to the work site and work area should they be required.

Enforcement.

Any employee found to be in violation of this policy would be subjected to disciplinary action up to and including termination.

Overhead lines

Any work performed near overhead power lines shall be considered to be energized electrical work if it is performed within the distances listed on the following table.

Approach distances for qualified employees	
VOLTAGE RANGE) (Phase to Phase)	MINIMUM APPROACH DISTANCE
300v and less	2 feet
Over 300V, not over 750V	4 feet
Over 750V, not over 2kV	10 feet
2kV, not over 15kV	15 feet
15kV, not over 37kV	20 feet
37kV, not over 87.5kV	20 feet
87.5kV not over 121kV	25 feet
121kv not over 140kV	30 feet



**ENERGIZED ELECTRICAL WORK PERMIT
TROUBLESHOOTING AND TEST WORK PERMIT**

Name of person performing work: _____
(Requires a Journeyman Electrician to complete hot work)

Customer Contact Name aware of hot work: _____

Customer Signature: _____ Date: _____

Project name or job number: _____

Location of hot work taking place: _____

Hazard Risk Category: _____

Potential Voltages Anticipated: _____

Sources of Power: _____

Description of work: _____
(Explain work to be performed, trouble shooting 120/208)

Safety Considerations and PPE to be used: (Circle)		
1. Hardhat	2. Safety glasses	3. Face Shield
4. Blankets	5. Signage or Barricading	6. Lock out / Tag out
7. Insulated tools	8. Meters used	9. Preplanning
10. Other employees informed		11. Materials available
12. Is a 2 nd person required?		
Other Considerations: _____		

Form is not valid for more than 15 days from date approved unless used as a troubleshooting and testing plan.

Electricians Signature: _____ Date: _____

Supervisors Signature: _____ Date: _____



INDEMNIFICATION AGREEMENT

Attached the signed indemnification agreement to this form and submit to manager for job files. This agreement is needed only if the customer /client require work on energized circuits be performed.

Use a separate sheet of paper to explain who will be performing work and the process that will be used.

Company Name: _____

Address: _____ City: _____ State: _____

Where as E Light will be installing electrical work in close proximity to and or in contact with live energized parts of electrical equipment, in connection with a subcontract agreement with: _____ herein after referred to as Contractor on a subcontracted project known as:

_____ located at: _____

Whereas it will be to the advantage of the undersigned firm, person and / or company not to de-energize the required equipment to complete the installation and E Light desires to be protected from liability from such risk.

Now therefore, it is hereby agreed by the undersigned that in the event E Light performs such installation,

The undersigned firm, persons agree as follows:

E Light will be in full control of the area in which they are working and limited access will be granted for all non-qualified persons in the area.

- To stop anyone from interfering with the orderly prosecution of installation.
- To save and hold harmless and indemnify E Light from and against all loss, liability, claims, demands, suits at law or inequity and judgments (including attorney’s fees and all court costs) and awards, regardless of their merits, on account of any injury, loss or damage to any person, or property which may be alleged against E Light and which may have been caused in whole or in part by or in connection with the said installation on the foresaid job by employees or agents of the undersigned.
- To assume all damages, loss, liability or injury, or the risk thereof, to any employee, property and equipment of the undersigned from all causes whatsoever in connection with said installation.

Name of firm, person or company

Name of firm, person or company

By: _____

By: _____

Date: _____

Date: _____



ENERGIZED ELECTRICAL WORK

STANDARD WORK PERMIT

Date work is to be performed: _____

Project Name or Job Number: _____

Time Work is to be performed: _____

Supervisor Requesting Work: _____

Hazard Risk Category per NFPA 70E: _____

Expected Voltages to be encountered: _____

Power Sources: _____

Explain work to be performed: (See Back): _____

Explain procedures to be followed: (See Back): _____

Explain Safety Precautions and equipment used: _____

On the table below list type, quantity and rating of the equipment needed.

Eye Protection		Head Protection	
Ear Protection		Upper Body Prot.	
Lower Body Prot.		Gloves	
Blankets		Clips	
Extinguisher		Barricades	



Explain why this has to be conducted hot, the potential risks for the customer, and all the alternatives which were considered for doing the work de-energized.

Describe the condition of the equipment to be serviced. Are there any additional risks due to age, code violations, improper maintenance, etc.:

Employees Assisting:

1. _____ 2. _____
3. _____ 4. _____

APPROVAL: _____

Job Name or Number: _____

E Light Project Manager Date: _____

E Light Vice President Date: _____

E Light Site Supervisor Date: _____

Director of Education and Loss Prevention Date: _____

Date: _____



Customer or Client Signature

(Signed only if requires that work must be performed energized)

I have been briefed and I have reviewed the safety involved in this hot work request. I understand my responsibility to ensure all the procedures and safety concerns are strictly complied with and followed:

_____ Date: _____
Journeyman Electrician #1

_____ Date: _____
Journeyman Electrician #2

Form is not valid for more than 30 days from the date approved. Attach is the indemnification agreement to this form and submit to the Project Manager for the job files.

Additional Information and sketches if necessary:



ENERGIZED WORK PRE-WORK JOB BRIEFING AND PLANNING CHECKLIST

Identify

- The hazards
- The voltage levels involved
- Skills required
- Any “foreign” voltage sources
- Any unusual work conditions
- Number of people needed to do the job
- The Hazard Risk Category
- Voltage rating and test equipment needed.
- The material needed to complete work

Ask

- Can the equipment be de-energized?
- Are back feeds of the circuits to be worked on possible?
- Are additional people required to be safe?
- Where will emergency vehicles approach and what is the route to the work area?

Check

- Job plans
- Single line diagrams and vendor prints
- Safety procedures
- Employees training

Think

- About the worst possible scenario.
- Test for voltages- first
- Use the right tools
- Prepare for an Emergency
- Are employees CPR/First Aid trained?
- Where is the disconnecting means located?
- Where is the nearest phone?
- If cell phone, is direct line to fire department programmed into speed dial?
- Do I know the exact information the fire department will need, address, exact location, directions?



SOME REMINDERS FOR ALL ELECTRICAL HOT WORK

- No Jewelry.
- No conductive watches, rings etc.
- No inserted piercing anywhere on the body from head to toe, including mouth.
- Good work boots that are electrically rated.
- Hair must be in ponytail or combed back under hardhat.
- No metal objects such as pens, mechanical pencils etc.
- Metal keys, belt buckles etc. must be removed.
- No metal-framed glasses can be worn.
- No contact lenses.
- No clothing other than 100 percent cotton fibers to be worn under FR clothing.
- NFPA 70E, Annex F, Hazard/Risk Evaluation Procedure should be consulted when doing analysis of the risk involved with any energized electrical work.
- NFPA 70E, Annex G, Sample Lockout/Tag-out Procedure should be consulted when determining the best method to lock out and tag out an energy source.
- Energized work should never be performed alone. It is always best to have at least one additional person present in the event of an emergency.



MAIN FOUR HAZARDS

The top four hazards in construction that attributed to the majority (90%) of construction deaths and injured workers across America are; Fall Hazards, Electrical Hazards, caught in Hazards and Struck by Hazards. E Light will strive to provide a safe and healthful work place for its employees and subcontractors, to the extent that this outline was developed. E Light superintendents will conduct frequent and routine job site audits to provide compliance, awareness, and if necessary enforcement to reduce or eliminate these risks in accordance with the Safety, Health, and Environmental Program. (SHEP.) The Director of Safety and Loss Prevention will ensure that the Four Main Hazards are the subject of Weekly Safety Talks regularly and that they are posted on the Trello communication boards. The Director of Training will ensure that the Four Main Hazards are included in Apprentice curriculum, Continuing Education Curriculum and are part of ongoing training efforts.

OBJECTIVE: The intent of this police is to provide an outline of the four main hazards, so employees will recognize and understand the top four hazards, and how to correct the conditions pro-actively before an accident or incident happens.

The four hazards, in order, that attribute to the majority of fatalities and injuries in construction are:

- 1) Fall Hazards
- 2) Electrical Hazards
- 3) Caught in Hazards
- 4) Struck by Hazards

Each hazard category will have a general overview; the rule; the standard; and common errors or violations.

FALL HAZARDS

Fall hazards include falls on the same level and falls from heights. Fall hazards alone account for one third of construction deaths in America.

Falls on the same level are normally from slips or trips caused from housekeeping issue, debris, ice, snow or an un-level working surface. Normally, a person falls on to something that causes them harm, such as materials, trash, bracing, debris, or their own tools worn on their waist. Injuries include but are not limited to puncture wounds, impalement injuries, broken ribs causing internal damage, or head injuries. Any of above situations can lead to serious long term injuries or death

Falls from heights are usually caused from losing footing, loss of balance, walk



platforms too narrow, or platforms that are too weak to hold the weight. Possible injuries that can occur from this type of fall include: paralysis, broken bones, internal injuries, impalement, head injuries, and impact injuries. Any of these falls can lead serious long-term injuries or death.

In many cases, an employee that has taken a fall must be under medical care for the first several days. The trauma to the internal organs must be monitored, as the trauma can cause an organ to swell, malfunction, or stop working, causing a delay in the outcome.

A condensed version of the OSHA rules:

- Walking and working surfaces must be kept clear of scrap and debris at all times.
- A ramp or stairway must be provided anytime there is a break in elevation over 19 inches high.
- Work platforms must be at least one unit wide. A unit found in the UBC is a minimum of 18 inches wide.
- Nails protruding from lumber must be removed or bent over. Impalement hazards such as rebar or bolts must have protective caps. Note: for work on same level, standard mushroom caps are sufficient, however, if working above the rebar, you must have impalement proof caps.
- General Fall protection on walking or working surfaces for General Industry is four (4) ft.
- General fall protection for walking or working surfaces for Construction is six (6) ft.
- Fall protection on Scaffolding is ten (10) ft. Work should be stopped due to weather.
- Fall protection for steel erection is 15 to 30 ft. or two stories whichever is less.
- No employee can walk an exterior wall. Employees in residential construction can however, walk interior walls. As the walls are set into place, so must fall protection on all wall openings and floor openings. A floor opening is any floor hole greater than 2" X 2". The protection can be a guardrail or cover. If a cover is used it must be secured in place and marked
- The employer such as scaffolding, ladders, or sawhorses, to gain access to set floor joist or roof trusses, must supply alternate means of egress.
- For roof sheathing and roofing the most efficient, economical, and easiest way is the use of a harness, rope grab, rope and anchor.

ELECTRICAL HAZARDS

Electrical hazards include: electrical shock, electrocution, and secondary injuries such as pull away injuries. These injuries are caused by:



Power tools not wired correctly or just wearing out and not having a proper grounding path, causing an electrical shock to employee and possibly secondary injuries, such as a fall.

Improper strain relief

Employee winds cord and strain relief is not provided causing live ends to pull off terminal screws and shock employee. Several cases having secondary accidents cause the employee to pull back, fall, fall from height, or strike objects with limbs.

Frayed or exposed live parts

Hazards are electrocution, shocks, and secondary accidents.

No GFCI or bad GFCI protection

GFCIs are normally used on 15 and 20 amp breakers. The thought is the GFCI will trip within 5 milliseconds or less, protecting from electrocutions. In buildings or structures that have permanent power, construction persons may use one tool plugged directly into the outlet. However, continuity checks must be made on the power tools to insure they are wired and working properly. If an extension cord and power tool or two power tools are used a GFCI must be used.

No employee can be exposed to live parts of electrical equipment over 50 volts. This includes: breaker boxes, power tools, cords or any electrical equipment. This means two forms of protection must be provided. An example would be, outer insulation and inner insulation of an extension cord. (Double insulated tools)

All lights for construction less than seven (7) ft. from the floor or working surface must be protected from accidental contact. It must be fully enclosed by a guard and/or glass, or a cage.

Cords or electrical equipment with reverse polarity, cause the tool to wear quickly and expose the operator to unnecessary risk of electrical shock and secondary accidents.

Temporary wiring must be correctly protected, wired correctly and be an approved SO insulation.

Overhead power lines

Coming into contact with overhead power lines can cause electrocution, and secondary accident. Employees and equipment must stay a minimum of 10 ft. from any overhead power line.

Underground power lines

Employees must call for locate and take additional care when digging, drilling, or trenching.



CAUGHT IN HAZARDS

Caught in or caught between hazards are cave ins, unguarded machinery or equipment. Each contractor needs to perform a pre-operation check on their work area, power tools, equipment and machinery to ensure that guards are in place and working properly.

TYPES OF GUARDING:

Chip Screen, or shields are freestanding screens used as safety barriers against flying chips, objects and scraps, made from metal, expanded metal, or canvas.

Eye Shields made from metal frames with glass or plastic windows used on abrasive wheel machines, routers and like machines.

Perimeter guards protect the perimeter of a machine, operation or dangerous task. In construction barricade tape, caution tape and alike are used to protect controlled access zones, areas below work taking place, and when dangerous equipment or machinery are being used. An example would be providing tension on post tension cables.

Abrasive wheel guards are normally made of metal and fully or partially enclosed, to keep the operator from coming in contact with the spinning wheel. The guards keep flying particles from striking the operator, or nearby workers. It also keeps the wheel contained if it malfunctions and blew apart.

Saw guards are normally made of metal or heavy plastic. They cover the saw blade to keep the operator from coming into contact with the moving blade. The guard keeps the flying particles contained and directed, as not to strike the operator or a nearby worker. The guard also keeps the saw blade contained in case a tooth flies off or breaks apart. Most guards come in two parts, an upper and lower. They are marked with the direction of the blade and normally only half of the guard is movable and should work freely.

Belt pulley, rope, chain and sprocket guards, shaft, and gear guards, are normally made of metal, expanded metal, or heavy plastic, designed to keep the operator from coming into accidental contact with moving parts and nip points. They are also designed to contain broken or flying parts of the equipment. If chain breaks the guard will keep the chain contained and not strike the operator or nearby worker.

Operator guards are made of metal, plastic, or glass, designed to keep the operator from coming in contact with the machinery or the moving equipment parts. Example, a bobcat skid steer, has operator guards on both the left and right of the operator. Without the guard, the operator could put his head out the side of the skid steer and lower the bucket or arms down, putting his head in a pinch point between the frame of the bobcat, and the bucket arms. Roll over protection is another good example of operator guarding.

Drills, routers, planes and other small moving parts. Most of these guards are made of metal or plastic. They are designed to keep the operator from coming into contact



with the moving piece. They also help the control of flying particles most are very high speed.

General guarding, of moving, spinning, rotating, pinching, cutting and shearing parts of equipment or machinery must be guarded to keep employees from accidentally coming into contact with a dangerous condition. Other items to be guarded would be fan blades, transmissions, fly wheels and other similar items.

Shoring or trench boxes are normally made of metal, aluminum or wood and are designed to protect workers in excavations, by keeping the collapsing soil from covering the workers. They are also designed to keep debris from being kicked in, or falling on top of workers. In place of shoring, contractors can slope the walls of the excavation depending on the type of soil. Example: class A soil 3/4 to 1 angle or 53 degrees, class B soil at a 1 to 1 angle or 45 degrees, and class C soil at 1 2 to 1 angle or 34 degrees. To obtain the angle on the sidewalls benching is allowed in class A or B soil but not in type C soil. (See 29 CFR 1926.650)

NOTE: Most manufactures supply the equipment and machines with proper guarding, however, there are some that do not. You can buy pieces of equipment without proper guarding, best practice is to always checking.

STRUCK BY HAZARDS

Struck by hazards include falling objects and vehicles. The injuries from struck by hazards are impact injuries, crushing injuries head injuries and multiply trauma injuries, and several are fatal.

- Traffic control persons must face oncoming traffic.
- Employees must use toe-boards if items, tools, equipment, or material can fall to below.
- Employees must wear hard hats.
- Employees exposed to vehicular traffic must wear a reflective warning vest.
- Areas below workers must be barricaded off.
- Floor holes should be guarded or covered as not to allow items to fall to below.
- Controlled access zones or controlled decking zones clearly marked.
- Spotters should be used when backing up.
- Back up alarms must be used and in good working order.
- Rigging must be pre-inspected prior to use.
- All employees shall be kept clear of loads about to be lifted and of suspended loads. (29 CFR 1926.550 (a)(19))
- Tag lines should be used to control the load.



- Lifting should be stopped due to bad weather.
- All employees should be trained and qualified. This is a performance standard the company decides how to train and who is qualified to complete the task safely.

NOTE: Most of the above are performance standards; the competent person must determine what to do in specific situations. However, a few guidelines do exist; an example would be for bad weather, in the STD 3-01 A. It specifies to stop work when the wind reaches 40 mph, or if lightning is within 1/4 mile.

It is understood that this outline is to provide a brief understanding of the four main hazards and does not take the place of each individual safety policy. For more information, review the individual policy or standard. (Example: for information on fall protection see the fall protection policy or fall protection standard 29 CFR 1926.500.)

MOST COMMON CITED VIOLATIONS

1. Fall Protection in Construction (1926.501)
2. Hazard Communication (1910.1200)
3. Scaffolding in Construction (1926.451)
4. Respiratory Protection (1910.134)
5. Lockout/Tagout (1910.147)
6. Powered Industrial Trucks (1910.178)
7. Electrical – Wiring Methods (1910.305)
8. Ladders in Construction (1926.1053)
9. Machine Guarding (1910.212)
10. Electrical – General Requirements (1910.303)



GUIDE TO MOLD IN THE WORK PLACE

Concern about indoor exposure to mold has increased along with public awareness that exposure to mold can cause a variety of health effects and symptoms, including allergic reactions. This safety and health information provides recommendations for the prevention of mold growth and describes measures designed to protect the health of building occupants and workers involved in mold cleanup and prevention.

MOLD BASICS

Molds are part of the natural environment. Molds are fungi that can be found anywhere - inside or outside - throughout the year. About 1,000 species of mold can be found in the United States, with more than 100,000 known species worldwide.

Outdoors, molds play an important role in nature by breaking down organic matter such as toppled trees, fallen leaves, and dead animals. We would not have food and medicines, like cheese and penicillin, without mold.

Indoors, mold growth should be avoided. Problems may arise when mold starts eating away at materials, affecting the look, smell, and possibly, with the respect to wood-framed buildings, affecting the structural integrity of the buildings.

Molds can grow on virtually any substance, as long as moisture or water, oxygen, and an organic source are present. Molds reproduce by creating tiny spores (viable seeds) that usually cannot be seen without magnification. Mold spores continually float through the indoor and outdoor air.

Molds are usually not a problem unless mold spores land on a damp spot and begin growing. They digest whatever they land on in order to survive. There are molds that grow on wood, paper, carpet, foods and insulation, while other molds feast on the everyday dust and dirt that gather in the moist regions of a building.

When excessive moisture or water accumulates indoors, mold growth often will occur, particularly if the moisture problem remains uncorrected. While it is impossible to eliminate all molds and mold spores, controlling moisture can control indoor mold growth.

All molds share the characteristic of being able to grow without sunlight; mold needs only a viable seed (spore), a nutrient source, moisture, and the right temperature to proliferate. This explains why mold infestation is often found in damp, dark, hidden spaces; light and air circulation dry areas out, making them less hospitable for mold.



Molds gradually damage building materials and furnishings. If left unchecked, mold can eventually cause structural damage to a wood framed building, weakening floors and walls as it feeds on moist wooden structural members. If you suspect that mold has damaged building integrity, consult a structural engineer or other professional with the appropriate expertise.

Since mold requires water to grow, it is important to prevent excessive moisture in buildings. Some moisture problems in buildings have been linked to changes in building construction practices since the 1970s, which resulted in tightly sealed buildings with diminished ventilation, contributing to moisture vapor buildup. Other moisture problems may result from roof leaks, landscaping or gutters that direct water into or under a building, or unvented combustion appliance. Delayed or insufficient maintenance may contribute to moisture problems in buildings. Improper maintenance and design of building heating/ventilating/air-conditioning (HVAC) systems, such as insufficient cooling capacity for an air conditioning system, can result in elevated humidity levels in a building.

HEALTH EFFECTS

Currently, there are no federal standards or recommendations, (e.g., OSHA, NIOSH, EPA) for airborne concentrations of mold or mold spores. Scientific research on the relationship between mold exposures and health effects is ongoing. This section provides a brief overview, but does not describe all potential health effects related to mold exposure. For more detailed information, consult a health professional or your state or local health department.

There are many types of mold. Most typical indoor air exposures to mold do not present a risk of adverse health effects. Molds can cause adverse effects by producing allergens (substances that can cause allergic reactions). Potential health concerns are important reasons to prevent mold growth and to remediate existing problem areas.

The onset of allergic reactions to mold can be either immediate or delayed. Allergic responses include hay fever-type symptoms such as runny nose and red eyes.

Molds may cause localized skin or mucosal infections but, in general, do not cause systemic infections in humans, except for persons with impaired immunity, AIDS, uncontrolled diabetes, or those taking immune suppressive drugs. An important reference with guidelines for immune-compromised individuals can be found at the Centers for Disease Control and Prevention (CDC) website.

Molds can also cause asthma attacks in some individuals who are allergic to mold. In addition, exposure to mold can irritate the eyes, skin, nose and throat in certain individuals. Symptoms other than allergic and irritant types are not commonly reported as a result of inhaling mold in the indoor environment.



Some specific species of mold produce mycotoxins under certain environmental conditions. Potential health effects from mycotoxins are the subject of ongoing scientific research and are beyond the scope of this document.

Eating, drinking, and using tobacco products and cosmetics where mold remediation is taking place should be avoided. This will prevent unnecessary contamination of food, beverage, cosmetics, and tobacco products by mold and other harmful substances within the work area.

PREVENTION

Moisture control is the key to mold control. When water leaks or spills occur indoors - act promptly. Any initial water infiltration should be stopped and cleaned promptly. A prompt response (within 24-48 hours) and thorough clean-up, drying, and/or removal of water-damaged materials will prevent or limit mold growth. E Light Electric Services employees will be cooperative in efforts to prevent mold on construction projects and will use the following tips to prevent mold in our facilities.

Mold Prevention Steps

Looking for condensation and wet spots. Report all condensation and leaks to the general contractor or building owner representative immediately.

Keeping HVAC drip pans clean, flowing properly, and unobstructed.

Performing regularly scheduled building/ HVAC inspections and maintenance, including filter changes.

Cleaning and drying wet or damp spots as soon as possible, but no more than 48 hours after discovery.

Pinpointing areas where leaks have occurred, identifying the causes, and taking preventive action to ensure that they do not reoccur.

Evaluating an Existing Facility

E Light Electric Service employees shall consider the following when performing work in an existing facility:

- Are building materials or furnishings visibly moisture damaged?
- Have building materials been wet more than 48 hours?
- Are there existing moisture problems in the building?
- Are building occupants reporting musty or moldy odors?
- Are building occupants reporting health problems that they think are related to mold in the indoor environment?

Remediation

Remediation includes both the identification and correction of the conditions that permit mold growth, as well as the steps to safely and effectively remove mold damaged materials.



E Light Electric Services employees will report the presence of any mold observed to the general contractor or building owner representative immediately. This report should be done by the supervisor assigned to the crew.

E Light Electric Service employees shall not contact mold and shall not participate in mold remediation. All work in the affected area is to stop and employees are to leave the area until an assessment of the work area has been done and a plan of remediation has been put into place.

E Light Electric Service employees shall not enter areas that are restricted or have designated as mold containing areas without authorization and then only with the approval of the Director of Education and Loss Prevention. Once an evaluation of the situation has been completed a written plan for continuation of work will be issued.

When deciding if relocating occupants is necessary, consideration should be given to the size and type of mold growth, the type and extent of health effects reported by the occupants, the potential health risks that could be associated with the remediation activity, and the amount of disruption this activity is likely to cause. In addition, before deciding to relocate occupants, one should also evaluate the remediator's ability to contain/minimize possible aerosolization of mold spores given their expertise and the physical parameters of the workspace. E Light Electric Services will not perform evaluation of mold infected areas. The general contractor or building owner will be notified and we will wait for an evaluation made by their representative.

MOLD CLEAN UP METHODS

E Light Electric Services employees will not participate in mold clean-up operations unless a written plan has been submitted and approved by the Director of Education and Loss Prevention and the Vice President of Operations.

Some methods that may be used include the following:

Wet Vacuum

Wet vacuums are vacuum cleaners designed to collect water. They can be used to remove water from floors, carpets, and hard surfaces where water has accumulated. They should not be used to vacuum porous materials, such as gypsum board. Wet vacuums should be used only on wet materials, as spores may be exhausted into the indoor environment if insufficient liquid is present. The tanks, hoses, and attachments of these vacuums should be thoroughly cleaned and dried after use since mold and mold spores may adhere to equipment surfaces.

Damp Wipe

Mold can generally be removed from nonporous surfaces by wiping or scrubbing with water and detergent. It is important to dry these surfaces quickly and thoroughly to discourage further mold growth. Instructions for cleaning surfaces, as listed on product labels, should always be read and followed.



HEPA Vacuum

HEPA (High-Efficiency Particulate Air) vacuums are recommended for final cleanup of remediation areas after materials have been thoroughly dried and contaminated materials removed. HEPA vacuums also are recommended for cleanup of dust that may have settled on surfaces outside the remediation area. Care must be taken to assure that the filter is properly seated in the vacuum so that all the air passes through the filter. When changing the vacuum filter, remediators should wear respirators, appropriate personal protective clothing, gloves, and eye protection to prevent exposure to any captured mold and other contaminants. The filter and contents of the HEPA vacuum must be disposed of in impermeable bags or containers in such a way as to prevent release of the debris.

DISPOSAL OF DAMAGED MATERIALS

Building materials and furnishings contaminated with mold growth that are not salvageable should be placed in sealed impermeable bags or closed containers while in the remediation area. These materials can usually be discarded as ordinary construction waste. It is important to package mold-contaminated materials in this fashion to minimize the dispersion of mold spores. Large items with heavy mold growth should be covered with polyethylene sheeting and sealed with duct tape before being removed from the remediation area. Some jobs may require the use of dust-tight chutes to move large quantities of debris to a dumpster strategically placed outside a window in the remediation area.

Use of Biocides

The use of a biocide, such as chlorine bleach, is not recommended as a routine practice during mold remediation. E Light Electric Services Employees shall not use biocides or fungicides.



LOCKOUT / TAG OUT GUIDELINES

AN ELECTRICAL SAFE WORK CONDITION

All of the following steps shall be taken in order to reach an electrically safe work condition:

- 1) Identify all sources of power.
- 2) Turn off the sources of power and apply locks and tags
- 3) Verify the circuit is de-energized using a solenoid type tester if the nominal voltages are 480V or less.
- 4) A CAT IV multi-meter shall be used to test circuits with nominal voltages in excess of 480V.

If any of the above steps are not performed the circuit shall be considered to be energized and the work shall be performed in accordance with the Energized Work Policy.

The Following Are Excerpts Taken Directly from the Standard for Electrical Safety in the Workplace (NFPA 70E, 2009)

PRINCIPALS OF LOCKOUT/TAGOUT EXECUTION

- **Employee Involvement.** Each person who could be exposed directly or indirectly to a source of electrical energy shall be involved in the lockout/Tag out process.
- **Training.** All persons who could be exposed shall be trained to understand the established procedure to control the energy and their responsibility in executing the procedure. New (or reassigned) employees shall be trained (or retrained) to understand the lockout/Tag out procedure as related to their new assignment.
- **Plan.** A plan shall be developed on the basis of the existing electrical equipment and system and shall utilize up-to-date diagrammatic drawing representation(s).
- **Control of Energy.** All sources of electrical energy shall be controlled in such a way as to minimize employee exposure to electrical hazards.
- **Identification.** The lockout/Tag out device shall be unique and readily identifiable as a lockout/Tag out device.
- **Voltage.** Voltage shall be removed and absence of voltage verified.
- **Coordination.** The established electrical lockout/Tag out procedure shall be coordinated with all of E Light Electric Services' procedures associated with lockout/Tag out of other energy sources.



RESPONSIBILITY

Procedures

E Light Electric Services shall establish lockout/Tag out procedures for the organization, provide training to employees, provide equipment necessary to execute the details of the procedure, audit execution of the procedures to ensure employee understanding/compliance, and audit the procedure for improvement opportunity and completeness.

Form of Control

Three forms of hazardous electrical energy control shall be permitted: individual employee control, simple lockout/Tag out, and complex lockout/Tag out. For the individual employee control and the simple lockout/Tag out, the qualified person shall be in charge. For the complex lockout/Tag out, the person in charge shall have overall responsibility.

Audit Procedures

An audit shall be conducted at least annually by a qualified person and shall cover at least one lockout/Tag out in progress and the procedure detail. The audit shall be designed to correct deficiencies in the procedure or in employee understanding.

Complex Lockout/ Tag out.

All jobsites shall use a simple lockout procedure involving one lock per person and shall be controlled by the individual who is performing the work. All employees involved in the work and exposed to potential hazard shall place their lock on the power source and only they may remove their lock. Any other form of lockout/ Tag out must be reviewed and approved as detailed in this policy.

Personal Locks

E Light Electric Services shall provide a single lock to each employee involved in field work and a single key to that lock. Each lock assigned shall be uniquely keyed. This lock shall be the responsibility of the employee and must be in their possession or control while working on a jobsite at all times. The employee will be responsible for replacement of their lock if it is lost or otherwise rendered inoperable. E Light Electric Services shall not keep copies of locks or keys. All personnel are responsible for removing their personal locks at the end of each work shift and placing their locks in place at the beginning of each work shift or when necessary.

All employees are responsible for accomplishing the steps of an electrically safe work condition. Each employee is responsible of determining the source of power, assuring circuits are de-energized, applying their personal lock to the control sources and testing for themselves to verify that a circuit is de-energized before any work may be performed.

Continuity and Supervisory Locks

Superintendents may place a lock on a power source to ensure it stays locked out for an extended period of time for control purposes. This lock is not a lockout/ Tag out lock and any person working on circuitry associated with the power source shall be required to place a personal lock on the power source in addition to the continuity lock.



Failure to comply with this policy may result in disciplinary action including suspension, reduction in pay or termination.

SIMPLE LOCKOUT/TAG OUT PROCEDURE

All lockout/Tag out procedures that are not under individual qualified employee control according to 120.2(D)(1) or complex lockout/Tag out according to 120.2(D)(3) shall be considered to be simple lockout/Tag out procedures. All lockout/Tag out procedures that involve only a qualified person(s) de-energizing one set of conductors or circuit part source for the sole purpose of performing work within the Limited Approach Boundary electrical equipment shall be considered to be a simple lockout/Tag out. Simple lockout/Tag out plans shall not be required to be written for each application. Each worker shall be responsible for his or her own lockout/Tag out.

Complex lock out tag out procedures shall be permitted but only after careful planning and approval of the Director of Safety and Training, The Project Manager and the Site Superintendent. Refer to NFPA 70E (2009) for further details. Anytime that complex lock out/ tag out procedures are used on a construction project, the superintendent shall be personally responsible for the lock out/ tag out procedure and shall be personally responsible for ensuring the safety of all personnel affected by the lock out/ tag out procedure.

COMPLEX LOCKOUT/ TAG OUT PROCEDURE GUIDELINES

E Light Electric Service employees must establish a written program to ensure the control of electrical energy, which has been de-energized for the purpose of maintenance, repair, and/or modification on each jobsite and project unless a simple lockout/Tag out procedure is to be used. Materials referenced herein are gathered from applicable standards, including 29 CFR 1926.416, 29 CFR 1910.333(b)(2), 29 CFR 1910.333(c)(2) and 29 CFR 1926.333(c)(10), NFPA 70E. While OSHA requires these procedures for the hazard of electricity, and any of the following hazards, it is advisable to get the machine to zero mechanical state:

- Water pressure in excess of 30 PSI.
- Hot water in excess of 120°.
- Fuel gases (in pipelines or cylinders).
- Compressed air in excess of 30 PSI.
- Hydraulics in excess of 30 PSI.
- Mechanical (stored residual energy).

The following sections contain guideline information for developing a complex lockout/ Tag out procedure when a simple lockout/ Tag out procedure is not to be used. The complex lockout/Tag out program must be submitted in writing for review and approval of the Director of Education and Loss Prevention.



PURPOSE

To establish a program and utilize procedures for affixing appropriate lockout or Tag out devices to energy isolating devices. To otherwise disable any potentially dangerous energy, machines or equipment to prevent unexpected energization, start up or release of stored energy in order to prevent injury before employees perform any maintenance, repair, or modification activities where stored energy could create injury.

NOTE: in some cases this is used to keep persons from turning off items that could create hazards, such as, but not limited to: life support, emergency services, FAA controls, etc.

ENERGY HAZARDS

- Any electrical charge in excess of 3 Milli-amps (Ma) is capable of causing a painful shock, which, in turn can cause indirect accidents.
- Any electrical charge in excess of 10 Ma can cause muscle contractions: the "NO-LET-GO" danger.
- A shock of more than 30 Ma can result in lung paralysis. This is usually temporary, but may require CPR.
- A "jolt" of more than 50 Ma can lead to possible ventricular fibrillation (heart dysfunction which is usually fatal).
- A shock of 100 Ma to 4 amps will usually result in certain ventricular fibrillation, and is usually fatal.

Note: Above scenarios are based upon AC current at 60 cycles/second.

RESPONSIBILITIES

Supervisors shall instruct all employees in the safety, significance, purpose, and use of the Lockout and/or Tag out procedure every twelve months and maintain a record thereof. Each new or transferred employee shall be instructed immediately upon assignment where this procedure may become a factor to the employee's safety.

Training records for all employees shall be delivered to the safety department for filing in each employee's personal file.

AUTHORITY

The Supervisor shall be in charge of the operation of the lockout and/or Tag out system.

Employees who are assigned by the Supervisor shall be authorized to operate the system with the supervisor's approval.



OUTSIDE CONTRACTORS AND/OR VENDORS

Must submit their written lockout/Tag out system to the Director of Safety and Training for approval.

Use of this plan must be coordinated the general contractor, owner, subcontractor and all employees to the extent that all involved employees are fully aware of the system.

PREPARATION FOR LOCKOUT AND/OR TAG OUT

- **The Supervisor assigned to the task to be performed must:**
 - Make a survey to locate and identify all energy isolating devices to be certain which switches or other devices apply to the machinery, equipment, or energized circuit to be locked out/tagged out. More than one energy source may be involved.
 - Utilize NFPA 70E to determine hazards, procedures and personal protective equipment which may be required.
 - Create a file with the written record of this survey, which should include the date, worksite, locations and types of switches/devices, and the people who made the survey.

- **Energy isolating means:**

Cord and plug connection equipment: Unplug and control the plug (cord-cap).

Open switches and/or devices: Apply a tag, and/or personal padlock plus a "**DANGER - LOCKOUT TAG**" which is signed, dated, and secured by each person working on the isolated device. If more than one person is involved, use a "Multi-lock" hasp. (or)

In equipment rooms such as but not limited to electrical rooms, elevator rooms and alike, where the area is controlled by qualified persons, only the following may be used:

- The door to the room can be controlled with limited access keys and can be kept locked or secured to only qualified persons. Signs should also be posted, and each panel should be locked and have a panel schedule with individual's names next to them who will be working on that circuit. Only the supervisor will be able to close (activate) a breaker or control.
- Anyone found not following this policy will be subject to termination.

SEQUENCE OF LOCKOUT AND/OR TAG OUT SYSTEM PROCEDURE



1. The Supervisor in charge of the operation shall notify all affected employees that a Lockout and/or Tag out system is going to be utilized and the reason(s) therefore. The assigned employee(s) shall be instructed as to the type and magnitude of energy that is involved in the operation and shall understand the hazards thereof and be given a copy of the pre-job survey record as described in G (1)(a and b) above. It should be noted that whenever possible both locks and tags are to be used.
2. If the machine, equipment or energized circuit is in operation, it shall be shut down by the normal stopping procedure.
3. The authorized assigned employee shall operate the switch or other energy isolating device(s) so that the equipment is isolated from its energy source(s).
4. Lockout and/or tag out the energy isolating devices using the assigned individual's locks and tags as described in G (2)(b).
5. The assigned employee(s), after ensuring that no personnel are exposed, and disconnecting the energy sources, shall operate the normal operating control(s) to make certain the machinery, equipment, or energized circuit will not operate. After the test, the employee(s) shall return the operating control(s) to the "neutral" or "off" position.
6. If the equipment did not operate during the test procedure outlined in H (5), it is now locked and/or tagged out and the assigned work can begin. (Note: If the disconnect is in site and is not more than 25 ft. from work, and the area will not be left unattended, no lock out or tag out is needed. IN-SITE!)

RESTORING MACHINERY, EQUIPMENT, OR ENERGIZED CIRCUIT TO NORMAL OPERATIONS

- After assigned work is completed and the machinery, equipment, or energized circuit is ready to return to normal operations, the assigned employee(s) shall check the area around the machine or equipment to ensure that no one is exposed.
- The employee(s) shall remove all tools from the machine or equipment, reinstall all guards, recheck for absence of other people, and then remove all Lockout and/or Tag out devices and/or tags.
- The supervisor shall inspect the equipment and terminations to ensure that all tools and material have been removed, all terminations are complete and made correctly and all safeguards are in place.
- The employee(s) will then operate the energy isolating device(s) to restore energy to the machinery, equipment, or energized circuit. Refer to NFPA 70E to determine the level of PPE required to re-energize the equipment or circuitry.

Only an authorized journeyman wireman may energize a circuit.



PROCEDURE INVOLVING MORE THAN ONE PERSON

- Each and every person required working under conditions requiring Lockout and/or Tag out procedures shall place his/her own personal lock and signed, dated tag on the energy isolating device(s).
- When an energy-isolating device cannot accept multiple locks and tags, a multiple lock hasp shall be used.
- As each person completes his/her task(s), he/she shall remove his/her assigned lock and/or tag and return them to the Supervisor.
- The last employee(s) to finish will restore the machine to normal operations following procedures as indicated in section I above.

LOCKOUT AND/OR TAG OUT EQUIPMENT

- The Supervisor shall keep a set of special, uncommon padlocks reserved for lockout service and a supply of tags which shall indicate "**DANGER - THIS TAG AND LOCK TO BE REMOVED ONLY BY PERSON SHOWN ON THIS TAG**".
- All lockout locks shall be keyed differently and not copies of keys shall be made. Each lock issued shall be issued with only one key.
- The Supervisor shall maintain a log of issuance and return of all locks by date of issue, control number or color, to whom it was issued, and the date of return if a lock out system other than a simple lock out procedure is utilized.
- When an employee returns a lock, he/she should also return the appropriate tag from the same device.
- Once a lock has been issued, it is not transferable to another employee until it has been returned to the Supervisor.
- If, at the end of a shift, the assigned task has not been completed, and there will be no intervening shift of workers, the original Lockout and/or Tag out devices and/or tags shall remain in place.
- If there is to be a shift change and work continues, the oncoming shift employee(s) will secure their own locks and tags and the off-going shift employee(s) shall remove theirs.

BASIC RULES FOR THE USE OF LOCKOUT AND/OR TAG OUT PROCEDURES

- All equipment shall be locked and tagged out to protect against accidental or inadvertent operation when such operation could cause injury to personnel.
- No one shall attempt to operate any switch or other energy-isolating device when it is locked and/or tagged out.



- Any unauthorized person found tampering with, or removing, Lockout and/or Tag out equipment will be subject to disciplinary action.

FORMS

CFR29-1910.333(b)(2) requires documentation of the Contractor's efforts to effectively operate a Lockout and/or Tag out program. The following forms are offered as examples for fulfilling this operation.

- Training Documentation
- Determination of Lockout or Tag out
- Inspection
- Periodic Inspection
- Location of Lockouts - Machine/Area Specific
- Lockout Sequence Checklist
- Group Lockout and/or Tag out Procedure
- Restoring Machines or Equipment to Normal Operations



LOCKOUT AND/OR TAG OUT GUIDELINES TRAINING DOCUMENTATION

DATE: _____ INSTRUCTOR: _____

DEPARTMENT: _____ TOPIC: _____

TRAINING FOR AUTHORIZED EMPLOYEES _____ OR AFFECTED EMPLOYEES _____

The training provided is to ensure that employees understand the purpose and function of the Energy Control Program, and that the knowledge and skills required for the safe application, usage, and removal of energy controls are required by employees.

EMPLOYEE SIGNATURE	EMPLOYEE SIGNATURE



LOCKOUT AND/OR TAG OUT GUIDELINES DETERMINATION FOR LOCKOUT AND/OR TAG OUT

This is a preliminary survey form used to determine the need to document Lockout and/or Tag out procedures for a machine or equipment.

SPECIFY THE MACHINE, EQUIPMENT, OR ENERGIZED CIRCUIT: _____

DO THE FOLLOWING CONDITIONS EXIST?	YES	NO
The machine, equipment, or energized circuit has no potential for stored or residual energy or re-accumulation of stored energy after shutdown which could endanger employees		
The machine, equipment, or energized circuit has a single energy source which can be readily identified and isolated		
The isolation and locking out of that energy source will completely de-energize and deactivate the machine, equipment or energized circuit		
The machine, equipment, or energized circuit is isolated from that energy source and locked out during servicing, maintenance, and/or modification		
A single lockout device will achieve a locked out condition		
The lockout device is under the exclusive control of the authorized employee performing the servicing, maintenance, and/or modification		
The servicing, maintenance, and/or modification does not create hazards for other employees		
No accidents involving the unexpected activation or re-energization of the machine, equipment, or energized circuit during servicing, maintenance, and/or modification have occurred on this machine or equipment		

If **"yes"** was indicated on **ALL** of the above points, the required procedure for the particular machine, equipment, or energized circuit **need not be documented**. Otherwise, lockout and/or Tag out procedure includes the steps outlined in the **PROCEDURES** section as follows.



**LOCKOUT AND/OR TAG OUT GUIDELINES
PERIODIC INSPECTION**

DATE: _____

This form is to be completed each time a Lockout and/or Tag out operation is inspected in accordance with the requirements of the General Industry Standard 1910.333 standard and is to be filed in the Supervisor record of the inspection.

SPECIFY THE MACHINE, EQUIPMENT, OR ENERGIZED CIRCUIT:

AUTHORIZED EMPLOYEE IN CHARGE OF THE OPERATION BEING INSPECTED:

AUTHORIZED EMPLOYEE(S) PERFORMING THE INSPECTION:

For Construction Industry 29CFR1926.417 - Specify the Room, equipment, panel or energized circuit: (per Floor)

- Inspector reviewed with the **AUTHORIZED** employee the employee's responsibilities and knowledge of the lockout procedure and use. No deficiencies. **Check: YES NO**
- Inspector reviewed with the **AUTHORIZED & AFFECTED** employees, each Employee's responsibilities and the limitations of tags. No deficiencies. **Check: YES NO**
- Deficiencies found requiring correction/re-training: **Check: YES NO**

Employees performing the work inspected:

NAME

JOB TITLE



**LOCKOUT AND/OR TAG OUT GUIDELINES
LOCATION OF LOCKOUTS - MACHINE/AREA SPECIFIC**

This form must be completed for each machine or equipment for which Lockout and/or Tag out procedures are required to be documented.

MACHINE/EQUIPMENT	TYPE & I.D.	NUMBER:
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DEPARTMENT SUPERVISOR:

AUTHORIZED EMPLOYEE:

PURPOSE



This procedure establishes the minimum requirements for the Lockout and/or Tag out of energy isolating devices. It shall be used to ensure that the machine, equipment, or energized circuit is isolated from all potentially hazardous energy and lockout out or tagged out before employee(s) perform **ANY** servicing or activities where the unexpected energization, start-up or release of stored energy could cause injury.

Below, specify types and magnitudes of energy (electrical, chemical, thermal, mechanical, etc.) and hazards (electrocution, burn, crushing, amputation, etc.) identified for this machine or equipment:

ENERGY	HAZARDS

LOCKOUT AND/OR TAG OUT GUIDELINES



LOCKOUT SEQUENCE

This form is to be completed each time lockout or Tag out is necessary during maintenance/servicing/modification of machines, equipment, or energized circuits. Post this form on or near the machine and initial each requirement as it is completed.

DESCRIPTION	INITIALS
Review the MACHINE SPECIFIC form on file to determine all types of energy involved and the location of each isolating device.	
Notify all AFFECTED employees that a lockout or Tag out system is going to be utilized and the reason it is necessary. The AUTHORIZED employee shall know the type and magnitude of energy involved and shall understand the hazards before initiating lockout.	
I verify that as an AFFECTED employee or Supervisor, I have been notified that a lockout or Tag out procedure will be utilized on this equipment. I understand that only the AUTHORIZED employee can remove the lockout and restore the equipment to normal operation.	
If the machine or equipment is operating, shut it down using normal procedure (stop button, toggle switch, etc.).	
Use energy isolating devices such as switches, valves, etc. to isolate the machine/equipment/circuit from ALL energy sources. Dissipate or restrain stored energy such as in springs, rotating flywheels, hydraulic systems, air, gas, waterlines, etc.	
Lockout and/or Tag out the energy isolating devices using assigned locks/tags. All locks/tags must be identified with the name of the individual applying the device.	
Before beginning the maintenance/service/modification work, make sure that all employees are clear of the area and operate the normal starting/operating controls to make certain that the equipment has been made incapable of startup. Be sure to return the controls to the "OFF" position after the test.	

***** AFTER MAINTENANCE/SERVICING/MODIFICATION IS COMPLETE *****

Refer to the procedure sequence for Restoring Machines, Equipment, or Circuit to Normal Operations.



**COMPLEX LOTO
LOCKOUT AND/OR TAG OUT GUIDELINES
GROUP LOCKOUT AND/OR TAG OUT**

In order to help ensure that each employee working as part of a group is provided a level of protection equivalent to that provided in a personal lockout or Tag out, this form and the group procedures must be completed in addition to basic Lockout and/or Tag out procedures and forms.

SPECIFY THE MACHINE, EQUIPMENT OR ENERGIZED CIRCUIT:

If more than one individual is required to lockout or Tag out a machine, equipment, or circuit, each shall place his/her own personal lockout or Tag out device on the energy isolating device(s). When an energy-isolating device cannot accept multiple locks or tags, a multiple lockout or Tag out device (HASP) may be used. If complex lockout is used and approved, two locks under the control of two qualified personnel may lockout the machine, equipment, or panel, with the keys being under control of the two qualified personnel individually and placed in a lockout box or cabinet which allows the use of multiple locks to secure it. Each employee in the group will then use his/her own lock to secure the box or cabinet. A pre-approved written procedure shall be posted near the locked equipment and also the lock box.

The following authorized employees are trained in group lockout and/or Tag out and will participate in this maintenance/servicing/modification operation:

NAME	JOB TITLE



LOCKOUT AND/OR TAG OUT GUIDELINES RESTORING MACHINES OR EQUIPMENT TO NORMAL OPERATIONS

The following steps are to be taken when service, maintenance, and/or modification operations are completed.

The **AUTHORIZED** employee is to initial each step as it is completed:

ACTIVITY	INITIALS
After servicing, maintenance, and/or modification are complete, inspect the area to see that all non-essential items have been removed, and that the machine, equipment, or circuit components are operationally intact.	
After the machine, equipment, or circuit is ready for normal operation; check the area around the machines and equipment to ensure that no one is exposed.	
After all tools have been removed from the machines, equipment, and areas, guards have been re-installed, and employees are in the clear, remove all Lockout and/or Tag out devices. Disengage the energy isolating devices to restore energy to the machine, equipment, or circuit.	(CHECK-BY)
Notify AFFECTED employees that the service is complete and have them remove their locks from the energy source	

The supervisor needs to ensure the area is safe for the energy to be established, this can be done by; physically checking the area, taking inventory of people, tools and equipment before activation, by physically talking to each individual, and by checking and ensuring each employee has removed the locks and/or tag system, and/or signed out.

When the supervisor in charge is sure the area is safe for activation then the energy may be restored.



SCAFFOLDING SAFETY AND LADDER SAFETY

SCAFFOLDING

OSHA 1926 SUBPART L

Scaffolding is an integral and important facet of the construction industry. Specific standards need to be followed in accordance to manufactures specifications, OSHA specifications, and ANSI specifications most of the time all the standards match each other's but the Manufactures specifications supersede all other specific specifications.

The Superintendents for E Light are assigned to the project and shall be responsible for inspecting and supervising the erection and use of the scaffolding.

GENERAL

- The footing of scaffolds must be sound and rigid; capable of supporting four times the maximum intended load.
- Only when a competent person is present shall anyone erect, dismantle or move a scaffold.
- Scaffolds in excess of ten feet above the ground must have fall protection. A standard guardrail consists of a top rail at 42 inches high, mid-rail half way in between and a 4-inch toe board. All guardrails must be capable of withstanding 200 lbs. of force in any direction.
- All scaffold components shall be able to support at least four times the maximum intended load.
- Any scaffolding that has been damaged or weakened shall be immediately replaced or repaired,
- All planking or platforms shall be 2 inches by 12 inches by 8 feet.(Fully Planked)
- All planking shall be overlapped a minimum of 12 inches.
- An access ladder or other safe access shall be provided.
- Scaffold planks must extend over their end supports by 6 inches but not more than 12 inches.
- The legs or uprights shall be plumb and rigidly braced to prevent swaying. All cross bracing should be used.
- Shore or lean-to scaffolding shall not be used.
- Scaffold legs shall be set on adjustable bases, plan bases or other foundations adequate to support the maximum rated load.
- All pins to secure diagonal braces and to prevent uplifting shall be used.
- Periodic inspections shall be made of all scaffolds and accessories.
- Scaffolding must be fully planked.



Designed Loads for Scaffolding

TYPE	LOAD PER SQUARE FT.	PERMISSIBLE SPAN
LIGHT	25	10 FT.
MEDIUM	50	8 FT.
HEAVY	75	6FT.

SAFE CENTER LOADS FOR SCAFFOLDING PLANKS

Based on extreme stress of 1300 pounds per square inch. Douglas Fir, Silka Spruce, White Spruce, Red Pine and Portland Orford White Cedar.

The following will assist you in the determination of the safe center loads. Do not use any lumber under nominal thickness of 2 inches (actual 1-5/8 inches).

SIZE OF PLANKS IN INCHES

SPAN IN FEET	2x8	2x10	2x12
6	230 lbs.	290 lbs.	355 lbs.
8	170	210	260
10	103	165	200
12	105	130	160
14	80	105	130
16	70	90	105

SCISSOR LIFTS AND MANLIFTS (JLG) OPERATIONS

- Workers must be trained in the operation and use of the equipment.
- The equipment lifting capacity must be clearly identified.
- Handrails, midrails and toeboards must be in place and free from any damage.
- Harnesses and lanyards must also be worn in any lift. (Even if guardrails are present and if totally enclosed)
- Operating instructions must be legible.
- When welding from lift fire extinguisher must be in the lift basket.
- Travel is only permitted when the lift is in the down position.
- Lifting material, which extends beyond the guardrails, is not permitted.
- The maximum lift capacity shall not be exceeded.

Each employee must ensure that both the top rail and mid rail are in place when they are in the lift.



Scaffolding cheat sheet:

- Mudsills if on dirt, need to be 180 square inches 2X10X18 Min.
- Base plates are next, cannot screw out more than 12 inch total.
- Up rights depending on distance between changes amount of weight. 6 ft. apart 75 pounds per square ft. 8 ft apart is 50 lbs. per square ft. 10 ft. apart is 25 lbs. per square ft. then take width and length times weight and times by 4 for four times maximum load.
- Must be fully braced, by cross braces, diagonal bracing or horizontal bracing. (No bracing left out)
- Planking – must be fully planked not gaps more than 1 inch between planks. Planks must overlap ends 6 to 12 inches, from plank to plank over lap 12 inch on each side of upright.
- Fall protection begins at 10 ft to your feet, and falling object protection also begins at 10 ft.(Toe boards).
- Tie to building every three section if narrow scaffold, if wide scaffold is use tie every four section high.
- Competent person (supervisor) must be on site at all times, when scaffold is being worked on, assembled, or disassembled.
- Use tags to control scaffolding (Green-go, Red-do not use!)

OSHA SCAFFOLDING STANDARD

1926.450 – SUBPART L

SCAFFOLDING

PURPOSE:

- 1) Updates the existing standard to include types of scaffolds.
- 2) Allows flexibility in the use of fall protective systems
- 3) Simplifies language, eliminates duplication
- 4) Allows employers compliance flexibility

An estimated 2.3 million construction workers, or 65 percent of the construction industry, work on scaffolds frequently. Protecting these workers from scaffold-related accidents would prevent 4,500 injuries and 50 deaths every year, at a savings for American employers of \$90 million in workdays not lost



ORGANIZATION OF STANDARDS

450. Scope, application and definitions applicable to subpart.

451. General requirements

- 1) Capacity
- 2) Scaffold platform construction
- 3) Criteria for supported scaffolding
- 4) Suspension scaffolding (N/A to our class)
- 5) Access
- 6) Use
- 7) Fall Protection
- 8) Falling objects (Struck by hazards)**
- 9) 452. **Additional requirements to specific types of scaffolding.**
- 10) Fabricated frame scaffolds (tubular welded frame scaffolds. (Type we use!))
- 11) 453. Aerial lifts**
- 12) 454. Training Requirements**
- 13) Hazard recognize
- 14) Electrical hazards
- 15) Proper use
- 16) Maximum intended load
- 17) Pertinent requirements (452.(c.))
- 18) Training for erecting and dismantling
- 19) Nature of scaffolding hazards
- 20) Design criteria
- 21) When to retrain

Appendix A – Scaffolding specifications

Appendix D – List of training topics for scaffold erectors and dismantlers.

Appendix E – Drawings and Illustrations



GENERAL REQUIREMENTS:

Capacity

- Support own weight and 4 times maximum intended load
- Designed by a qualified person and built and loaded to design
- Scaffolding weight guideline:
 - Uprights 10 ft. apart = 25 lbs. per sq. ft.
 - Uprights 8 ft. apart = 50 lbs. per sq. ft.
 - Uprights 6 ft. apart = 75 lbs. per sq. ft.

Scaffolding Platforms (Planking)

- Platforms fully planked or decked (Outriggers or walkways must also be fully planked)
- No more than 1 inch gaps
- Maximum openings of 9 ½ inches
- Scaffolding platforms and walkways a minimum of 18 inches wide
- Guardrails and / or personal fall arrest systems (PFAS) for platforms and runways not 18 inches wide
- Front edge of all platforms
 - No more than 14 inches from the face of the work
 - 3 inches from the face of work to outrigger scaffolds
 - 18" from the face for plastering and lathing operations
- Platforms 10 ft. long and less, planks to extend over the end of the support at least 6 inches but not more than 12 inches (over hang)
- Platforms greater than 10 ft. in length, no more than 18" past support
- Overlap platforms must be 12 inches over supports unless restrained to prevent movement
- On direction changes, any platform on a bearer at other than right angles shall be laid first, and platforms which rest at right angles over the same bearer laid second.
- No paint on wood, except edges that maybe marked or identification
- Fully planked between front upright and guardrail supports
- No mixed scaffolding components used, unless compatible and integrity maintained
- No modifications of scaffolding components



Criteria for supported scaffolds

- Scaffolding higher than 4:1 ratio restrained from tipping by ties to building
- Bear on adequate foundations
 - Mud sills
 - Baseplates
- Plumbed and fully cross braced
 - Cross bracing / diagonal bases, or combination of bracing
- Cross bracing or diagonal bracing maybe used as a midrail or toprail, but not both
- Pins used if uplift could occur (If forklifts use a must)
- Scaffolding must be secured to the building once scaffolding is 30 ft. wide and 26 ft. high (if wider than 3 ft.) then be secured to the structure every 20 to 26 ft.
- If scaffold is covered with plastic, tarps etc., scaffolding must be secured to building regardless of height, to protect against wind
- Forklifts cannot be used to support scaffolding
- Scaffolding more than 125 ft. high must be designed by a Registered Professional Engineer

Suspension scaffolding (does not apply to our work.)

Access

- Must have safe access
- No access by cross braces
- Bottom rung not more than 24 inches high
- Rest platforms at 35 ft intervals
- Sets access requirements for erectors and dismantlers
- Can use some end frames for access



Use

- Checked by competent person prior to start of work
- Never overload
- No shore or lean-to scaffolds
- Inspected by a competent person
- Immediately removed or repaired,
- No horizontal movement
- Maintain clearance near power lines (min 10 ft)
- Can only be erected, moved, dismantled or altered under supervision of competent person
- No work on snow or ice covered platforms (planks)
- Tag lines used on swinging loads
- No work during storms, or high winds
- Debris shall not be allowed to accumulate
- Ladders shall not be used on scaffolds to increase height

Fall protection (PFAS or Guardrails)

- 100% fall protection required at and above 10 ft.
- PFAS in lieu of guardrails
- Toprails must be between 38 and 45 inches high
- Use of crossbracing in lieu of top or midrails in some cases
- All sides and ends must be fall protected (only front or work area left open)

Falling objects protection

- Hardhats required
- Protection of employees below
 - Cautioned off
 - Guarded by covers, canopies
 - Toe boards
 - Screens

Five training areas

- Nature of electrical, fall, and falling objects hazards
- Correct procedures for protection above
- Proper use of the scaffolding
- Load capacities of scaffolding
- Requirements of OSHA scaffolding Requirements – subpart L

RETRAINING AS NECESSARY TO RESTOR PROFICIENCY

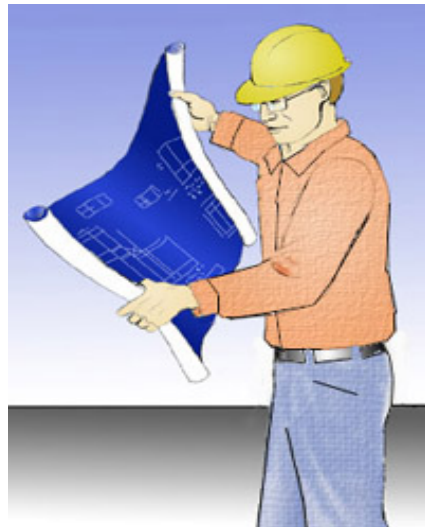
<< Competent Persons

The competent person is **responsible for determining the safety and feasibility** of installing and using safe means of access, based on site conditions and the type of scaffold involved. [1926.451(e)(9)(i)]

<< Erectors and Dismantlers

Employers are required to **provide fall protection for employees** erecting or dismantling supported scaffolds where it is feasible, and where installing and using it does not create a greater hazard. [1926.451(g)(2)]

Critical to scaffolding safety are the use of competent persons for the design, erection/dismantling, and maintenance of scaffolds, and trained workers for their use. Therefore, assessing personnel abilities should be a part of all phases of the scaffolding inspection



LADDERS

OSHA estimates that there are 24,882 injuries and as many as 36 fatalities per year due to falls from stairways and ladders used in construction. **E Light** is dedicated to provide a safe and healthful work place, in that we will strive to keep all ladders in compliance and reduce and eliminate injuries and accidents with the use of ladders.

Ladders shall be designed and constructed by approved industrial practices and general specifications. Ladders shall be without structural defects or accident hazards such as sharp edges, burrs, etc. Wood ladders shall not be painted. All repairs must be equal or stronger than original equipment and support at a minimum of 200 pounds live load.

GENERAL:

A ladder or a ramp must be provided for employees to gain access where there is a break in elevation of 19 inches or more.

At least one point of access (36 inches wide) must be kept clear and free from debris and slipping and tripping hazards.

All ladders used to gain access to any elevation, must extend up passed the point of elevation by at least 36 inches (3 feet) and be secured into place. A frame ladders cannot be used for means of egress.

When there are 25 or more employees gaining access to another elevation, two ladders must be used, one for ascending and the other for descending or a double-cleated ladder needs to be provided.

Rungs of the ladder shall not be any closer than 8 inches apart nor further than 12 inches apart.

Ladders cannot be tied or fastened together.

The minimum clearance between side rails (uprights) must not be less than 16 inches.

Ladders must be kept free of oil, grease, and other slipping hazards. A frame ladders cannot be leaned against walls or other parts of the structure they must be spread out and locked into place. No type III ladders maybe used.

No painting or coatings on wood ladders.

Only nonconductive side rails used for electrical work.

Ladders can't be set up within 6 ft of a rake edge.

A FRAME LADDERS:

A frame ladders must be used as they were designed. They were designed to be used in an A frame position, not as a single ladder it must be used with metal spreader locked into place.

Do not set up any ladder in a traffic area where the ladder may be come displaced by equipment, machinery, or the public.

The top of the ladder may not be used as a step. The second to top of the ladder may not be used as a step, it is normally marked "not a step" or "Do not use as a step" or something of this nature.

Must have a metal locking spreader!

The minimum clear distance at the top between the rungs cannot be less than 11 ½ inches.

***The ladder must have all legs on a good even surface.**

LADDER CLASSIFICATION

Category	Height	Weight Limit	Rating
Type IA	3 to 20 ft*	300 Lbs.	Heavy Duty Industrial
Type I	3 to 20 ft*	250 Lbs.	Heavy Duty
Type II	3 to 12 ft*	225 Lbs.	Medium Duty
Type III (...for Step Ladders only. No Type III ladders are to be used in construction or on construction sites.)	3 to 6 ft*	200 Lbs.	Light Duty (Household)

Extension Ladders:

Must be placed against something, if used to gain access to a different level it must extend up by at least 3 feet and be secured into place.

Must be set up at a one to four ratio. A ladder 12 ft in length must be set three feet from the wall (12/4=3)

Feet must be placed securely on the ground; boxes, blocks and cans cannot be used to level the ladder or uneven ground.

If placed in dirt the claw must be turned down to dig into the ground keeping the ladder from sliding out.

Extension ladder may not be set up within 6 ft of an edge (rake edge) or open side.

JOB MADE LADDERS:

Must not be longer than 24 feet, or with a grab bar of three feet so the total length will be 27 ft long.

Ladder used for access must extend up three feet and be secured in place.(Job made ladders must sit on 2 X 10 mudsill)

From side rail to side rail not less than 16 inch wide, but not more than 20 inch wide maximum.

*First rung from the ground up must be placed so the top of the rung is 12 inch high. Every rung must be evenly spaced at 12 inch high to the top of the rung.

*Side rails must be made of clear 2 X 4 material or greater. (No 1 X material at all for side rails. All 2 X 4 material must be nailed with at least three 12 d common nail or better.

Rungs made of 2 X 4 material must use filler blocks of 1 X 2 material evenly spaced. Cleats made of a 1 X 4 material must be nailed with three 10 d nail or better.

All general rules still apply; ladders to gain access must be three feet above and secured. The one to four ratios must be used. Must still face the ladder to ascend or descend the ladder, the rungs must be a non-skid, Etc.

INSPECTIONS:

After you have selected the proper ladder for the job, it should be inspected for defects before it is brought to the site or put in to use. The inspection should cover the following areas:

Are the steps firmly anchored to the side rails?

Is all hardware secured?

Are there any hinges loose or missing?

Are there broken parts sticking out that could cause scrapes or cuts?

Are the side rails free of cracks?

Are the ropes for raising the fly section in good condition?

Does the ladder have any oil, grease or any substances that may cause slipping?

Are all rungs in perfect condition?

Ladders cannot be tied or fastened together.

Any ladder that does not pass inspection should be tagged for maintenance and removed from service. This prevents a co-worker from accidentally using damaged ladder.

3 - Foot Rule

Extending the ladder three feet beyond the roof prevents you from tipping the ladder by stepping on one of the top steps. Once three feet extend the ladder above it then can be secured in place. Ladder should be set at 75½ degrees or ¼ ratio.

Self-supporting Ladders

Self-supporting ladders or stepladders must be set up so that all four legs are on solid ground and the spreaders are locked. Do not use a self-supporting ladder as a straight ladder by

leaning it against a structure .

Care and Maintenance:

Ladders must be in good condition at all times, the joints and side rails must be tight and all hardware and fittings securely attached. Ladders should operate freely without binding or undue play. (Pre inspected before use!)

Ladders should not be placed in front of doors or walkways unless guarded or blocked off.

Ladders that have been damaged should be tagged and taken out of service, until repairs can be made.

Ladders cannot be tied or fastened together.

Main access on job sites should be made and maintained with an off set similar to this one!



Any questions about ladders contact your supervisor. Ladder information is available on the OSHA web site www.OSHA.gov under 1926.1053 and training requirements under 1060.

Training:

Each employee should be able to:

1. Recognize hazards
2. Nature of fall hazards
3. Correct procedures for erecting, maintaining, and disassembling fall protection
4. Proper construction, use, placement and care.
5. Maximum intended loads
6. The OSHA standards
7. Retraining shall be provided for each employee as necessary so that the employee maintains understanding and knowledge.

FIRE PROTECTION & EXTINGUISHERS

In the event of a fire, the following procedures must be used:

- The first two minutes of a fire are the most critical for extinguishments.
- Assess the situation and call for help.
- If the building is equipped with an alarm system {Activate the alarm system}, and evacuate the area.
- If you feel you can extinguish the fire do so only when you have back up with a fire extinguisher. (PASS) If not
- Secure the area, close doors behind you, wait for help, get a head count, make sure everyone is accounted for.
- Set up employees to provide directions for fire fighting agencies.

GENERAL FIRE FIGHTING PROCEDURES:

- Locate fire fighting equipment.
- With the wind at your back, approach the fire and discharge the extinguisher at the base of the fire, sweep the blaze as you advance.
- After the fire is extinguished or if your unable to extinguish the fire, back away (never turn on a fire) as your back up person covers you. If extinguished get another extinguisher and stand by to ensure the fire is out, and does not start back up. If not out wait for assistance.
- Recharge or replace fire extinguishers as soon as possible.

FIRE PREVENTION:

The best way to stop fires is not to have them start we can do this by:

- Controlling storage of material waist
- Keeping the area clean and free of debris.
- Keeping flammable and combustible materials in approved containers, well-ventilated areas and by providing quick clean up of spills and leaks.
- Disposal of materials in proper containers i.e. oily rags in a metal can with a lid.
- Inspect fire-fighting equipment often and make sure they are serviceable.
- Keep exits and aisle ways clear.
- Check emergency lighting.

- Report and repair any flammable or combustible leaks.
- Keep Spray Paints and like product in flammable storage cabinets.

- Do not smoke or use open flames around flammable or combustible products.

PORTABLE FIRE EXTINGUISHERS

OBJECTIVES: The purpose of this procedure is to keep all portable fire extinguishers in compliance, and provide fire-fighting equipment as the hazards dictate. This procedure is to let each department know their duties and responsibilities pertaining to the portable fire extinguishers.

STANDARDS:

All portable fire extinguishers should be inspected monthly.

All portable fire extinguishers shall be mounted, the national fire code says that portable fire extinguisher less than 40 lbs. should be mounted no closer to the floor or ground level than four inches, but no higher than five feet. (4-44 rule)

A sign or a red background to make the extinguisher more visible shall be used to identify all fire extinguishers.

All Portable fire extinguishers shall be tagged; the tag should read the last annual maintenance check and the monthly inspections log.

Annual maintenance checks, all portable fire extinguishers must be subjected to an annual maintenance check.

All portable fire extinguishers must be serviceable, and in good working order.

Accessible, all portable fire extinguishers must be readily accessible. Ready accessible means a 36-inch clear path to the extinguisher.

On any construction site if there are 5 lbs. or 5 gallons of a flammable or combustible a fire extinguisher must be within 50 feet and on the same level.

CLASSES OF EXTINGUISHERS

<p>A COMBUSTIBLE MATERIAL</p> <p><i>Green</i> Timber, Smoldering Trash Cardboard, Wood, Paper Dry Rags</p>	<p>B FLAMMABLE LIQUID</p> <p><i>Red</i> Lubricating Oils Greases, Fuel Oils Gasoline, Solvents</p>
<p>C ELECTRICAL</p> <p><i>Blue</i> Electrical Motors Battery Equipment Transformers Computers</p>	<p>D COMBUSTIBLE METAL</p> <p><i>Yellow</i> Sodium Titanium Zirconium Magnesium</p>

FIRE EXTINGUISHERS

MAXIMUM AREA TO BE PROTECTED PER AREA EXTINGUISHER

+-----+			
Class A Rating	Light (low)	Ordinary (mod)	Extra (high)
Shown on	Hazard	Hazard	Hazard
Extinguisher	Occupancy	Occupancy	Occupancy
+-----+			
1A*	-	-	-
2A	6,000	3,000	-
3A	9,000	4,500	-
4A	11,250	6,000	4,000
6A	11,250	9,000	6,000
10A	11,250	11,250	10,000
20A	11,250	11,250	11,250
30A	11,250	11,250	11,250
40A	11,250	11,250	11,250
+-----+			

* = Number is equal to pounds, A is for Class A extinguisher, Class A is combustible material like wood, paper, trash etc.

PROCEDURES:

All portable fire extinguishers in each area of control are the responsibility of that area. All portable fire extinguishers should be inspected monthly to ensure they are in good working order and that they are still in compliance. All portable fire extinguishers that are out dated should be taken out of service and changed out with ones that have been subjected to an annual maintenance check.

FIRE PREVENTION

Ignition Hazards

Electrical wiring and equipment for light, heat and power purposes shall be installed in compliance with the NEC (National Electric Code) and Sub-part K of CFR 1926.

Internal combustion engine powered equipment shall be so located that exhausts are well away from combustible materials.

Smoking shall be prohibited at or in the vicinity of operations, which constitute a fire hazard, and shall be posted "No Smoking or Open Flame".

Means of Egress

A means of egress shall be maintained at all times in all work areas. A path straight to the street or exit shall be maintained at least 36 inches wide.

Stairways, Walkways, Ramps, Platforms shall be clear of all debris and obstacle. (Housekeeping)

If more than 25 workers you must have bi-directional ladders.

INSTRUCTIONS AND TRAINING

Instructions and training are vital for effective use of an extinguisher. In the excitement of a fire situation the uninitiated layman is much less likely to perform effectively than an instructed person.

In case of a fire, evacuate the occupants of the hazard area and call the fire department or 911. Then use your training and nameplate information to ascertain if you can effectively deal with the type and size of fire you have.

IF YOU DECIDE TO FIGHT THE FIRE:

- **Make sure you have back up before you fight a fire.**
- **Maintain the proper distance 6 to 8 feet for most dry chemical hand portable extinguishers.**
- **Try to position yourself so that the wind blows the fire away from you.**
- **Pull the safety pin, (this is always forgotten) or release any safety locks on the unit. (Always try to have another person with an extinguisher behind you for back up and always back away from the fire never turn from the fire!)**
- **Hold the extinguisher firmly and begin spraying the agent at the near edge of the fire. Most extinguishers squeeze at the handle or the nozzle.**
- **Move the stream rapidly side to side covering the entire width of the fire.**
- **Advance slowly as your extinguisher pushes the fire back. Try to maintain the optimum distance from the front edge of the fire.**

- **After the fire is out, step back and watch for possible re-ignition. (Keep the area clear until you are sure the fire will not re-ignite, if possible get a new extinguisher and keep in area incase of re-ignition.)**

PASS = Pull the pin, then
Aim and
Squeeze the handle,
Sweep the fire from side to side

Always back away from the fire and have back up!

July 13, 2016

FORKLIFT SAFETY (Powered Industrial Trucks)

PURPOSE:

To ensure the safety and health of our employees and others working around us and by reducing cost associated with accidents by providing a forklift policy and training outline. Safety is the E Light's top priority; we need to strive to protect each and every worker. This can only be done through strict compliance and training of our employees.

Only authorized employees are permitted to operate fork trucks, tractors, forklifts, and other material moving vehicles. If riding or operating this type of equipment is not your job, stay off. Compliance with all recognized safety practices for powered industrial trucks is mandatory.

It is your responsibility to report to your supervisor immediately any unusual condition or damage to your fork truck or to any company property.

1.0 GENERAL OUTLINE

Your vehicle and any racks, tubs, dollies, etc. must be under control at all times. Speed limits must be observed. Your operating speed must be consistent with the conditions of the floor or roadway, landscape on which you are traveling.

Seat belt must be worn at all times during operation unless wearing a seat belt would prove hazardous (such as operating on a dock over water).

All warning labels must be on the machine and in a legible condition.

Keep to the right on aisles and roadways.

Slow down, sound horn, and proceed with caution at cross aisles, intersections, and turns.

Safe guard pedestrians at all times sound horn and allow the pedestrian plenty of clearance.

Always look to the rear before backing up. Travel forward when possible. If the load you are carrying obstructs your forward view, then travel with the load trailing. Always back down ramps or inclines. Keep your load as low as possible.

A safe distance, approximately three truck lengths, shall be maintained between moving vehicles.

Racing, stunt driving or any other form of horseplay is absolutely forbidden, and could be grounds for disciplinary action up to and including termination.

Always keep hands, arms, and feet inside the running lines of your vehicle. On a forklift, arms or legs shall not be placed between the uprights of the mast.

Any time you leave your vehicle, lower the load, shut the power off, set the brakes, and remove the key. **Be sure that your vehicle is in a safe position when it is parked.** Do not park on ramps. On forklifts, the forks shall be fully lowered and controls neutralized.

The forklift must be properly shut down any time the operator must leave the cab.

Do not operate any vehicle with wet or greasy hands or feet.

Do not let your vehicle **idle** for a long period of time **inside** a building.

Avoid running over loose objects on the floor or roadway.

Avoid sudden or jerky starts or stops. Make allowance for the momentum of the load. Loads must be secure to prevent shifting when emergency action is required.

Do not drive up to anyone standing in front of a bench or other fixed object.

Tampering with the truck's governor or electrical system is strictly prohibited.

When placing stock, do not block aisles, electrical control panels, or fire protection equipment.

Do not attempt to turn your vehicle around **on ramps or inclines.**

Spinner knobs must not be attached to steering hand wheels of trucks not originally equipped with such.

While negotiating turns, speed shall be reduced to a safe level.

Other trucks traveling the same direction at intersections, blind spots, or other dangerous locations shall not be passed.

The operator will look in the direction of travel and keep alert.

A spotter will be used in congested areas or whenever the operator's vision is obstructed and backward travel is not feasible or would prove hazardous. Spotters will remain a minimum of 10 ft. from the equipment while it is in use.

Spotters shall not place themselves in a position where they could be crushed or injured by the equipment or load.

Passengers shall not be permitted to ride on powered industrial trucks or towed equipment.

Extreme care shall be used when tilting the load forward or backward, particularly when high tearing.

An overhead guard shall be used as protection against falling objects. Make sure your industrial truck is compatible to the environment it is used in, i.e., flammable vapor areas or enclosed areas without ventilation.

Operators of material moving vehicles are required to run them at a safe speed at all times. Employees shall be instructed to watch out for equipment when walking through buildings, yards or construction areas. Employees shall not walk beside the equipment while it is in motion. Do not talk to the operator of a vehicle until he has stopped because he needs to keep his mind on what he is doing to avoid an accident.

Operators of material moving vehicles are instructed not to transport loads which are unstable or above the rated capacity of their vehicles. If you are helping to load them, cooperate with the operator by observing these rules.

Never use the forklift or similar vehicle **as a work platform** or allow yourself to be hoisted from one level to another **unless a specially designed platform is provided** and you have been authorized to use the vehicle in this way.

If you are authorized to ride in a fork truck or other material-moving vehicle, do not allow any part of your body to hang over the edge. Do not jump off a vehicle in motion; wait until it stops. Do not ride in a material moving truck with unsecured loads.

Always come to a complete stop at blind corners and before entering doorways, unless a mirror provides the operator with clear vision around the corner.

Do not over load your power fork truck or endeavor to transport loads, which are **above its rated capacity**. Don't lift unstable loads. They should be re-piled, banded, or otherwise secured.

Forklift trucks, with or without loads, should **travel with forks about six inches to eight inches above the floor**. Never attempt to lift or lower loads while traveling. The tilt control should be used to bring the center of gravity of the load closer to the drive wheels, as this keeps the load from spilling.

Bridge plates between docks and trucks or freight cars must be sufficiently wide, strong, and securely anchored. Truck operators should drive over plates slowly. Do not get your truck too close to the edge of the loading dock.

Never butt loads with the forks or with the rear end of the truck.

Operators shall not block fire aisles, access to stairways, or fire equipment.

The operator's manual for each forklift shall be present on the lift at all times.

Each forklift shall be used for its designed and intended purpose.

After driving a power truck into an elevator, **turn the motor off and set the brakes**.

Don't take a dive. Stay away from the edge of loading docks and open trenches. One little slip and you can be hurt or killed.

Never drive into a truck or trailer unless the brakes are firmly set and/or wheels chocked.

Any modifications which could affect the capacity, stability, or safe operation of the lift shall not be performed without written approval from the manufacturer. Only manufacturer approved attachments may be used.

Forklift shall not be operated in atmospheres containing a hazardous concentration of acetylene, butadiene, ethylene oxide, hydrogen (or gases or vapors equivalent in hazard to hydrogen, such as manufactured gas), propylene oxide, acetaldehyde, cyclopropane, diethyl ether, ethylene, isoprene, or unsymmetrical dimethyl hydrazine (UDMH)

Before operating make a visual inspection of the entire forklift and look for possible problems. Check fluid levels.

The hydraulic fluid level should be checked with the boom fully lowered and retracted.

Check for hydraulic leaks using a piece of cardboard rather than your bare hand.

Know your equipment and learn to operate it correctly in a safe, level, open area before operating in tight places or near other people.

Be aware of all obstructions and or people in front, behind, or on the sides of traveling vehicle.

Operator shall sound the horn:

- Once upon starting
- Twice prior to forward movement
- three times prior to reversing

Never allow riders on forklift.

Be sure to check load limitations on equipment before proceeding to lift heavy objects.

Ease into load so as not to damage goods, operator, or co-workers by unbalancing object causing it to overturn.

To maintain proper balance, load should be centered and forks should be near the outside edges and all the way under the load.

Load should be tilted back until it rests securely for traveling.

Mount machine using grab rails and steps while facing machine, maintaining a three-point contact with steps and grab rails.

Never lift unstable loads.

If traveling on ramp not designed for a forklift, you should back the load down in low gear. Also never turn sideways on an incline.

When parking machine, lower forks so they are flat on the ground and apply brake before leaving machine.

Report faulty truck performance to your supervisor immediately.

Use a soapy solution to check for propane leaks.

Never attempt to change a liquid propane tank inside of a confined space.

Refueling:

Refueling is not permitted while the engine is running.

Only refuel in designated areas.

Do not use open flames to check the fuel level.

Verify the type of fuel the lift uses.

Do not smoke near or during refueling of the equipment.

Ensure proper environmental protective measures are taken to prevent spills.

Avoid topping off the tank.

Ensure the gas cap is replaced prior to starting the engine.

Pre Shift/Operation Inspections:

Only trucks in safe operating condition may be operated. Before operating your vehicle, the operator shall check and document the condition of the following:

- Brakes
- Air filter
- Engine oil and coolant
- Belts, fan and guards
- Fuel tank cap
- Welds and structural components
- Boom condition and operation
- Tires/wheels
- Charging system
- Wiring
- Hydraulic system
- Hydraulic oil level
- Controls
- Seat belt and ROPS
- Safety devices
- Back up alarm
- Manufacturer's placard
- Fork/attachment condition
- Horn
- Mast
- Lights
- Windshield & Wipers
- Clutch

- Guards
- Fire extinguisher

If any item is defective, it shall be reported immediately. Do not attempt to repair the defective item yourself. The truck shall not be operated until the deficiencies are corrected. Forklifts shall not be operated if a fuel system or hydraulic leak is present.

2.0 SAFE OPERATING PROCEDURE:

Check work areas for:

- Muddy, slippery surfaces.
- Overhead and side clearances.
- Dust, smoke or fog, which could impair vision.

Perform the following machine starting procedures:

- Place controls in the Neutral/Hold/Locked position.
- Sound horn. (Once-Start, Twice-Move forward, three times-Reverse).
- Start engine from the operator's seat.
- After starting engine, check gauges and instruments to ensure everything is operating properly.
- Follow manufacturer's recommended starting procedures.
- Never smoke or have an open flame around starting fluids.
- Check braking system, transmission, steering, speed control, operation of bucket, bowl, blade, doors, etc.
- Immediately report defects to your supervisor.
- Never let anyone stand or ride in the arm of an articulating machine.
- Never carry people in or on equipment, if they cannot be seated safely.
- Never move a load above the heads of other employees or over vehicle cabs.
- Ensure all people are clear before starting or moving.
- Use caution in congested areas, over rough terrain and on slopes. Have complete control of your equipment at all times and match speed to conditions.
- Follow existing traffic patterns.
- Use extreme caution near bank and pit edges.
- Use proper gear when going uphill or downhill. Operate up and down slopes, whenever possible.
- Cool down engine for 3-5 minutes, shut off engine, and engage parking brake and lower bucket and attachments to the ground when leaving machine unattended.
- Turn lights on 30 minutes before sunset and on days when visibility is limited.
- Park in a non-operating area or a designated parking area. Select level ground when possible, and park at right angles to the slope and block wheels when on a grade.

Mounting and dismounting:

- Be alert for uneven, rocky, muddy or slick conditions, and take proper precautions.
- Keep boots or shoes as free as possible of all grease, mud, ice, water, etc.
- Use handholds and set points, keeping three points of contact at all time.
- Keep both hands free. Do not try to carry anything while mounting and dismounting.

- Face machinery while mounting or dismounting.
- Do not jump when dismounting.

Forklift Operators:

- Do a pre-operation inspection of the forklift and complete pre-shift inspection.
- Check the location and condition of fire extinguisher on the forklift.
- Inspect forklift for wear or damage and report any defects to your supervisor.
- Have proper personal safety equipment available and in use.
- Allow engine to idle during warm-up and check all gauges.
- Check oil pressure after starting engine, if no indication within ten (10) seconds shut down engine.
- Adjust seat, fasten seat belts, and align mirrors before starting or moving equipment.
- Check brakes and steering before moving forklift.
- Do not allow unauthorized persons to ride on or operate forklift.
- Do not coast downgrade in neutral. Select proper gear for going down or up hill.
- Maintain complete control of forklift.
- Use extreme caution when on frozen ground or ice due to limited traction.
- Do not exceed capabilities and limitations of forklift.
- Lower forks as close to ground as possible while still maintaining ground clearance when traveling with a load with an upward tilt on forks.
- Apply brake before parking forklift.
- Do not go or permit others to go underneath elevated loads or forks.
- Idle engine for approximately five (5) minutes to allow engine to cool down before shutting forklift off.
- Sudden stopping or reversal of direction can cause the load to fall or the forklift to tip.
- Use inching pedal to provide low speed approach during pick- up, or load positioning. Ensure the entire forks are under the load.
- Always adjust forks as wide as possible for stability of the load.
- Know the location of first aid stations in the area you are working.
- Report all unsafe or unusual conditions to your supervisor.
- Any unusual circumstances report to your supervisor before any operation of the fork truck.

Safety

- No employee shall operate a forklift without documentation of proper training.
- Employees must know the rated lifting capacity of forklift and weight of load prior to operation.
- No employee other than the operator shall ride the forklift.
- Only trained and designated employees may operate forklifts

Equipment Check

- Employees must perform an equipment serviceability inspection prior to each use of the forklift.
- Forklifts must not be operated until all defects affecting safe operation are properly repaired.

Starting Procedure

- Ensure parking brake is set.
- Ensure all controls are in NEUTRAL or HOLD.

- Sound horn, wait ten (10) seconds.
- START engine.
- Monitor instruments and gauges for proper operation.

Test Controls for Proper Operation

- Test parking brake.
- Test hoists, side-shift and tilt controls.
- Test steering.
- Test service brake.

Fork Adjustment

- For load stability, always adjust the forks as wide as possible. Position the load evenly on both forks.
- Lift the hook pin and idle the fork to the new position.
- Install the hood pin in the carriage slot. Follow the same procedure for the other fork.

Moving the forklift

- Fasten seat belt.
 - Raise forks just high enough to clear obstacles.
 - Engage direction selection.
 - Sound horn.
 - Release parking brake.
 - Accelerate slowly.
 - Release the accelerator pedal to STOP while traveling in either direction.
 - Use inching pedal when picking up or positioning a load.
 - Ensure forks are properly adjusted before engaging a load to -Avoid pallet or container damage.
 - Ensure balance of load.
 - Tilt mast to proper position before lifting load.
 - Lift loads slowly to ensure balance.
 - Carry loads as low as possible while traveling.
 - Travel in REVERSE if load obstructs vision.
 - Reduce speed when turning with load.
-
- Tilt mast FORWARD only when directly over unloading area.
 - Ensure unloading area will safely support load.
 - Ensure proper balance is maintained and monitor for overhead clearance when using forklift with mast extended.

Parking

- Select safe spot
- Engage parking brake.
- Lower forks to ground in safe position.
- Place all controls in NEUTRAL or HOLD.
- STOP engine.

- Chock block tires.

NOTE: Shut off the LP gas fuel tank valve when stopping or parking for an indefinite or prolonged period of time.

3.0 TRAINING AND EVALUATION

No employee shall be permitted to operate a lift prior to being trained and evaluated by an E Light authorized trainer.

Who is authorized to train?

Training may only be conducted by an E Light representative with the knowledge, training and experience necessary to conduct the training.

In addition to these criteria, trainers must successfully pass E Light's forklift training module and be at least one of the following:

- E Light Supervisor
- Qualified trainer or manufacturer's representative

EVALUATION:

Operators will receive a formal and documented evaluation at least once every three years.

RETRAINING/REFRESHER TRAINING:

Operators will receive refresher training any time:

- The operator is observed operating in an unsafe manner or not following this policy.
- The operator is involved in a Near Miss or Incident.
- An evaluation reveals that the operator is in need of refresher training.

TRAINING OUTLINE:

Training shall consist of a classroom portion and a hands-on practical application portion.

Classroom training shall cover the following:

- OSHA 1910.178 training requirements:
 - Operating instructions, warnings, and precautions
 - Differences between truck and automobile
 - Controls and instrumentation
 - Engine and motor operation
 - Steering and maneuvering
 - Visibility
 - Fork and attachment adaptation, operation and use limitations
 - Vehicle capacity
 - Vehicle stability
 - Vehicle inspection and maintenance
 - Operating limitations

- Powered industrial truck classifications
- Workplace related topics:
 - Hazardous locations
 - Ramps and sloped surfaces
 - Closed environments
 - Unique or hazardous environmental conditions
- Rough terrain forklifts
- Vehicle inspection and maintenance
 - Operator's Manual
- Engine or motor operation
- Front steering vs. rear steering
- 4-wheel steering and crab steering
- Job site hazards
- Controls and instrumentation
- Visibility
- Stability
- Vehicle capacity
- Operating limitations
- Basic safety rules
- Rules of operation
- E Light Forklift Policy
- Review / Written Examination

Employees must pass the written test with a score of **80%** or better before being allowed to take the hands-on field training. Employees will be given the opportunity to discuss any questions they missed on the written test.

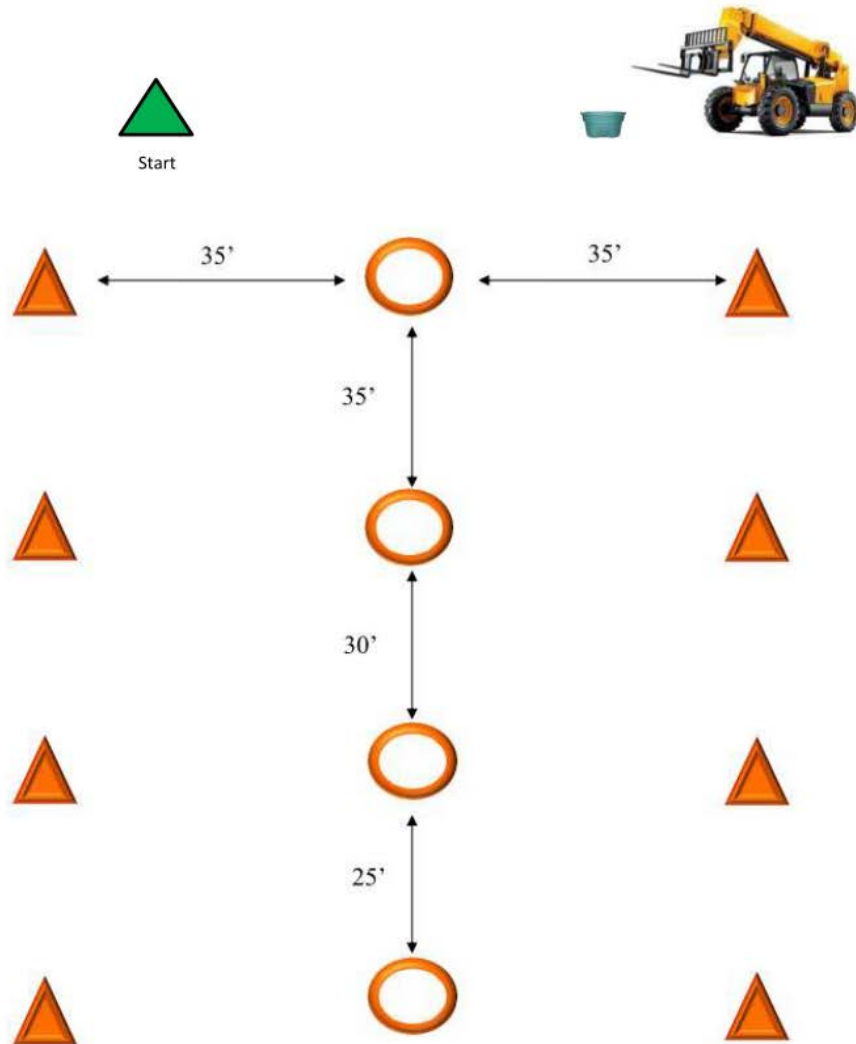
Trainees will be provided with an opportunity to apply his/her theory knowledge to physical practice through hands-on experience with the operation of the forklift.

Field training will consist of:

- Inspecting the equipment
- Utilizing operator's manual and load chart
- Guiding forks into a pallet
- Picking and placing multiple pallets.
- Utilizing a spotter
- Ensuring the load is properly balanced before and throughout the lift.
- Position of the load while traveling
- Traveling and stopping the equipment without shifting the load.
 - A 150 gal trough will be carried on a pallet.
- Maneuvering the forklift in a figure 8 pattern in both forward and reverse direction with an obstructed view.
 - A piece of cardboard will be attached to the front of the lift, obstructing the operators view.
- Placing the load on the ground and backing out of the load
- Identifying potential hazards

After completing an assessment of skills demonstrated, trainees will be presented with a certificate of completion. Training records shall be kept on site, and copies submitted to E Light's Safety Coordinator.

HANDS ON TRAINING OBSTACLE COURSE EXAMPLE:



4.0 PERFORMANCE EVALUATION FOR OPERATION OF FORKLIFT

SATISFACTORY

UNSATISFACTORY

- | | | |
|---|--|--|
| 1. Demonstrates knowledge of safe Working procedures. | | |
| 2. Demonstrates proper inspection Techniques checking: | | |
| -Mast and forks. | | |
| -For cracks and damage. | | |
| -For loose or missing parts. | | |
| -Tires and wheels. | | |
| -For leaks. | | |
| -Hoses and belts. | | |
| -Fluid levels. | | |
| -Operating controls. | | |
| 3. Demonstrate procedures for Starting forklift and testing Controls: | | |
| -Ensures park brake is set. | | |
| -Move levers and controls to hold. | | |
| -Sounds horn-waits ten (10) seconds. | | |
| -Starts engine. | | |
| -Monitors instruments and gauges. | | |
| -Tests park brake. | | |
| -Tests service brake. | | |
| -Checks steering. | | |
| 4. Demonstrates proper procedures For placing forklift in motion: | | |
| -Fasten seat belt. | | |
| -Sounds horn and waits | | |
| -Raises forks to travel height. | | |
| -Selects proper direction/bear. | | |
| -Releases parking brake. | | |
| -Accelerates slowly & smoothly. | | |
| 5. Makes necessary fork adjustments for load to be handled. | | |

SATISFACTORY

UNSATISFACTORY

6. Demonstrates proper operational

Procedures for:

-Positioning to lift.

-Inching.

-Lifting load.

-Traveling with load.

-Turning with load.

-Stopping with load.

-Changing direction safely.

-Positioning to lower.

-Lowering

7. Demonstrates proper parking

Procedures.

-Selects safe area.

-Sets parking brake.

-Lowers forks to safe position

-Places controls to NEUTRAL OR
HOLD.

-Stops engine.

NOTE:

If employee fails this test, the employee must be retrained and retake the test. If the employee does not pass the test the second time they will not be permitted to operate a forklift for E Light Electric Services, Inc.

NOTE: This evaluation should be submitted using iAuditor and the Forklift Evaluation Template.

NOTE: All projects shall have the OSHA Forklift Operations Poster displayed prominently in an area where employees gather and on all communication boards for the project.

FORKLIFT SAFETY QUIZ

1. Once you are trained you can operate any type of forklift.
 - a. True
 - b. False
2. Forklift training is important because
 - a. It's the law
 - b. It protects the workers
 - c. It reduces operating costs
 - d. All of the above
3. If an operator is involved in an accident or near miss he/she must receive refresher training.
 - a. True
 - b. False
4. An operator must be evaluated at least every three years in order to continue to operate the forklift.
 - a. True
 - b. False
5. Federal OSHA requires the forklift to be inspected
 - a. Once a week
 - b. At the start of the day or shift
 - c. Once a month
 - d. Once a quarter
6. Pre-operation inspections can
 - a. Improve safety
 - b. Reduce down time
 - c. Reduce costs
 - d. All of the above
7. The major difference between automobiles and forklifts is
 - a. Forklift typically weigh more than automobiles
 - b. Forklifts use rear wheel steering
 - c. Forklifts do not carry passengers
 - d. All of the above
8. The operator's manual is required to be on the machine at all times.
 - a. True
 - b. False
9. A legible capacity plate is always to be mounted on the machine.

- a. True
 - b. False
10. It is OK to add an attachment without the written approval of the manufacturer as long as you purchase or rent it from a reputable source.
- a. True
 - b. False
11. All warning labels must be on the machine and in a legible condition.
- a. True
 - b. False
12. The hydraulic fluid level should be checked with the boom fully lowered and retracted.
- a. True
 - b. False
13. Check for hydraulic leaks using a piece of cardboard rather than your bare hand.
- a. True
 - b. False
14. The primary sources of fuel for a forklift are:
- a. Gasoline
 - b. Liquid propane
 - c. Diesel
 - d. All of the above
15. Liquid propane fuel is lighter than air.
- a. True
 - b. False
16. When parking a LP powered forklift for an extended period of time always:
- a. Shut off the service valve
 - b. Avoid high heat sources
 - c. Avoid parking in confined spaces
 - d. All of the above
17. When refueling a forklift, you should:
- a. Have a fire extinguisher nearby
 - b. Don't smoke
 - c. Shut off the engine
 - d. All of the above

18. LP tanks can be replaced in confined spaces.
- a. True
 - b. False
19. What will happen if the service valve on an LP tank is opened to quickly?
- a. The fuel supply line could burst
 - b. The back pressure check valve will close
 - c. The engine will not restart
 - d. The fuel supply valve will freeze open
20. The best way to check for propane leaks is
- a. By smell
 - b. Use a soapy solution
 - c. Use a match or a lighter
 - d. Look real close
21. When fueling a gasoline or diesel forklift, always fill the tank completely full.
- a. True
 - b. False
22. Checking the tightness of existing bolts with a torque wrench is not always reliable because of thread corrosion
- a. True
 - b. False
23. Never replace a liquid or solid filled tire with and an air filled tire.
- a. True
 - b. False
24. Hoisting a near capacity load on the end of one fork can damage the fork.
- a. True
 - b. False
25. Front-end attachments have no effect on the capacity of the machine.
- a. True
 - b. False
26. The operator is not required to wear a seat belt when:
- a. Moving the forklift from one end of the yard to the other
 - b. Maneuvering the machine for repairs
 - c. Operating the machine inside a container or trailer

- d. Using a seat belt would prove more hazardous than not wearing one
27. A horn is not required as long as you have a backup alarm.
- a. True
 - b. False
28. Using the frame sway control is a good way to level the machine when you are boomed up high and you need to level the load in order to get out from under it.
- a. True
 - b. False
29. When defects are noted during the pre-operation inspection, it is OK to continue to use the forklift until the job is completed.
- a. True
 - b. False
30. The stability of the forklift is based on what principle?
- a. Principle of gravity
 - b. Principle of stability
 - c. Principle of balance
 - d. Principle of momentum
31. The balancing point of the forklift is:
- a. The counterbalance
 - b. The front wheels
 - c. The back wheels
 - d. The mast
32. Which is not one of the principle offsetting weights on an internal combustion engine forklift?
- a. Counterweight
 - b. Forks and boom
 - c. Engine
 - d. Transmission
33. The point in a forklift around which all the weight is evenly distributed is
- a. The weight of the load
 - b. The center of gravity
 - c. The balancing point
 - d. The stability pyramid
34. The center of gravity is always at the physical center of the load.
- a. True
 - b. False
35. When a load is lifted, the center of gravity for the forklift does not change position.

- a. True
 - b. False
36. When the boom is raised without telescoping out the machine becomes more stable front to back.
- a. True
 - b. False
37. When you lower the boom or telescope out the capacity of the machine increases.
- a. True
 - b. False
38. Leveling the machine is not necessary on loads well within the capacity of the machine.
- a. True
 - b. False
39. Which of the following is not a dynamic condition:
- a. Braking
 - b. Turning
 - c. The load
 - d. Booming down
40. What information is needed to use the load chart properly?
- a. The weight of the load
 - b. The height of placement
 - c. The radius of placement
 - d. All of the above
41. The most accurate way to obtain the weight of the load is:
- a. Weigh it
 - b. Bills of lading
 - c. Approved calculations
 - d. The internet
42. If the unit weight for plywood is 36 lbs per cubic foot and the load is 4 ft x 4 ft x 8 ft, approximately how much would it weigh?
- a. 2,200 lbs
 - b. 3,400 lbs
 - c. 4,600 lbs
 - d. 5,800 lbs
43. When operating a lift truck, it is

- a. The pedestrian's responsibility to watch out for you
 - b. Your responsibility to watch out for pedestrians
 - c. Management is responsible to keep pedestrians out of the work site
 - d. All of the above
44. The number one cause of death involving a forklift is tip over.
- a. True
 - b. False
45. The number one cause of death involving a forklift is tipover.
- a. Picking up a load that is too heavy
 - b. Driving on an incline
 - c. Going around a corner too fast without a load
 - d. Hitting an overhead obstruction
46. You should never turn a forklift with the load raised above travel height.
- a. True
 - b. False
47. To best survive a tipover you should:
- a. Wear your seat belt
 - b. Hang on tight
 - c. Lean forward and away from fall
 - d. All of the above
48. The minimum distance between the crane boom and a 50,000 volt power line is
- a. 5 Feet
 - b. 10 feet
 - c. 15 feet
 - d. 20 feet
49. If the boom or load comes into contact with a live power line, what should those on the ground do?
- a. Carefully walk up to the machine and help the operator off
 - b. Hook onto the machine and pull it out from the power lines
 - c. Keep all people away from the area surrounding the machine
 - d. Throw a rope to the operator so he can be drug away from the vehicle
50. All telescopic handlers are rated to lift personnel as long as you have an approved platform.
- a. True
 - b. False
51. Railroad tracks or curbs should be crossed at an angle.

- a. True
 - b. False
52. It is ok to leave your forklift running while out of eyesight of it as long as you have the emergency brake on and the forks are lowered to the ground.
- a. True
 - b. False
53. How many vehicle lengths is the minimum you should maintain between you and another vehicle?
- a. 1
 - b. 2
 - c. 3
 - d. 4
54. Never drive a forklift up to anyone next to a fixed object.
- a. True
 - b. False
55. If you pick up a load and you feel the back end of the forklift start to come up, then you are probably overloaded.
- a. True
 - b. False
56. If while picking up a load and telescoping out you feel the back end of the forklift start to come up, then you should:
- a. Telescope back in
 - b. Boom down quickly
 - c. Keep telescoping out but at a much slower rate
 - d. Put a few guys on the back of the lift to add counterweight
57. If you are handling hazardous materials you must be trained in what they are, how to handle them and how to clean them up in case of a spill.
- a. True
 - b. False
58. It is better to lean out to see around a load rather than have to travel in reverse.
- a. True
 - b. False
59. When elevating personnel, only platforms built to OSHA/ANSI standards should be used.

- a. True
 - b. False
60. The _____ is responsible for the safe operation of the forklift.
- a. The supervisor
 - b. The employer
 - c. The operator
 - d. All of the above

FORKLIFT CERTIFICATION

I certify that (...Print Employees Name) has been trained and evaluated as required by the New Powered Industrial Truck Operator Training Standard dated 12-1-1998. The above employee has been trained in the Safe Operation, Warnings and Limitations, Forklift Controls, Engine Operation, Steering and Maneuvering, Forks and Attachments, and Refueling Operations. The above employee has been observed operating the vehicle in a safe manner on this date,

_____.

Trainer (Print Name) _____

Signature of Trainer Date








Employee Name (Print Name) _____

Signature of Employee Date

Please attach training evaluation forms.

COMMENTS: _____

New hired employees must be trained before the employee may operate a Power Industrial Fork Truck. All employees that operate a Forklift / Power Industrial ForkTruck must receive training and evaluation prior to operation, as outlined by 29CFR 1926.

 <div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 5px 0;">E Light</div> FORKLIFT CERTIFICATION This card certifies that Name: _____ Has successfully passed all required elements for forklift training and testing as required by OSHA Standards on _____ for Lift Type: _____ Model: _____ Trainer: _____	 <div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 5px 0;">E Light</div> FORKLIFT CERTIFICATION This card certifies that Name: _____ Has successfully passed all required elements for forklift training and testing as required by OSHA Standards on _____ for Lift Type: _____ Model: _____ Trainer: _____
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MOTOR VEHICLE SAFETY 2016

INTRODUCTION:

E Light is striving to provide a safe and healthful work place to the extent that motor vehicle safety is one of many of the company's main focus areas. This section of the safety manual was designed to assist in controlling loss resulting from improper or unauthorized operation of a company vehicle.

E Light, along with each employee, can eliminate or reduce our company vehicular accidents. Every employee of E Light must do their part in providing a safe and healthful workplace; only then can we eliminate employee injuries and accidents.

In most fleet operations, vehicle accidents and associated injuries are among the largest costs of doing business. In the long run, every company pays for its own accidents; either directly or in the form of insurance premiums. Insurance distributes accident costs over a period of years.

Since the company's premium rate is closely related to the company's accident experience, one way to reduce insurance costs is to improve the fleet's accident performance. The premium rate is also affected by the personal driving records of those that operate company vehicles.

GENERAL MOTOR VEHICLE SAFETY

Initial training: The Director of Safety and Loss Prevention shall ensure that this section is reviewed with new employees.

Management has the ultimate responsibility for the safety performance of the fleet but this responsibility must be extended, just as authority is delegated, in a direct line through the operating departments to the drivers and other employees. Management must see to it that this responsibility is fully accepted and then, in turn, hold Director of Loss Preventions and field managers accountable for the safety performance of their respective areas or departments.

SAFE DRIVING RULES

Employees who operate company vehicles or who operate personal vehicles while performing company business shall comply with the following rules:

1. Always drive defensively and be alert to unexpected and sudden moves from other drivers.
2. All passengers and the driver shall wear seat belts.
3. Move with the flow of traffic. If you are driving slower than the cars behind you, change lanes carefully, and let them pass. Don't take chances trying to buck the traffic.
4. Drive courteously. Allow other vehicles to merge in front of you and allow others the right of way. Remember you are representing E Light Electric Services.
5. Slow down at intersections, blind corners or other dangerous situations. Begin slowing down early for signal lights.
6. Be sure to maintain a safe distance between your vehicle and vehicles in front of you according the vehicles suggested practices and the road conditions.

7. Rely on your brakes, not your horn.
8. Use your turn signals and signal your intentions in a timely manner.
9. Keep your speed and distance constant and within the posted speed limit.
10. Set your head rest to be at height of your head, this reduces neck injuries.
11. Smoking is not allowed in company vehicles.
12. Operation of a vehicle while intoxicated or under the influence of controlled substances is not allowed.
13. Operation of a vehicle while under the influence of a prescription medication if you are made aware the medication can affect your ability to operate a vehicle is not allowed.
14. Use of a cell phone, mobile text or e-mail device is not allowed while operating a vehicle. If you need to use a mobile communication device, pull over to a safe place until you are finished using the device.
15. Do not pick up hitch hikers while operating a company vehicle.
16. Company vehicles must be locked at all times while not in operation.
17. Park company vehicles in a location where they are most unlikely to sustain damage.
18. Do not park company vehicles with logo's or other company markings in locations where public perception could be negatively affected.
19. Only authorized and licensed employees may operate company vehicles and equipment. The Director of Safety and Loss Prevention will authorize drivers based on a review of their Department of Motor Vehicle record.
20. The parking brake must be set whenever the vehicle is parked.
21. All passengers must be in a designed seating location that accommodates seat belts.
22. Do not back up any vehicle when the view to the rear is obstructed unless you use personnel to guide you from outside the vehicle.
23. Report all motor vehicle violations or accidents to the Director of Loss Prevention immediately. Do not leave the scene of an accident without approval of the Director of Loss Prevention. Whenever possible, call the local law enforcement and file an accident report. Take pictures if possible of the vehicles, damage, the area and the streets around the accident and anything else that may be pertinent to the accident.
24. **Personal Vehicle:** If you are issued a company vehicle, report accidents and violations that occur while operating a personal vehicle the Director of Loss Prevention within 5 business days. The operator is personally responsible for traffic violations while driving company vehicles.
25. Drivers will immediately report any change in driver's license status including suspension, revocation or restriction.
26. Radar detectors in company vehicles are prohibited.
27. Ride only in vehicles designated for transporting personnel. Do not ride on running boards, fenders or other projections and do not extend legs, feet, arms, hands or other body parts over the edge of the truck bed.
28. Keep your vehicle clean; windows, inside cab, mirrors etc. Make sure you have good wipers and window wash is full.
29. Maintain your vehicle and keep it in good condition. It is the responsibility of the operator to ensure regular maintenance is performed on their company vehicle.

- This maintenance is to be charged to your fleet maintenance card.
30. Use of the company fleet fuel is to be restricted to fuel charges only unless prior authorization has been obtained by your Director of Loss Prevention. Any unauthorized charges will be automatically deducted from the employee's next payroll.
 31. Toll charges are the responsibility of the vehicle operator unless prior authorization has been obtained from your Director of Loss Prevention. Unpaid toll charges will be automatically deducted from the employee's next payroll if they are charged to the company.
 32. Parking expenses are the responsibility of the vehicle operator unless prior authorization has been obtained from your Director of Loss Prevention. Unpaid parking fines, charged to the company, will be automatically deducted from the employee's next payroll.
 33. Damage to a company vehicle resulting from an accident that is the fault of the employee may become the responsibility of the employee as determined by management.
 34. Company assigned motor vehicles may be used for limited and authorized personal use in compliance with this policy.
 35. Service Vans may not be used for personal use.
 36. The tool and material inventories stocked service vans may not be used for personal use.
 37. All company vehicles are the property of E Light Electric Services. E Light Electric services reserves the right to inspect, search, track and have complete access and control over company vehicles at any time at the discretion of management. Company vehicles must be delivered and made available for inspection upon request of management at any time. There is to be no expectation of privacy while operating a company vehicle.
 38. We require all personnel that operate a personal vehicle for company business such as errands and transport to meetings on company paid time to carry minimum legally required insurance on their vehicles. We require that a copy of your proof of insurance be on file with the human resources department.
 39. All personal vehicles, while parked on company property or on the premises at a company office or job site, are subject to search. Employees are expected to cooperate in this search. Failure to cooperate in a requested search may result in termination.
 40. When travel by vehicle is required outside the normal company region (Colorado) to a long term project (or return trip), it is preferred that the travel is completed during normal working hours. The company, however, does NOT authorize any employee to travel by vehicle for more than 10 hours in a day whether in or out of state.

ACCIDENTS

All accidents and incidents involving company vehicles should be reported to the Director of Safety and Loss Prevention immediately.

Failing to report a vehicular accident or incident is grounds for dismissal.

The driver shall complete an accident report and obtain all the information requested on the form. The police shall be notified and a police report filed and attached to the accident report. The accident report shall be delivered to the Director of Safety and Loss Prevention by close of business the next business day following the accident.

The operator of the vehicle shall not contact the insurance company concerning any vehicle damage or accident. The Director of Safety and Loss Prevention shall be responsible for this reporting.

Motor Vehicle Records

All operators of company vehicles and all office personnel shall have their Motor Vehicle records reviewed annually by the Director of Education and Loss Prevention. This review will result in the following decisions concerning operation of motor vehicles:

Authorization to operate a company vehicle

Authorization to operate a personal vehicle while on company business.

The Director of Safety and Loss Prevention will make decisions concerning authorization based on the following:

- The number of accidents
- The number of moving violations
- DUI or DWI convictions\
- Validity of license
- Completion of Defensive Driving Course

IMPORTANT NOTE: Personnel may be reassigned or their employment terminated if they are not able to perform their duties without driving privileges.

A person who is not authorized to operate motor vehicles or operate personal vehicles while performing company vehicles may have their status changed in the following ways:

- A request by a manager to review the person's motor vehicle record again to determine a change in status
- An annual review of motor vehicle record with a positive change in the person's motor vehicle record
- Direction of executive management for temporary special conditions
- Temporary special conditions exception at the discretion of the Director of Education and Loss prevention.

Failure to meet the requirements of this policy may result in disciplinary action including, but not

limited to, reassignment, suspension or termination.

WORK ZONE SAFETY:

- Employees in field operations are sometimes required to set up work zones on or near public roadways.
- Drivers are to pull off the road as far as possible before setting up the work zone.
- Employees must wear high visible warning vests and hard hats.
- Local law enforcement must be notified prior to redirecting traffic or impeding the flow of traffic for work operations.
- Signs and barricades are to be set up to direct traffic. (Give plenty of advance warning to oncoming traffic- 500 ft plus with signage.)
- Barricades are normally orange and white the direction of the color pointing down is the direction of the flow of traffic.
- For Example: Keep Left! Note: Colors pointing down to the left.
- The backside is the opposite.
- In heavy traffic areas or in high-speed areas barricades and signs, are not enough jersey barriers are needed.
- **Flaggers** must face oncoming traffic. Radios or some other form of communication must be used, as the flaggers can't be distracted.
- **Flaggers** must be certified traffic flaggers and trained in traffic flow patterns and safe traffic redirection.
- Back up alarms on all equipment must be working.
- Portapotties must be place where workers can safely access them.
- Always follow the direction of Flaggers.
- Have speed limits posted.
- Do not stop traffic for long periods of time if possible. This makes many drivers irritable. Road rage is very dangerous.
- Contact your Director of Loss Prevention with any questions.

MONTHLY VEHICLE INSPECTION:

All employees that are issued a company vehicle shall perform a monthly vehicle inspection, complete an inspection form and submit it to The Director of Loss Prevention, The Vehicle Coordinator and the VP of Operations by no later than the 5th day of each month or the next business day if the 5th is not a business day. This report is to be completed using iAuditor and using the Monthly Vehicle Inspection Template. Email the completed audit to jstarinshak@elightelectric.com and tsmith@elightelectric.com and jwheeler@elightelectric.com each month.

TRAINING: All drivers of company vehicles must complete a Defensive Driving course annually.

Motor Vehicle Accident Report

Your Name: _____

Date of Accident: _____ Time of Accident: _____

Location of Accident: _____

Explain the details of the accident:

Weather conditions at the time of the accident:

Your vehicle VIN number: _____

Your vehicle Make and Model and Year: _____

Your Driver's License Number: _____ State: _____

Your License Plate Number: _____ State: _____

Other Vehicles Information

Other Driver's Name: _____

Other Driver's Address: _____

Other Driver's Phone Number: _____

Other Driver's Vehicle VIN: _____

Other Driver's Make and Model and Year: _____

Other Driver's License Number: _____ State: _____

Other Driver's License Plate Number: _____ State: _____

Other Driver's Insurance Information:

Name of Other Driver's Insurance Company: _____

Other Driver's Insurance Policy Number: _____

Other Driver's Insurance Policy Expiration Date: _____

Witnesses: Name, Address and Phone Number:

Other Information:

INSPECTION CHECKLIST

NAME: _____	EQUIPMENT TYPE _____
EQUIPMENT # _____	SHIFT _____ DATE _____
MILEAGE START: _____	MILEAGE END: _____
HOURS START: _____	HOURS FINISH: _____

	CHECK IF OKAY	X IF REPAIRS ARE NEEDED		HAZARD CLASS		HAZARD CLASS
1. LIGHTS	_____	_____		_____		_____
2. WIPERS	_____	_____		_____		_____
3. HORN	_____	_____		_____		_____
4. GAUGES	_____	_____		_____		_____
5. TURN SIGNALS	_____	_____		_____		_____
6. BRAKES	_____	_____		_____		_____
7. PARKING BRAKE	_____	_____		_____		_____
8. MIRRORS	_____	_____		_____		_____
9. SEAT (S)	_____	_____		_____		_____
10. STEERING	_____	_____		_____		_____
11. WINDOW (S)	_____	_____		_____		_____
12. TIRES	_____	_____		_____		_____
13. BACKUP ALARM	_____	_____		_____		_____
14. WALKWAY (S)	_____	_____		_____		_____
15. RAILING	_____	_____		_____		_____
16. LADDER	_____	_____		_____		_____
17. FIRE EXTINGUISHER	_____	_____		_____		_____
18. DIMMER SWITCH	_____	_____		_____		_____
19. AIR LEAKS	_____	_____		_____		_____
20. FUEL LEAKS	_____	_____		_____		_____
21. SPEEDOMETER	_____	_____		_____		_____
22. HYDRAULIC LEAKS	_____	_____		_____		_____
23. LIFT CHAINS	_____	_____		_____		_____
24. FORKS	_____	_____		_____		_____
25. HOIST ROPES	_____	_____		_____		_____
26. HOOKS / SAFETY LATCH	_____	_____		_____		_____
27. BOOM	_____	_____		_____		_____
28. STABILIZER JACKS	_____	_____		_____		_____
29. RACKS	_____	_____		_____		_____
30. MUFFLER (GUARD)	_____	_____		_____		_____
31. EXHAUST LEAKS	_____	_____		_____		_____
32. BOOM ANGLE IND.	_____	_____		_____		_____
34. WEAR PADS	_____	_____		_____		_____
35. SAFETY BELTS	_____	_____		_____		_____
36. HOUSEKEEPING	_____	_____		_____		_____
37. ENGINE OIL LEVEL	_____	_____		_____		_____
38. COOLANT LEVEL	_____	_____		_____		_____
39. LPG LEAKS / LEVEL	_____	_____		_____		_____
40. BATTERY (S)	_____	_____		_____		_____
41. _____	_____	_____		_____		_____

INSPECTION REMARKS: _____

- * **CLASS A HAZARD** - A condition or practice likely to cause permanent disability, loss of life or body parts and / or extensive loss of structure equipment or material.

- * **CLASS B HAZARD** - A condition or practice likely to cause *serious injury or resulting in temporary disability or property damage that is disruptive, but not excessive.*

- **CLASS C HAZARD** - A condition or practice likely to cause *minor non-disabling injury or non-disruptive property damage.*

E Light Electric Services, Inc

Electrical Safety for DC and AC Solar Production

General Safety Procedures

E Light Electric Services, Inc

This policy and procedure is an addendum to the E Light Electric Services Energized Electrical Policy. The stricter requirement of either policy shall be used in the event of a conflict between the two policies.

This policy and procedure is to be used as base policy for all solar production plants and solar commercial installations. A specific process shall be written for each jobsite or project and shall detail exact processes to be used and PPE to be worn for that specific job site.

Purpose

This Electrical Safety program is designed to prevent electrically related injuries and property damage in Solar installations. Only employees qualified in this program may conduct adjustment, repair or replacement of electrical components or equipment. Electricity has long been recognized as a serious workplace hazard, exposing employees to such dangers as electric shock, electrocution, fires and explosions. References: NFPA 70E 2009, Electrical Safety Requirements for Employee Workplaces, National Electrical Code (NEC) 2011 and OSHA Standard (Electrical Safety) 29 CFR 1910.331 to 1910.339

Responsibilities

Management / Supervision /Corporate

- Provide training for qualified and unqualified employees

- Conduct inspections to identify electrical safety deficiencies

- Preplan all work, write job safety analysis, develop, review and approve energized work permits

- Guard and correct all electrical deficiencies promptly

- Ensure all new electrical installations meet codes and regulations

- Develop Site Specific procedure and policy for each project

Employees

Report electrical deficiencies immediately

Not work on electrical equipment unless authorized and trained

Properly inspect all electrical equipment prior to use

Hazard Control

Engineering Controls

- All electrical distribution panels, breakers, disconnects, combiner boxes, inverters, switches, junction boxes shall be completely enclosed
- Water tight enclosure shall be used where there is possibility of moisture entry either from operations or weather exposure
- Electrical distribution areas will be guarded against accidental damage by locating in specifically designed rooms, use of substantial guard posts and rails and other structural means
- Only approved personnel shall be allowed access to energized equipment and unqualified person shall not be allowed to enter an area closer than 10 feet from any energized and open panel, combiner box, inverter, etc.
- A one line diagram shall be developed that shows the feeders, disconnects, combiner boxes and inverters for the entire project. This diagram shall be developed in such a way that a qualified person may use it to determine all sources of energy on any given piece of equipment. This diagram will be turned over to the owner at the completion of the project. This diagram must be complete before any testing, troubleshooting or commissioning may proceed.

Administrative Controls

- All areas deemed to Electrically Hazardous- LIVE PARTS, by the Safety Manager, shall be marked on their entire perimeter with Red Rope. The rope shall be placed so that entry into the area cannot be accomplished without visibly and obviously crossing the red rope.
 - Only persons that have completed the projects LOTO and Electrical Hazard Training Course shall be permitted to cross into a red rope area. Personnel that have not completed this training that cross a red rope shall be permanently removed from the site.
 - All persons shall receive a pocket card signed by the instructor upon completion of the LOTO and Electrical Hazard Training and all

personnel shall have a LOTO sticker placed on their hard hat for fast identification.

- No person shall enter a RED ROPE area before submitting a RR ACCESS FORM to the Safety Manager and receiving back an approved authorization to enter a RR area. The approved authorization must be kept with any crew that has entered a red rope area. Safety team members may ask to review the authorization periodically. Any person that is in a Red Rope area that can not produce a written authorization form shall be escorted out of the red rope area and may be subject to further disciplinary action.
- Only trained and authorized employees may conduct repairs, testing, commissioning, or any work on energized electrical equipment in excess of 50 volts.
- Authorized personnel are those personnel that have a Colorado Journeyman Wireman's license **and** have completed the E Light Electric Services Energized Electrical Work course successfully.
 - The E Light Electric Services Energized Electrical Work course shall be developed and administered on Solar Projects specifically for each project. Personnel shall be required to complete the course for each project separately.
- Areas under new installation or repair will be sufficiently guarded with physical barriers and warning signs to prevent unauthorized entry. Only persons that have been approved and trained may enter into an area that contains energized equipment.
- Access to electrical distribution rooms is limited to those employees who have a need to enter and have received authorization from the E Light Wind and Solar competent person.
- All electrical control devices shall be properly labeled
- Work on energized circuits is prohibited unless the procedures of the E Light Electric Services Energize Work Policy and Procedure have been completed and all permits have been completed and approved.

Protective Equipment

- Qualified employees will wear electrically rated safety shoes/boots.
- All tools used for electrical work shall be properly insulated
- All protective equipment shall be selected for each operation based on the conditions and the job safety analysis. The PPE shall be selected by using

Tables 130.7(C)(9) and Table 130.7(C)(10) from NFPA 70E, 2009 edition.

- Electrically rated matting will be installed in front of all distribution panels, inverters, combiner boxes, etc. before any energized work is performed.
- All work shall be done in accordance with Article 120 of NFPA 70E as much as possible and work that cannot be brought to an electrical safe work condition shall be done in accordance with Article 130 of NFPA 70E, 2009 edition.

Electrical Equipment

Examination

Electrical equipment shall be free from recognized hazards that are likely to cause death or serious physical harm to employees. Safety of equipment shall be determined using the following considerations:

- Suitability for installation and use in conformity with the provisions of this subpart. Suitability of equipment for an identified purpose may be evidenced by listing or labeling for that identified purpose.
- Mechanical strength and durability, including, for parts designed to enclose and protect other equipment, the adequacy of the protection thus provided.
- Electrical insulation.
- Heating effects under conditions of use.
- Arcing effects.
- Classification by type, size, voltage, current capacity, and specific use.
- Other factors which contribute to the practical safeguarding of employees using or likely to come in contact with the equipment.
- All factors shall be listed on the job safety analysis and energized work permit before any energized may be performed.

Identification of Disconnecting Means and Circuits

Each disconnecting means for solar panels, arrays, inverters, combiner boxes and transformers shall be legibly marked to indicate its purpose. Each service, feeder, and branch circuit, at its disconnecting means or overcurrent device, shall be legibly marked to indicate its purpose. These markings shall be of sufficient durability to withstand the environment involved.

The main disconnecting means for the utility shall be clearly marked and all personnel that will be working in energized areas shall be trained as to its location and operation.

Definition of Terms

Qualified Worker: An employee trained and authorized to conduct electrical work.

Unqualified: Employees who have not been trained or authorized by management to conduct electrical work.

Authorized Worker: An employee that has successfully completed the LOTO and Electrical Hazards Training and has been authorized to enter a red rope area after submitting an RR ACCESS Form and receiving back an approved authorization form.

Electrical Competent Person

A person that is licensed as a wireman, is experienced in electrical safety and supervision and who can meet all the requirements of an OSHA competent person and who has been designated by E Light Wind and Solar to be the electrical competent person on site.

The competent person shall inspect all energized work permits, inspect all electrical PPE before each use and shall conduct a safety briefing with the work crews before any energized electrical work is performed. The competent person shall review and if they approve, sign all RR ACCESS Forms. No RR ACCESS form may be approved without the approval of the Electrical Competent Person.

The competent person shall inspect daily:

All locked out areas and equipment

All areas of work where energized equipment is present

The disconnecting means at the utility

All areas of work where energized work may be performed

Energized Work

Any work that is in areas where solar panels have been installed and work is being performed on or near cables, equipment or panels and were all of the steps of an Electrically Safe Work Condition as defined by Article 120.1 of NFPA 70E, 2009 Edition cannot be successfully completed shall be considered energized work.

Training

Training for Unqualified Employees

Training for Unqualified Employees in general electrical safety precautions to provide an awareness and understanding of electrical hazards. No person may enter an area that has solar panels installed until they have completed this training. This training shall be a part of all employees orientation.

Electrical Safety Rules for Non-Qualified Workers

1. Do not conduct any repairs to electrical equipment
2. Report all electrical deficiencies to your supervisor
- 3 Do not operate equipment if you suspect and electrical problem
4. Water and electricity do not mix.
5. Even low voltages can kill or injure you
6. Solar panels do not have an off switch. Cables, equipment and panels are energized all the time and there is a great potential of arc blast and severe electrical shock.
7. Introduction to Electrical Hazards
8. Introduction to NFPA 70E
9. Introduction to Lock Out and Tag Out

LOTO and Electrical Hazards Training for Qualified Personnel

1. Site specific requirements for Lock out and Tag Out
2. Site specific electrical hazards
3. Site one line diagram to include all disconnecting means locations, circuits, isolation of AC and DC and isolation of circuits
4. Site specific additional hazards
5. Electrical Hazards Refresher including Arc Blast

Electrical Lockout & Tagout Requirements

Application of locks and tags.

A lock and a tag shall be placed on each disconnecting means used to de-energize circuits and equipment on which work is to be performed. Except as provided for

below, a single lock shall be placed for each potentially exposed employee. Lock boxes and complex lock out procedures shall be developed for each situation where a single lock for each employee cannot be achieved due to multiple power sources. The plan shall be approved by the Vice President of Operations and the Director Education and Loss Prevention.

1. Locks shall be attached so as to prevent persons from operating the disconnecting means.
2. Each tag shall contain a statement prohibiting unauthorized operation of the disconnecting means and removal of the tag.
3. A tag or label shall be placed on each lock to identify when it was placed and by whom.
4. A supervisor's lock may be placed on equipment as a shift continuation lock only. It may not be used as a LOTO device. Each employee must place their individual lock on the disconnecting means.
5. Each employee shall remove their lock from the disconnecting means when they are no longer exposed to the hazard. Employees may not leave their locks in place overnight or between shifts.

Working at Elevated Locations

Any person working on electrical equipment on a crane or other elevated must take necessary precautions to prevent a fall from reaction to electrical shock or other causes. A second person, knowledgeable as a safety watch, must assume the best possible position to assist the worker in case of an accident. Portable ladders shall have non-conductive side-rails if they are used where the employee or the ladder could contact exposed energized parts.

General Protective Equipment and Tools

General Protective Equipment and Tools shall be used when in the proximity of, or working on, exposed energized parts. The following rules apply:

1. When working on or near exposed energized parts, Qualified Employees shall use insulated tools or handling equipment suitable for the voltage present and working environment. In cases where the insulation may be damaged, a protective outer layer should be employed.
2. Fuse handling equipment, insulated for the circuit voltage, shall be used to remove or install fuses when the terminal is energized.
3. Ropes and other hand-lines used near exposed energized equipment shall be non-conductive.
4. Discharge sticks and proximity testers shall be used to ground conductors that have been energized if the conductors operate at over 600Vs.

5. Each conductor shall be tested with an operable and verified meter to ensure it is de-energized before discharging the conductor to ground.
6. Work on de-energized equipment that normally operates at 600V or greater requires the use of grounding chains and each phase shall be grounded in accordance with recognized safety practices as defined by American Lineman's Handbook prior to any work being done.
7. A written procedure shall be submitted and approved by the Director of Education and Loss Prevention and the Vice President of Operations before any work may be done on energized equipment or cables may be performed.

Warnings and Barricades

Warnings and barricades shall be employed to alert unqualified Employees of the presence of dangers related to exposed energized parts. The following rules apply:

1. Safety signs, warning tags, etc., must be used to warn Unqualified Employees of the electrical hazards present, even temporarily, that may endanger them.
2. Non-conductive barricades shall be used with safety signs to prevent Unqualified Employees access to exposed energized parts or areas.
3. Where barricades and warning signs do not provide adequate protection from electrical hazards, an Attendant shall be stationed to warn and protect Employees.
4. Red Rope shall be used to barricade all areas that have been determined to be Hazardous and Live by the Site Safety Manager.

Standard Operating Procedure

Electrical Pre-Work Procedure

Except in extreme cases, work on electrical equipment will be done with all electrical circuits in the work area de-energized by following the Lockout/Tagout procedure. When working on or near energized electrical circuits with less than 50 volts to ground, the equipment need not be de-energized if there will be no increased exposure to electrical burns or to explosion from electric arcs.

To prepare for work on electrical systems or components, the following procedure applies:

Caution: Treat all electrical circuits as "Live" until they have been Tagged and Locked Out and tested by the following procedure.

1. Obtain permission from supervisor to conduct work

2. Prepare a Job Safety Analysis and brief the crew on the hazards
3. Lockout and Tagout all sources of electrical power in accordance with site procedures and log all Lockout devices in the Lock-Out Log.
4. Verify de-energized condition before any circuits or equipment are considered and worked as de-energized.
 - A. A qualified person shall operate the equipment operating controls or otherwise verify that the equipment cannot be restarted.
 - B. Verify proper operation of the Voltmeter at a live electrical source of the same rated voltage as the circuit to be worked.
 - C. Using the Voltmeter, check all exposed circuits phase to phase and phase to ground for evidence of voltage/current in the circuit.
 - D. Conduct work on the circuit only after determining that there is no voltage in any of the exposed circuits.
 - E. If the conductors or equipment are operating at over 600V, the conductors must be grounded to ensure any stored charges are discharged.
 - F. If voltage is detected in any exposed circuit, STOP, inform supervisor and determine source and procedure to eliminate voltage.
4. Conduct work
5. Close up all exposed circuits, boxes, controls, equipment.
6. Remove Lockout/Tagout devices and record on the Lock Out Log
7. Obtain supervisor permission to energize circuits

Standard Operating Procedure

Working on or Near Exposed Energized Circuits

In the rare situation when energized equipment or working in near proximity to energized equipment that cannot be de-energized, the following work practices must be used to provide protection:

Caution: Unqualified Employees are prohibited from working on or near exposed energized circuits.

1. Obtain permission from Manager to work on or near energized electrical circuits by completing an energized work permit and obtaining all reviews and approvals as required by energized work practices policy.
2. Lockout and Tagout all circuits possible

3. Treat all circuits as energized.
4. Remove all conductive clothing and jewelry (rings, watches, wrist/neck chains, metal buttons, metal writing instruments, etc.).
5. Use proper personal protective equipment, shields and/or barriers to provide effective electrical insulation from energized circuits. This may include electrically rated insulated gloves, aprons, rubber soled shoes, insulated shields, insulated tools, etc.
6. Provide adequate lighting. Do not enter areas with exposed energized parts unless illumination (lighting) is provided so that Employee may work safely. Do not reach around obstructions of view or lighting (blindly) into areas where exposed energized parts are located.
7. Employees entering a Confined Space with exposed energized parts, must use protective barriers, shields, or equipment or insulated materials rated at or above the present voltage to avoid contact.
8. Doors or other hinged panels shall be constructed and secured to prevent them from swinging into an Employee and causing contact with exposed energized parts.
9. Housekeeping in areas of exposed energized parts may not be completed in areas with close contact unless adequate safeguards (insulation equipment or barriers) are present. Conductive cleaning material (Steel Wool, Silicon Carbide, etc.) or liquids may not be used unless procedures (Lock and Tag Out, etc.) are in place and followed.
10. Station a safety observer outside work area. The sole function of this person is to quickly de-energize all sources of power or pull worker free from electrical work area with a non-conductive safety rope if contact is made with an energized electrical circuit.
11. A person qualified in CPR must be readily available to the scene.

Standard Operating Procedure

Re-energizing Electrical Circuits After Work Completed

These requirements shall be met, in the order given, before circuits or equipment may be reenergized, even temporarily.

1. A qualified person shall conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuits and equipment can be safely energized.
2. Warn employees exposed to the hazards associated with reenergizing the circuit or equipment to stay clear of circuits and equipment.

3. Remove each lock and tag. They shall be removed by the employee who applied it or under his or her direct supervision. However, if this employee is absent from the workplace, then the lock or tag may be removed by a qualified supervisor designated to perform this task provided that:

A. The supervisor ensures that the employee who applied the lock or tag is not available at the workplace, and

B. The supervisor ensures that the employee is aware that the lock or tag has been removed before he or she resumes work at that workplace.

4. Conduct a visual determination that all employees are clear of the circuits and equipment.

SAFETY MEETING AND SAFETY MEETING TOPICS

GUIDELINES FOR SAFETY TRAINING MEETINGS

Supervisor is responsible for assuring and monitoring Safety Training Meetings on a weekly basis. The Supervisor should assign one or two employees to conduct a weekly safety meeting. Supervisors should conduct Special Safety Meetings as soon as possible when a serious accident, incident or potential problem exists on-site. The Director of Safety and Loss Prevention may, at his discretion, declare Safety Stand Downs and direct specific training be conducted. All employees, supervisors and sub-contractor's employees on site the day of a meeting shall attend the meeting and sign the meeting record. All personnel shall attend the meeting wearing all their PPE and dressed ready for work. The weekly safety meeting will be conducted immediately following that mornings stretch and flex.

NOTE: Each project will conduct a morning stretch and flex as a crew. Immediately following the morning stretch and flex, the crews will break up and meet with their individual foremen for the daily JHA briefing. The daily JHS briefing is not to be held as an entire group. There is not to be an announcement period daily as a group. Announcements will be given by individual foremen to their crews. The only all hands meetings will be held once per week and additional meetings at the Direction of the Director of Safety and Loss Prevention.

Sub-contractors on site the day of the E Light weekly safety meeting are required to have their employees attend our weekly safety meeting.

These meetings are an essential element of the Company's Safety, Health, and Environmental Program (SHEP). It is a proven fact that Companies, which conduct good meetings, attain better safety records than those that have poor, or no safety meetings.

In order to assist in the preparation of material and in presenting safety-training meeting, the following guidelines are provided.

PREPARING FOR THE MEETING

The Director of Safety And Loss Prevention will write a safety meeting each week and send out to supervision. Be sure to review the safety meeting and prepare beforehand. You may need demonstration material. Be sure you are completely familiar with the topic of discussion before holding the safety meeting. Be sure to consult with the Director of Safety and Loss Prevention if you are going to cover a different topic at a safety meeting other than the one sent to you. This topic must be approved in advance.

Schedule the meeting at the same time every week, if possible, and hold it right in the work area. These meetings are generally 5 to 15 minutes in length so seating is not important. However, make sure everyone can easily see and hear the speaker. A good time to hold the meeting is just after shift begins, immediately following the lunch break or before receiving payroll.

Just prior to the meeting, gather all the material and/or equipment the speaker will need. When possible, use actual demonstrations to illustrate the points. For example, if you are talking about fire extinguishers, have one with you to show what it looks like and how it is used. Have a mushroomed tool head or a broken hammer handle to show how they can cause accidents. If necessary, get someone to help you.

The entire crew or department shall be present before the meeting is started.

Be sure that an employee assigned to deliver a safety meeting has read this entire document and is prepared to deliver the safety meeting correctly. We do not need to have someone stand in front of the group and read a piece of paper.

CONDUCTING THE MEETING

- Start on time. You lose interest if delays occur.
- Make the meeting short and to the point. However, if you get a good discussion going, use discretion whether to continue.
- Start by complimenting the men on some recent good work.
- Give the talk in your own words.
- Get the employees to participate in the meeting. The purpose of these meetings is to get workers to think about safety problems. Encourage them to offer suggestions for improving safety in the work area or your craft.
- Maintain control. Do not allow the meeting to develop into a wasteful, time-consuming "bull session".

OTHER ITEMS TO COVER IF APPLICABLE

Review any injury or near miss incident any crewmember had during the past week or a Special Safety Meeting topic identified by E Light. Discuss: what the injury was, how it happened, and how it could have been prevented and steps to be taken to prevent reoccurrence.

Review safety violations noted during the past week. Discuss: the nature of the violation, the danger involved and offers constructive criticism without naming anyone in particular.

Review the work planned for the week ahead. Discuss hazards to avoid or control, safety equipment to be used, and safe procedures to be followed.

Be sure to cover the announcements in the safety meeting each week.

Ask the employees if they experienced any rework during the previous week and the cause of the rework. Be sure to note the responses on the sheet. This information is not to lay blame. It is used to track rework, determine primary causes and find new mitigations for reducing our rework in the field.

RECORD KEEPING REQUIREMENTS

Have each employee sign the attendance sheet (Safety Meeting Record, Form attached) at the conclusion of the meeting and the person conducting the meeting must sign it. The completed sheet must be faxed or e-mailed to the Director of Safety and Loss Prevention's designated coordinator after each meeting and the original kept on file in the construction office.

Temporary Heat & Devices

Philosophy

Objectives:

The primary objective to this policy is to reduce the hazards associated with temporary power, lighting, heat and heating devices. We strive to eliminate the possible loss due to injury, illness or loss due to fire and property damage. Temporary heat is normally for a period of less than 90 days. Supervisors shall review the installation before any temporary power is supplied. The temporary power plan shall be coordinated with the general contractor and both parties shall agree on a plan for providing temporary power to the construction project prior to installation.

Policy

Types of temporary power, lighting, and heating devices, including, but not limited to: Salamanders, LPG heaters, Oil-fired heaters and electric heaters.

References include but are not limited to CFR 1910.110 and CFR 1926. 153 and 154, NFPA 101.

General Procedures

The supervisor on the project is responsible for ensuring that safe measures are followed and necessary emergency equipment (fire extinguishers, first aid kits, etc.) are available for use.

The supervisor shall insure that ventilation is supplied in sufficient quantities to maintain the health and safety of the employees working in the area. When heaters are used in confined spaces, special care must be taken in order to ensure proper ventilation and combustion is maintained and the health and safety of the employee's air supply is monitored.

Prevention

To prevent shocks from your own tools and equipment, make sure power tools have a 3-wire cord and are grounded (double-insulated tools don't need a ground). Check power tools and cords daily for cracks, exposed wire, and breaks in the insulation. Tag faulty items and send them for repair. If a power tool buzzes, report it immediately and have an electrician check it out. Either the wiring or the tool itself may be defective. Store cords and tools neatly in a safe place to prevent damage. Don't touch any electrical equipment when the equipment is wet, you're wet, you're sweating, or you're standing on a wet surface. Moisture lowers your resistance. That can make your injury worse if you get a shock. Don't touch any electrical equipment if you're in contact with good conductors like metal pipes, tanks, or boilers.

When working with electrical cords, never remove the third prong (the ground prong) from a plug. Never force plugs into receptacles that don't match. Never use an adapter (3-prong plug to 2-hole outlet) that isn't grounded. Never use ordinary extension cords. Use 3-wire cords intended for heavy duty. Never splice flexible cords together. Never overload a power box. If the circuit breaker trips, there's usually too much plugged in. Never unplug them to "borrow" the outlet, and never run extra lines off the light circuits.

General

Clearances:

Temporary heaters must be at least 6 ft. from the LPG bottle or gas container; all hoses and connections shall be capable of with standing 250 lbs. of pressure, without failure.

Clearances for temporary heaters from buildings shall be not less than 12 inches on sides and rear. If two or more heating units are used in the same area they must be separated by 20 ft.

In the vicinity of combustibles, tarpaulins, canvas or similar coverings, the heater shall be located at least 10 ft. from the covers. When any heater is resting on combustible floors or materials, the heater must be insulated by an insulating material or at least 1-inch concrete.

The insulating material must extend beyond the heater, in all directions by at least 2 ft. Note: at least a 20BC fire extinguisher shall be in the area.

Prohibited:

Solid fuel salamanders will not be used in buildings or on scaffolds.

Storage of LPG within any building or structure is prohibited. No LPG bottles can be stored in the building unless they are connected for use.

Storage of the LPG bottles shall be at least 12 ft from the buildings.

Non approved containers of any type are prohibited to be used for flammables or combustibles.

Not more than 735 lbs. of a LPG can be used on any floor or area in a building can be used at any one time.

NOTE: LPG is heavier than air.

Safety devices:

All combustible or flammable storage containers shall have safety relief devices.

Shut off valves must be located between the container and the heating devices.

.All Portable heaters, including salamanders, shall be equipped with an approved automatic device to shut off the flow of gas to the main burner, and pilot light if used, in the event of flame out.

Systems having a water capacity of 2 and ½ lbs. (nominal 1 lbs. LPG) shall be equipped with excess flow valves. Such control valves shall be either integral with the container valves or in the connections to the container valve outlet.

Wiring

When inspecting temporary wiring, ask yourself the following questions:

- Can temporary wiring safely carry the amount of current required?
- Is there a circuit breaker to prevent overload?
- Are all temporary wiring installations grounded?
- Are wiring and equipment in safe condition and secured firmly? Do all conductors have insulation?

- Are switches labeled clearly, showing what they control and which position is off? Do boxes and fittings have covers or barriers to prevent contact with live parts?
- Is temporary wiring used only for periods of less than one year (unless special state permission is obtained)? Is it removed promptly when construction is done or when the permit time expires?

Before beginning repair work on wiring, wiring and equipment must be de-energized. Energy must be dissipated from devices (like capacitors) that store it. Wiring and equipment must be locked or tagged out. All affected personnel in the area must be notified.

Never use temporary wiring in the following places: damp or wet areas, extremely hot or cold areas, or on sheet metal or lath unless listed for the use and protected from physical damage. Do not use temporary wiring anywhere vehicles or equipment might run over it, near gases or fumes that might make it deteriorate, over sharp edges or projections that could damage it, or at pinch points unless protected adequately from damage.

Temporary wiring is usually low voltage (under 600 volts). Injuries caused by a low voltage shock include: fibrillation (a fast, irregular heartbeat), burns, injury due to falling.

If someone gets an electric shock, don't touch the person until power has been disconnected. Call 911. Give immediate first aid or CPR if necessary, but only if you know what you're doing. Calm and reassure the injured person. Don't move them until trained help arrives. Notify on-site first aid personal or a supervisor as soon as possible.

All splices in temporary power system wiring shall be made in an approved enclosure, utilizing an approved cover and shall be made with approved connectors.

GFCI Grounding System

A GFI is a ground fault circuit interrupter. It senses ground faults (accidental electrical paths to ground) and cuts off all power in the circuit. For example, if there is a short in a power tool, the metal casing can become "live." A GFI will cut off power before you can get a serious shock.

5.7.2 Assured grounding shall be required and maintained according to the assured grounding policy and the assured grounding procedure.

Monthly tests and inspections shall be performed and recorded according. A copy of the test and inspection shall be filed monthly with the corporate office and the general contractor. The following items shall be included in the monthly test and inspection:

- Power distribution panels
- Turtles
- All extension cords and power cords
- All plug attachments
- All power tools and equipment

NEC Requirements

All temporary installations shall meet the minimum requirements of the currently adopted version of the National Electrical Code. Refer to the Article 590 for further details.

All temporary installations shall be planned and coordinated so as to meet the minimum requirements of the NEC and OSHA.

Temporary lighting systems shall be supported by only non-conductive materials.

All egress lighting systems shall provide a minimum of 5 foot candles per square foot. The means of egress for site shall be defined by the superintendent in cooperation with the general contractor before installation of temporary power and both parties shall agree in advance as to the entrance and exit routes for the construction project.

LPG

Containers having a water capacity greater than 2 ½ pounds (nominal 1 pound LP-Gas capacity) connected for use shall stand on a firm and substantially level surface and when necessary shall be secured in an upright position. When securing any flammable bottle it is a good idea to secure with wire, chain or something that will not burn.

All LPG bottles shall be protected from vehicle traffic; precautions against such damage shall be taken. Examples would be a dike, concrete barriers or a fence 4-ft high.

No weeds and combustibles should accumulate in this area. No smoking and open flame signs need to be posted.

The distance from buildings and openings depends on the size of the container, but a good general rule of thumb is to keep the LPG bottles 12-ft from the building. If a question arises it can be looked up according to size in table F-31 in 29 CFR 1926.153.

NOTE: Temporary means not more than 6 months.

Carbon Monoxide

With most fuels, Carbon Monoxide is always a problem. Each area must have some general or natural ventilation. If the area does not have ventilation, you may have to go back to electric heat.

Training

We require that all E Light personnel who are assigned to use temporary heat be trained in the safe operation and limitations of the specific type of heaters being used.

This training should include the types of hazards involved, along with the safe operation. If equipment is rented the rental company should review safe operation prior to the time of delivery.

SELF-INSPECTION CHECKLIST FOR TEMPORARY HEATING

NAME	DATE
JOB-SITE	OR LOCATION

Fire Prevention

Temporary heaters must be at least 6' from LPG bottles or gas containers.

Standard	Needs Corrected	Hazard Class
----------	-----------------	--------------

Clearances for temporary heaters from building walls shall not be less than 12" on all sides and rear.

Standard	Needs Corrected	Hazard Class
----------	-----------------	--------------

Tarpaulins, canvas or similar coverings must be located at least 10' away.

Standard	Needs Corrected	Hazard Class
----------	-----------------	--------------

2 or more heating units used in same area must be separated by 20'.

Standard	Needs Corrected	Hazard Class
----------	-----------------	--------------

Combustibles, Tarpaulins, canvas and similar coverings shall be at least 10' from heaters.

Standard	Needs Corrected	Hazard Class
----------	-----------------	--------------

Heaters sitting on combustible floors shall be set on at least 1" insulating material that extends beyond the heater by at least 2'.

Standard	Needs Corrected	Hazard Class
----------	-----------------	--------------

Is at least a 20BC Fire extinguisher in the area, at least within 75' on same level?

Standard	Needs Corrected	Hazard Class
----------	-----------------	--------------

PROHIBITED USE OF TEMPORARY HEAT

Solid fuel salamanders will not be used in buildings or on scaffolds.

Standard	Needs Corrected	Hazard Class
----------	-----------------	--------------

Storage of LPG inside any building or structure is prohibited. (Not connected for use)

Standard	Needs Corrected	Hazard Class
----------	-----------------	--------------

Non-approved containers of any type can not be used for flammables or combustibles.

Standard	Needs Corrected	Hazard Class
----------	-----------------	--------------

Not more than 735 lbs. of LPG can be used on any floor or area with in a building, at any time.		
Standard	Needs Corrected	Hazard Class

SAFETY DEVICES

All containers shall have a shut off valve and handle in place.		
Standard	Needs Corrected	Hazard Class

Containers shall sit firmly on the ground or be secured in an upright position. (Secured with wire or chain)		
Standard	Needs Corrected	Hazard Class

All LPG bottles shall be protected from vehicular traffic. (Fence, barricade)		
Standard	Needs Corrected	Hazard Class

LPG outside of buildings shall be at least 12' from the building.		
Standard	Needs Corrected	Hazard Class

No weeds or combustible material can accumulate within 10' of the LPG bottle.		
Standard	Needs Corrected	Hazard Class

Is the area ventilated or some means of ventilation provided to keep Carbon Monoxide vapors from accumulating.		
Standard	Needs Corrected	Hazard Class

All parts of LPG must be capable of holding with out failure 250 lbs., of pressure.		
Standard	Needs Corrected	Hazard Class

Is this heater being used as it was designed? (Was it designed for this purpose.)?		
Standard	Needs Corrected	Hazard Class

Are all fittings tight? (Use soapy water, not a match or flame to check)		
Standard	Needs Corrected	Hazard Class

Welding on LPG containers is prohibited.		
Standard	Needs Corrected	Hazard Class

Fueling of LPG must be completed at least 10' from any building or structure.

Standard

Needs Corrected

Hazard Class

All flammable or combustible fuel storage tanks must have a safety relief or vent.

Standard

Needs Corrected

Hazard Class

Temporary heating devices used in confine spaces must be approved for that purpose.

Standard

Needs Corrected

Hazard Class

All temporary heaters must sit horizontally, level and be stable. (Unless permitted by manufacture)

Standard

Needs Corrected

Hazard Class

All electric heaters must be plugged into a GFCI.

Standard

Needs Corrected

Hazard Class

OTHER COMMENTS:



EXCAVATION SAFETY

OVERVIEW

Part 1926 of 29 CFR Subpart P - Excavations - OSHA Federal Register, was amended October 31, 1989. Strict compliance with this Standard is required, and may take some unusual ways to comply.

The new standard states that a competent person must first classify the soil by using one, visual test, and two manual tests. The competent person shall do an inspection each day prior to entry. Once the test is complete, the standard allows several different options of sloping or benching. The spoil pile must be retained back from the edge of the excavation by at least two feet. All employees working in the excavation shall wear hard hats and when the excavation is close to vehicle traffic all employees shall wear highly visible vests. Before any employees enter the excavation a means of egress shall be used and maintained at least with in twenty-five feet of the employees working. If you have any questions on an excavation or the excavation standard consult with your supervisor.

PURPOSE:

Is to define a general guideline for work to be performed in open excavations made in the earth's surface. It is **E Light** policy to provide a safe and healthful work place to the extent of providing methods of protecting employees against cave-ins and describes safe work practices for employees during excavations and trenching operations. All excavations must be in compliance with established OSHA rules and Regulations 29 CFR 1926 Subpart P.

DEFINITIONS APPLICABLE

- **Accepted Engineering Practices:** Requirements, which are compatible with standards of practice, required by a registered professional engineer.
- **Bell Bottom Pier Hole:** Type of shaft or footing excavations, the bottom of which is made larger than the cross section above to form a belled shape.
- **Benching:** Method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.
- **Cave-in:** Separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system. The soil its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury or otherwise injure and immobilize a person or persons.
- **Excavation:** Any man-made cut, cavity, trench or depression in the earth's surface, formed by earth removal.
- **Hazardous Atmosphere:** Atmosphere with potential of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient or otherwise harmful, may cause death or illness or injury.
- **Sloping:** A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factor as the soil type, environmental conditions of exposing and application of surcharge loads.

- **Tabulated Data:** Tables and charts approved by a registered professional engineer and used to design and construct a protective system, or create a safe working environment in an excavation.

GENERAL

Surface encumbrances that are located so as to create a hazard to employees shall be removed or supported as necessary to safeguard employees.

Underground utilities such as water, sewer, telephone, fuel, electric, and others shall be determined prior to opening an excavation.

Means of egress from an excavation or trench such as a stairway, ladder, ramp or other safe means of egress shall be located so as to require no more than 25 feet of lateral travel for employees working in the excavation or trench.

Employees exposed to vehicular traffic shall wear warning vests of high-visible reflective material.

All employees working in an excavation shall wear head protection (hard hats).

No employees shall be permitted underneath loads handled by lifting or digging equipment.

Employees shall be protected from loose rock, or soil that could pose a hazard by falling or rolling from an excavation face or side.

Employees working in excavations shall be protected from cave-ins by an adequate protective system designed in accordance with the OSHA rules and regulations.

Appropriate eye protection shall be worn when machines or operations present potential eye or face injuries.

Where employees or equipment are permitted to cross over excavations, walkways or bridges standard guardrail or fall protection shall be used.

INSPECTIONS

Supervisors must conduct daily inspections of excavations, the adjacent areas, and any protective systems used. The purpose of the inspection is to look for evidence of any situation that could result in a possible cave-in, or other hazardous conditions.

See Inspection Checklist for Classification:

inspections should be conducted prior to the start of work and as needed throughout the shift.

At which time the supervisor finds evidence of a situation that could result in a possible cave-in, indication of failure of a protective system, hazardous atmosphere or any other hazardous condition, exposing employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

NOTE: For protective systems, soil classifications, and other specific details about excavations reference 29 CFR 1926 Subpart P.

APPENDIX FOR SLOPING AND BENCHING FOLLOWS:

SLOPING, SHIELDING AND BENCHING

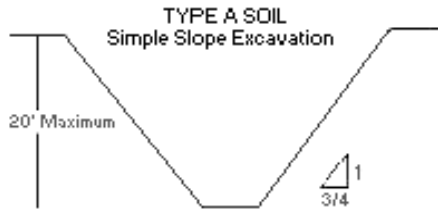


Figure 1 – Normal Sloping Configuration for a “type A soil” open over 24 hours.

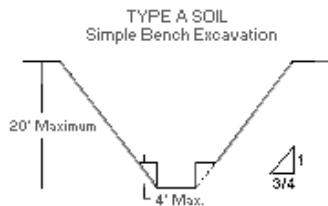


Figure 2 – Normal Sloping Configuration for a “type A soil” open over 24 hours with a bench.

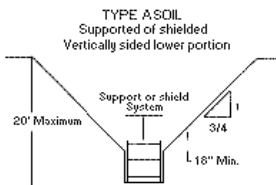


Figure 3 – Normal Sloping Configuration for a “type A soil” open over 24 hours with a trench box.

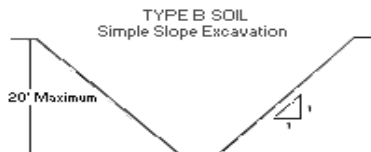


Figure 4 - Normal Sloping configuration for a “type B soil”.

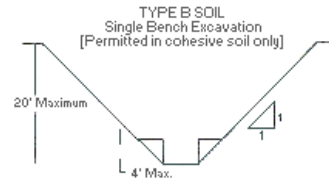


Figure 5 – Normal Sloping Configuration for a “type B soil” with simple bench.

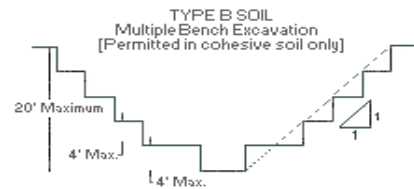


Figure 6 - Benching System for a “type B soil”.

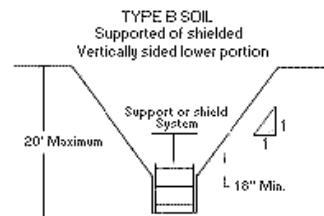


Figure 7 – Normal Sloping Configuration for a “type B soil” with a trench box.



Figure 8 – Normal Sloping Configuration for a “type C soil”.

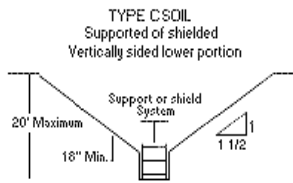
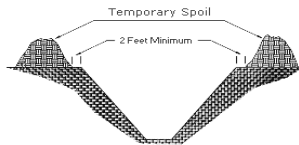
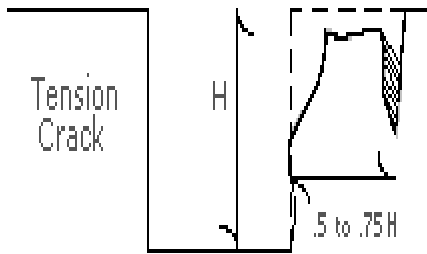


Figure 9 – Normal Sloping Configuration for a “type C soil” with a trench box.

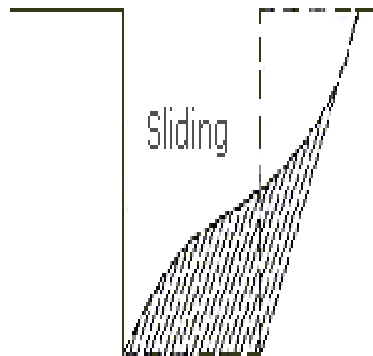


Spoils Management System Must be at least 2 feet from edge of excavation.

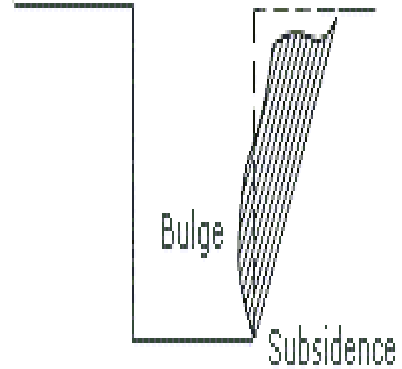
COMMON Hazards Found in Excavations



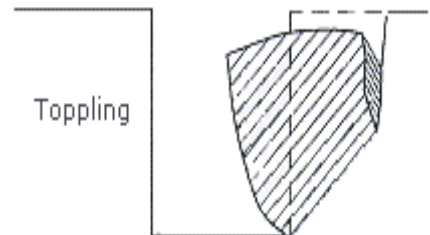
Tension Crack Resulting in a Cave-in.



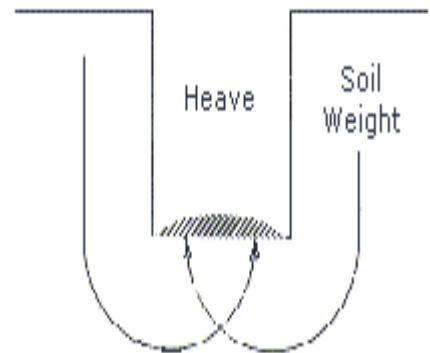
Sliding Material resulting in a Cave-in.



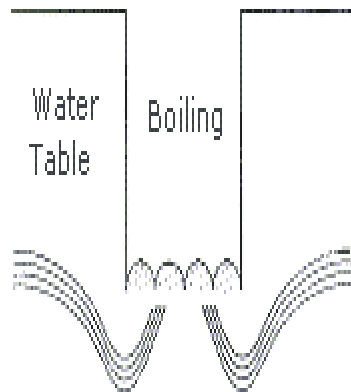
Trench Wall Bulging and can result in a Cave-in.



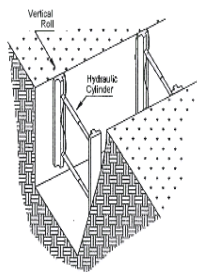
Trench Wall Toppling into Excavation.



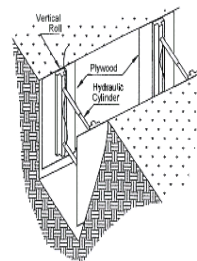
Material Heaving into Trench from Bottom.



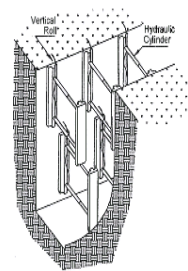
**Water Entering Trench from Water.
COMMON PROTECTIVE SYSTEMS**



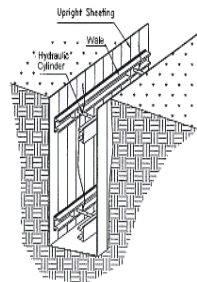
Vertical Aluminum Hydraulic Shoring (Spot Bracing)



Vertical Aluminum Hydraulic Shoring (With Plywood)

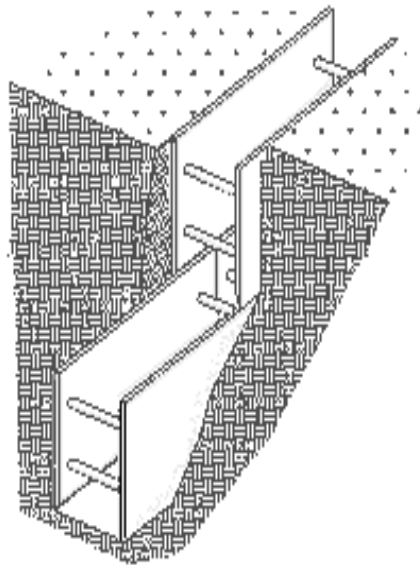


Vertical Aluminum Hydraulic Shoring (Stacked)

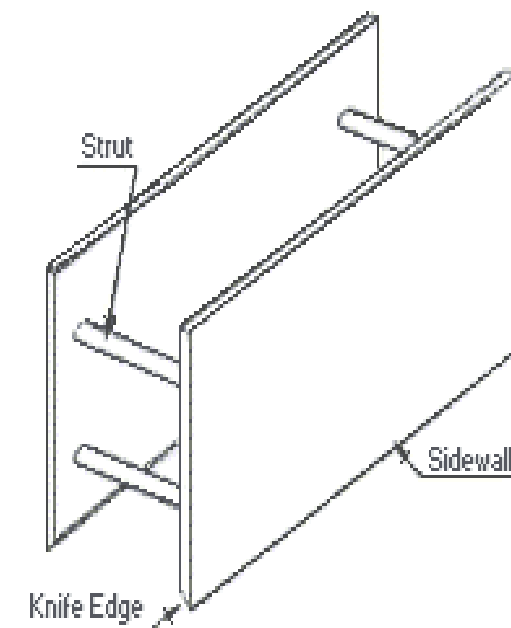


Aluminum Hydraulic Shoring Water System (Typical)

**Aluminum Hydraulic Protective Systems and in place for trenches that can't be sloped,
Reminder you must use at least 3 shores minimum!
Two used to create work area and one for egress.**



Trench Boxes Stacked and in place for trenches that can't be sloped



Trench Box Parts

Each Box must be inspected prior to beginning work in them.

Inspect the above for cracks, look for damaged weld joints or weakened areas.

Some have ladders built in them inspect the ladders to ensure they are safe for use.

Gunite is another approved method of protection, normally contracts out the work to be performed and dries relatively quickly. In many cases much less expensive then renting trench boxes or shielding systems. Gunite is a sprayed on cement type product that is sprayed on the sides of the excavation, sometimes it is sprayed over a support system such as pins, wire and netting.

EXCAVATION INSPECTION REPORT

COMPETENT PERSON:		DATE:	
JOB:	LOCATION:	WEATHER:	

1. VISUAL TEST: (NOTE: ONE VISUAL AND ONE MANUAL TEST ARE REQUIRED)

TRENCH OR EXCAVATION INSPECTION (REQUIRED DAILY)			SOIL IS: COHESIVE _____ GRANULAR _____ CLAY _____		
TRENCH IS:	YES	NO	SOIL IS:		
SUBJECT TO VIBRATION			MOIST	YES	NO
FISSURED OR CRACKS ARE PRESENT			DRY	YES	NO
CAVED-IN			A YES ANSWER BELOW MEANS THE SOIL CAN NOT BE A <input type="checkbox"/> TYPE A SOIL. <input type="checkbox"/>		
LAYERED					
SOIL EXHIBITS:			WET	YES	NO
PRIOR EXCAVATION			SATURATED	YES	NO
EXCAVATED SOIL CRUMBLES EASY			SUBMERGED	YES	NO
A YES ANSWER ABOVE MEANS THE SOIL CANNOT BE A "TYPE A SOIL."			LEFT BLANK		

2. SOIL CLASSIFICATION: MANUAL TEST

Thumb penetration test: Thumb can penetrate less than ¼ inch or less Type A soil. Thumb penetrates from ¼ to 1 inch Type B soil. Thumb penetrates an inch or more type C soil	¼ or less: Yes ¼ to 1 inch Yes Over 1 inch Yes	No No No	If yes Type A (¾ to 1) 53 degrees If yes Type B (1 to 1) 45 degrees If yes Type C (1 ½ to 1) 34 degrees
---	--	----------------	---

SOIL TYPE: _____	TRENCH DEPTH: _____	PROTECTION: TRENCH BOX _____ SLOPE _____ SLOPE < _____
FOR SPECIAL CONDITIONS SUCH AS EXCAVATIONS LESS THAN 12 FT DEEP, SEE 29 CFR 1926.650 TABLE B-1 A SHORT-TERM MAXIMUM ALLOWABLE SLOPE OF ½ TO 1 (63 DEGREES) IS ALLOWED IN TYPE A SOIL THAT IS 12 FT OR LESS IN DEPTH.		

3. GENERAL TRENCH SAFETY:

CHECKLIST	YES	NO	IF YES: DO
EXISTING UTILITIES ARE PRESENT			CALL 811 or go to http://call811.com/811-your-state
THERE IS A POTENTIAL HAZARDOUS ATMOSPHERE			CALL SAFETY MANAGER AND TEST AIR BEFORE ENTERING
THE TRENCHES ARE MORE THAN FOUR (4) FEET DEEP			HAVE RAMPS/LADDERS WITHIN 25 FEET OF WORK AREA
THE TRENCHES ARE DEEPER THAT FIVE (5) FEET DEEP			SLOPE, SHIELD, OR SHORE THE EXCAVATION
THE TRENCHES ARE DEEPER THAN TWENTY (20) FEET DEEP			HAVE TRENCH DESIGNED BY REGISTERED PROFESSIONAL ENGINEER
THE SPOIL PILES ARE WITHIN TWO (2) FEET FROM THE EDGE OF THE TRENCH			MOVE SPOILS, MATERIALS, AND EQUIPMENT BACK TWO (2) FEET
THERE ARE BUILDINGS OR OTHER STRUCTURES NEAR THE TRENCH			HAVE AN ENGINEER CHECK AND DOCUMENT THEIR STABILITY
ELECTRIC PUMPS ARE USED FOR DEWATERING			MAKE SURE THEY ARE PROPERLY WIRED AND GROUNDED
TRENCH BOXES, SHORING, OR SHIELDS ARE BENT OR BROKEN			REPLACE EQUIPMENT AS REQUIRED
TRENCH BOXES ARE FLUSH WITH TOP OF TRENCH			BOXES MUST EXTEND ABOVE THE TRENCH A MINIMUM OF EIGHTEEN (18) INCHES
IS THERE A TRENCH BOX CERTIFICATE ON SITE			WHERE:
ARE BARRICADES, TAPE, OR SIGNS NEEDED			WHERE:
ARE WORKERS SUBJECT TO VEHICLE TRAFFIC			SUPPLY SAFETY VEST AND BARRICADES IF NECESSARY
SOMEONE IS WORKING IN A TRENCH ALONE			HAVE A TOP MAN PRESENT AT ALL TIMES

VISUAL AND MANUAL TESTS MUST BE MADE DAILY PRIOR TO START, OR WHEN CONDITIONS CHANGE DURING THE DAY

Inspection Checklist

Date: _____ Time: _____ Location: _____ Competent Person: _____

Job Site Description

Area Congested YES NO Right of Way & Clearance O.K. YES NO
 Trench Depth: _____ Width: _____ Length: _____
 Crossing Trench or Excavation Power Lines _____ Roads _____ / Alley _____
 Parallel to Trench or Excavation Power Lines _____ Roads _____ / Alley _____
 Overhead Power lines YES NO Water in Excavation Trench YES NO
 Utilities Companies Notified YES NO Utilities Marked or Staked YES NO
 Comments: _____

TRENCH / EXCAVATION INSPECTION

Soil Type A B C Spoil Pile Angle: _____
 Slop Angle: _____ Benching Angle: _____
 Manual Soil Tests (Circle what applies)
 Plasticity & Pat test- Fissured Cohesive Granular Is Excavation less
 Dry Strength Fissured Cohesive Granular then 5' in depth
 Drying Fissured Cohesive Granular YES No
 Thumb Penetration- Type A ___ 1/4" or less Has the Soil been
 Type B ___ 1/4" to 1" previously disturbed
 Type C ___ 1" or more YES Type One Less
 NO Same Class
 Pocket Pentrometer Results _____

Visual Tests

	Cohesive	Granular
	Type A or B	Type C
Spoil Pile	Remains in Clumps: _____	Breaks up easily _____
	Fine Grained Clay _____	Coarse Grained _____
		Silt, Sand or Gravel
Excavation Sides	Stands Vertical _____	Sloughs in Trench _____
	for over 2 hrs	
	Fine Grained Clay _____	Coarse Grained _____
		Silt, Sand or Gravel

Fissures - Excavation Side (Cracks or Spalls) _____
 Fissures - Top of Excavation (Cracks or Openings) _____
 Soil Layers Slope into Excavation 4:1 or Steeper _____
 Rock Layers above Soil Layer _____
 Vibration Sources YES NO If yes downgrade one class or Type: _____
 Unusual Circumstances: _____
 Type of Protection Used Shoring Benching Sloping Option _____
 Spoil Pile back more than two feet? YES NO Distance _____
 Is there a potential for a Hazardous Atmosphere, YES NO Precautions taken
 if Yes: _____

EMPLOYEE AND PUBLIC SAFETY

Ladders every 25 ft.	YES	NO	Ramps	YES	NO	
Emergency Equipment		YES	NO	Water Removal	YES	NO
Traffic Control	YES	NO	Barricaded	YES	NO	
Air Testing Equipment Needed		YES	NO	Weekend Protection	YES	NO

CLASS OF SOIL: (CIRCLE ONE) SOLID ROCK TYPE A TYPE B TYPE C

CONFINED SPACE ENTRY

INTRODUCTION

Field Supervisors / Project Supervisors are responsible for evaluating all confined spaces and developing an entry program based upon the hazard evaluation. Reference shall be made to applicable standards including 29 CFR 1910.146, 29 CFR 1926.21 (b) (6) (OSHA), and American National Standards Institute, Inc. (ANSI) 2117.1-1989.

DEFINITIONS

The National Institute for Occupational Safety and Health (NIOSH) defines a confined space as "a space, which, by design, has limited openings for entry and exit, unfavorable natural ventilation that could contain or produce dangerous air contaminants, and which is not intended for continuous employee occupancy". Confined or enclosed spaces include, but are not limited to, storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers and manholes, underground utility vaults, tunnels, pipelines, and open top spaces more than four feet in depth, such as pits, tubs, vaults, vessels and ditches.

Toxic atmospheres are defined as atmosphere having concentrations of airborne chemicals in excess of permissible exposure limits as defined in applicable Federal, State, local or regional safety and health regulations, codes or statutes.

Oxygen deficient atmospheres are deemed to exist if the atmosphere at sea level has less than 19.5% oxygen by volume or has a partial pressure of 135 mm of mercury or less. The deviation for working at the higher altitude of this project should be determined to ascertain the correct levels for this location. Oxygen enriched atmospheres are deemed to exist if the atmosphere at sea level has more than 23.5% oxygen by volume.

Flammable atmospheres are defined as atmospheres in excess of the lower explosive limit. It should be understood that these are usually toxic as well as flammable.

PRE-PLANNING AND EMPLOYEE TRAINING

The Supervisor shall provide the necessary protection from the hazards, which may result from entry into a confined space. This includes, but is not limited to the implementation of procedures, training, and planning for entry into confined spaces which present a problem due to toxicity, flammability, oxygen deficiency or excess, mechanical, electrical, corrosive or temperature hazards.

E Light has developed and will enforce the written procedure which does include planning, general precautions procedures, testing and evaluation of hazards, ventilation requirements, personal protective equipment requirements, assignment of responsibilities, and emergency evacuation procedures.

For each job involving a confined space, Supervisors are competent in the evaluation of hazards, and associated precautions, shall be specifically assigned to these jobs.

All personnel required to work in a confined space or support those inside of a confined space will have completed training in the following areas:

- Permit System
- Hazards Associated with Confined Space Entry
- Specific Chemical and Physical Hazards involved
- Protective Equipment
- Air Monitoring Procedures
- Rescue Operations
- First Aid/CPR
- Lockout and Tag out procedures (as applicable)

NOTE: All permits must be maintained for **1 year**.

ENTRY PROCEDURE - PERMIT SPACE

The permit serves as written approval authorization and approval into a confined space under specific conditions to perform a certain task. The permit certifies that existing and potential hazards have been evaluated and proper protective measures will be taken to ensure worker safety.

The permit will contain the following information:

- Location and description of task
- Known and potential hazards that may be encountered
- Identification of entry and stand-by personnel
- Emergency telephone numbers
- Emergency and first aid information
- Pre-Entry atmospheric monitoring for:
 - Oxygen level
 - Toxic substance level
 - Flammable vapor level
 - Personal protective and safety equipment
 - Continuous air monitoring requirement
 - Isolation checklist (as applicable)
 - Blanking and disconnecting of all lines
 - Electrical lock out and tag out
 - Mechanical isolation and tag out
 - Ventilation requirements
 - Attendant

The entry permit will be valid for a single shift only. On jobs that require more than a single shift to complete work, a new permit must be completed at the start of each shift when the new personnel arrives on the job and before the space is reentered.

The properly executed entry permit must be displayed at the job site. At the conclusion of the shift, the permit must be removed and sent to the Field Supervisors for filing and retention. Retention must conform to all applicable federal, state, and local regulations or statutes.

GENERAL INFORMATION

All confined spaces must be tested for flammable vapors, toxic atmospheres, and oxygen deficiencies prior to entry. These conditions must be continuously monitored throughout the confined space entry. Confined spaces must also be continuously vented when work is being performed within the space.

The employee working in the confined space must be under constant observation by a competent employee outside the space. This watch must maintain verbal contact with the employee inside the space. Under no circumstance is the observer or the watching employee to enter the confined space without wearing an air-supplied breathing apparatus. In the event of an emergency, the observer is to signal for help and attempt to remove the employee from a confined space, including lifting hoists, tripods, and other equipment. Emergency self-contained breathing apparatus must be readily available for the rescue operations. This equipment must be compatible to the size of the opening to the confined space.

No smoking, open flames, sparking tools (electric) or other forms of ignition are allowed in confined spaces where the presence of flammable vapors is expected.

Employees are required to wear an approved harness when entering spaces that would make rescue difficult because of the size of the opening. This harness should be attached to a lifeline capable of lifting in an upright position. The free end of the line shall be secured outside the entry opening to a winch and tripod, and be at least 1/2 inch in diameter, and 2,000-lbs. test. (See fall protection)

PROCEDURES FOR ATMOSPHERIC TESTING IN CONFINED SPACES

Atmospheric testing is required for two distinct purposes: evaluation of the hazards of the permit space and verification that acceptable conditions exist for entry into that space.

Evaluation Testing:

The atmosphere of a confined space should be analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmospheres that may exist or arise, so that appropriate permit entry procedures can be developed and acceptable entry conditions stipulated for that space. Evaluation and interpretation of these data and development of the entry procedures should be done by, or reviewed by, or certified by a technically qualified professional.

Verification testing:

The atmosphere of a permit space which may contain a hazardous atmosphere should be tested for residues of all contaminants identified by evaluation testing using permit specific equipment to determine that residual concentrations at the time of testing and entry are within the range of acceptable entry conditions. Testing should be for oxygen, flammable, and then toxic. Results should be recorded on the permit which should be posted adjacent to the confined space (or by the opening of the confined space). (29 CFR 1910.146)

Duration of testing:

The atmosphere of a permit space should be tested in parameters for what the minimum response time would be or as specified by the manufacturer.

Perform re-testing periodically to verify that the atmosphere remains within acceptable entry conditions. (29 CFR 1910.146)

If you have any questions about entering a confined space, do not enter and contact your Supervisor and/or Project Supervisors.

REVIEW:

Review workplace or equipment

List Potential Hazards

Review abatement of the hazards

Evaluation to determine if it is a permit or non-permit confined space.

Entry without permit / attendant: Certification Confined space maybe entered without the need for a written permit or attendant provided that the space can be maintained in a safe condition for entry by mechanical ventilation alone as provided in 1910.146 (c) (5). Employee as a minimum shall have completed task training on confined space entry standards and procedures.

- Entry with a permit and attendant: Employees must have successfully completed training over the standards and the company program.
- Completed the permit and evaluate hazards associated.

Develop and implement the means, procedures, and practices necessary for safe permit space entry operations, including, but not limited to the following:

- Specifying acceptable entry conditions
- Employee observe monitoring results
- Isolating the space
- Purging, flushing or ventilating the space
- Protection from external hazards
- Verification the space is maintained in a safe to enter condition

Equipment that maybe needed:

- Testing and monitoring equipment
- Ventilating equipment
- Communication devices
- Personal protective equipment necessary
- Lighting equipment low voltage or explosion proof
- Barriers and or shields
- Rescue and emergency equipment
- Safe means of egress
- Harness and lanyard

Test atmosphere to ensure safe for entry

Review results with employees

- Appoint an attendant; insure attendant is knowledgeable of his duties:
- Knows the hazards involved.
- Is aware of behavioral changes.
- Continuously maintains an accurate count of entrants in the space.
- Remains at entrance until work is complete and everyone is out, or until relieved by another attendant.
- Communicates as necessary to monitor entrance status, or to alert entrants to evacuate.
- Monitors inside and outside space to ensure entrance safety.
- Summons rescue or emergency services if needed.
- Keeps unauthorized persons from being near, or entering the space.

Recheck Permit

- Is Lock Out Tag Out used?
- Is everything blanked off?
- Has the atmosphere been tested?
- Are applicable SDS readily available?
- Are employees trained?
- Is the Attendant ready?
- Is all equipment correct and checked?
- Have communication devices been checked and working?
- Is a means of egress provided?
- Have External Barriers been set up?
- Are Emergency Services available?
- Are all employees trained and ready?

Implement the work.

- Watch for any changes in the environment.
- Monitor the atmosphere.
- Communicate with employees in confined space.
- Survey the surrounding conditions internal and external.
- When work is complete conduct a closing review of the to alert entrants to evacuate.

NON PERMIT CONFINED SPACE:

...means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

NOTE: Confined spaces can be downgraded to a Non Permit Confined Space by eliminating the hazards, and or by providing ventilation. Example: 7-ft tall 6 ft round potable water tank, which by definition is a confined space. Through draining the water tank, providing ventilation and an acceptable means of egress (eliminating the hazards) could become a non-permit confined space. (This is assuming the tasks being performed do not create any additional hazards).

E Light will always reduce the risk and use ventilation and down grade the permit confined space into a non-permit confined space as much as possible.

TRAINING:

E Light will provide training (JIT) so that all employees whose work involves working in or around confined spaces, has a good understanding and the skills necessary for work to be completed safely.

Training shall be provided to each affected employee:

- Before the employee enter a confined space
- Before there is a change in assigned duties or whenever there is a change in permit space
- Whenever the employee believes there is a change in the permit space.
- When employee task changes, new or revised procedures.
- Duties of each employee, to include attendant, supervisor, and entrants.
- The employee shall be certified in writing and kept on file.
- The name of the employee, signature of trainer, and the date of training.



CERTIFICATION OF TRAINING

CONFINED SPACE ENTRY PROGRAM TRAINING RECORD

I certify that I have received training on the company confined space entry program. I understand the hazards associated with confined spaces. I received my copy of the confined space entry program and training over the confined space entry program on the below date. I understand that I am responsible for my part of the confined space entry program and for maintaining my personal protective equipment, I also understand that if any questions arise that I am to contact my supervisor immediately.

EMPLOYEE NAME (PRINT NAME) _____

Signature: _____

DATE _____

INSTRUCTOR (PRINT NAME) _____

Signature: _____

DATE _____

NOTE: Send a copy to the Main Office to be maintained in employee's file and maintain a copy at the job site.

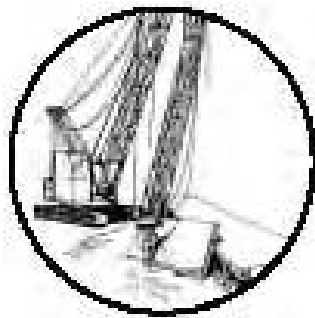
E Light Electric Services, Inc.
361 Inverness Drive, Suite B
Englewood, CO 80112
Phone: (303) 745-0001
Fax: (303) 754-0011

MATERIAL HANDLING

Fatalities and serious injuries can occur if cranes are not inspected and used properly. Many fatalities can occur when the crane boom, load line or load contacts power lines and shorts electricity to ground. Other incidents happen when workers are struck by the load or caught inside the swing radius or fail to assemble/ disassemble the crane properly.

Cranes are to be operated only by qualified and trained personnel.

- A designated competent person must inspect the crane and all crane controls before use.
- Be sure the crane is on a firm/stable surface and level.
- During assembly/disassembly do not unlock or remove pins unless sections are blocked and secure (stable).
- Fully extend outriggers and barricade accessible areas inside the crane's swing radius.
- Watch for overhead electric power lines and maintain at least a 10-foot safe working clearance from the lines.
- Inspect all rigging prior to use; do not wrap hoist lines around the load.
- Be sure to use the correct load chart for the crane's current configuration and setup, the load weight and lift path.
- Do not exceed the load chart capacity while making lifts.
- Raise load a few inches, hold, verify capacity/balance, and test brake system before delivering load.
- Do not move loads over workers.
- Be sure to follow signals and manufacturer instructions while operating cranes.



Exits. Every scaffolding, building or structure exits shall be so arranged and maintained as to provide free and unobstructed egress from all parts of the building or structure at all time when it is occupied. No lock or fastening device can prevent free escape from the inside of any building. Every exit must be clearly marked. Every access to an exit must be maintained clear of any obstructions and be at least 36 inches wide.

Access. When storing materials remember to leave adequate access ways. Do not block aisles or exits. Any rise over 19 inches a step or ramp must be provided.

Flammable/Toxic. Flammable and toxic or other harmful materials shall be stored in properly designated, well-ventilated areas. Observe and abide by "No Smoking" or Open Flame with in 15 ft. and other warning signs.

Heavy Loads. Do not attempt to lift heavy loads without assistance. Learn how to lift properly by bending your knees and keeping your feet together. Avoid strain by lifting with your legs and arms, not your back.

Life Lines. When working with a fall hazard of 6 ft or more wear a safety harness attached to a lifeline and have somebody standing by in case of an emergency.

Non-compatible Materials. Avoid stacking non-compatible materials in the same pile. Dry chemicals should always be stacked above liquids.

General

- Wear required Personal Protective Equipment.
- Avoid jagged edges, slivers, burrs, rough or slippery surfaces of material.
- Watch for and avoid tripping and stumbling hazards.
- Use caution when handling long or a large item to prevent striking other objects or people.
- Inspect Material to be handled.
- Inspect travel route and the area around the material.
- Read and follow warning labels on all containers.

Lifting and pulling:

- Use proper lifting techniques.
- Keep back straight and use leg muscles for support and strength.
- Raise object to waist level before lifting to shoulder height.
- Keep body weight positioned directly over feet.
- Keep feet apart- one beside and one behind the object.
- Do not twist, move feet and body in one motion.

Hoisting Material:

- Inspect all equipment before using; do not use damaged equipment. (I.e.. Cables, chains, hooks, slings, etc)
- Note hoisting capacity and do not overload. Ensure hoist limits are not exceeded.
- Use slings, chokers or other rigging substantial enough to safely support the load. (Weight divided by angle sin equals force on sling. Use 3 times the load as a rule of thumb.)
- Do not leave loads suspended or unattended. Keep fingers and hands clear of pinch points.
- Use taglines to steady a suspended load.
- Avoid tip loads and side pulling with hoists.
- Avoid Sharp bends over materials, corners or edges.
- Destroy slings with evidence of cuts, excessive wear or damage.
- Lift gradually.
- Always use taglines. (Keeps load from spinning and helps align. If the tagline creates a hazard do not use the tagline.)
- Consider weather conditions, (wind, and lightning) and look around for electrical, sloping grades etc. when rigging loads.
- Avoid impact loading.
- Do not divert operator.
- Report any unusual conditions and refer all questions to your supervisor.

FORKLIFTS:

- The operator must be trained in the operation of the lift and certified in writing.
- A pre-use inspection should be completed prior to the day's operation of the lift. (see pre-use section for inspection list)
- The lift operator can not wear headphones.
- The area to be traveled must be clean of debris and level.
- As material is loaded guardrails must be reinstalled.
- No one should be beneath the load.
- Only one signalman must use hand signals.
- Power lines must be observed it is best to keep clear of them by a minimum of 10 ft.
- Park brake must be used and forks lowered when lift is not in use.
- Special care must be taken when operating the lift, damage to people, material and property can occur at any time.
- For specifics on forklifts see the forklift section in this manual.
- Never overload the lift check weights and charts.

CRANES

The use of cableways cranes, derricks, hoists, hooks, jacks, and slings are subject to certain hazards that cannot be met by mechanical means only by the exercise of intelligence, care, and common sense. It is therefore essential to have personnel involved in the use and operation of equipment who are competent, and careful. Serious hazards are overloading, dropping or slipping of the load caused by improper hitching or slinging, obstructing the free passage of the load, and using equipment for a purpose for which it was not intended or designed. The crane must have good glass in the cab, an angle indicator, and ton-mile cut off records, wire rope inspection records, an annual inspection by a third party, and a serviceable fire extinguisher.

GENERAL

- The rated load capacities and operating speeds of the crane shall be posted.
- All hooks should have a safety latch or you must snub or mouse.
- A thorough annual inspection conducted by a third party.
- Wire rope must be inspected and records kept.
- The swing radius must be guarded to prevent striking or crushing employees.
- All window glass must be in good condition.
- A 5 BC fire extinguisher or higher must be in the cab.
- Must maintain 10 ft of clearance between the cranes and live electrical lines.
- Crawler and Truck cranes shall have stops to prevent movement within 5 degrees.
- Hoists - Safe working loads and angles shall be posted in the cab.
- Taglines must be used to control the load. (If it does not create a hazard)
Only one person may give signals to the crane operator. (See the following for appropriate signals).

Crane Signals and signaler

- The signaler must:
 - Be in clear view of the crane operator
 - Have a clear view of the load and the equipment
 - Keep persons outside the crane's operating area
 - Never direct a load over a person

Examples of some common hand signals:

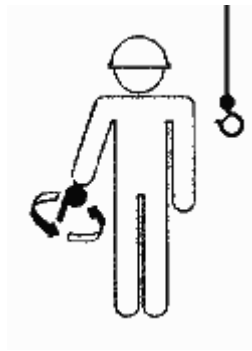
Hoist: With forearm vertical, forefinger pointing up move the hand in a small horizontal circle.

Lower: With an arm extended downward, forefinger pointing down, move the hand in small horizontal circles.

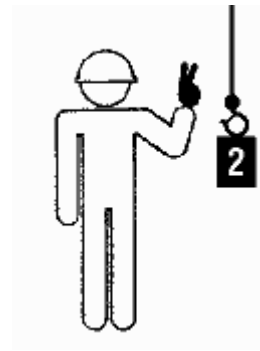
Multiple Trolleys: Hold up one finger for block marked "1" and two fingers for a block marked "2." Regular signals follow.



Hoist



Lower

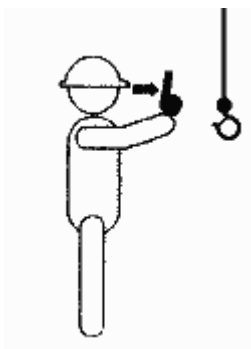


Multiple Trolleys

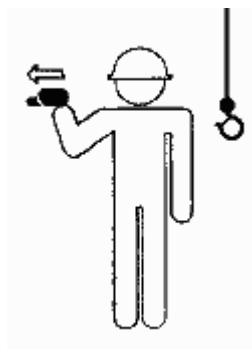
Bridge Travel: Arm extended forward, hand open and slightly raised, make a pushing motion in direction of travel.

Trolley Travel: Palm up, fingers closed, thumb pointing in direction of motion, and jerk the hand horizontally.

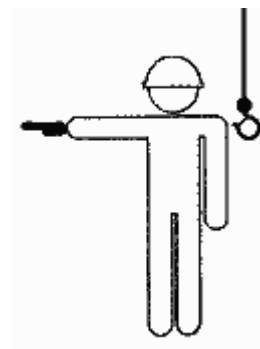
Stop: Arm extended, palm down, hold the position rigidly.



Bridge Travel



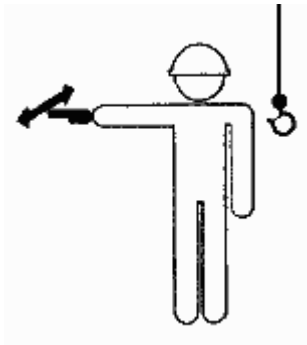
Trolley Travel



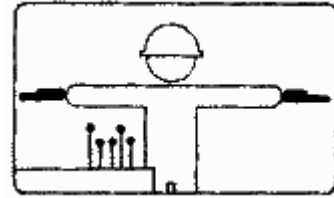
Stop

Emergency Stop: Arm extended, palm down, move the hand rapidly right and left.

Magnet Is Disconnected! : Crane operator spreads both hands apart, palms up.



Emergency Stop



Magnet is Disconnected!

Here are some common hand signals for crawler, truck and locomotive cranes.

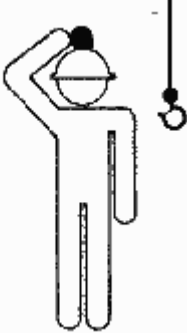
Use Main Hoist: Tap fists on head; then use regular signals.

Use Whip Line (Auxiliary Hoist): Tap elbows with one hand; then use regular signals.

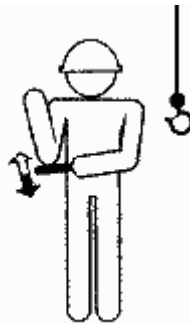
Raise Boom: Arm extended, fingers closed, thumb pointing upward.

Lower Boom: Arm extended, fingers closed, thumb pointing downward.

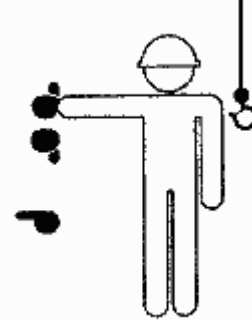
Swing: Point with a finger in direction of swing of a boom.



Use Main Hoist



Use Whip Line

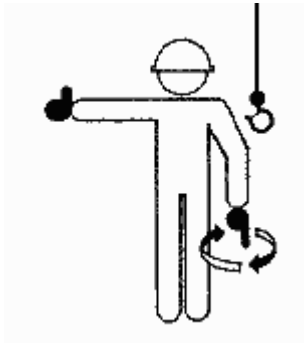


Raise Boom; Lower Boom; Swing

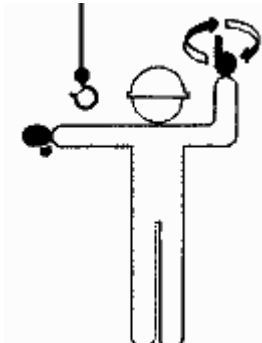
Raise the Boom and Lower the Load: Arm extended, fingers closed, thumb pointing upward, other arm bent slightly with forefinger pointing down and rotate hand in horizontal circles.

Lower the Boom and Raise the Load: Arm extended, fingers closed, thumb pointing downward, other arm with forearm vertical, forefinger pointing upward and rotate the hand in horizontal circles.

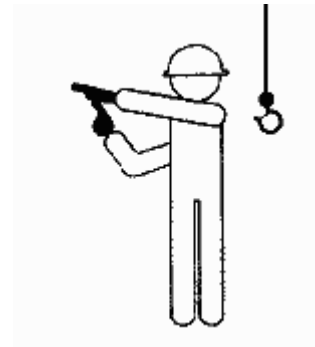
Move Slowly: Use one hand to give any motion signal and place the other hand motionless in front of the hand giving the motion signal. (Hoist, Slowly shown as example.)



Raise the Boom and Lower the Load



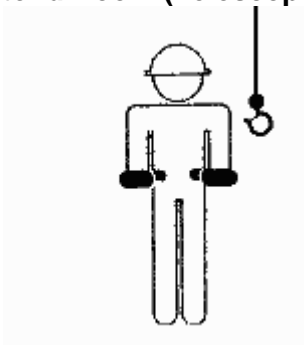
Lower the Boom and Raise the Load



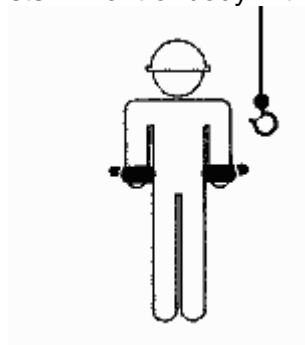
Move Slowly

Retract Boom (Telescoping Booms): Both fists in front of body with thumbs pointing toward each other.

Extend Boom (Telescoping Booms): Both fists in front of body with thumbs pointing outward.



Retract Boom



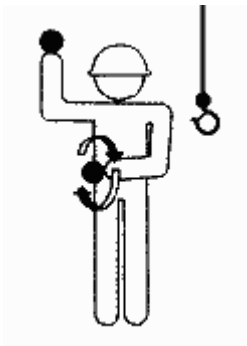
Extend Boom

Some signals for crawler cranes only

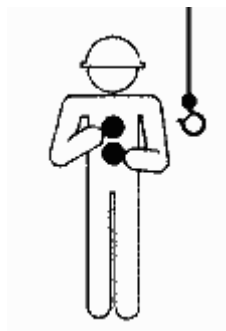
Lock Track: this side as indicated by raised fist.

Turn Travel Track: this side in direction shown by revolving fist.

Travel Both Tracks: forward or backward by revolving fists.



Lock Track
Turn Travel Track



Travel Both Tracks

Asbestos Safety Program

Purpose

The purpose of this program is to establish guidelines and procedures in the operations and maintenance of asbestos, asbestos materials, at E Light Electric Services to protect all employees, contractors, visitors and vendors from potential health hazards of asbestos related diseases.

This Program applies to all buildings and structures owned by E Light Electric Services, to all employees and subcontractors of E Light Electric Services, to occupants of E Light Electric Services buildings and to E Light Electric Services projects who may come into contact with or disturb asbestos-containing material in E Light Electric Services buildings. The Program applies to routine work during which an employee might encounter asbestos as well as work undertaken to repair or remove asbestos -containing material.

Policy

It is the policy of E Light Electric Services that only qualified employees shall be involved in any repairs, maintenance or removal of any materials or environments where the listed materials or gases are present. All unqualified employees shall be protected from exposure to asbestos fibers by isolating and controlling access to all affected areas during asbestos work. All tasks involving the disturbance of asbestos, asbestos material will be conducted only after appropriate work controls have been identified and implemented. A qualified supervisor shall be available at asbestos controlled work sites during all activities. Proper personal protective equipment, vacuums and hepa filters shall be used and properly maintained. If outside contractors are used, the company shall ensure all contractor employees have been properly trained and have been issued proper equipment and protective gear.

Responsibilities

Management

- Ensure all Asbestos, asbestos Material is identified and labeled
- Ensure training is effective for employees
- Establish engineering controls for all work with asbestos, asbestos material
- Coordinate with building owners, owners representatives and general contractors to ensure E Light Electric Services employees are not exposed to asbestos hazards and asbestos hazards are mitigated prior to the performance of work
- Ensure E Light Electric Service employees are informed of asbestos hazards and mitigations on each project.

Supervisors

- Qualified supervisors shall provide effective on-site management during work with asbestos, asbestos material
- Supervisors will notify the Director of Education and Loss Prevention immediately upon discovering asbestos material

Employees

- Qualified employees must follow the exact procedures established for the project for work in areas containing asbestos.
- Unqualified employees are to stay clear of all asbestos work areas and report any damaged asbestos containing material to their supervisor

Hazards

Asbestos is a common, naturally occurring group of fibrous minerals. Asbestos fibers have been used in a variety of building materials, however, E Light Electric Services takes an aggressive effort to use non-asbestos, asbestos materials in new construction and renovation projects. Generally, most asbestos is found in pipe insulation, doors, textured paints and plasters, structural fireproofing, and floor tiles. Friable asbestos (that is, material that contains more than 0.1% asbestos by weight and can be crumbled by hand) is a potential hazard because it can release fibers into the air if damaged. Long term exposure to airborne asbestos is necessary for chronic lung disease. Significant and long-term exposure to asbestos from activities that directly disturb asbestos-containing materials (such as asbestos mining) can lead to a variety of respiratory diseases, including asbestosis and mesothelioma (cancer of the lung lining). Asbestosis is a non-malignant, irreversible disease resulting in fibrosis of the lung. Asbestos-related cancers tend also to result from substantial long-term exposure, however, mesothelioma may result from much smaller exposures to asbestos.

Hazard Control

Engineering Controls

Engineering controls include the use of enclosures such as monitoring equipment, glove bags, tenting, negative pressure work areas, HEPA filters, controlled vacuums, water misters and other equipment to ensure containment and clean up of asbestos work areas.

Administrative Controls

Written procedures and management authorizations are required for all work involving asbestos, asbestos material

Training Controls

All personnel shall receive annual training on asbestos hazards, mitigations and procedures. This training shall be coordinated by the Director of Education and Loss Prevention and records of training shall be kept and made available upon request.

Definitions

Asbestos - Asbestos is a generic term describing a family of naturally occurring fibrous silicate minerals. As a group, the minerals are noncombustible, do not conduct heat or electricity and are resistant to many chemicals. Although there are several other varieties that have been used commercially, the most common asbestos mineral types likely to be encountered in E Light Electric Servicesbuildings are chrysotile (white asbestos), amosite (brown asbestos), and crocidolite (blue asbestos). Among these, white asbestos is by far the most common asbestos mineral present in E Light Electric Servicesbuildings.

Friable Asbestos - Friable asbestos material means finely divided asbestos or asbestos-containing material or any asbestos-containing material that can be crumbled, pulverized or powdered by hand pressure. Individual fibers in friable asbestos-containing material can potentially become airborne and can then present a health hazard. Three types of friable material commonly used in buildings are:

Sprayed fibrous fireproofing;

Decorative or acoustic texture coatings;

Thermal insulation.

Non-friable Asbestos - Non-friable asbestos includes a range of products in which asbestos fiber is effectively bound in a solid matrix from which asbestos fiber cannot normally escape. Non-friable asbestos includes a variety of products including asbestos cement tiles and boards and asbestos reinforced vinyl floor tiles. Cutting, braking, sanding, drilling of similar activities can release asbestos fiber from even non-friable asbestos materials.

Asbestos Work Categories -

Category 1

Work includes the installation or removal of non-friable asbestos in which the asbestos fiber is locked in a binder such as cement, vinyl or asphalt which holds the material together. E Light Electric Service employees shall not participate in Category 1 work.

Category 2

Work involves work with friable asbestos that is of short duration in situations which create low levels of airborne asbestos. Example of category 2 work are

enclosure of friable asbestos, application of tape or sealant to asbestos, asbestos pipe insulation and minor removal of friable asbestos and minor installation, maintenance or repair work above false ceilings where sprayed asbestos fireproofing is present on beams. E Light Electric Service employees shall not participate in Category 2 work.

Category 3

work involves possible exposure to friable asbestos over long periods of time or work that generates high levels of asbestos. Included in category 3 work are removal projects where relatively large amounts of asbestos are removed from a building including removal of friable asbestos from structural material, cleaning or removal of heating or air handling equipment that has been insulated with asbestos. **Also included in category 3 work are cutting or grinding of asbestos-containing materials using power tools.**

E Light Electric Service employees shall only conduct work in Category 3 and only as exposed during the course of their electrical operations, repair and installation. No E Light Electric employee shall conduct work that classified as Category 1 or 2.

General Rules

When in doubt, treat all material as containing asbestos and comply with all applicable rules and regulations and protective measures.

All Asbestos, asbestos Material (ACM) will be handled by certified and licensed asbestos abatement personnel. The friability of the ACM will dictate the type of removal/maintenance required. Removal and maintenance shall be done by specialty contractors.

Employees who are uncertified and unlicensed will not handle any ACM >1%. This will include encapsulation projects, renovation/removal and/or demolition of any type of structure. This will prevent the potential for accidental exposure from the mishandling of any ACM.

When an uncertified, unlicensed employee questions whether they may be handling suspect ACM, the employee will immediately contact their supervisor. The employee shall not resume working at the site until the area has been checked to verify the material is not ACM.

Uncertified, unlicensed employees will not cross over a barrier/containment area where asbestos projects are in progress.

Any employee who discovers ACM or suspect ACM in damaged or poor condition should report it to their supervisor so the identified material is repaired.

Asbestos Inventory

E Light Electric Services requires that the building owner or general contractor notify the Director of Education and Loss prevention of asbestos hazards in any building where work is to be performed and that a copy of any conducted surveys and prepared written inventories of the type and locations of asbestos-containing material be forwarded to the Director of Education and Loss Prevention. The Director of Education and Loss Prevention shall forward to the Project Manager and Supervision on each project the written reports which shall include but not be limited to the following:

- Procedures for periodic condition inspections

- Procedures for maintenance and repair of damaged asbestos

For each building the inventory containing the following information:

- Type of asbestos-containing material (sprayed fireproofing, texture coating, or thermal insulation);

- The location of the material;

- When it has been sampled, the type and percentage of asbestos present.

Also included in the survey information the sampling results showing the absence of asbestos in material which might be mistaken for an asbestos-containing material.

Asbestos Identification

Asbestos identification system is used to alert people to the presence of asbestos. Asbestos is identified by tags, stickers, pipe labels, signs and other high visibility means. Where feasible, stickers indicate the presence of asbestos in thermal insulation, in asbestos board and tiles and in other locations. Warnings may also be placed near the entrances of rooms -particularly mechanical rooms where unusually large amounts of asbestos may be present. The building owner or general contractor shall provide to E Light Electric services the type of identification used and the key to the identification. This shall be provided to the Director of Education and Loss prevention. The Director of Education and Loss Prevention shall forward this information to the project manager and site supervision.

Inspection

The E Light Site Supervision shall be responsible for inspecting work areas prior to the start of procedures to ensure the absence of or the mitigation of asbestos hazards. The site supervision shall immediately notify the Director of Education and Loss Prevention and the building owners representative of any asbestos hazards that are discovered and that are not listed on the asbestos inventory, identified or mitigated.

Access Control

Access to mechanical and electrical rooms, service shafts, tunnels and other locations is to be restricted where asbestos may be present in unusually large amounts and where other hazards may also be present. Such areas are locked and accessible only to authorized personnel. Where sprayed asbestos-containing fireproofing is present in a building above a false ceiling, access to the space is restricted to qualified personnel.

Repair and Maintenance of ACM

Should an employee or a contractor encounter material which is not identified and is not listed in the Asbestos Inventory and which might reasonably be expected to be asbestos, the person will stop any work which could create airborne asbestos and report the discovery to a supervisor. Where it is determined that friable asbestos-containing material is in a condition that could likely lead to inhalation exposure, the supervisor will immediately limit access to the location. Where there is reasonable doubt about the composition of a friable material, it will be treated as asbestos until testing demonstrates that asbestos is present at levels below 1%. E Light Electric Services employees shall not participate in clean up activities.

When routine work is to take place in an area where asbestos is present or when the work might disturb friable asbestos, employees will be informed of the potential for exposure during their pre task safety briefing. If upon reviewing the work situation, the employee believes that normal work practices do not provide an adequate measure of safety, the employee will report these concerns to the supervisor. The supervisor will review the work situation and authorize any required additional precautions. All employees, visitors, vendors and contractors will be notified in advance when work involving asbestos is to be carried out in any area of E Light Electric Services buildings or projects which they occupy.

Training

All E Light Electric Services employees will be trained to carry out their work without endangering themselves, their coworkers or other building occupants while working in areas containing asbestos materials.

Training Outline

All E Light Electric Services personnel shall complete Asbestos Awareness Training as part of new hire orientation. This training shall include:

The types, properties and uses of asbestos

Ways to recognize asbestos

The hazards of asbestos fiber inhalation

Types of activities which could release asbestos fibers

The E Light Electric Services Asbestos Safety Program

State and Federal regulations regarding work with asbestos and disposal of asbestos-containing waste

Ways to recognize and avoid damage to asbestos-containing material

Refresher training will be provided every year. Only those that have completed the training will be allowed to work in areas containing asbestos materials.

Subcontractors shall ensure all their employees have received Asbestos Awareness training. Subcontractors shall submit training records for all their employees to the Director of Education and Loss Prevention.

Contracted Work

Asbestos Removal Work

Major asbestos removal is contracted to external firms who specialize in asbestos removal work. E Light Electric Services requires that all such work be carried out in accord with the requirements established by the regulation of the State in which the project is located. At all such projects the contractor will ensure that cleanup is properly completed and that all asbestos and asbestos contaminated material is collected, and disposed of in accord with the state regulations. The contractor will be required to submit air testing results to demonstrate that the cleanup has been carried out properly and the area can be reoccupied safely.

ASBESTOS WORK PROCEDURES

Discovering Damaged Asbestos

When asbestos is discovered the following steps describe the actions to be taken by trades Employees and their supervisors. The steps comply with E Light Electric Services Asbestos Policy, which states the long term goal is to remove all asbestos and the short term goal is to manage asbestos to minimize exposure to airborne asbestos.

- 1) Notification - The employee is to notify the supervisor immediately.**
- 2) Notification by Supervisor. The supervisor is to notify the Director of Education and Loss Prevention and the building owner representative that a potential asbestos containing work area has been identified.**
- 3) Testing and Mitigation: E Light Electric Services employees shall then coordinate with the building owner or building owners representative to test and mitigate the asbestos hazard based on the established procedures of the building owner.**
- 4) Access- The supervisor shall stop all work activities, personal inspect the area and determine if access is to be restricted to the area.**

Clean up of Asbestos, asbestos Material

Asbestos only poses a health hazard when it becomes airborne and people inhale the fiber. When asbestos-containing material has been disturbed, effective cleanup will ensure that asbestos does not present a health hazard. Clean up of dust which might contain traces of asbestos, such as a custodian might encounter in routine cleaning in buildings where asbestos is present, will not require special precautions. To ensure that cleanup of significant quantities of asbestos will not cause a health hazard, the following procedure will be followed:

Clean up of significant amounts of asbestos, asbestos material will be only be done by selected specialty contractors or the building owner..

Dry sweeping of asbestos-containing waste or other cleanup activities which will create airborne dust are not permitted

Non-friable ACM Work

Asbestos that is effectively bonded in a non-asbestos matrix cannot easily become airborne. As such, provided the material is not broken or abraded, there is little risk of inhalation exposure to asbestos. To ensure that minor work involving non-friable asbestos (including vinyl asbestos tile, asbestos asphalt roofing, and asbestos ceiling and wall tile) the following procedure will be followed.

Procedure:

Before beginning the work the supervisor will carefully inspect the asbestos-containing material to ensure that the planned work will not create airborne asbestos dust.

Where dust that might contain asbestos fiber is present, the worker will clean the material using a wet method after a work plan has been developed and approved by site supervision.

Following completion of the task the worker will carry out any required clean wet methods.

If the work cannot be safely performed using wet methods, then mitigation plan shall be developed and approved prior to any work being performed.

Note:

Cutting, drilling, sanding or breaking the material are likely to create airborne asbestos dusts and will require additional precautions.

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Repairs to ACM

Where asbestos is known or believed to be present in damaged insulation, repairs or removal are needed to prevent asbestos fiber from becoming airborne. The following procedure will be used whenever minor repairs to asbestos, asbestos insulation is undertaken:

Procedure:

Access to areas where minor repair is to be carried out will be restricted to authorized people only. When necessary, signs will be posted advising of access restrictions.

Workers repairing asbestos, asbestos insulation will wear coveralls and a properly fitted, air purifying respirator equipped with a particulate filter designed to remove asbestos fibers from inhaled air.

Before beginning the repair, the area will be carefully cleaned using the Cleanup of Asbestos-Containing Material Procedure

When feasible a drop cloth shall then be placed beneath the insulation to be repaired.

Before beginning the repair, all feasible steps (wetting with amended water, encapsulating adjacent asbestos-containing material, etc.) will be taken to prevent the release of asbestos fibers, flyings or vapors.

Following the repair the worker will carefully bag for disposal all asbestos-containing waste and clean the surrounding area using wet cleaning techniques.

NOTE: E Light Electric Service employees shall not participate in Asbestos Clean Up or Abatement procedures. Asbestos cleanup or abatement procedures shall be done by the building owner or a specialty contractor.

Disposal of Asbestos, asbestos Waste Materials

Handling and disposal of asbestos, asbestos waste is regulated by both State and Federal regulations. To ensure compliance with these regulations and to ensure that no-one is exposed to asbestos the following procedure is to be followed:

E Light Electric Services employees shall not handle asbestos waste or participate in asbestos removal. These procedures shall be performed by the building owner or a specialty contractor.

E Light Electric Services

Ergonomics Program

Purpose

The purpose of this company program is to effectively eliminate or control Work-related Musculoskeletal Disorders (WMSD) and hazards by providing management leadership, recognition & control of hazards and employee involvement in the identification and resolution of hazards and by providing training, medical management and evaluation as an on-going process.

Ergonomics: is the science of fitting jobs to people. Ergonomics encompasses the body of knowledge about physical abilities and limitations as well as other human characteristics that are relevant to job design. Ergonomic design is the application of this body of knowledge to the design of the workplace (i.e., work tasks, equipment, environment) for safe and efficient use by workers. Good ergonomic design makes the most efficient use of worker capabilities while ensuring that job demands do not exceed those capabilities.

Ergonomics program is a **systematic process** for anticipating, identifying, analyzing and controlling WMSD hazards.

A **process** is the activities, procedures, and practices that you set up to control WMSD hazards.

Systematic means these actions are ongoing and conducted on some routine basis that is appropriate to the workplace conditions.

Program Goals

The Primary permanent goals of this program are:

- Reduction in injuries & illnesses
- Reduction in absenteeism
- Reduction in employee turnover
- Increased productivity & quality

Short term goals may be established as a means of meeting the permanent goals

Program Elements

- A. Management Leadership & Employee Participation
- B. Hazard Identification & Information
- C. Job Hazard Analysis & Control
- D. Training

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- E. MSD Medical Management
- F. Program Evaluation
- G. Records

Element 1: Management Leadership & Employee Involvement

Policy: Employees are highly encouraged to bring their concerns to supervisors and management. Feed back from employees is an important means of identifying ergonomic hazards. When an WMSD is identified, the Director of Education and Loss Prevention will provide a response and recommended action within 48 hours of receiving notification of the hazards or condition.

Management leadership element must be initiated within 30 calendar days after a determination that a job meets the Action Trigger. Action items include

- A. Assign and communicate responsibilities for setting up and managing the ergonomics program so managers, supervisors and employees know what is expected of them and how they are held accountable for meeting those responsibilities. The assignment of specific responsibilities are published under a separate memorandum.
- B. Provide those persons with the authority, resources, information and training necessary to meet their responsibilities.
- C. Examine existing policies and practices to ensure they encourage reporting and do not discourage the early reporting of MSDs, their signs and symptoms, and MSD hazards; and employee participation in the ergonomics program;
- D. Identify at least one person to:
 - 1. Receive and respond promptly to reports about signs and symptoms of MSDs, MSD hazards and recommendations
 - 2. Take action, where required, to correct identified problems
- E. Communicate regularly with employees about the program and their concerns about MSDs. This shall be accomplished through safety and health committees, postings on employee bulletin boards and routine safety training meetings.

Employee Participation element must be initiated within 30 calendar days after a determination that a job meets the Action Trigger. Employee Participation action items include providing Employees and their designated representative:

- A. A way to promptly report signs and symptoms of WMSDs and WMSD hazards, and to make recommendations about appropriate ways to control them. Reporting

procedures include notification of immediate supervisor, ergonomic suggestion forms and medical management forms. Any one of these methods constitute a means of reporting and will require action on the part of the Program Administrator.

- B. Prompt responses to their reports and recommendations. 48 hour response will be provided for all reports of WMSDs and WMSD hazards..
- C. Method for providing employees a summary of the OSHA requirements, and ready access to a copy of the OSHA standard and to information about MSDs, MSD signs and symptoms, MSD hazards, and access to the company ergonomics program
- D. Ways to become involved in developing, implementing and evaluating:
 - 1. Job hazard analysis and control. This is accomplished by participation on safety & health committees, suggestions for supervisors & management, review and comment on existing job hazard analysis and other appropriate means of communication.
 - 2. Training. Feedback from employees on the quality and usefulness of ergonomic training will be reviewed by the program administrator to be used for training modifications to improve effectiveness.
 - 3. The effectiveness of the program and control measures. Safety & Health Committees are the primary means of employee involvement in this area. Additionally, all comments, recommendations and suggestions will be forwarded to the program administrator for action and response comment.

Element 2: Hazard Identification

MSD hazard determination process - A Job Hazard Analysis must be initiated within 60 calendar days after determination that a job meets the Action Trigger. Conduct a job hazard analysis for that job – the job hazard analysis must include all employees who perform the same job, or a sample of employees in that job who have the greatest exposure to the relevant risk factors, and include the following steps:

- A. Talk with those employees and their representatives about the tasks the employees perform that may relate to MSDs; and
- B. Observe the employees performing the job to identify the risk factors in the job and to evaluate the magnitude, frequency, and duration of exposure to those risk factors.
- C. Use one or more of the following methods or tools to conduct this analysis:
 - 1. Use one or more of the hazard identification tools
 - 2. Use the occupation-specific hazard identification tool
 - 3. Have a professional trained in ergonomics conduct a job hazard analysis

Determining the Action Trigger - Determination of Action Trigger must be completed within 7 calendar days after determination that the employee has experienced an MSD incident. A job meets the Action Trigger if:

An MSD incident has occurred in that job; and

The employee's job routinely involves, on one or more days a week, exposure to one or more relevant risk factors at the levels described in the Basic Screening Tool

Problem Jobs - For each job for which an MSD hazard has been identified, determine if the MSD hazards pose a risk only to the employee who reported the MSD. If so controls, training and evaluation need only be applied to that individual employee's job.

Element 3: Job Hazard Analysis & Control

Reducing MSD hazards process

- A. Control MSD hazards; or
- B. Reduce MSD hazards in accordance with or to levels below those in the hazard identification tools; or
- C. If the MSD hazard cannot be reduced, do the following:
 - 1. Reduce MSD hazards to the extent feasible
 - 2. At least every 3 years, assess the job and determine whether there are additional feasible controls that would control or reduce MSD hazards; and
 - 3. If such controls exist, implement them until MSD hazards have been reduced
- D. Do the following if a work-related MSD occurs in a job whose hazard(s) have been reduced:
 - 1. Ensure that appropriate controls are still in place, are functioning, and are being used properly, and
 - 2. Determine whether new MSD hazards exist and, if so, take steps to reduce the hazards

MSD Hazard Controls

For each problem job, must use feasible engineering, work practice or administrative controls, or any combination, to reduce MSD hazards in the job. Engineering controls are the preferred method of control. Use personal protective equipment (PPE) to supplement engineering, work practice or administrative controls only where other controls are not feasible. Where PPE is used, it will be provide it at no cost to employees.

Steps to reduce MSD hazards

Ask employees in the problem job and their representatives to recommend measures to reduce MSD hazards

Identify and implement initial controls within 90 days after determination that the job meets the Action Trigger. Initial controls mean controls that substantially reduce the exposures.

Identify and implement permanent hazard controls within 2 years after determination that a job meets the Action Trigger, except that initial compliance can take up to January 2005 whichever is later.

Track progress and ensure that controls are working as intended and have not created new MSD hazards. This includes consulting with employees in problem jobs and their representatives. If the controls are not effective or have created new MSD hazards, the hazard control process to identify additional control measures that are appropriate and implement any measures identified.

Control Methods

Engineering Controls, where feasible, are the preferred method for controlling WMSD hazards. Engineering controls are the physical changes to jobs that control exposure to WMSD hazards. Engineering controls act on the source of the hazard and control employee exposure to the hazard without relying on the employee to take self-protective action or intervention. Examples of engineering controls for WMSD hazards include changing, modifying or redesigning the following:

- Workstations
- Tools
- Facilities
- Equipment
- Materials
- Processes

Work Practice Controls are controls that reduce the likelihood of exposure to MSD hazards through alteration of the manner in which a job or physical work activities are performed. Work practice controls also act on the source of the hazard. However, instead of physical changes to the workstation or equipment, the protection work practice controls provide is based upon the behavior of managers, supervisors and employees to follow proper work methods. Work practice controls include procedures for safe and proper work that are understood and followed by managers, supervisors and employees. Examples of work practice controls for MSD hazards include:

- Safe and proper work techniques and procedures that are understood and followed by managers, supervisors and employees.

- Conditioning period for new or reassigned employees.

Training in the recognition of MSS hazards and work techniques that can reduce exposure or ease task demands and burdens.

Administrative Controls are procedures and methods, typically instituted by the employer, that significantly reduce daily exposure to MSD hazards by altering the way in which work is performed. Examples of administrative controls for MSD hazards include:

- Employee rotation
- Job task enlargement
- Adjustment of work pace (e.g., slower pace)
- Redesign of work methods
- Alternative tasks
- Rest breaks

Element 4: Training

Employee Training - Employee training must be completed within 45 calendar days after determination of a job that meets the Action Trigger. Training must be provided in language that the employee understands. During each training session, employees must be given an opportunity to ask questions about the ergonomics program and the content of the training and receive answers to those questions. The company will provide initial training, and follow-up training every 3 years, for:

Each employee in a job that meets the Action Trigger

Each of their supervisors or team leaders, and

Other employees involved in setting up and managing the ergonomics program.

Employee Training topics include:

- The requirements of the OSHA Standard
- The ergonomics program and the employee's role in it
- The signs and symptoms of MSDs and ways of reporting them;
- The risk factors and any MSD hazards in the employee's job, as identified by the Basic Screening Tool and job hazard analysis
- Company plan and timetable for addressing the MSD hazards identified
- The controls used to address MSD hazards
- Employee's role in evaluating the effectiveness of controls .

Program management training - for employee involved in setting up and managing the ergonomics program must address the following:

- Relevant employee training topics
- How to set up, manage, and evaluate an ergonomics program

How to identify and analyze MSD hazards and select and evaluate measures to reduce the hazards.

Initial Training is required for

Each employee involved in setting up and managing the ergonomics program within 45 days after a determination that an employee's job meets the Action Trigger

Each current employee, supervisor and team leader within 90 days after determination that an employee's job meets the Action Trigger

Each new employee or current employee prior to starting a job that has a determination that an employee's job meets the Action Trigger

Employee Notification

Ergonomic program information will be posted in a conspicuous place such as employee bulletin boards. Each Employee, within 14 days of hiring, will be provided, in writing, basic information about:

- A. Common musculoskeletal disorders (MSDs) and their signs and symptoms
- B. The importance of reporting MSDs and their signs and symptoms early and the consequences of failing to report them early
- C. How to report MSDs and their signs and symptoms
- D. The kinds of risk factors, jobs and work activities associated with MSD hazards
- E. A short description of the requirements of OSHA's ergonomics program standard
- F. The requirements of the OSHA Ergonomic standard.

Element 5: MSD Medical Management

Employee report of an MSD or signs or symptoms

Action: Promptly determine whether the reported MSD or MSD signs or symptoms qualify as an MSD incident. A report is considered to be an MSD incident in the following two cases:

The MSD is work-related and requires days away from work, restricted work, or medical treatment beyond first aid; or

The MSD signs or symptoms are work-related and last for 7 consecutive days after the employee reports them.

MSD Management process - MSD Management must be initiated within 7 calendar days after determination that a job meets the Action Trigger.

- A. Provide the employee with prompt and effective MSD management at no cost to the employee. MSD management does not include medical treatment, emergency or post-treatment procedures. MSD management includes:
 - 1. Access to a Health Care Professional (HCP);
 - 2. Any necessary work restrictions, including time off work to recover;
 - 3. Work restriction protection; and
 - 4. Evaluation and follow-up of the MSD incident.

- B. Obtain a written opinion from the HCP for each evaluation and provide a copy to the employee. Instruct the HCP that the opinion may not include any findings or information that is not related to workplace exposure to risk factors, and that the HCP may not communicate such information to the employer, except when authorized to do so by State or Federal law.

- C. Whenever an employee consults an HCP for MSD management, the company will provide the HCP with the following:
 - 1. A description of the employee's job and information about the physical work activities, risk factors and MSD hazards in the job
 - 2. A copy of this standard
 - 3. A list of information that the HCP's opinion must contain.

Information the HCP's opinion must contain

- A. The HCP's assessment of the employee's medical condition as related to the physical work activities, risk factors and MSD hazards in the employee's job

- B. Any recommended work restrictions, including, if necessary, time off work to recover, and any follow-up needed

- C. A statement that the HCP has informed the employee of the results of the evaluation, the process to be followed to effect recovery, and any medical conditions associated with exposure to physical work activities, risk factors and MSD hazards in the employee's job

- D. A statement that the HCP has informed the employee about work-related or other activities that could impede recovery from the injury.

Temporary work restrictions

- A. If an employee experiences an MSD incident in a job that meets the Action Trigger, the employee will be provided with temporary work restrictions or time off work that the HCP determines to be necessary, or if no HCP was consulted, apply those that are determine to be necessary.

- B. Whenever limitations are placed on the work activities of an employee in his or her current job or an employee is transferred to a temporary alternative duty job, provide the employee with Work Restriction Protection, which maintains the employee's employment rights and benefits, and 100% of his or her earnings, until the earliest of the following three events occurs:
- C. The employee is able to resume the former work activities without endangering his or her recovery, or
- D. An HCP determines, subject to the determination review provisions in paragraph (s) of this section, that the employee can never resume his or her former work activities; or
- E. 90 calendar days have passed.

Whenever an employee must take time off from work under this program, the employee will be provided Work Restriction Protection, which maintains the employee's employment rights and benefits and at least 90% of his or her earnings until the earliest of the following three events occurs:

The employee is able to return to the former job without endangering his or her recovery
An HCP determines, subject to the determination review provisions in paragraph (s) of this section, that the employee can never return to the former job; or
90 calendar days have passed.

Participation in WRP - For an employee to participate in the provision of WRP, the employee must participate in the company MSD management program. Providing WRP benefits to a temporarily restricted or removed employee is reduced to the extent that the employee receives compensation for earnings lost during the work restriction period from either a publicly or an employer-funded compensation or insurance program, or receives income from employment made possible by virtue of the employee's work restriction. The company may fulfill the obligation to provide work restriction protection benefits for employees temporarily removed from work by allowing the employees to take sick leave or other similar paid leave (e.g., short-term disability leave), provided that such leave maintains the worker's benefits and employment rights and provides at least 90% of the employee's earnings.

Second HCP Opinions & Resolutions

If the company selects an HCP to make a determination about temporary work restrictions or work removal, the employee may select a second HCP to review the first HCP's finding at no cost to the employee. If the employee has previously seen an HCP on his or her own, at his or her own expense, and received a different recommendation, he or she may rely upon that as the second opinion.

If the company selected HCP and the employee's HCP disagree, the company must, within 5 business days after receipt of the second HCP's opinion, take reasonable steps to arrange for the two HCPs to discuss and resolve their disagreement

If the two HCPs are unable to resolve their disagreement quickly, the company and the employee, through the respective HCPs, must, within 5 business days after receipt of the second HCP's opinion, designate a third HCP to review the determinations of the two HCPs, at no cost to the employee

The company must act consistently with the determination of the third HCP, unless the company and the employee reach an agreement that is consistent with the determination of at least one of the HCPs;

The company and the employee or the employee's representative may agree on the use of any expeditious alternative dispute resolution mechanism that is at least as protective of the employee as the review procedures in paragraphs above.

The company will make available prompt and effective medical management whenever an employee has a MSD. (This means that when an employee reports signs or symptoms of a MSD. All reports will be processed to determine whether medical management is necessary). Medical management, including recommended work restrictions, will be provided at no cost to the employee. Medical treatment protocols for MSDs will be established by the health care professions.

Element 6: Program Evaluation

If evaluation reveals deficiencies in the program, the deficiencies must be promptly corrected. Program evaluation is required:

- A. Within 3 years after determination that a job meets the Action Trigger
- B. When there is reason to believe that the program is not functioning properly.
- C. At least every 3 years as follows:

Consult with employees in the program, or a sample of those employees, and their representatives about the effectiveness of the program and any problems with the program

Review the elements of the program to ensure they are functioning effectively

Determine whether MSD hazards are being identified and addressed

Determine whether the program is achieving positive results, as demonstrated by such indicators as reductions in the number and severity of MSDs, increases in the number of problem jobs in which MSD hazards have been controlled, reductions in the number of jobs posing MSD hazards to employees, or other measure that demonstrates program effectiveness.

Element 7: Recordkeeping

The following written or electronic records will be kept

- A. Employee reports of MSDs, MSD signs and symptoms, and MSD hazards
- B. Company response to such reports
- C. Job hazard analyses
- D. Hazard control measures
- E. Quick fix process
- F. Ergonomics program evaluations
- G. Work restrictions, time off of work, and HCP opinions

All records required by the OSHA standard, other than the HCP opinions, upon request, for examination and copying, will be provided to employees, their representatives.

All HCP opinions required by the OSHA standard will be provided to the subject employee or to anyone having the specific written consent of the employee, upon request, for examination and copying.

All records will be kept for 3 years or until replaced by updated records, whichever comes first, except the HCP's opinion, which must keep for the duration of the employee's employment plus 3 years.

HCP opinions need not be retained beyond the term of an employee's employment if the employee has worked for less than one year and if the employee is provided with the records at the end of his or her employment.

Definitions

Administrative controls are changes in the way that work in a job is assigned or scheduled that reduce the magnitude, frequency or duration of exposure to ergonomic risk factors. Examples of administrative controls for MSD hazards include:

- (1) Employee rotation;
- (2) Job task enlargement;
- (3) Alternative tasks;
- (4) Employer-authorized changes in work pace.

Control MSD Hazards: means to reduce MSD hazards to the extent that they are no longer reasonably likely to cause MSDs that result in work restrictions or medical treatment beyond first aid.

Employee representative means, where appropriate, a recognized or certified collective bargaining agent.

Engineering controls are physical changes to a job that reduce MSD hazards. Examples of engineering controls include changing or redesigning workstations, tools, facilities, equipment, materials, or processes.

Follow-up means the process or protocol an employer or HCP uses to check on the condition of an employee after a work restriction is imposed on that employee.

Health care professionals (HCPs) are physicians or other licensed health care professionals whose legally permitted scope of practice (e.g., license, registration or certification) allows them to provide independently or to be delegated the responsibility to carry out some or all of the MSD management requirements of this standard.

Job means the physical work activities or tasks that an employee performs. This standard considers jobs to be the same if they involve the same physical work activities or tasks, even if the jobs have different titles or classifications.

Musculoskeletal disorder (MSD) is a disorder of the muscles, nerves, tendons, ligaments, joints, cartilage, blood vessels, or spinal discs. For purposes of this standard, this definition only includes MSDs in the following areas of the body that have been associated with exposure to risk factors: neck, shoulder, elbow, forearm, wrist, hand, abdomen (hernia only), back, knee, ankle, and foot. MSDs may include muscle strains and tears, ligament sprains, joint and tendon inflammation, pinched nerves, and spinal disc degeneration. MSDs include such medical conditions as: low back pain, tension neck syndrome, carpal tunnel syndrome, rotator cuff syndrome, DeQuervain's syndrome, trigger finger, tarsal tunnel syndrome, sciatica, epicondylitis, tendinitis, Raynaud's phenomenon, hand-arm vibration syndrome (HAVS), carpet layer's knee, and herniated spinal disc. Injuries arising from slips, trips, falls, motor vehicle accidents, or similar accidents are not considered MSDs for the purposes of this standard.

MSD hazard means the presence of risk factors in the job that occur at a magnitude, duration, or frequency that is reasonably likely to cause MSDs that result in work restrictions or medical treatment beyond first aid.

MSD incident means an MSD that is work-related, and requires medical treatment beyond first aid, or MSD signs or MSD symptoms that last for 7 or more consecutive days after the employee reports them to you.

MSD signs are objective physical findings that an employee may be developing an MSD. Examples of MSD signs are:

- (1) Decreased range of motion;
- (2) Deformity;
- (3) Decreased grip strength; and
- (4) Loss of muscle function.

MSD symptoms are physical indications that an employee may be developing an MSD. For purposes of this standard, MSD symptoms do not include discomfort. Examples of MSD symptoms are:

- (1) Pain;
- (2) Numbness;
- (3) Tingling;
- (4) Burning;
- (5) Cramping; and
- (6) Stiffness.

Personal protective equipment (PPE) is equipment employees wear that provides a protective barrier between the employee and an MSD hazard. Examples of PPE are vibration-reduction gloves and carpet layer's knee pads.

Problem job means a job that the employer has determined poses an MSD hazard to employees in that job.

Risk factor means, for the purpose of this standard: force, awkward posture, repetition, vibration, and contact stress.

Work practice controls are changes in the way an employee performs the physical work activities of a job that reduce or control exposure to MSD hazards. Work practice controls involve procedures and methods for safe work. Examples of work practice controls for MSD hazards include:

- (1) Use of neutral postures to perform tasks (straight wrists, lifting close to the body);
- (2) Use of two-person lift teams;
- (3) Observance of micro-breaks.

Work-related means that an exposure in the workplace caused or contributed to an MSD or significantly aggravated a pre-existing MSD.

Work restriction protection (WRP) means the maintenance of the earnings and other employment rights and benefits of employees who are on temporary work restrictions. Benefits include seniority and participation in insurance programs, retirement benefits and savings plans.

Work restrictions are limitations, during the recovery period, on an employee's exposure to MSD hazards. Work restrictions may involve limitations on the work activities of the employee's current job (light duty), transfer to temporary alternative duty jobs, or temporary removal from the workplace to recover. For the purposes of this standard, temporarily reducing an employee's work requirements in a new job in order to reduce muscle soreness resulting from the use of muscles in an unfamiliar way is not a work restriction. The day an employee first reports an MSD is not considered a day away from work, or a day of work restriction, even if the employee is removed from his or her regular duties for part of the day.

E Light Electric Services

Process Safety Management Program

Facility Name: _____

(This program is to be modified by the Director of Education and Loss Prevention in cooperation with the Project Manager for each facility specifically. The modified specific plan must be approved by the Facility Owner before implementation)

Introduction

This Program has been developed for the

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to meet the requirements of OSHA Standard 29 CFR 1910.119 Process Safety Management of Highly Hazardous Substances (PSM). Additional program requirements have been taken from applicable ANSI & (List Sources of Standards used in your Industry such as IIAR) Standards.

Responsibilities

Project Management

- assign sufficient resources and qualified operators to ensure safe operating and material conditions are maintained
- assign a qualified supervisor to oversee and direct operations, maintenance and training
- involve operators in the various elements of this program
- request, as necessary, assistance from Facility Engineering to execute the PSM Program and conduct effective audits
- Ensure the E Light Electric Employees are not assigned to any tasks that are not within our specific scope of work.
- E Light Employees shall only be allowed to perform maintenance on systems and shall not be allowed to operate systems. All operations of systems shall be done by qualified facility operators.

Electricians

- actively participate in the PSM program
- exercise good engineering practices in the operation and maintenance of the systems
- comply with all safety procedures

Human Resource Manager

- Provide PSM overview indoctrination training for all new employees as part of the New Hire Safety Orientation training if an employee is to be assigned to a facility requiring Process Safety Management.

PSM Elements

The PSM Standard contains 14 Elements that must be addressed in this program.

1. Employee Participation
2. Process Safety Information (PSI)
3. Process Hazard Analysis (PHA)
4. Operating Procedures
5. Training
6. Contractor Safety
7. Pre-Startup Safety Review
8. Mechanical Integrity
9. Hot Work Program
10. Management of Change (MOC)
11. Incident Investigation
12. Emergency Planning and Response
13. Compliance Audits
14. Trade Secrets

Section 1: Employee Participation

Requirements: The standard requires the project manager to:

- Develop a Plan of Action for implementation of Employee Involvement
- Consult with employees on the conduct of the development of PSM Elements
- Provide access to PSM information
- This plan must be developed in coordination with the facility owner

Section 2: Process Safety Information (PSI)

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Requirements: the OSHA standard requires compiling of technical information on the process and equipment in the system. This requirement is to allow for PHA and maintaining information on the system for Operator training and reference. The project manager shall secure this information from the facility owner and forward to the Director of Education and Loss Prevention.

Specifically:

- Hazards of the specific system pertaining to the technology of the system
- Information pertaining to the equipment in the process
- Documentation that equipment complies with recognized and generally accepted good engineering practices.

Section 3: Process Hazard Analysis

Requirements: An initial process hazard analysis must be conducted by a team with expertise in engineering and process operations, including at least one employee who has experience and knowledge on the system. This initial process hazard analysis shall be conducted by the facility owner.

After Initial PHA

- Establish a system to promptly address the team's findings and recommendations
- Assure that the recommendations are resolved in a timely manner
- Document resolutions
- Document what actions are to be taken
- Complete actions as soon as possible
- Develop a written schedule of when these actions are to be completed; Communicate the actions to operating, maintenance

PHA review is required at periodically as determined by the facility owner and all updates shall be sent to the project manager and relayed through training to the electricians.

PHA must address: The hazards of the process;

Identify previous incident which had a likely potential for catastrophic consequences in the workplace

- Engineering and administrative controls
- Detection methods for providing early warning of releases
- Consequences of failure of engineering and administrative controls
- Facility site

- Human factors
- Qualitative evaluation of a range of the possible safety and health effects of failure of controls on employees

Section 4: Operating Procedures

Requirements: Obtain from the facility owner written operating procedures that provide clear instructions for safely conducting operations and maintenance. Operating procedures shall be readily accessible to employees. The operating procedures shall be reviewed as often as necessary to assure that they reflect current operating practice. E Light shall ensure that the operating procedures have been certified annually by the facility owner.

Develop and implement safe work practices to provide for the control of hazards during operations such as lockout/tagout; confined space entry; opening process equipment or piping; and control over entrance into a facility by maintenance, contractor, laboratory, or other support personnel. These safe work practices shall apply to employees and contractor employees.

Procedures shall include:

- Initial startup
- Normal, temporary and emergency operations
- Normal shutdown
- Startup following a turnaround or after an emergency shutdown
- Operating limits
- Consequences of deviation & Steps required to correct or avoid deviation.
- Safety and health considerations:
- Precautions necessary to prevent exposure, including engineering controls
- Administrative controls, and personal protective equipment
- Control measures to be taken if physical contact or airborne exposure occurs
- Quality control for raw materials and control of hazardous chemical inventory levels
- Safety systems and their functions.

Section 5: Training

Requirements

Initial training: E Light Employees must be trained in an overview of the process and in the operating procedures as applies to the maintenance and repair. The training shall include emphasis on the specific safety and

health hazards, emergency operations including shutdown, and safe work practices applicable to the employee's job tasks.

For those employees already involved in operating a process on May 26, 1992, an employer may certify in writing that the employee has the required knowledge, skills, and abilities to safely carry out the duties and responsibilities as specified in the operating procedures.

Refresher training shall be provided at least every three years, and more often if necessary, to each employee involved in operating a process to assure that the employee understands and adheres to the current operating procedures of the process. The employer, in consultation with the employees involved in operating the process, shall determine the appropriate frequency of refresher training.

Training documentation. E Light Electric Services shall ascertain that each employee involved in operating a process has received and understood the training required by this paragraph. The employer shall prepare a record that contains the identity of the employee, the date of training, and the means used to verify that the employee understood the training.

Section 6: Contractors

Requirements

- Obtain and evaluate information regarding the contract employer's safety performance and programs
- Communicate to contractors the known potential fire, explosion, or toxic release hazards related to the contractor's work .
- Develop and implement safe work practices to control the entrance, presence and exit of contract personnel
- evaluate the performance of contract employers in fulfilling their obligations
- a contract employee injury and illness log related to the contractor's work in process areas

Section 7: Pre-Startup Safety Review

Requirements: Coordinate with the facility owner to perform a pre-startup safety review for new facilities and for modified facilities when the modification is significant enough to require a change in the process safety information. The

purpose of the Pre-Startup Review is to confirm that, prior to the introduction of highly hazardous chemicals to a process:

- Construction and equipment is in accordance with design specifications;
- Safety, operating, maintenance, and emergency procedures are in place and are adequate
- Modified facilities meet the requirements contained in Management of Change
- Training of each employee involved in operating a process has been completed.

Section 8: Mechanical Integrity

Requirements: Establish and implement written procedures in cooperation with the facility owner to maintain the on-going integrity of the equipment. This includes:

Test & Inspections (T&Is) on equipment following recognized and generally accepted good engineering practices, manufacturers recommendations and operating experience for the conduct and frequency.

Documentation of T&Is, identifying:

- date
- name of the person performing T&I
- serial number or other identifier of the
- description of the inspection or test performed
- results

Equipment deficiencies. Correct deficiencies in equipment that are outside acceptable limits before further use or in a safe and timely manner when necessary means are taken to assure safe operation.

New Equipment. Assure that equipment as it is fabricated is suitable for the process application for which they will be used. Additionally, conduct appropriate checks and inspections to assure that equipment is installed properly and consistent with design specifications and the manufacturer's instructions.

Material Control. Assure that maintenance materials, spare parts and equipment are suitable for the process application for which they will be used.

Section 9: Hot Work

Requirements: The employer shall issue a hot work permit for hot work operations conducted on or near a covered process. The permit shall document that the fire prevention and protection requirements in 29 CFR 1910.252(a) have been implemented prior to beginning the hot work operations; it shall indicate the date(s) authorized for hot work; and identify the object on which hot work is to be performed. The permit shall be kept on file until completion of the hot work operations. The hot work shall be conducted in accordance with E Light Electric Services Hot Work Policy.

Section 10: Management of Change (MOC)

Requirements: Obtain from the facility owner written procedures to manage changes (except for "replacements in kind") to process chemicals, technology, equipment, and procedures; and, changes to facilities that affect a covered process for which our employees may have contact.

Prior to the change, address the following considerations:

- The technical basis for the proposed change;
- Impact of change on safety and health;
- Modifications to operating procedures;
- Necessary time period for the change; and,
- Authorization requirements for the proposed change.

Train affected employees and contract employees in the change prior to start-up of the process or affected part of the process.

Obtain Up-dated PSI, PHA and Operating Procedures

Section 11: Incident Investigation

Requirements:

Investigate each incident that resulted in, or could reasonably have resulted in a catastrophic release of highly hazardous chemical in the workplace. An incident investigation shall be initiated as promptly as possible, but not later than 48 hours following the incident. This investigation shall be separate from and in parallel to any investigation conducted by the facility owner. Results of the investigation shall be communicated to the Facility Owner.

Incident Reports: A report shall be prepared at the conclusion of the investigation that includes at a minimum:

- Date of incident
- Date investigation began
- Description of the incident
- Factors that contributed to the incident
- Recommendations resulting from the investigation

Corrective Actions: Establish a system to promptly address and resolve the incident report findings and recommendations. Forward recommendations to the facility owner.

Report Review: The report shall be reviewed with all affected personnel whose job tasks are relevant to the incident findings including contract employees where applicable. Incident investigation reports shall be retained for five years

Section 12: Emergency Planning & Response

Requirements:

Obtain from the facility owner an emergency action plan for the entire plant in accordance with the provisions of 29 CFR 1910.38(a). and 29 CFR 1910.120(a), (p) and (q). In addition, the emergency action plan shall include procedures for handling small releases.

Train all E Light Employees on the emergency action plan and document the successful completion of this training.

Section 13: Compliance Audits

Requirements: Obtain from the facility owner verification that a compliance audit has been performed and ask for the results of the audit. Certify that E Light Electric Service employees are in compliance with the provisions of the PSM Standard at least every three years to verify that the procedures and practices developed under the standard are adequate and are being followed.

- The compliance audit shall be conducted by at least one person knowledgeable in the process.
- A report of the findings of the audit shall be developed.
- Promptly determine and document an appropriate response to each of the findings of the compliance audit, and document that deficiencies have been corrected.

- Retain the two (2) most recent compliance audit reports.

Section 14: Trade Secrets

Requirements: E Light Electric Service personnel shall not share any information obtained from the facility owner with any outside source unless compelled to do so by a court with appropriate jurisdiction.

E Light Electric Services shall comply with the confidentiality and trade secret policies of the facility owner.

E Light Electric Services

Aerial & Scissors Lift Safety Program

Purpose

The purpose of this section is to outline policies and procedures for the safe operations of scissors lift and aerial lifts operated by E Light Electric Services employees. It applies to all operations, programs and locations that require employees to access elevated locations and/or use aerial work platforms; in particular steel erection and inspection.

Definitions

Aerial Lift – A piece of equipment, extendable and/or articulating, designed to position personnel and/or materials in elevated locations.

ANSI – American National Standards Institute.

Lanyard – ANSI approved line designed for supporting one person, with one end connected to a safety harness and the other end attached to a suitable anchorage able to support 5,400 pounds of force. The anchorage can be a structural steel member, an approved lifeline, or other approved anchorage points.

Full Body Harness – ANSI approved body device designed for fall protection, which by reason of its attachment to a lanyard and safety line or an approved anchorage point, which will limit a fall to six (6) feet or less. Employees shall only use 10 foot self-retracting type lanyards while operating lift equipment.

Fall Protection

Full body harnesses and lanyards shall only be used, as intended by the manufacturer, for employee fall protection. Appropriate devices shall be used to provide 100% fall protection. The "D" ring on the body harness shall be positioned in the back up between the shoulder blades to minimize impact forces of the body in the event of a fall.

All fall protection equipment shall be carefully inspected prior to each use and periodically throughout the day. Safety equipment showing any signs of mildew, torn or frayed fabric or fiber, burns, excessive wear, or other damage or deterioration which could cause failure shall be permanently removed from service. All fall protection equipment shall be properly maintained and stored when not in use. This includes keeping dry and out of sunlight, away from caustics, corrosives or other materials that could cause defects.

Hard hats and safety harnesses shall be worn by employees in the bucket or platform of any aerial lift device. Other safety personal protective items may be required by either company or client safety policies. High visibility clothing is NOT required for employees, but it is recommended while working in the air.

Consideration must be given to water hazards and appropriate precautions. When 100% fall protection is employed, OSHA water safety standards are not mandated. However it is advisable to take minimum precautions such as readily available buoy and safety line, and a rescue boat.

Equipment

Aerial lift devices shall conform to ANSI Standards applicable to the type of equipment being used – bucket truck, under-bridge inspection vehicle, portable and/or self-propelled personnel lift. Aerial lift devices shall only be used for the purpose(s) intended by the manufacturer. All manufacturer and maintenance department recommendations and warnings regarding operation, capacity and safety precautions shall be strictly followed. Permanent labeling must be conspicuously posted to indicate lifting capacity and travel height.

Only devices approved for lifting personnel shall be used as aerial lifts. Loaders, forklifts or other material lift devices shall NOT be used to transport employees to elevated locations nor as work platforms. Forklifts and cranes may ONLY be used as a last resort, and then only with approved personnel baskets.

Modifications shall not be made to any aerial lift device without the expressed written authorization from the manufacturer. Buckets and bucket liners shall not be drilled, cut, welded on, etc.

Procedures

Lift equipment shall be inspected upon delivery to the jobsite, and daily prior to use. The daily inspection will include testing the controls prior to use, and all inspections shall be documented on the Aerial Lift Daily Inspection form. All inspections shall be performed in accordance with the manufacturers operators manual. A log of the inspection shall be kept with the piece of equipment or shall be filed for review in the jobsite office. Records of inspection shall be filed with job records.

Equipment that does not pass all inspection points shall be taken out of service until repairs can be made.

Before extending or raising the boom or platform, outriggers (if so equipped), shall be positioned properly and the lift will be level. Outriggers shall be placed on mud mats or other SOLID surface, and shall not be used to level the vehicle. If the lift is on unlevelled ground, the wheels shall be chocked and the parking brake set. Sufficient clearance shall be checked before raising the lift. For under-bridge units, adequate clearance beneath the boom shall be assured.

Employees shall keep both feet on the floor of the bucket or platform at all times. When the lift has to be moved, it shall only be moved when the bucket or platform is at the lowered position. For scissorlifts, this is lowered all the way down, and for aerial lifts, this is lowered to the lowest point that the operator can safely see to drive the vehicle.

Employees are required to wear full body safety harnesses with lanyards. The lanyards shall be attached to an engineered anchorage point inside the lift. Do Not wrap the lanyard around a rail and tie back onto itself. Employees are Not to anchor on structural members outside of the lift, unless exiting the lift to get on the structural members.

Platform lifts (scissorslifts) shall have a top and mid rail and a kick plate (toe board), along with an engineered anchorage point to tie off. Employees shall not climb nor stand on the mid or top rails, keeping both feet on the floor of the platform.

Tools, parts or any materials shall not be dropped or thrown from the bucket or platform. When using welding or heating equipment from the bucket or platform, the vehicle shall be protected from sparks and slag and special care shall be taken to remove flammable objects away from the lifts.

Electrical Safety

When working near electrical lines or equipment, avoid direct or indirect contact. Direct contact is body contact. Indirect contact is when the body touches or is in dangerous proximity to any object that is in contact with energized systems. Always assume lines are "live" and carry high voltage. Electrical lines can only be considered "dead" when verified by licensed electricians from the utilities department, and proper lockout and tagout has been performed.

Employees shall not position any aerial lifts closer than ten (10) feet to a power line that carries up to fifty (50) kilovolts. For each kilovolt over 50, add four (4) inches.

Employees are to be trained concerning the hazards and precautions of working near power lines.

Ensure posted warning placards are in place concerning electrical lines.

If the operator is unable to assess the clearances while operating the aerial lift, then a "spotter" must be used to observe the clearances and warn the operator.

Modifications

No lift equipment shall be modified in anyway unless the modification is approved by the lift manufacturer in writing. Racks, temporary fittings, extensions and material holding items shall not be allowed unless they are produced by the lift manufacturer.

Lifts shall only be used for the purpose they are designed per the manufacturer.

Training

Aerial lift operators shall be trained and certified to use the various lifts on the jobsites. Training shall be general safety and operation training and then also specific to the type of lift and manufacturer.

Training may be obtained from the rental companies supplying the lifts. If not available from the rental companies, contact the Director of Education and Loss Prevention for training options.

All employees operating lifts shall be issued a E Light Electric Services operator's card, to be carried at all times on their person, when working on a E Light jobsite. Retraining shall be accomplished annually or when an employee shows a lack of understanding of aerial lift safe operating procedures.

All operators of lifts shall read the operators manual for their piece of equipment once before the first use of that piece of equipment. The operators manual must be located with the equipment at times while in use.

Benzene and Hydrogen Sulfide (H2S) Safety Program

Purpose

The purpose of this program is to establish guidelines and procedures in the operations and maintenance of benzene and H2S containing atmospheres at E Light Electric Services to protect all employees, contractors, visitors and vendors from potential health hazards of benzene and H2S containing atmospheres and related diseases.

This Program applies to all buildings and structures owned by E Light Electric Services, to all employees and subcontractors of E Light Electric Services, to occupants of E Light Electric Services buildings and to E Light Electric Services projects who may come into contact with or disturb benzene and H2S containing atmospheres. The Program applies to routine work during which an employee might encounter benzene and H2S containing atmospheres as well as work undertaken to repair or remove benzene and H2S containing atmospheres.

Policy

It is the policy of E Light Electric Services that only qualified employees shall be involved in any repairs, maintenance or removal of any materials where the listed materials or gases are present. All unqualified employees shall be protected from exposure to benzene and H2S containing atmospheres by isolating and controlling access to all affected areas during benzene and H2S containing atmospheres work. All tasks involving the work in benzene and H2S containing atmospheres will be conducted only after appropriate work controls have been identified and implemented. A qualified supervisor shall be available at benzene and H2S containing atmospheres controlled work sites during all activities. Proper personal protective equipment and air monitor warning systems shall be maintained and used at all times that employees are working in areas that may contain benzene or H2S gases. If outside contractors are used, the company shall ensure all contractor employees have been properly trained and have been issued proper equipment and protective gear. Each subcontractor shall be responsible for supplying their employees with personal protective equipment and air monitors as required for individual projects.

Responsibilities

Management

- Ensure all Benzene and H2S containing atmospheres are identified and warning signs are posted

- Ensure training is effective for employees and that each employee knows how to properly test and wear their air monitor.
- Establish engineering controls for all work with benzene and H2S containing atmospheres material.
- Coordinate with building owners, owners representatives and general contractors to ensure E Light Electric Services employees are not exposed to benzene and H2S containing atmospheres hazards and/or benzene and H2S containing atmospheres hazards are mitigated prior to the performance of work
- Ensure E Light Electric Service employees are informed of benzene and H2S containing atmospheres hazards and mitigations on each project.

Supervisors

- Qualified supervisors shall provide effective on-site management during work with benzene and H2S containing atmospheres.
- Supervisors will notify the Director of Education and Loss Prevention immediately upon discovering benzene and H2S containing atmospheres.

Employees

- Qualified employees must follow the exact procedures established for the project for work in areas containing benzene and H2S gases.
- Unqualified employees are to stay clear of all benzene and H2S containing atmospheres work areas.

Hazards

BENZENE

Physical Description

Colorless to light-yellow liquid with an aromatic odor. [Note: A solid below 42°F.]

Exposure Routes

Inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms

Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression

NOTE: Potential occupational carcinogen

Personal Protection/Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation Provide: Eyewash, Quick drench	First Aid Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
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HYDROGEN SULFIDE (H₂S)

Physical Description

Colorless gas with a strong odor of rotten eggs. [Note: Sense of smell becomes rapidly fatigued & can NOT be relied upon to warn of the continuous presence of H₂S.

Exposure Routes

Inhalation, skin and/or eye contact

Symptoms

Irritation eyes, respiratory system; apnea, coma, convulsions; conjunctivitis, eye pain, lacrimation (discharge of tears), photophobia (abnormal visual intolerance to light), corneal vesiculation; dizziness, headache, lassitude (weakness, exhaustion), irritability, insomnia; gastrointestinal disturbance

Personal Protection/Sanitation Skin: Frostbite (Liquid) Eyes: Frostbite (Liquid) Wash skin: No recommendation Remove: When wet (flammable) Change: No recommendation Provide: Personal Air Monitor. Evacuate when alarm produced by air monitor.	First Aid Eye: Frostbite Skin: Frostbite Breathing: Respiratory support , remove from area
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Hazard Control

Engineering Controls

Engineering controls include the use of personal air monitor warning systems, evacuation procedures, evacuation muster areas safe from potentially exposed areas, use of respirators based on exposure potential.

Administrative Controls

Written procedures and management authorizations are required for all work involving benzene and H₂S containing atmospheres.

Training Controls

All personnel shall receive training on benzene and H₂S containing atmosphere hazards, mitigations and procedure before working on a project that has any of these atmospheres normally or where the potential of these atmospheres exist. . This training shall be coordinated by the Director of Education and Loss Prevention and records of training shall be kept and made available upon request.

All subcontractors shall provide the Director of Education and Loss Prevention records of completed training for any employee that will be assigned to an E Light Electric Services project where these atmospheres may exist.

Definitions

Benzene and H₂S containing atmospheres - Benzene and H₂S containing atmospheres is a generic term describing a location where Benzene or Hydrogen Sulfide may be present in levels above the NIOSH recommended levels for a safe work environment.

Benzene and H₂S containing atmospheres Work Categories -

Category 1

Work in areas where Benzene or H₂S is present in the work area above safe exposure limits as a normal condition.

Category 2

Work in areas where Benzene or H₂S may be present in the work area above safe exposure limits due to an accidental release, release from an adjacent area or other non-normal operational event. .

Category 3

Work in areas where Benzene or H₂S may be present in the work area or project site and through testing and or monitoring it has been determined that the area does not contain benzene or H₂S gases in excess of safe exposure limits.

General Rules

When in doubt, treat all work areas where the potential of Benzene or H₂S exists as containing benzene and H₂S containing atmospheres and comply with all applicable rules and regulations and protective measures until through monitoring or testing the area has been determined to be a Category 3 work area.

All Benzene and H₂S containing atmospheres category 2 and 3 shall require the wearing of a personal air monitoring warning device by all employees in the work area.

NOTE: Site specific procedures may be developed and submitted for approval to allow for work without monitors based on work being done in a category 2 or 3 work areas.

E Light Electric Services personnel and contractors shall not enter a Category 1 area unless they have completed the respirator program and are equipped with an appropriate respirator for the atmosphere and have completed all the procedures for entrance into a category 1 area.

NOTE: It is our intention that no E Light Electric Services personnel or contractor personnel should enter into Category 1 area.

Any employee who believes they are working in an area where Benzene or H₂S gases are present, shall immediately alert others in the area and all employees shall evacuate the area and supervision shall be notified. Supervision shall coordinate a test of the area with air monitors and coordinate with the building owner or building owner's representative to determine the air quality before employees are allowed to return to work.

Benzene and H₂S containing atmosphere Identification

Benzene and H₂S containing atmosphere areas shall be clearly identified by signage and all employees shall be briefed daily on the locations of the these areas and the category of the work area.

Inspection

The E Light Site Supervision shall be responsible for inspecting work areas prior to the start of procedures to ensure the absence of or identification of benzene or H2S atmospheres. The site supervision shall immediately notify the Director of Education and Loss Prevention and the building owner's representative of any benzene and H2S containing atmospheres hazards that are discovered and that are not identified.

Evacuation Procedures and Wind Direction Marking

All projects where category 1, 2 or 3 work may be performed shall have written evacuation procedures which shall include evacuation routes, evacuation alarms, muster locations, secondary and tertiary muster areas in the event the primary or secondary muster area is exposed, employee accounting and return to work area procedures.

All projects where category 1, 2 or 3 work may be performed in an outdoor environment shall be provided with wind socks that are activated by 10 mph or great wind speeds. Wind socks shall be placed at all employee entrance and exit points and also placed so that a wind sock is visible from all work areas where employees will be located during their work shift.

In the event of an evacuation in outdoor area, employees shall immediately identify the wind direction and then proceed in a calm and orderly manner to the primary or secondary muster areas. They shall proceed in a way that will keep the wind blowing across their bodies. They shall maintain a walking position that keeps the wind from blowing at their back or front of their body. They will chose to move towards a muster area that permits their movement in this manner.

All projects where category 1, 2 or 3 work may be performed in an outdoor environment shall designate their primary and secondary muster areas so that they are in locations that are located north and east or south and west approximately and located so that employees may evacuate to one of the sites in a manner described above regardless of the direction of wind.

Training

All E Light Electric Services employees will be trained to carry out their work without endangering themselves, their coworkers or other building occupants while working in areas containing benzene and H2S atmospheres.

Training Outline

All E Light Electric Services personnel shall complete Benzene and H2S containing atmospheres Awareness Training before working on a project where these atmospheres may be present.

This training shall include:

- The properties of Benzene and H2S and exposure limits.

- Ways to recognize benzene and H2S containing atmospheres

- The hazards of benzene and H2S containing atmospheres.

- Types of activities which could release benzene and H2S containing atmospheres.

- The E Light Electric Services Benzene and H2S containing atmospheres Safety Program

- State and Federal regulations regarding work in benzene and H2S containing atmospheres and disposal of benzene and H2S containing atmospheres.

- Site specific procedures for working in areas with potential benzene and H2S atmospheres.

- Evacuation procedures

- First aid and medical response in the event of exposure

- Correct inspection and use of personal air monitor systems.

Training will be specific to each project and employees must complete training for specific project.

Only those that have completed the training will be allowed to work in areas containing benzene and H2S containing atmospheres materials.

Subcontractors shall ensure all their employees have received Benzene and H2S containing atmospheres Awareness training. Subcontractors shall submit training records for all their employees to the Director of Education and Loss Prevention.

E Light Electric Services

CRITICAL LIFTS

Scope

This section includes guidelines and requirements applicable to critical lifts and describes the planning and documentation required to perform a critical lift.

References

29 CFR 1926, SUBPART N
ANSI/ASME B-30.7 SERIES
RESPONSIBILITIES

Responsibilities

Management

- Make determinations of critical lifts
- Provide supervisor & employee training
- Provide safe and proper equipment for critical lifts
- Provide inspection procedures

Supervisors

- Follow guidelines and inspection procedures
- Supervise all critical lifts
- Ensure employees have adequate operational knowledge & experience
- Immediately remove from service any equipment that fails inspection

Employees

- Follow lifting & rigging procedures
- Immediately report any problems with equipment or procedures
- Not attempt any critical lifts unless authorized & approved

Critical Lift Determination

The decision to designate a lift as a critical lift is a management decision. Guidelines provided here are intended to aid in making that decision. A lift should be designated as a critical lift if dropping, upset or collision could cause or result in any one of the following:

1. Damage that would result in serious economic consequences.
2. Damage that would result in unacceptable delay to schedule or other significant deleterious programmatic impact (such as loss of vital data)

3. Undetectable damage that would jeopardize future operations or safety of a facility.
4. Significant release of radioactive or other hazardous material to the environment or creation of an undesirable condition.
5. Personnel injury or significant adverse health impact, either onsite or offsite.
6. In addition, a lift that meets one of the following criteria shall be designated as a critical lift:
 - a. Any lift that requires the use of multiple cranes.
 - b. Any lift that exceeds 80% of the crane's rated capacity within the lift configuration of the crane.
 - c. The item to be lifted requires exceptional care in handling because of size, weight, close-tolerance installation, high susceptibility to damage or other unusual factor.
 - d. The item, although non-critical, requires exceptional care in handling because it is being lifted above a critical item.

The manager who has the responsibility for the item being lifted has the authority to require that it be handled as a critical lift. In addition, the manager at the facility where the lift will be performed also has the authority to require that it be handled as a critical lift. The manager who designates the lift as a critical lift shall ensure that a person-in-charge (PIC) is assigned. (The PIC need not be in the manager's organization).

Critical Lift Procedures

The PIC shall ensure that a step-by-step procedure is prepared for critical lifts. Although individual procedures are prepared for one-time critical lifts, general procedures may be employed to accomplish routine recurrent critical lifts. For example, a general procedure may be used to lift an item or series of similar items that are frequently lifted or repeatedly handled in the same manner. A critical lift procedure should contain the following, as applicable:

- Ø Identify the items to be moved.
- Ø Special precautions, if any (such as outrigger or track cribbing for mobile cranes).
- Ø Weight of the item and total weight of the load (For mobile cranes, see the manufacturer's instructions regarding components and attachments that must be considered as part of the load).
- Ø Center of gravity location.
- Ø A list of each piece of equipment (e.g., crane, hoist, fork truck), accessory, and rigging component (e.g., slings, shackles, spreader bars, yokes) to be used for the lift. (This list shall identify each piece of equipment by type and rated capacity).

- Ø Designated checkpoints and holdpoints and estimated instrument readings, as relevant, so that job progress can be checked against the plan.

NOTE: Sign-offs in the procedure are generally appropriate. For example, initial and time/date the procedure as key steps are completed. Hold points or sign-off points should be provided for personnel assigned to witness the work.

- Ø Rigging sketch(s), which include the following:

- Lift point identification.
- Method(s) of attachment.
- Load vectors.
- Sling angles.
- Accessories used.
- Other factors affecting the equipment capacity.
- Rated capacity of equipment in the configuration(s) in which it will be used. (For mobile cranes, many factors affect rated capacity, including boom length, boom angle and work area).

- Ø A load-path sketch that shows the load path and height at key points in the job. (For lifts with mobile cranes, include the crane position(s) relative to the load and relative to surrounding obstructions. Where appropriate, include floor-loading diagrams).

- Ø A sketch indicating lifting and travel speed limitations. (This may be noted on the load path sketch or on a separate sketch).

- Ø A sign-off sheet to verify that equipment and tackle inspections or tests are current.

NOTE: Practice lifts are recommended. (If used, requirements for the practice lift should be documented in the procedure).

Approval of Critical Lifts

The critical lift procedure should be approved as required by the responsible contractor's procedures. In the absence of direction from the contractor's procedures, a critical lift procedure shall be approved (signed and dated) by the following:

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- Ø Procedure author.
- Ø Manager of the lift operation.
- Ø PIC
- Ø Responsible safety organization

Revisions to Critical Lift Procedures

Revisions to the procedure shall be reviewed and approved through the same cycle as the original procedure.

Prelift Meeting

Before the critical lift is performed, a prelift meeting with all participating personnel shall be held. During the meeting, the critical lift procedure shall be reviewed and questions shall be resolved. The prelift meeting shall be documented.

Documentation

Critical lift documentation is required. When the job is finished, the PIC shall transmit the critical lift documentation to the manager (or designee) for whom the lift was done. This documentation is subject to audit for one year after the critical lift is completed.

Documentation of a critical lift shall include the following:

- Ø The critical lift procedure, recording job completion with approval signatures and hold point sign-offs.
- Ø Documentation of the prelift meeting; containing, as a minimum, the meeting date and list of attendees (NOTE: it is recommended that documentation of the prelift meeting be included as part of the critical lift procedure.
- Ø Any additional documentation deemed appropriate by the PIC or other responsible personnel (e.g., lessons learned).

E Light Electric Services

Hot Work Safety Procedures

Purpose

Welding and Hot Work, such as brazing or grinding present a significant opportunity for fire and injury. All precautions of this program must be applied prior to commencing any welding or hot work by company employees or contractors. Reference: OSHA 29 CFR 1910.252

Responsibilities

Management

- Provide training for all employees whose task include heat, spark or flame producing operations such as welding, brazing, or grinding.
- Develop and monitor effective hot work procedures
- Provide safe equipment for hot work
- Provide proper and effective PPE for all hot work

Supervisors

- Monitor all hot work operations
- Ensure all hot work equipment and PPE are in safe working order
- Allow only trained and authorized employees to conduct hot work
- Ensure permits are used for all hot work outside authorized areas

Employees

- Follow all hot work procedures
- Properly use appropriate hot work PPE
- Inspect all hot work equipment before use
- Report any equipment problems
- Not use damaged hot work equipment

Definitions

Welding/Hot Works Procedures: any activity which results in sparks, fire, molten slag, or hot material which has the potential to cause fires or explosions.

Examples of Hot Works: Cutting, Brazing, Soldering, Thawing Pipes, Torch Applied Roofing, Grinding and Welding.

Special Hazard Occupancies: Any area containing Flammable Liquids, Dust Accumulation, Gases, Plastics, Rubber and Paper Products.

Hazards

- Fires & Explosions
- Skin burns
- Welding "blindness"
- Respiratory hazards from fumes & smoke

Training

Training shall include:

- Review of requirements listed in OSHA 1910.252
- Use of Hot Works Permit System
- Supervisor Responsibilities
- Fire Watch Responsibilities - specifically, the fire watch must know:
 1. That their ONLY duty is Fire Watch
 2. When they can terminate the watch
 3. How to use the provided fire extinguisher
 4. How to activate fire alarm if fire is beyond the incipient stage
- Operator Responsibilities
- Contractors Responsibilities
- Documentation requirements

- Respirator Usage requirements
- Fire Extinguisher training
- *Cadmium Awareness*
- *Hexavalent Awareness*
- *Zinc Oxide*

Hot Works Procedures

OSHA 29 CFR 1910.252 required fire prevention actions for welding/hot works.

A hot work permit shall be filled out by the person performing any hot work or by the supervisor of the person performing the hot work. The hot work permit shall be submitted to the person on site directly responsible of safety supervision for review and approval. A copy shall be kept by the safety supervisor and posted on the wall of the project office until such time as the permit is closed. Closed permits shall be filed with the job records.

A hard copy of the permit shall be posted in the area where the work is being performed and shall be clearly visible. The hard copy shall be returned to the safety supervisor when the hot work is completed.

The hot work permit shall include but not be limited to:

- Date of work performed
- Expected duration of work
- Area work is to be performed
- Hazards and Safety Precautions
- Type of Hot Work
- Fire Watch
- Name of persons performing work
- Approval and Close Out Acceptance Signatures

Where practicable all combustibles shall be relocated at least 35 feet from the work site. **Where relocation is impractical, combustibles shall be protected with flame proof covers, shielded with metal, guards, curtains, or wet down material to help prevent ignition of material.**

Ducts, conveyor systems, and augers that might carry sparks to distant combustibles **shall be protected or shut down.**

Where cutting or welding is done near walls, partitions, ceilings, or a roof of combustible construction, fire-resistant shields or guards shall be provided to prevent ignition.

If welding is to be done on a metal wall, partition, ceiling, or roof, precautions shall be taken to prevent ignition of combustibles on the other side, due to conduction or radiation of heat. **Where combustibles cannot be relocated on the opposite side of the work, a fire watch person shall be provided on the opposite side of the work.**

Welding shall not be attempted on a metal partition, wall, ceiling or roof having a covering nor on walls having combustible sandwich panel construction.

Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings, or roofs shall not be undertaken if the work is close enough to cause ignition by combustion.

Cutting or welding shall not be permitted in the following situations:

- In areas not authorized by management.
- In sprinkled buildings while such protection is impaired.
- In the presence of potentially explosive atmospheres, e.g.. a flammable
- In areas near the storage of large quantities of exposed, readily ignitable materials.
- In areas where there is dust accumulation of greater than 1/16 inch within 35 feet of the area where welding/hot works will be conducted. *All dust accumulation should be cleaned up following the housekeeping program of the facility before welding/hot works are permitted.*

Suitable extinguishers shall be provided and maintained ready for instant use.

A fire watch person shall be provided during and for 2 hours past the completion of the welding project.

A cutting/welding permit will be issued on all welding or cutting outside of the designated welding area.

Welding & Hot Work fire prevention measures

A designated welding area should be established to meet them following requirements:

- a. Floors swept and clean of combustibles within 35 ft. of work area.
- b. Flammable and combustible liquids and material will be kept 35 ft. from work area.
- c. Adequate ventilation providing 20 air changes per hour, such as a suction hood system should be provided to the work area.
- d. At least one 10 lb. dry chemical fire extinguisher should be within access of the 35 ft. of work area.
- e. Protective dividers such as welding curtains or non-combustible walls will be provided to contain sparks and slag to the combustible free area.

Requirements for welding conducted outside the designated welding area.

- a. Portable welding curtains or shields must be used to protect other workers in the welding area.
- b. A hot works permit must be completed and complied with prior to welding operation.
- c. Respiratory protection is mandatory unless an adequate monitored air flow away from the welder and others present can be established and maintained.
- d. Plastic materials be covered with welding tarps during welding procedures
- e. Fire Watch must be provided for all hot work operations.

Welding Standard Operating Procedures

The following pages list the *Welding Standard Operating Procedures* (SOP) and are applicable for all electric and gas welding. These SOPs are to be posted at each Designated Welding & Hot Work Area for quick reference and review.

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SOP - Electric Welding

Perform Safety Check on all equipment

Ensure fire extinguisher is charged and available

Ensure electrical cord, electrode holder and cables are free from defects (no cable splices are allowed within 10 feet of the electrode holder).

Ensure PPE (welding hood, gloves, rubber boots/soled shoes, aprons) are available and have no defects.

Ensure the welding unit is properly grounded.

All defective equipment must be repaired or replaced before use.

Remove flammables and combustibles

No welding is permitted on or near containers of flammable material, combustible material or unprotected flammable structures.

Place welding screen or suitable barricade around work area to provide a fire safety zone and prevent injuries to passersby (Do not block emergency exits or restrict ventilation)

Ensure Adequate Ventilation and Lighting

Execute Hot Work Permit procedures

Set Voltage Regulator

No higher than the following for:

Manual Alternating Current Welders - 80 volts

Automatic Alternating Current Welders - 100 volts

Manual or automatic Direct Current Welders -100 volts

Uncoil and spread out welding cable

To avoid overheating, ensure proper contact of work leads and connections, remove any metal fragments from magnetic work clamps (to avoid electric shock do not wrap welding cables around a body part and avoid welding in wet conditions)

Fire watch for one hour after welding & until all welds have cooled

Perform final fire watch and terminate permit.

SOP: Gas Welding

Perform Safety Check on all equipment

Ensure tanks have gas and fittings are tight

Ensure fire extinguisher is charged and available

Ensure hoses have no defects

Ensure PPE (welding hood, gloves, rubber boots/soled shoes, aprons) are available and have no defects.

All defective equipment must be repaired or replace before uses.

Remove flammables and combustibles

No welding is permitted on or near containers of flammable material, combustible material or unprotected flammable structures.

Place welding screen or suitable barricade around work area to provide a fire safety zone and prevent injuries to passersby (Do not block emergency exits or restrict ventilation)

Ensure Adequate Ventilation and Lighting

Execute Hot Work Permit procedures

Open Valves on Oxygen and Gas tanks to desired flow

Shut Tank Valves & relieve hose pressure. Store hoses

Fire watch for one hour after welding & until all welds have cooled

Perform final fire watch and terminate permit.

Dangerous or Potentially Dangerous Gases Caused By Welding

Welding Specific Provisions

The process of welding, grinding and cutting of galvanized materials and certain other materials has been demonstrated to cause potential exposure to zinc oxide, hexavalent chromide and cadmium gases which can produce negative health effects.. All welding, grinding and cutting of

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galvanized materials must be done with the use of a respirator and a respirator program must be established and maintained by the contractor responsible for the welding, grinding and cutting.

E Light Electric Service employees shall not perform welding in area where they could be exposed to cadmium gases.

NIOSH REPORT EXCERPT: Zinc Oxide

Overexposures to zinc oxide may produce metal fume fever, also known as brass chills, welders' ague, copper fever, zinc fever, and Monday morning fever. Metal fume fever is a syndrome that arises after respiratory exposure to the fume of any of several metals. Fume is generated when a metal is heated to above its melting point, typically in such settings as brass foundry work, welding, galvanized steel, and acetylene or plasma arc cutting. Exposure to fumes of zinc, copper, and magnesium are the most common causes. Symptoms, such as thirst, metallic taste, dry mouth, and headache, occur about four to eight hours after fume exposure. Cough, chills with irregular fever, dyspnea, muscle pain, and a sense of weakness and fatigue may develop over the subsequent few hours. The illness is self-limited and usually resolves within 24-48 hours. Illness can occur after an individual's first exposure to fume. Exposure to fume within a day or so of initial exposure tends to elicit less severe symptoms, but repeated exposure after having avoided metal fume for a longer period makes the individual susceptible again to the initial symptoms. The name "Monday morning fever" is used among workers with Monday through Friday fume exposure who become ill after a Monday exposure, feel well for the rest of the work week, and become ill again the next Monday.

Exception: *Respirators shall not be required if (2) two persons are monitored with an approved air monitor for (2) two eight hour periods of welding, cutting or grinding and it is demonstrated that neither person was exposed to the levels exceeding the recommended NIOSH 5 mg/m³ 10-hour TWA limit with a 15-minute ceiling of 15 mg/m³.*

NIOSH REPORT EXCERPT: Hexavalent Chromium

The NIOSH REL (10-hour TWA) is 0.001 mg Cr(VI)/m³ for all hexavalent chromium [Cr(VI)] compounds. NIOSH considers all Cr(VI) compounds (including chromic acid, tert-butyl chromate, zinc chromate, and chromyl chloride) to be potential occupational carcinogens.

The NIOSH REL (8-hour TWA) is 0.5 mg Cr/m³ for chromium metal and chromium(II) and chromium(III) compounds.

The OSHA PEL is 0.005 mg CrO₃/m³ (8-hour TWA) for chromic acid and chromates (including tert-butyl chromate with a "skin" designation and zinc chromate); 0.5 mg Cr/m³ (8-hour TWA) for chromium(II) and chromium(III) compounds; and 1 mg Cr/m³ (8-hour TWA) for chromium metal and insoluble salts.

Overexposures to hexavalent chromium may produce negative health impacts. All employees that may potentially be exposed to hexavalent chromium shall complete Hexavalent chromium awareness training prior to performing welding operations in this environment. Testing shall be performed to determine hexavalent chromium levels and respirators shall be worn while performing welding in areas where exposure to hexavalent chromium is a potential.

Exception: *Respirators shall not be required if (2) two persons are monitored with an approved air monitor for (2) two eight hour periods of welding, cutting or grinding and it is demonstrated that neither person was exposed to the levels exceeding the recommended NIOSH .001 mg/m³ 10-hour TWA limit .*

All welders must demonstrate through the submittal of welding certifications their welding proficiency prior to welding on any E Light Electric project.

E Light Electric Services Environmental [Management Policy](#)

Purpose: This document establishes an environmental management policy and program for E Light Electric Service, Inc.

Applicability: This Directive applies to all company organizational elements, facilities and projects.

Policy: All company employees must be committed to protect, preserve, and enhance the quality of the work environment while conducting their primary activities. The company environment includes the soil, water, air, and natural habitat within and around all facilities and boundaries. The company Environmental Management Program is built around three of the four focus areas: prevention, compliance, conservation and restoration.

The company will conduct business in an environmentally responsible manner; optimize the use of resources through the use of efficient technologies and procedures; prevent adverse impacts; and comply with applicable requirements. The company will actively support efforts to implement environmental policy, programs, initiatives, and activities. The company will integrate environmental stewardship and accountability in the performance of its operations and activities to promote continuous improvement of environmental performance. The company will cooperate with all clients in maintaining programs for environmental protection and will advise clients of potential environmental impacts for projects including mitigation suggestions. The company will actively pursue construction projects and business development in the renewable energies markets.

Company objectives are to prevent adverse environmental effects and to realize the benefits of superior environmental performance. To attain these objectives, the company will use risk management, pollution prevention, recycling, energy conservation and sustainable development techniques to improve environmental performance and reduce operating costs.

All field projects shall be supplied with an adequate number of spill containment and clean up kits to effectively manage any spill which may occur on site. All personnel on site shall be trained in the use of a the spill kit and in the proper containment, clean up and disposal techniques.

Responsibilities: It is the responsibility of every company employee to comply with Federal, State, and local environmental regulations. It is the responsibility of every employee to determine methods to reduce the use of nonrenewable fuel sources and reduce the amount of energy consumed in the course of business. It is the responsibility of every employee to participate in recycling efforts.

Management: The company management is responsible for all [environmental compliance](#) activities at all company facilities.

Director of Education and Loss Prevention: As the company's focal point for environmental activities, the Director of Education and Loss Prevention has overall environmental

responsibilities and will function as the environmental manager (EM). The EM task is to ensure continual [surveys](#), reviews, and evaluations of environmental activities at all levels throughout the company are conducted. Under this authority, the EM has authority for approval or cessation of all phases of acquisition and operation of hazardous facilities, systems, or equipment for non-compliance activities. The EM will develop and administer training programs for corporate employees to educate them on environmental responsibility, recycling, energy conservation, fuel conservation, regulations and lead containing product hazards.

Project Managers: Managers of company facilities and projects shall ensure that internal organizational plans and procedures are maintained to implement and comply with the Federal, State, and local environmental laws and regulations.

**E Light Electric Services
Master Document
Confidential**

Business Continuity Plan

Purpose

The purpose of this business continuity plan is to prepare E Light Electric Services and E Wind and Solar in the event of extended service outages caused by factors beyond our control (e.g., natural disasters, man-made events), and to restore services to the widest extent possible in a minimum time frame. All E Light Electric Services sites are expected to implement preventive measures whenever possible to minimize communication and services failure and to recover as rapidly as possible when a failure occurs.

The plan identifies vulnerabilities and recommends necessary measures to prevent extended service outages. It is a plan that encompasses all system sites and operations facilities.

1.1 Scope

The scope of this plan is limited to communication and service provision. This is a business continuity plan, not a daily problem resolution procedures document.

1.2 Plan Objectives

- Serves as a guide for the E Light Electric Services recovery teams.
- References and points to the location of any data that resides outside this document.
- Provides procedures and resources needed to assist in recovery.
- Identifies vendors and customers that must be notified in the event of a disaster.
- Assists in avoiding confusion experienced during a crisis by documenting, testing and reviewing recovery procedures.
- Identifies alternate sources for supplies, resources and locations.
- Documents storage, safeguarding and retrieval procedures for vital records.

1.3 Assumptions

- Key people (Team Leaders or Alternates) will be available following a disaster.
- A national disaster such as nuclear war is beyond the scope of this plan.
- This document and all vital records are stored in a secure off-site location and not only survived the disaster but are accessible immediately following the disaster.
- Each support organization will have its own plan consisting of unique recovery procedures, critical resource information and procedures.

1.4 Disaster definition

Any loss of utility service (power, water), connectivity (system sites), or catastrophic event (weather, natural disaster, vandalism) that causes an interruption in the service provided by E Light Electric Services operations. The plan identifies vulnerabilities and recommends measures to prevent extended service outages.

1.5 Recovery teams

- Emergency Management Team (EMT)
- Emergency Management Team Lead (EMTL)
- Emergency Communication Lead (ECL)
- Location Response Coordinator (LRC)
- Local Restoration Team (LRT)
- Incident Response Team (IRT)
- Technical Services Engineering (TSE)
- Client Communication Liaison (CCL)

See Appendix A for details on the roles and responsibilities of each team.

1.6 Team member responsibilities

- Each team member will designate an alternate backup
- All the members should keep an updated calling list of their work team members' work, home, cell phone numbers both at home and at work.
- All team members should keep this binder for reference at home in case the disaster happens during after normal work hours. All team members should familiarize themselves with the contents of this plan.

1.7 Instructions for using the plan

1.7.1 Invoking the plan

This plan becomes effective when a disaster occurs. Normal problem management procedures will initiate the plan, and remain in effect until operations are resumed at the original location, or a replacement location and control is returned to the appropriate functional management.

1.7.2 Disaster declaration

The Emergency Management Team and Location Response Coordinator are responsible for declaring a disaster for Technical Services and activating the various recovery teams as outlined in this plan.

In a major disaster situation affecting multiple business units, the decision to declare a disaster will be determined by The Director of Education and Loss Prevention Corporate. The Emergency Management Team/Location Response Coordinator will respond based on the directives specified by Corporate.

1.7.3 Notification

Regardless of the disaster circumstances, or the identity of the person(s) first made aware of the disaster, the Emergency Management Team (EMT) must be activated immediately in the following cases:

- Two (2) or more systems and/or sites are down concurrently for five (5) or more hours
- Five (5) or more systems and/or sites are down concurrently for five (5) or more hours
- Any problem at any system or network facility that would cause either of the above conditions to be present or there is certain indication that either of the conditions are about to occur

1.7.4 External communications

The corporate marketing assistant is designated as the principal contacts with the media (radio, television, and print), regulatory agency, government agencies and other external organizations following a formal disaster declaration. All media release shall be cleared by the Emergency Communication Lead before release.

1.7.5 Emergency management standards

Data backup policy

Full and incremental backups preserve corporate information assets and should be performed on a regular basis for audit logs and files that are irreplaceable, have a high replacement cost, or are considered critical. Backup media should be stored in a secure, geographically separate location from the original and isolated from environmental hazards.

Department specific data and document retention policies specify what records must be retained and for how long. All organizations are accountable for carrying out the provisions of the instruction for records in their organization.

Information Technology follows these standards for its data backup and archiving:

Tape retention policy

Backup media is stored at locations that are secure, isolated from environmental hazards, and geographically separate from the location housing the system.

Backup System Hard Drive Network

- Hard Drive is stored at Englewood Corporate office with a mirror image stored at the Colorado Springs Office.
- Hard Drive Full Back up is run every Friday Night
- Incremental backup is made everyday recording only changed files.
- Mirror Image back ups will be created weekly

Backup System Hard drive E Mail

- Hard Drive procedure will be the same as Network Drive Procedure

1.7.6 Emergency management procedures

The following procedures are to be followed by system operations personnel and other designated company personnel in the event of an emergency. Where uncertainty exists, the more reactive action should be followed to provide maximum protection and personnel safety.

Note: Anyone not recognized by the Technical Services staff as normally having business in the area must be challenged by the staff who should then notify the EMT lead.

These procedures are furnished to company management personnel to take home for reference. Several pages have been included to supply emergency contacts.

In the event of any situation where access to a company facility or company provided housing facility or a system is denied, personnel should report to alternate locations. Primary and secondary locations are listed below.

Alternate locations

Workplace: Englewood Corporate Offices

- Attempt to contact your immediate supervisor or management via telephone. Home and cell phone numbers are included in this document

Workplace: Colorado Springs Office

- Attempt to contact your immediate supervisor or management via telephone. Home and cell phone numbers are included in this document

Workplace: Fredrick Office

- Attempt to contact your immediate supervisor or management via telephone. Home and cell phone numbers are included in this document

Workplace: Project Jobsite Any Location

- Attempt to contact your immediate supervisor or management via telephone. Home and cell phone numbers are included in this document

Employee Housing Facility

- Attempt to contact your immediate supervisor or management via telephone. Home and cell phone numbers are included in this document

1.7.7 In the event of a natural disaster

In the event of a major catastrophe affecting an E Light Electric Services facility, immediately notify the **Director of Safety, Ted Smith, (303) 550-5292**

Procedure

STEP	ACTION
1	Notify the CEO, Vice President of Operations and Director of Service of pending event, if time permits.
2	<p>If impending natural disaster can be tracked, begin preparation of site within 72 hours as follows:</p> <ul style="list-style-type: none"> • Deploy portable generators with fuel within 100 miles. • Deploy support personnel, service technicians, and information technology personnel within 100 miles. • Deploy tractor trailers with replacement work space, antennas, power, computers and phones in a safe location with adequate access to original location. • Place Service and Operations department on standby for replacement shelters and recovery personnel support • Transfer network and communications to emergency trailers on hard drives for access and use • Initiate emergency travel and housing arrangements for potential support and recovery • Determine if alternate employee housing will be necessary • Initiate communication with employee families and arrange for updated communications by Human Resources Dept. • Basic necessities are acquired by support personnel when deployed: <ul style="list-style-type: none"> • Food and water for 1 week • Temporary housing • Gasoline and other fuels • Supplies, including chainsaws, batteries, rope, flashlights, medical supplies, etc.
3	<p>24 hours prior to event:</p> <ul style="list-style-type: none"> • Create an image of the system and files • Back up critical system elements • Verify backup generator fuel status and operation • Create backups of e-mail, file servers, etc. • Fuel vehicles and emergency trailers • Place service and operations on standby for travel for support and recovery • Notify senior management

1.7.8 In the event of a fire

In the event of a fire or smoke in any of the facilities, the guidelines and procedures in this section are to be followed. The Director of Education and Loss Prevention shall be notified in the event of a fire at any company facility.

If fire or smoke is present in the facility, **evaluate the situation and** determine the severity, categorize the fire as *Major* or *Minor* and take the appropriate action as defined in this section. Call 911 as soon as possible if the situation warrants it.

- Personnel are to attempt to extinguish **minor fires** (e.g., single hardware component or paper fires) using hand-held fire extinguishers located throughout the facility. Any **other fire or smoke situation** will be handled by a designated IRT member until the local fire department arrives. If the facility has no IRT member present, call 911, evacuate the building and wait for the local fire department.
- In the event of a major fire, call 911 and immediately evacuate the area.
- In the event of any emergency situation, system site security and personal safety are the major concern. All personnel shall remain at the facility in the designated muster area until the local response coordinator has released them. The operations supervisor should remain present at the facility until the fire department has arrived.
- In the event of a major catastrophe affecting the facility, immediately notify the **Director of Safety. (EMTL)**

Procedure

STEP	ACTION
1	Dial 9-1-1 to contact the fire department
2	Immediately notify all other personnel in the facility of the situation and evacuate the area.
3	Alert emergency personnel on: PHONE NUMBERS Provide them with your name, extension where you can be reached, building and room number, and the nature of the emergency. Follow all instructions given.
4	Alert the Operations Manager. He/she will notify the Emergency Management Team Coordinator. <i>Note:</i> During non-staffed hours, security personnel or the stand by service technician will notify the Operations manager responsible for the location directly.

5	<p>Notify Building Security if Applicable</p> <p>Local security personnel will establish security at the location and not allow access to the site unless notified by the Director of Education and Loss Prevention or his designated representative</p>
6	<p>Contact appropriate vendor personnel to aid in the decision regarding the protection of equipment if time and circumstance permit</p>
7	<p>All personnel evacuating the facilities will meet at their assigned outside location (assembly point) and follow instructions given by the designed authority. Under no circumstances may any personnel leave without the consent of supervision.</p>

1.7.9 In the event of a network services provider outage

In the event of a network service provider outage to any facility, the guidelines and procedures in this section are to be followed.

Procedure	STEP	ACTION
	1	<p>Notify the Information Technology specialist of outage.</p> <p>Determine cause of outage and timeframe for its recovery.</p>
	2	<p>If outage will be greater than 1 hour, coordinate an alternative communication plan with the Information Technology Specialist. .</p> <p>If it is a major outage and all carriers are down and downtime will be greater than 12 hours an alternative communication plan will be developed and deployed by the information technology specialist.</p>

1.7.10 In the event of a flood or water damage

In the event of a flood or broken water pipe within any computing facilities, the guidelines and procedures in this section are to be followed. The Director of Education and Loss Prevention shall be notified.

Procedure

STEP	ACTION
1	Assess the situation and determine if outside assistance is needed; if this is the case, dial 911 immediately.
2	Immediately notify all other personnel in the facility of the situation and to be prepared to cease operations accordingly.
3	If water is originating from above equipment, power down the individual devices and notify the service department manager so that electrical service can be shut down by a qualified person. Remove sensitive equipment and paperwork to a safe location and store until situation is clear.

1.8 Plan review and maintenance

This plan is intended to be a living document and as such must be reviewed on a regular basis. The plan will be reviewed semi-annually and exercised on an annual basis. The test may be in the form of a walk-through, mock disaster or component testing. Additionally it is important to review the listing of personnel and phone numbers contained within the plan regularly. Emergency evacuation drills shall be performed at each facility and project annually.

The plan will be stored in a common location where it can be viewed by site personnel and the Emergency Management Team. Each recovery team will have its own directory with change management limited to the recovery plan coordinator.

The Director of Education and Loss Prevention will be responsible for the plan. A recovery plan coordinator will be assigned for each company location. Their specific responsibilities are as follows:

Frequency of plan update: Quarterly or when there is a change in personnel

- Provide hard copy of plan to all team members. Team members must store copy at home, in a personal car, or electronically via a hand-held device or laptop computer.
- Regularly review and update information in the disaster recovery plan (e.g., contact lists, equipment inventories). Communicate with the Emergency Management Coordinator to get up-to-date information periodically.
- Hold initial team meeting to get team members acquainted with the plan and hold annual/semi-annual meetings to review the plan on an ongoing basis

- Maintain an accurate record of the locations of alternate sites, equipment suppliers, data storage locations, portable power generators and implementation plans.

2. Alert/Verification/ Declaration phase

On-duty personnel responsibilities

If in-hours:

Upon observation or notification of a potentially serious situation during working hours at a system/facility, ensure that personnel on site have enacted standard emergency and evacuation procedures if appropriate and notify the Location Response Coordinator.

If out of hours:

The on call service technician or supervisor will notify the Director of Education and Loss Prevention. .

2.1 Provide status to EMT

1. The Location Response Coordinator (LRC) will contact the Emergency Management Team (EMT) and provide the following information when **any** of the following conditions exist: (**See Appendix B for contact list**)

- Five or more facilities are down concurrently for five or more hours.
- Any problem at any system or location that would cause the above condition to be present or there is certain indication that the above condition is about to occur.

The LRC will provide the following information:

- ◇ Location of disaster
- ◇ Type of disaster (e.g., fire, hurricane, flood)
- ◇ Summarize the damage (e.g., minimal, heavy, total destruction)
- ◇ Emergency Command Center location and phone contact number; a meeting location that is close to the situation, but away from the disaster scene
- ◇ An estimated timeframe of when a damage assessment group can enter the facility (if possible)

The EMT will contact the Senior Management Team and the CEW and report that a disaster has taken place.

2.2 Decide course of action

Based on the information obtained, the EMT decides (with the LRC) how to respond to the event: mobilize IRT, repair/rebuild existing site (s) with location staff, or relocate to a new facility.

2.3 Inform team members of decision

If a disaster is not declared, the location response team will continue to address and manage the situation through its resolution and provide periodic status updates to the EMT.

If a disaster is declared, the Location Response Coordinator will notify the Incident Response Team members immediately for deployment.

Declare a disaster if the situation is not likely to be resolved within predefined time frames. The person who is authorized to declare a disaster is Perry Herrmann, President and CEO. Ted Smith, Director of Education and Loss Prevention shall be the first back up. Bill Bicket, Director of Service shall be the second back up.

2.4 EMT notifies account teams/customers

Using the call list in (**Appendix D**), EMT members contact team members to inform them of the situation. If known, advise as to when operations will be restored or what actions will be taken to restore operations.

The Client Communication Liaison shall notify all customers and clients in the affected area of the situation, the ongoing mitigation and the expected types and durations of service interruptions.

The Emergency Management Team Lead shall notify all Project Managers of the situation, the ongoing mitigation and the expected types and durations of service interruptions.

The project managers in the affected areas shall notify their clients that we are activating the force majeure clause of our contract.

The Human Resources Manager shall notify employees and family members of the situation, ongoing mitigation and the types and expected durations of service outages.

2.5 Contact general vendors (see Appendix I)

The affected project managers shall notify vendors of the situation, ongoing mitigations and the types and expected durations of service interruptions.

3. Disaster declared: mobilize incident response team/Report to command center

Once a disaster is declared, the Incident Response Team (IRT) is mobilized. This recovery team will initiate and coordinate the appropriate recovery actions. IRT members assemble at the Command Center as quickly as possible.

The LRT remains at the affected site to perform a preliminary damage assessment (if permitted) and gather information until the IRT arrives.

3.1 Conduct detailed damage assessment (This may also be performed prior to declaring a disaster)

1. Under the direction of local authorities and/or LRC/IRT assess the damage to the affected location and/or assets. Include vendors/providers of installed equipment to ensure that their expert opinion regarding the condition of the equipment is determined ASAP.
 - A. Participate in a briefing on assessment requirements, reviewing:
 - (1) Assessment procedures
 - (2) Gather requirements
 - (3) Safety and security issues

NOTE: Access to the facility following a fire or potential chemical contamination will likely be denied for 24 hours or longer.

- B. Document assessment results using Assessment and Evaluation Forms contained in Appendix G

Building access permitting:

- Conduct an on-site inspection of affected areas to assess damage to essential hardcopy records (files, manuals, contracts, documentation, etc.) and electronic data
 - Obtain information regarding damage to the facility (s) (e.g., environmental conditions, physical structure integrity, furniture, and fixtures) from the LRC/LRT.
2. Develop a Restoration Priority List, identifying facilities, vital records and equipment needed for resumption activities that could be operationally restored and retrieved quickly
 3. Develop a Salvage Priority List identifying sites and records which could eventually be salvaged
 4. Recommendations for required resources
 5. Contact the EMTL and decide whether the situation requires the initiation of business recovery plans (long-term disaster, months) or if work can return to the primary location (short-term week or so).

3.2 Contact EMT/decide whether to continue to business recovery phase

The LRC gathers information from the IRT and other sources; contacts the EMT and provides the EMT with detailed damage assessment information.

Based on the information obtained from the LRC, the EMT decides whether to continue to the business recovery phase of this plan. If the situation **does not** warrant this action, continue to address the situation at the affected site (s). Provide periodic status updates to the EMT Leader.

The business recovery phase of this plan will be implemented when resources are required to support full restoration of system and/or facility functionality at an alternate recovery site (e.g., another company office, vendor hot site, cold site) that would be used for an extended period of time.

NOTE: During the Initial Response Phase, service may be shifted to alternate sites to allow operations to begin functioning and provide service to its customers. Initially reduced service may be provided until sites can be fully restored. Within *14 days* the system and facilities should be functional at 100%.

4. Business recovery phase

This section documents the steps necessary to activate business recovery plans to support full restoration of systems or facility functionality at an alternate/recovery site that would be used for an extended period of time. Coordinate resources to reconstruct business operations at the temporary/permanent system location, and to deactivate recovery teams upon return to normal business operations.

4.1 Company System and facility operation requirements

The system and facility configurations for each location are important to re-establish normal operations.

The Director of Education and Loss Prevention shall review the needs of each facility and develop a plan for each location in cooperation with the management representative responsible for the facility.

The Director of Education and Loss Prevention shall develop an emergency interim business continuation plan including temporary plans to provide services and support to clients and submit for review and approval to the CEO within 72 hours.

The Vice President of Operations shall develop a business relocation plan including logistics and support personnel and submit to the CEO for review and approval within 72 hours.

4.2 Notify Information Technology Specialists/coordinate relocation to new facility/location

The information technology specialists shall immediately begin development of a plan to relocate and re-establish network and communication services. This report shall be developed and submitted to the CEO within 5 business days for review.

4.3 Secure funding for relocation

The CEO shall develop a plan for relocation of business and required funding and submit the plan to the Board of Directors for review and approval. The Vice President of Finance shall develop an emergency funding plan and long term financial analysis and funding plan.

4.4 Notify EMT and corporate business units of recovery Startup

Using the call list in Appendix B, notify the appropriate company personnel. Inform them of any changes to processes or procedures, contact information, hours of operation, etc.

4.5 Initiate Business Relocation and Recovery Plan

The Director of Education and Loss Prevention shall coordinate the business relocation and recovery plan as approved by the CEO and the senior management team shall implement the plan.

4.6 Operations recovered

Assuming all relevant operations have been recovered to an alternate site, and employees are in place to support operations, the company can declare that it is functioning in a normal manner at the recovery location.

5. Appendixes

5.1 Appendix A: E Light Electric Services recovery teams

5.1.1 Emergency management team (EMT)

Lead: Director of Safety, Ted Smith
Alternate: Director of Service, Bill Kolson
CEO/ President, Perry Herrmann
Vice President of Operations, Jason Wheeler
Director of Construction, Mike Egri

Vice President of Preconstruction, David Wright
Vice President of Finance, Sandy Bonham
Director of Human Resources, Roseanne Mullis
Director of Education, Bill Bicket
Prefabrication Manager, Aron Bowen
Marketing Specialist, Jenny McKowen
Information Technology Manager, Scott Searles

Charter:

Responsible for overall coordination of the disaster recovery effort, evaluation and determining disaster declaration, and communications with senior management

Support activities:

The Emergency Management Team:

- Emergency Management Team Lead: Develop emergency contingency plan outlines and checklists and include in this plan by no later than December 31st, 2011.
- Evaluate which recovery actions should be invoked and activate the corresponding recovery teams.
- Evaluate and assess damage assessment findings
- Set restoration priority based on the damage assessment reports
- Provide senior management with ongoing status information
- Acts as a communication channel to corporate teams and major customers
- Work with vendors and IRT to develop a rebuild/repair schedule

5.1.2 Location Response Coordinator (LRC)

Note: See Appendix B for contact list. This role will be filled by the Project Manager for each construction project, the account manager for each service contract and the senior manager on location for each business location.

Charter:

Responsible for overall coordination of the disaster recovery effort for their region, establishment of the command center, and communications with Emergency Management Team

Support activities:

- Notify the Incident Recovery Team
- Gather damage assessment information and report it to EMT
- Determine recovery needs.
- Establish command center and related operations. The command center is a prearranged meeting facility where EMT/LRT/IRT members meet to coordinate damage assessment and business recovery tasks for the affected operations.
- Notify all Team Leaders and advise them to activate their plan (s) if applicable, based upon the disaster situation

- If no disaster is declared, then take appropriate action to return to normal operation using regular staff.
- Determine if vendors or other teams are needed to assist with detailed damage assessment.
- Prepare post-disaster debriefing report
- Coordinate the development of site specific recovery plans and ensure they are updated semi-annually.

5.1.3 Location Response Team (LRT)

Note: See Appendix B for contact list. This role will be filled by the site superintendent and supervisors for each construction project, the service technicians for each service contract and the project managers and account managers for each business location.

Charter:

The Location Response Team (LRT) is responsible for the initial alerting/notification of the problem to the LRC during normal business hours. During off hours, the LRT will be notified along with the LRC. In the event of a disaster declaration, this team will become a part of the Incident Response Team.

Support activities:

- Provide the following information to the LRC in the event of an outage:
 - a. Type of event
 - b. Location of occurrence
 - c. Time of occurrence
- Coordinate resumption of voice and data communications:
 - a. Work with management to re-route voice and data lines, especially when alternate site (s) or alternate work locations are predefined
 - b. Recover voice mail and electronic mail systems when requested by EMT.
 - c. Verify voice mail and electronic mail are operational at the alternate site.
 - d. Review the <Client> Minimum Acceptable Operational Requirements checklist to determine if sufficient resources are in place to support operations
- Coordinate resumption of information system operations:
 - a. Work with management to recover critical systems, applications and infrastructure at recovery site (s) or alternate work locations
 - b. Recover critical data files and related information when requested by EMT
 - c. Ensure that network and perimeter security is re-established at alternate location
 - c. Verify normal, secure operation of systems and servers at alternate site
 - d. Review the <Client> Minimum Acceptable Operational Requirements checklist to determine if sufficient resources are in place to support operations

5.1.4 Incident Response Team (IRT)

Note: See Appendix B for contact list. The incident response team shall be composed of designated personnel on each project and business location. The location response coordinator shall be responsible for designating personnel for their facility. Bryan Kassahn, Site Safety Manager shall be member of all incident response teams.

Charter:

The Incident Response Team (IRT) is formed to deploy to the disaster location when a disaster is declared.

Support Activities

- Provide recovery support to the affected location and operations
- Coordinate resumption of voice and data communications:
 - a. Work with management to re-route voice and data lines, especially when alternate site (s) or alternate work locations are predefined
 - b. Recover voice mail and electronic mail systems when requested by EMT.
 - c. Verify voice mail and electronic mail are operational at the alternate site.
 - d. Review the Minimum Acceptable Operational Requirements checklist to determine if sufficient resources are in place to support operations
- Coordinate resumption of information system operations:
 - a. Work with management to recover critical systems, applications and infrastructure at recovery site (s) or alternate work locations
 - b. Recover critical data files and related information when requested by EMT
 - c. Ensure that network and perimeter security is re-established at alternate location
 - c. Verify normal, secure operation of systems and servers at alternate site
 - d. Review the Minimum Acceptable Operational Requirements checklist to determine if sufficient resources are in place to support operations

5.1.5 IT Technical Support (TS)

Charter

IT Technical Support will facilitate technology restoration activities.

Support activities:

- Upon notification of disaster declaration, review and provide support as follows:
 1. Facilitate technology recovery and restoration activities, providing guidance on replacement equipment and systems, as required.
 2. Coordinate removal of salvageable equipment at disaster site that may be used for alternate site operations.

5.2 Appendix C: Emergency numbers

5.2.1 First Responders, Public Utility Companies, Others

Utility Name	Contact Name	Phone

5.3 Appendix D: Contact list

Name	Address	Home	Mobile/Cell Phone

5.4 Appendix E: Emergency Command Center (ECC) Locations

5.4.1 Emergency Command Center – Englewood Corporate Office

Primary: 361 Inverness Drive South, Suite B
Conference Room
Englewood, CO 80112
Contact: Ted Smith (303) 550-5292

Alternate: 359 Inverness Drive South, Suite C
Training Room
Englewood, CO 80112
Contact: Ted Smith (303) 550-5292

5.4.2 Emergency Command Center – Colorado Springs Office

Primary: 655 Elkton Drive, Suite 201
Conference Room
Colorado Springs, CO 80909
Contact: Jason Wheeler (719) 235-0856

Alternate: 361 Inverness Drive South, Suite B
Conference Room
Englewood, CO 80112
Contact: Ted Smith (303) 550-5292

5.5 Appendix G: Forms

5.5.1 Incident/Disaster form

Upon notification of an incident/disaster situation the On-Duty Personnel will make the initial entries into this form. It will then be forwarded to the ECC, where it will be continually updated. This document will be the running log until the incident/disaster has ended and “normal business” has resumed.

TIME AND DATE

TYPE OF EVENT

LOCATION

BUILDING ACCESS ISSUES

E Light Electric Services, Inc. Quality Assurance Program (QAP)

President's Statement

E Light Electric Services Inc. is committed to be the best. I believe that we can only accomplish this goal through a continual process of evaluating quality, safety and efficiency. The Quality Assurance Program is one of many processes I have implemented at E Light Electric Services, Inc. to help us make these evaluations and find ways to make ourselves better.

I expect each of our employees to take pride in everything we do. Our electrical installations are the best in the industry and I take a pride in knowing that our customer's needs are exceeded.

Each of you is the reason that E Light Electric Services is the best electrical contractor. Taking pride in every aspect of your job and performing your work with an awareness of quality, safety and efficiency is the foundation of our corporate culture.

E Light Electric Services, Inc. will never reach a point of complete satisfaction in our development. We will continually strive to improve and we will do this as a team.

Perry Hermann

President and CEO

April 3, 2016

Site Specific to Enter Project Name Here

- I. Quality Structure on site is as follows;
 - A. Single point of contact for quality issues will be the Site Quality Manager or **Quality Representative**, dependent on the size of the project, who reports to **the Director of Safety and Loss Prevention** for E Light Electric Services, Inc.
 - B. Quality Manager will have a staff of quality inspectors that report to him to conduct inspections on a daily basis and make sure all deficiencies found are remediated as soon as possible.
 - C. Quality Manager will hire or train qualified personnel to conduct inspections on a daily basis.
 - D. **Quality Manger will coordinate daily with the lead operations supervisor to ensure that Operations is informed of quality issues and the Quality Manager and the lead operations supervisor shall make sure that quality issues are remediated and take steps to correct quality issues in the future using a Root Cause Analysis Work Sheet and Report. (Attached)**
 - E. **Quality Manager shall maintain Quality Tracking Reports and shall review the Quality Trackers at the end of each Plan of Tomorrow Meeting with the operations team. (Attached)**
- II. E Light Electric Services, Inc. will follow the First Install Process for the **Enter type of System here** System as agreed to by the **Builders Name Here** lead operations supervisor and Quality Manager.
- III. E Light Electric Services, Inc. will follow all quality requirements per the Contract documents.
- IV. E Light Electric Services, Inc. Quality process will be adhered to as follows;
 - A. As any given portion of the project system is installed, the lead operations supervisor will notify the Quality manager of the installation.
 - B. The Quality Manager will post installations on the visual trackers for the project and will keep the visual trackers updated based on inspections and turn over to client.
 - C. The quality manager shall coordinate inspection of the installation per the contract documents.
 - D. The quality manager will issue any deficiency reports to the lead operations supervisor for remediation. **The Quality manager shall also ensure that the**

quality inspector staff are making minor corrections to work and not simply logging issues for later remediation.

- E. Remediation crew will then follow through and remediate noted defects that are out of specification beyond the allowed tolerances noted in the contract documents. All defects will be flagged and mapped to help remediation crews identify any deficiencies. The quality manager shall personally speak to the lead operations supervisor to ensure understanding of the deficient items and to begin a root cause analysis to mitigate further issues.
 - i. NOTE: The first root cause analysis discuss should be informal and changes discussed should be implemented and a follow up discussion occur within 3 days. If a quality issue arises on the same issue after this, then a formal Root Cause Analysis process shall be implemented by the Quality Manager.
 - F. The lead operations supervisor shall ensure deficiencies have been corrected and once satisfied shall inform the Quality Manger that the remediation is complete.
 - G. E Light Electric Services, Inc. Quality group will then re-inspect to ensure that the defects have been remediated, QA/QC will then remove flagging and document remediation at this time.
 - H. v. E Light Electric Services, Inc. will then release, by **section**, the approved work to **Builders name here** QA/QC.
 - I. vi. If defects are noted by **Builders Name Here** then E Light Electric Services, Inc. will remediate noted defects and notify **Builders name Here** QA/QC that the noted defects have been remediated.
 - J. Once notified by **Builders Name Here** QA/QC that a given **Block or Array** has been released, E Light Electric Services, Inc. will move to the next process.
- V. Change Notification and Change Management will be handled by RFI process.
- VI. Procured & Other Materials purchased by E Light Electric Services, Inc. will be submitted for approval by **Builders Name Here**.
- VII. Quality Control Documents and Records
- A. A Daily Report will be submitted by E Light Electric Services, Inc. to **Builders Name Here** for review. This format will be agreed upon at the beginning of the Project. The report shall be made into an iAuditor Template and shall be issued in iAuditor format to the Builder and saved in the Project File on the Construction Drive under Quality
 - 1. NOTE: This report will include date, auditor name(s), area audited, scope of audit, defects, remedial actions & root cause when available.

- B. All Combiner Boxes, Inverters, Transformers, Panel Boards, Switchgear, and significant other equipment will be inspected and documented using iAuditor.
 - C. A QC deficiency tracker will be issued to the General Forman and Construction Manager daily showing the number of deficiencies found per task that day.
- VIII. Calibration Records will be maintained & turned over to **Builders Name Here** for all inspection, measuring and testing equipment.
- IX. Inspections and Electrical Testing
- A. ELight Electric Services, Inc. will retain a 3rd party testing company to perform all testing if required by the contract documents or certified electricians will be used for electrical testing.
 - B. The testing process shall be established by meeting with the Quality Staff, Operations Staff and the Builders Staff prior to significant construction activities. This meeting shall be coordinated and lead by the Quality Manager and minutes shall be kept and distributed to all members. The agenda shall be as follows:
 - 1. Introduction of Members
 - 2. Review and agreement on Contract Documents for Quality
 - 3. Review and agreement on all Forms to be used for Quality
 - 4. Review and agreement on all testing and inspection processes
 - 5. Review and agreement on all turn over processes

Organization and Responsibility

- I. President and CEO
 - A. Responsible for approval of quality assurance program.
 - B. Responsible for appointment of quality assurance program administrator.
 - C. Responsible for annual review and approval of quality assurance program audit report.
- II. Vice President of Operations
 - A. Responsible for oversight of quality assurance program
 - B. Reports Directly to the President and CEO

- C. Responsible for review of the quarterly review of the quality assurance program report.
- D. Responsible for participation in the annual audit of the quality assurance program
- E. Responsible for annual audit of the quality assurance program to the CEO
- F. Responsible for implementation of the quality assurance program

III. **Director of Safety and Loss Prevention**

- A. Responsible for quarterly review of the quality assurance program to be given to the Vice President of Operations
- B. Reports directly to the President and CEO
- C. Responsible for conducting monthly quality assurance inspections of all work sites and reporting findings to the project management and supervision team
- D. Responsible for follow up inspections regarding deficiencies in quality
- E. Responsible for conducting the annual audit of the quality assurance program
- F. Responsible for training company personnel in the use of the quality assurance program.
- G. Responsible for developing a corporate culture of quality awareness
- H. Responsible for the direction of the Quality Programs and Staffs of all corporate projects

IV. Project Manager

- A. Responsible for managing the quality assurance program on assigned work site
- B. Reports directly to the Vice President of Operations
- C. Responsible for oversight of the planning, execution and completion of assigned work sites in accordance with the quality assurance program
- D. Responsible for semi-monthly quality inspections of each assigned worksite.
- E. Responsible for ensuring that all reported quality deficiencies are investigated and corrected if necessary.

V. Quality Manager

- A. Responsible for the implementation of the quality assurance program on their assigned work site
- B. Reports directly to the Project Manager. The Quality Manager also has a parallel reporting responsibility to the Director of Safety and Loss Prevention.
- C. Responsible for daily quality inspections
- D. Responsible for investigating and correcting, if necessary and capable, all quality deficiencies
- E. Responsible for maintaining the Visual Trackers and the Quality Trackers for the project.

VI. Lead Operations Supervisor

- A. Responsible for the implementation of the corrections and revisions to processes as determined by Root Cause Analysis.
- B. Reports directly to the Project Manager
- C. Responsible for daily pre-inspections of work with the assistance of his staff
- D. Responsible for training operations staff on quality, and ensuring that all work is performed according to contract documents and to E Light's expectations
- E. Responsible for investigating and correcting all quality deficiencies
- F. Responsible of writing and implementing installation plans and ensuring that each crew has an updated written installation plan in their work area.
- G. Responsible for leading the daily Plan of Tomorrow meeting and ensuring that the Quality Tracker is reviewed in each meeting.

List of Standard Operating Procedures

I. Electrical installations and Structural Installations

- A. All installations will be planned in advance using the Rapid Installation Procedures (Installation Plans)

1. Employees assigned to installations will be briefed on the planned installation and will be trained in advance in the proper installation techniques and procedures. The written installation plan shall be located in the work area daily so that crews can access and refer to it at any time.
 2. **NOTE: Any manager or supervisor coming into a work area, shall ask for a copy of the Installation plan and check to ensure that the work is being installed according to the Installation Plan.**
- B. All installations will be made in accordance to the contract specifications, municipal codes and regulations, county codes and regulations, state codes.
 - C. All installations will be made with quality products which are approved in advance by the general contractor or owner representative as defined contractually.
 - D. All installations will be made in accordance to manufacturer's instructions.
 - E. All installations will be inspected for correctness by a licensed journeyman electrician to ensure correctness and quality.
 - F. Supervisors shall make weekly inspections of installations to ensure quality and correctness.
 - G. The project manager shall make a minimum of two inspections per month to ensure installation correctness and quality.
 - H. The Director of Safety and Loss Prevention shall make an inspection at least once monthly of electrical installations to ensure correctness and quality.
 - I. The Vice President of Operations shall make an inspection at least once quarterly of electrical installations to ensure correctness and quality.
 - J. The President and CEO shall make visits to work sites annually to observe electrical installations and review correctness and quality.
 - K. All inspections shall include a review of safety procedures.
 - L. All job briefings and instruction shall include a review of safety procedures. A JHA shall be in the work area along with the installation plan.

II. Photovoltaic Installations

- A. All electrical installation operating procedures shall apply to photovoltaic installations.

III. Metrics and Testing Procedures

- A. The National Electric Code, current approved edition, shall be the base standard for all metrics.
- B. The Supervisors Preplanning manual shall be used as a guideline for preplanning, installation and testing.
- C. All forms and documentation shall be submitted based on the procedures listed in the preplanning manual.
- D. All electrical testing shall be performed by a licensed journeyman electrician and shall be performed with listed test equipment rated Category III or greater.
- E. All commissioning procedures shall be preplanned by the supervisor and approved by the project manager in advance of commissioning.
- F. All torque set fasteners shall be installed by trained personnel. A log shall be kept of all torque values applied and torque seal markings shall be placed on all torque set fasteners. The supervisor shall personally inspect and verify 10% of all torque set fasteners and initial the torque log showing acceptance. All major electrical equipment shall have Torque Verification record inspection performed and submitted using iAuditor to include pictures of the finished installation.
- G. All electrical terminations shall be inspected by a journeyman electrician to ensure correctness.
- H. All electrical equipment shall be tested for electrical correctness and operation prior to turn over to the owner. This testing shall be done in accordance with the electrical safety policy, the manufacturer's instructions and industry standards.
- I. The project manager shall be responsible for ensuring all contractually required testing is performed and all logs are recorded with the work site files for archiving.

IV. Correction Procedures

- A. All deficiencies shall be reported to the QA/QC Manager immediately.
- B. All inspection reports noting deficiencies shall be given to the supervisor and the project manager immediately.
- C. The supervisor shall investigate the deficiency.
- D. The supervisor shall determine the cause of the deficiency
- E. The supervisor shall make a plan to correct the deficiency. This plan shall be coordinated with the Quality Manager. If the same deficiency occurs again after the corrections have been put into place, then a form Root Cause Analysis investigation shall be conducted and a report (Attached) completed. The findings shall be shared with the entire operations team and a follow up report concerning the corrections and measure of success shall be issued to the operations staff within one week after implementation.
- F. The project manager shall review the deficiency, the cause and the plan to correct and approve a final plan to correct the deficiency.
- G. The project manager shall make a follow up inspection of the installation after the deficiency is corrected to ensure the corrected installation is correct and acceptable.
- H. The project manager shall report the deficiency, the cause and the correction plan to the Vice President of Operations and the Director of Safety and Loss Prevention.
- I. The Vice President of Operations shall review the deficiency and report the deficiency to the project managers so as to avoid similar deficiencies on other work sites.
- J. The Director of Safety and Loss Prevention shall record the deficiency on the Deficiencies log and will instruct employees on how to avoid the deficiency in the future and shall post the information in the E Light Electric Ideas Radiator for sharing with other projects.
- K. The Director of Safety and Loss Prevention shall keep a log of deficiencies and shall review this log with the Vice President of Operations quarterly and with the President and CEO annually.

- L. The President and CEO, Vice President of Operations and the Director of Safety and Loss Prevention shall determine deficiency trends, identify significant deficiency causes and shall annually develop education programs and preventions programs to avoid deficiencies.

V. Continual Quality Control

- A. All E Light Electric Services, Inc. employees are responsible for the quality of our product. We expect all our employees to take pride in every task they perform and to continually be aware of quality. ELight Electric Services Inc. is striving to be the best electrical contractor and our employees are expected to work together as a team to accomplish this goal.
- B. All E Light Electric Services, Inc. employees are expected to observe their work environments and the work product and to evaluate them for quality. All E Light Electric Services and ELight Wind and Solar employees are empowered to stop a work process and inform a supervisor if they observe procedures or product that does not meet the high quality expectations of E Light Electric Services, Inc.
- C. The management of E Light Electric Services, Inc. will work in a coordinated manner to continually develop a corporate culture of safety, training, and education of which quality awareness will be the foundation.
- D. The STOP action program has been implemented to facilitate the continual improvement process.
- E. The Director of Safety and Loss Prevention and the Director of Training will include safety and quality discussions in all training and education classes.
- F. All management meetings will include a discussion about safety and quality.

VI. Audit and Revision

- A. The Director of Safety and Loss Prevention shall conduct an annual audit of the quality assurance program.
- B. The audit shall include a review of the:
 - 1. Effectiveness of the program
 - 2. The procedures used in the program

3. The inspection processes used in the program
 4. The Reporting processes used in the program
- C. The audit shall be made by the quality assurance committee made up of the Director of Education and Loss Prevention, The Vice President of Operations, one project manager, one supervisor, one journeyman electrician and one apprentice.
 - D. The committee shall make recommendations which shall be reported to the
 - E. The Vice President of Operations shall make an annual report concerning the quality assurance program to the President and CEO following the committees audit and suggestions.

The Director of Safety and Loss Prevention shall prepare an annual report on the effectiveness of the Quality Assurance Program and shall make a report to the heads of all departments annually.

It is the intention of ELight Electric Services, Inc. to implement an electronic inspection and reporting process on the **Name of Project here** as a means to improve communications between E Light and **Builders Name Here**. We will request a meeting to review the electronic method before implementation.

E LIGHT ELECTRIC SERVICES, INC.

Injury and Illness Prevention Plan

Bonnybrooke Solar Project

E-15034

(2015)

Site Specific Injury and Illness Prevention Program

Bonnybrooke Solar Project E-15034

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Management Commitment and Policy Statement

The president and management of E Light Electric Services are committed to providing a safe and healthful work environment for all our employees and others that may work, visit, or enter the job site at the Bonnybrooke Solar Project E-15034.

Program Administrator Ted Smith, Director of Safety and Loss Prevention, has the authority and responsibility for implementing the provisions of this program.

E Light Electric Services shall meet all requirements of the SunPower Environmental Health and Safety Plan for the Bonnybrooke project.

This Plan was written in accordance with Title 8 of the California Code of Regulations, Section 3203 (T8 CCR 3203). Every employer within the state of California must establish, implement and maintain a written injury and illness prevention plan. A copy will be maintained at the Bonnybrooke site at all times.

It is our policy to manage and conduct business operations in a manner that offers maximum protection to each and every employee and any other person that may be affected by our business operations.

It is our absolute conviction that we have the responsibility for providing a safe and healthful work environment for our employees and others that may be affected as we conduct our business.

We will make every effort to provide a working environment that is free from any recognized or potential hazard.

We recognize that the success of a safety and health program is contingent and dependent upon support and involvement from management and all employees of the company.

The management of this company is committed to allocating and providing all the resources needed to promote and effectively implement this Injury and Illness Prevention Program.

This company will establish procedures to solicit and receive comments, information, and assistance from employees about safety and health.

This company will comply with all federal, state, and local safety and health regulations. Company management and supervisors will set an example of commitment to safety and health at this company.

This policy applies to all employees and persons affected or associated in any way by the scope of this business.

Responsibility and Authority

The Director of Safety and Loss Prevention (Ted Smith) of E Light Electric Services accepts the responsibility for providing resources and guidance for the development and implementation of this Injury and Illness Prevention Program and Injury and Illness Prevention Plan.

The Project Manager, Construction Manager, Superintendents and Safety Manager are responsible and will be held accountable for the overall implementation of this Injury and Illness Prevention Program. The Construction Manager, Project Manager, Superintendent and Safety Manager have the authority to delegate any or all portions of the plan to subordinates but will be held responsible for the performance of the plan.

The Construction Manager or Project Manager Responsibility

Has overall management authority and responsibility for all site operations to include safety. The Construction Manager will:

- Determine if contract documents and specifications describe and support project safety
- Monitor contractor and sub-contractor process and adhere to established guidelines
- Participate in Pre-Task planning and sub-contractor kick off meetings
- Possess knowledge of the loss control and public requirements in the safety specifications of the subcontract documents
- Approve EHASP, Emergency Action Plan, Fire Protection Plan and Safety recognition Plan
- Approve the traffic control plan
- Audit contractor and subcontractor's safety plan for compliance with the SunPower EHASP for the Bonnybrooke project.

The Superintendent also has the authority to approve or carry out disciplinary actions against those that violate policies, procedures, or rules.

Superintendents Responsibility:

- Plan and execute all work to comply with the SunPower EHASP and contract specifications
- Be knowledgeable of loss control and public protection and the requirements of the SunPower EHASP
- Participate in; daily inspections, pre-task plans, safety meetings and pre-contract kickoff meetings
- Enforce the mandatory PPE requirements in accordance with the SunPower EHASP
- Take immediate action to abate unsafe conditions and practices and document corrective actions
- Support Project safety staff and cooperate with all designated personnel in obtaining corrective actions necessary to comply with the SunPower EHASP

- Responsible for accident, incident investigation with the assistance of the Site Safety Supervisors
- Support project safety staff and cooperate with all designated personnel in obtaining corrective action necessary to comply with SunPower EHASP

The Site Superintendent and his foremen will be held accountable to ensure that all employees under their control follow all safety and health policies, procedures, and rules established for the company and this site in specific SunPower EHASP. They are also responsible for administering training and guidance to employees under their direction. The Superintendent has the authority to reprimand and recommend disciplinary actions against employees that violate the safety and health policies of this company and the SunPower EHASP.

Safety Manager and Supervisors Responsibility

- Support Superintendents and supervisors in achieving an injury-free environment
- Serve as technical advisors to project management team on safety and health planning
- Administer the E Light Electric Services Injury and Illness Prevention Program
- Have the authority to implement and the responsibility to implement this IIPP and the SunPower EHASP
- Actively participate in accident /incident / injury investigations
- Report all injury, illness and near misses to SunPower Project Safety Manger
- Complete any claims forms (Injury liability, property damage and forward to SunPower Project Safety Manger/Coordinator
- Provide ongoing training for all E Light Electric Services employees
- Monitor work areas and enforce proper use of PPE and tools
- Conduct a daily safety inspection of all areas within E Light Electric Services scope of work and record the findings
- Prepare and conduct site safety orientation separate from the SunPower orientation
- Provide supervisors with daily, weekly safety meeting topics and participate in these meetings
- Attend periodically tool box/ tail gate safety meetings to evaluate the effectiveness of the meetings
- Review JHA's while observing the crew for continuous improvement of JHA's
- Report unsafe acts and conditions to the workers supervisor
- Expedite corrective action to abate any observed or potentials exposure to workers the environment and the public
- Responsible for facilitating training on Pre-Task planning
- Oversee development and implementation of Emergency Action Plan

Foreman Responsibility

- Train and instruct workers in safe work practices for all tasks to which they are assigned
- Ensure availability of and enforce the proper use of job site tools and PPE
- Monitor work areas for unsafe acts and conditions
- Work with the Safety Manager to develop and implement corrective action plans to correct deficiencies discovered during daily inspections. Deficiencies will be discussed with Safety Manager to determine appropriate corrective action(s)
- Preplan all job activities assuring workers are properly trained in applicable safety requirements
- Present daily toolbox, Pre-Task Plan (“PTP”) review meetings and maintain attendance logs and records
- Participate in weekly safety meeting and safety training
- Participate in accident/incident/injury investigations and implementing corrective actions to prevent further occurrences
- Provide information regarding these actions to superintendents and safety coordinators

Employees Responsibility-Code of Safe Practices

1. All persons shall follow these safe practice rules, render every possible aid to safe operations, and report all unsafe conditions or practices to the foreman or superintendent.
2. Foremen shall insist on employees observing and obeying every rule, regulation, and order as is necessary to the safe conduct of the work, and shall take such action as is to obtain observance.
3. All employees shall be given frequent accident prevention instructions. Instructions shall be given daily.
4. Anyone known to be under the influence of drugs or intoxicating substances that impair the employee's ability to safely perform the assigned duties shall not be allowed on the while in that condition.
5. Horseplay, scuffling, and other acts that tend to have an adverse influence on the safety or well-being of the employees shall be prohibited.
6. Work shall be well planned and supervised to prevent injuries in the handling of materials and in working together with equipment. Installation Plans shall be implemented for all tasks and safety information discussed at the Plan of Tomorrow Meeting daily.
7. No one shall knowingly be permitted or required to work while the employee's ability or alertness is so impaired by fatigue, illness, or other causes that it might unnecessarily expose the employee or others to injury.
8. Employees shall not enter manholes, underground vaults, chambers, tanks, silos, or other similar places that receive little ventilation, unless it has been determined that is safe to enter.

9. Employees shall be instructed to ensure that all guards and other protective devices are in proper places and adjusted, and shall report deficiencies promptly to the foreman or superintendent.
10. Crowding or pushing when boarding or leaving any vehicle or other conveyance shall be prohibited.
11. Workers shall not handle or tamper with any electrical equipment, machinery, or air or water lines in a manner not within the scope of their duties, unless they have received from their foreman.
12. All injuries shall be reported promptly to the foreman or superintendent so that arrangements can be made for medical or first aid treatment.
13. When lifting heavy objects, the large muscles of the leg instead of the smaller muscles of the back shall be used.
14. Inappropriate footwear or shoes with thin or badly worn soles shall not be worn.
15. Materials, tools, or other objects shall not be thrown from buildings or structures until proper precautions are taken to protect others from the falling objects.

Employees are responsible and will be held accountable for committing to the safety and health program, abiding by the policies, procedures, rules set forth by this plan, and becoming actively involved in the program to assist in providing a safe and healthful workplace for all involved.

The Director of Safety and Loss Prevention (Ted Smith) shall develop a beginning, preliminary Job Site Safety Analysis. The Project Manager or Superintendent shall further develop and modify the Job Hazard Analysis (JHA) for the site and shall update as often as necessary. The JHA shall be distributed to all supervisors and shall be utilized in daily toolbox safety meeting. Onsite safety supervisors shall audit the JHA's and coach crews in hazard recognition during crew safety observation. The JHA is a continuous improvement document. All updated JHAs shall be filed onsite and a copy kept with the crew performing the task. The refined JHA will be forwarded to the Regional Safety Manager for input into the company Safety Data Base

The Site Superintendent and the Foreman on site shall cooperate with the assigned safety professional in accident and incident investigations. All accidents (recordable) or incidents (non-recordable or near miss) shall be investigated by the Safety Manager, Project Manager or Superintendent.

Communication

Employees are encouraged to communicate their safety and health concerns with management and supervision to implement changes in our program where needed to reduce injury and illness exposures in the workplace.

Contractors that provide or perform services for E Light Electric Services at any location/facility will receive the Injury and Illness Prevention Program for review. They are responsible for ensuring that all their employees' actions and the services delivered are in a manner consistent with our commitment to safety and health.

Two way communications begins at new employee orientation. Open communication in an informal setting is practiced with the safety audits and JHA reviews. The safety "Thinking" is coached with two way communication to nurture our safety culture. The Pre-Task card is filled out by every employee every day. This provides a nonverbal communication to relay safety concerns directly to the onsite safety professionals.

E Light Electric Services will provide labor/management personnel to participate in the SunPower Safety committee. The committee will:

- Review the SunPower Injury and Illness Program. Review the Workplace safety and health training programs
- Effectively communicate any safety and health concerns between workers and supervisors
- Post or distributed safety information
- Develop a system for workers to anonymously inform management about workplace hazards.
- Meet regularly, prepares written records of the safety and health committees meetings
- Reviews results of the periodic scheduled inspections
- Reviews the investigations of accidents and exposures
- Makes suggestions to management for the prevention of future incidents

E Light Electric Services believes that the only valid means of reviewing and identifying trends and deficiencies in a safety program is through an effective record keeping program. The record keeping element is also essential in tracking the performance of duties and responsibilities under the program.

This company is committed to implementing and maintaining an active, up-to-date record keeping program.

INCIDENT COMMUNICATION

Anytime a person reports an injury of any kind the following individuals must be notified.

1. On-Site SunPower Representative (Recordable and Lost Time Only)
2. Marshall Redlin, Regional Safety Manager
3. Ted Smith, Director of Safety and Loss Prevention

DO NOT SEND ANY PERSON TO A CLINIC OR OFF SITE FOR MEDICAL TREATMENT WITHOUT FIRST COMMUNICATING WITH ALL OF THE INDIVIDUALS LISTED ABOVE.

Any time that a person requires immediate medical attention, you are to contact SunPower Safety Rep on site and then call 911.

Injury and Illness Data

The Project Manager, Superintendent or the Safety Manager will forward all information to maintain records of all work-related injuries and illnesses of our employees. The following forms or records are applicable only to work-related injuries and illnesses:

- Occupational Safety and Health Administration (OSHA) 300, *Log of Work-Related Injuries and Illnesses* or equivalent if required
- OSHA 301, *Injuries and Illnesses Incident Report* or equivalent if required
- *Employer's Report of Occupational Injury or Illness*
- Record of first aid or other non-recordable accidents/incidents

The OSHA 300, *Log of Work-Related Injuries and Illnesses* or an equivalent record will be maintained at the corporate offices. The OSHA 301 *Injuries and Illnesses Incident Report* will be established, and maintained on site, bearing a case number correlating with a case identifier on the OSHA 300 log and all pertinent and required information. The information contained in or entered on these records will be maintained current within seven calendar days after a recordable accident is reported.

The OSHA Form 300A *Summary of Work-Related Injuries and Illnesses* will be posted in a conspicuous location for employee review no later than February 1, for the previous calendar year and will remain in place until April 30. This will be posted in the corporate office and on site. All data pertaining to injuries or illnesses that did not require medical treatment or were otherwise not recordable on the above-mentioned documents will be maintained in written record form. An incident report shall be made by the Project Manager, Superintendent or the Safety Manager after a complete investigation. A root cause shall be identified and mitigation determined. This process shall be performed on any reported incident. The incident report shall be sent to the Director of Safety and Loss Prevention (Ted Smith) within 24 hours of the incident occurrence.

All injury and illness documentation will be reviewed annually in January by management and supervisors to analyze occurrences, identify developing trends, and plan courses of corrective actions.

These records will be maintained a minimum of five years or as required by law.

Safety and Health Surveys and Inspection/Program

The Director of Safety and Loss Prevention (Ted Smith) will maintain and review records of all safety audits and inspections that are conducted within or that affect the company, our employees, or facilities. Applicable forms and records:

- Site Safety Audit
- Incident Reports
- Daily Safety Inspection Reports

Reports generated as a result of comprehensive surveys conducted by outside professional agencies will receive immediate attention and consideration. All hazards identified and recommendations will be acted upon in a timely manner. All methods of addressing the issues contained in the reports will be documented in writing and a copy maintained with the report. This documentation will also show the date corrections were made or actions taken. These reports and all associated documentation will be maintained for record and periodic review. The Project Manager or Superintendent will ensure the corrective actions have been taken by the responsible personnel.

Checklists will be developed as part of the periodic self-inspection process. Checklists will be used and maintained including the name of the person performing the evaluation and the date the inspection takes place. The self-inspection checklists will be reviewed by management upon completion. All equipment and vehicles used on the site shall be inspected prior to use each day.

All discrepancies identified during the inspection will be evaluated as soon as possible by the Project Manager or Superintendent. The periodic self-inspection checklists will be reviewed and evaluated on a regular basis by the Project Manager or Superintendent to ensure current applicability. This review will be performed throughout the workplace with input from supervisors and employees. The checklist will be retained along with other applicable data for review. The hazards and recommendations noted in the daily, weekly and monthly safety inspections and audits will be given consideration at weekly foremen meetings. Area supervisors will be responsible for requisitioning and assisting in the correction process. The formal Injury and Illness Prevention Program components will be reviewed monthly by the Project Manager or Superintendent and The Director of Safety and Loss Prevention (Ted Smith) in to identify insufficiencies or component failure.

Safety or Other Related Meetings

The Project Manager, Superintendent, or the Safety Manager will maintain accurate records of all proceedings associated with the safety and health program on this site.

Applicable forms and records:

- Weekly Safety Meeting Records
- Weekly Supervisor Safety Meetings
- Daily Pre Task Cards and Safety Briefings
- Master JSA's review / JHA's for task briefing / tool box talk

The Project Manager or Superintendent shall keep a record of all proceedings and appropriate management or other designated staff actions affecting the safety and health program. These records will include the name of the recorder, date, a list of attendees, details of the topics discussed, and action or corrective measures suggested, recommended, or taken. The purpose

of these is to ensure that decisions affecting the safety and health program of this company are carried out, implemented, and that results are tracked.

Training Records

The Project Manager, Superintendent and Safety Manager will document and maintain records of all safety - and health-related training. All documented training records will be forwarded to The Director of Safety and Loss Prevention (Ted Smith) for filing in the corporate records.

All safety and health related training provided to employees of this company will be documented. This documentation will be maintained as proof of attendance and reviewed to assist in determining the need for additional or repeated training for employees on an individual basis. Records and documentation of training will include the presenter's name, date of training, topic or subject, legible identification of the attendee, and attendee's signature. The person providing the training is responsible for generating the documentation.

Accident Investigation

The Project Manager, Superintendent and Safety Manager will ensure proper records and documentation of all accident and incident investigation activities are maintained and reviewed. Applicable forms and records:

- Accident Report (Recordable Accident)
- Incident Report (Non-Recordable or Near Miss)

All accidents and near miss incidents will be investigated

All items on the designated accident investigation form will be addressed in detail as soon as possible following the accident/incident. The information acquired will be used and reviewed by management, supervisors, and effected employees to establish all contributing factors and causes. From the investigation, a plan of corrective action will be established to prevent recurrence of the accident/incident.

The plan of corrective action and implementation will be documented and reviewed by management.

The investigations are to find out the facts, not to place blame. Any suggestions employees may provide on how to prevent future accidents or incidents are encouraged.

All accident and incident reports shall be filed with The Director of Safety and Loss Prevention (Ted Smith) within 24 hours of the occurrence.

Equipment Inspection and Maintenance

The Project Manager or Superintendent, in conjunction with the Site Safety Manager will maintain records and data pertaining to equipment inspection and maintenance programs performed on site. Applicable forms and records include:

- Daily inspection and maintenance records
- Documentation of services performed by contract agreement
- Documentation of repair and replacement of parts or equipment
- Manufacturer's instructions for operation and maintenance of equipment

Accurate records will be maintained involving all routine inspection and maintenance procedures performed on equipment on this site.

Safety and Health Training

E Light Electric Services is committed to providing safety and health related orientation and training to all employees at all levels of the company. The Director of Safety and Loss Prevention (Ted Smith) will develop, coordinate and implement orientation and training programs or delegate to assigned Site Safety Supervisor. The plan's purpose is to educate and familiarize employees with safety and health procedures, rules, and work practices. The management of this organization will encourage and require involvement and participation of all managers, supervisors, and employees. Furthermore, the management will support the orientation and training program with allocations in funding, staff, resources, and time to develop and implement this plan.

Training Program Development

The Project Manager, Superintendent and Safety Manager shall develop and implement site specific training and orientation program for this site and shall make modifications to this program as the work conditions dictate. The training subjects and materials will be developed utilizing industry and site specific criteria relating to identified and potential hazards, accident and incident data, and training required by federal regulations. The orientation, and subsequent training sessions will include, but not be limited to, the following:

- Hazards associated with the work area
- Hazards of the job or task assignment
- Emergency procedures for the site
- Personal protective equipment for the site
- Security requirements for the site
- Parking requirements for the site
- Hazard communication (hazardous chemicals and materials)
- Specific equipment operation training
- Employee reporting requirements

- Accident investigation (supervisors and other designated personnel)
- Trenching Safety
- Outdoor Exposure Training
- The site JSAs / JHAs that are currently in use
- This Site Specific Injury and Illness Prevention Program

The training program shall be administered in two phases consisting of new employee or reassignment orientation and regular periodic training and refresher sessions.

Aside from the formal safety and health training classes, employees will receive guidance and instruction on safe operating procedures of each assigned job or task on a daily basis. Employees are expected to provide feedback to management on the usefulness or applicability of the training provided to them.

Documentation

Any and all safety and health related training administered or provided by E Light Electric Services will be documented with the following minimum information:

- Date of training session
- Provider (name of person conducting training and affiliation, if not an employee of the company)
- Subject matter
- Legible name of attendee(s) and supplemental identification if needed or required
- Signature or acknowledgement of attendance

All training records and documentation will become a permanent part of each employee's record as well as a master record used to determine participation of all employees. Individual training records will be maintained for the current year plus five more.

Safety Audit and Inspection

The Director of Safety and Loss Prevention (Ted Smith) has implemented a program to identify, correct, and control hazards on an ongoing basis. This program will utilize multiple resources to ensure effectiveness.

Monthly Safety Audits

E Light Electric Services has arranged for this site to receive a comprehensive safety and health audit by the Director of Safety and Loss Prevention (Ted Smith or his Designated Safety Professional) on a regular basis — at least monthly. These audits will identify existing and potential hazards and noncompliance issues that should be addressed. Recommendations will be made to enhance the performance of the safety and health program and this site specific Injury and Illness Prevention Program. Reports will be forwarded to all management and supervision for review and action.

Safety and Health Self-Inspections

The Project Manager, Superintendent or Safety Manager will conduct daily in-house safety and health self-inspections that will cover everything within E Light's scope of work.

The Project Manager, Superintendent or Safety Manager will conduct a weekly safety inspection of everything within E Light's scope of work.

Employees will conduct constant informal inspections of their work areas and tools. If any potential exposures or deficiencies are identified, employees are expected to communicate these to their supervisors if the employees are not able to rectify the situation immediately.

All inspections will be conducted on an ongoing basis without interruption. Management will allocate adequate time and resources to perform the inspections.

The Project Manager, Superintendent or Safety Manager will perform specific task safety audits periodically. These audits reports will be reviewed with the task supervisor. The Project Manager, Superintendent and Safety Manager will develop and maintain an inspection checklist specific to the operations on this site. The list will be developed utilizing a general inspection checklist and will be evaluated and updated with hazards that are identified during the inspections and other pertinent data as it is acquired. The contents of this checklist will be reviewed on a regular basis to ensure that it is current and updated.

The checklist will become a part of the permanent record of the inspection and will serve as a confirmation of the inspection. Each checklist will indicate the location, specific site or area inspected, name and title of the inspector, date of inspection, and corrective action taken for identified hazards or violations. The inspection report will be used in trend analysis and record keeping.

Employees must be notified of the hazards that pose an immediate threat of physical harm or property damage, and informed of measures or steps that will be taken to eliminate, correct, or control the hazard.

Management will review the inspection checklists and any other established documentation to ensure that a course of corrective action and time line has been established for eliminating each deficiency.

Hazard Assessment

Hazard assessment begins at the pre-construction planning stage and continues to the very end of the project. The key tool for hazard assessment is the E Light Electric Services JHA and pre-task safety card system.

Job Hazard Analysis and Pre-Task Safety Cards

Contractors shall identified significant tasks to be performed on site, i.e. Welding, Driving Piers, Cutting, Trenching, etc. and shall complete a method of procedure and job safety analysis and

submit it to The Project Manager or Superintendent, for review and approval before the tasks are performed.

Each day, each person on site shall be assigned tasks for the day and shall complete a Pre-Task Safety Card for the tasks. Each person shall fill their own card while in the presence of their supervisor and shall review the hazards of the tasks with their supervisor. Each person shall have their card with them at all times while performing the task.

At the end of the shift, each employee shall present their card to their supervisor for review and completion. The supervisor shall turn all cards in each day for review and reporting.

Any employee that observes a near miss, a safety violation or a hazard that has not been recognized previously shall report this on the Near Miss section of the Pre Task Safety Card.

Any person that enters the area where a task is being performed that has not reviewed the hazards involved in the task must be challenged and stopped before entering the area. The challenging person shall present their pre-task safety card to the person entering the area and review the hazards with them. Once completed the person may be allowed in the area if it is safe to do so. There are no exceptions to the challenging rule. **ALL PERSONS THAT HAVE NOT REVIEWED THE PRE-TASK SAFETY CARD MUST BE STOPPED AND BRIEFED TO THE TASK /AREA HAZARDS PRIOR TO ENTERING THE AREA.** This includes engineers, inspectors, Project Construction Manager, Visitors and E Light Electric Services personnel. **NO EXCEPTIONS.**

Personal protective equipment will be the control of last resort when all other means of eliminating the hazards have not provided adequate protection to the employee. When personal protective equipment is issued, the employee will be informed of the requirements, use, and limitations of the equipment.

Hazard Control

When identified hazards cannot be eliminated, the hazard will be effectively controlled by engineering, administrative procedures, work practices, personal protective equipment, or any suitable combination of these measures. Engineering controls will include, but not be limited to, the following:

- Isolation of employee exposure to the hazard
- Guarding or displacement of employee exposure to the hazard
- Preventive maintenance and repair of machinery and equipment

Administrative procedures will include, but not be limited to, the following:

- Written programs to establish administrative guidelines for safe work practices

- Established and implemented work rules and procedures

Work practices will include, but not be limited to the following:

- Careful planning and performance of each assigned job, duty, or task
- Reduction in duration of exposure to hazards
- Adherence to safety and health rules and procedures.

Hazard Correction

Hazards identified at this site will be corrected eliminating or mitigating the cause of the hazard at the source. This will include, but not be limited to, the following:

- Discontinuation from use or removal of hazardous chemicals, materials, or substances from the workplace
- Discontinuation from use or removal of hazardous equipment until replaced or repaired
- Correction of any unsafe acts or conditions in existence, by service or training

Hazard corrections will be the result of any investigation. The root cause will be identified on the Accident Incident Investigation form (page two). The root cause and hazard correction will be listed on the first page after the root cause analysis process is completed. Supervisors are responsible for completing the root cause analysis and filling out the form. The Safety Manager and Safety Supervisors will be available for technical assistance with the root cause analysis and hazard correction. Ted Smith, Director of Safety and Loss Prevention (303) 550-5292 or Marshall Redlin (303) 802-0962 will be contacted so that the hazard correction will be utilized throughout the company. Documentation of the hazard correction will be submitted to SunPower Site Safety Manager.

Accident and Hazard Investigation

Management is committed to and will correct or control all hazards identified through any of the avenues of recognition established. All identified hazards will receive a timely response.

Accident Reporting

The Project Manager, Superintendent and Safety Manager will investigate all work related accidents and near miss incidents involving employees or company property to develop preventive measures and implements corrective actions. All reports generated will be forwarded to Project Construction Manager.

Employee Reporting

All employees are required to report to their immediate supervisor ***immediately*** any of the following:

- Accidents or incidents with injury or illness of any magnitude (including first aid related cases)
- Accidents or incidents resulting in property or equipment damage of any magnitude

- Any near miss incidents that could potentially have resulted in injury or illness or property damage

Case Management

Ted Smith, Director of Safety and Loss Prevention or Marshall Redlin, Regional Safety Manager will be consulted for proper management of accident cases to minimize severity and duration.

Employer Reporting

The Director of Safety and Loss Prevention (Ted Smith) will report the following as required:

- [State] Workers' Compensation Commission: Fatalities and accidents involving hospitalization of five or more injuries will be reported within 24 hours.
- OSHA: Fatalities and accidents involving hospitalization of three or more injuries will be reported within eight hours.

Accident Investigation Responsibility

The Project Manager or Superintendent will be responsible for conducting investigations of accidents and incidents that occur in their areas or that affect employees on this site. Upon notification of an accident or near-miss incident, the responsible supervisors will begin investigation to determine the following:

- How the accident or incident occurred
- Special circumstances involved
- Underlying, indirect, or associated causes
- Corrective actions or preventive measures and controls

Accidents and incidents involving situations where multiple supervisors are affected will be investigated jointly.

Documentation

All activities and findings of the investigators will be documented and recorded for review. Accident and Incident investigation documentation will be done by use of the Accident Report or Incident Report, depending on the type of situation. All blocks of the reports shall be completed with detailed and concise information. All reports shall be forwarded for distribution to appropriate personnel and a copy given to the construction manager.

Review and Revision of Components

The Project Manager or Superintendent and the Director of Safety and Loss Prevention (Ted Smith or Marshall Redlin, Regional Safety Manager) will review and revise the components of the Injury and Illness Prevention Program monthly for effectiveness and implementation. Special attention will be devoted to areas and criteria that demonstrate failure in a program component,

introduction of new procedures, processes, or equipment. Corrective measures will be taken as needed to reemphasize or restructure the Injury and Illness Prevention Program to perform at the optimum effectiveness. Information will be solicited from area supervisors and employees to determine the effectiveness of each program component, and to develop adjustments and corrections.

Goals and Objectives

Our goal for the Bonnybrooke work site is zero accidents.

Employee Involvement

Management encourages employee involvement in the implementation of the safety and health program of this facility. We solicit this involvement by giving each employee an opportunity to participate and be responsible for implementation of the safety program for their respective areas or job. **ALL EMPLOYEES, REGARDLESS OF POSITION, HAVE THE AUTHORITY AND THE RESPONSIBILITY TO STOP WORK IF THEY RECOGNIZE AN UNSAFE WORK CONDITION.**

Reporting of Hazards and Unsafe Conditions

As a condition and requirement of employment, all employees are required to report hazards and unsafe conditions in the workplace to their supervisor or the Project Manager or Superintendent. He will take prompt and appropriate action to determine if a hazard exists. If it is determined that a hazard does exist, immediate attention for correction or interim protective measures will be taken. The reporting employee will be notified of the corrective action taken or the procedures used to conclude that no hazard existed. This information will be shared with all employees on site.

Disciplinary Policy

E Light Electric Services has developed a disciplinary policy that applies to the safety and health program of this company and the Injury and Illness Prevention Program for this site. The disciplinary policy will be a tool to ensure enforcement of the rules and procedures established by this Injury and Illness Prevention Program to promote a safe and healthful working environment. The disciplinary policy applies to all employees of this company.

Verbal Warnings

Management, Safety Manager or supervisors may issue verbal warnings to employees that commit minor infractions or violations of the safety rules or safe work practices. A written record of verbal counseling shall be given to the Project Manager or Superintendent and will be forwarded to The Director of Safety and Loss Prevention (Ted Smith) for review and filing. Continued violations or verbal warnings can lead to more stringent action.

Written Warnings

Management, Safety Manager or supervisors may issue written warnings for the following:

Repeated violation of minor safety rules or procedures:

- Single serious violations of a rule or procedure that could have potentially resulted in injury to themselves, another employee and/or could have caused property damage
- Activities that result in injury and/or property damage

Disciplinary Leave

The Project Manager or Superintendent or The Director of Safety and Loss Prevention (Ted Smith) may institute, disciplinary leave for the above reasons and the following:

- A single serious violation of a rule or procedure that results in injury to an employee and/or property damage
- Repeated violations and/or nonconformance to safety rules or procedures.

Termination

Supervisors may recommend and The Project Manager or Superintendent or The Director of Safety and Loss Prevention (Ted Smith) may concur in the termination of any employee for repeated serious violations of the above circumstances.

Documentation

Violations of company or safety rules, regulations, or procedures will be documented by filling out a report on the employee. The report will state the type of violation and corrective action taken. The employee must read and sign the report acknowledging that they understand the seriousness of the violation.

Orientation / Training Specifics

All employees shall receive an on-site orientation to be conducted by the Safety Department. Orientations will be held at the (determine location) on Friday and Monday only from (set time) am to (set time) pm. Plan your manpower needs according to the orientation schedule. We will only allow new employees on Mondays and Tuesdays and only after completing orientation. Special orientations may be arranged with the approval of Project Manager or Superintendent. Contractors requesting special orientations will be charged a fee of \$500 per orientation session.

Employees will be issued a hard hat sticker when they complete orientation. All employees on site must have their hard hat sticker prominently displayed at all times while on site.

Orientation stickers are color coded as follows:

- | | |
|----------|---|
| Orange – | Allowed in potentially energized areas |
| Blue - | Supervisor |
| Yellow - | Approved to operate a cart or buggy on site |
| Green - | Employee |
| Red - | Un-acclimated Employee |

Un-acclimated to heat and working conditions will wear the red sticker for two weeks or length of time required to be acclimated. The Un-acclimated Employee will be assigned an acclimated mentor during this period.

Visitors to the site will check in with the Site Safety Manager and receive a brief safety instruction and will be issued a hard hat with a 2" green stripe across the top. All visitors are to be escorted on site by an employee that has completed the on-site orientation.

Topics:

1. All OSHA regulations will be strictly enforced.
2. Contractors and Sub-contractor employees are required to follow applicable OSHA standards and site policies.
3. All project personnel entering and working on the Bonnybrooke project are required to receive the New Hire Safety Orientation and required training.
4. All personnel are empowered and required to ask questions if they are unsure of how to perform a task safely, stop unsafe acts, identify unsafe conditions and report hazardous conditions immediately to their supervisor or Site Safety Supervisor.
5. Report all accidents, incidents, and near misses immediately to your supervisor and fill out the reporting section of your Pre Task Safety Card.
6. Should you observe damage to the environment, property, installations, equipment, etc., report such findings immediately to your supervisor and complete the reporting section of your Pre Task Safety Card.
7. All personnel shall fully comply with all Project security requirements.
8. Personal belongings such as lunch boxes, toolboxes, back packs and vehicles brought onto site are subject to search at any time.
9. Personnel who currently, or develop, a health condition potentially affecting safe work performance must inform their supervisor immediately. This includes the taking of medication that may have side effects.
10. Personnel shall be appropriately dressed- full length pants, shirts shall have at least 4" sleeve and sturdy, hard soled work shoes that provide ankle support Personnel protective clothing and equipment include as a minimum, hardhats, safety glasses, gloves, sturdy/hard soled work shoes that provide ankle support. Boots shall meet the ANZI Z-41.1 and have the EH designation. No sneaker or fabric uppers will be allowed.
11. Hi-visibility reflective vests shall be worn at all times.
12. Additional personnel protective equipment shall be used as job conditions require. Cut resistant level 4 gloves and sleeves will be required for installing class or any activity that has the same potential hazard.
13. Horseplay, fighting and running is not permitted.
14. Smoking is permitted in designated 10x10 areas in close proximity to the work area. Smoking area will be equipped with a 5 gallon sand filled bucket and a fire extinguisher. Smoking is prohibited in offices/ trailers, along roadways, and adjacent property and within the solar arrays. Smokeless tobacco is prohibited in all equipment and structures.

15. Lunch and Beverage breaks shall be limited to approved areas and shall be kept clean and organized at all times. Fugitive debris shall be picked up daily.
16. Be respectful and polite to all project personnel, including landowners and visitors.
17. The project and the surrounding areas shall be kept clean and organized at all times. Fugitive debris shall be picked up daily.
18. All trash and debris shall be disposed of properly and timely into designated dumpsters, bins and designated construction vehicles.
19. Human functions shall be limited to designated sanitary facilities.
20. Disciplinary procedures- "Three Strikes and You're Out"
 - Verbal/ Written
 - Written
 - Termination

Grounds for Immediate Termination:

1. Violation of fall protection requirements may result in immediate termination
2. Violation of "Lockout / Tag out" procedures and practices may result in immediate termination.
3. Alcoholic beverages, controlled substances and illegal drugs are strictly prohibited
4. All personnel must report to work free from the influence of alcohol and drugs. Personnel taking prescription drugs (under the direction of a qualified physician) which may affect their awareness/ job performance must inform their supervisor of the situation immediately upon returning to work or in advance if possible. Superintendent and Site Safety Supervisor must approve any person taking such medication for work on the site prior to them beginning work.
5. Removal of any items or materials from the site, without specific approval of Construction Manager, is strictly prohibited.
6. Weapons of any kind are strictly prohibited.
7. Harassment of any type will not be tolerated.
8. Inappropriate pictures, writings, language, and jokes are prohibited.
9. Vandalism and defacement of property and equipment is prohibited.
10. Open fires of any nature are prohibited.
11. No open flames shall be permitted unless previously approved and proper precautions are taken. A hot work permit must be submitted and approved by the Safety Department before any open flame; welding, cutting, etc. may be performed.

Emergency Procedures

1. Notification at location or first on the scene:
 - a. Notify your supervisor immediately or use the nearest person with communication capability (phone or radio)
 - b. Notify Safety Manager or Site Superintendent

2. Superintendent becomes the communication Commander
 - a. Utilize channel 1 on radios for emergency use only
 - b. Superintendent monitors both E Light and SunPower channels
3. Begin First Aid to injured and assign individual to call 911 if immediate advanced medical care is required.
 - a. Utilize the nearest First Aid and Blood Borne Pathogens kits
4. The supervisor or assigned individual calls 911
5. Assigned individual stays on the line with 911 dispatch
 - a. Give the exact nature of the emergency`
 - b. Give the exact location
 - c. Stay on the scene to brief emergency personnel upon their arrival.
 - d. On the scene Supervisors advises Superintendent if onsite ambulance is needed.
6. Superintendent as communication commander notifies:
 - a. SunPower Project Construction Site Manager
 - b. Safety Manager
 - c. Notifies E Light Project Manager
 - d. Notifies Front Gate Security
 - e. Notifies Other contract supervisors
 - f. Establishes most efficient route for emergency
7. Supervisors have workers mark route and direct emergency responding vehicles
8. All emergency information (routes to medical facility, emergency contact information, and SDS folder) are located in the SunPower trailer and E Light Electric Services trailer.

If full evacuation is needed follow table:

EMERGENCY	EVACUATION ROUTE	EMERGENCY ASSEMBLY AREA
Chemical Spill	See attached Evacuation map	Temporary construction parking area
Fire/Explosion	Up and Cross Wind	Temporary construction. parking area
Severe Weather	Safest Route	Nearest Secure Shelter Area
Lightning	See attached Evacuation map	Temporary construction. parking area

9. Evacuation Procedures

- a. Three (3) long blast of an air-horn or vehicle horn will indicate an evacuation emergency
 - i. The sounding of the horn will be assigned to another individual allowing the Site Safety Supervisor and or closest supervisor with First Aid supplies to go directly to the scene of the emergency
 - ii. The air horn will be sounded at each of the road ways and through the center of the site.
- b. Verbal, radio and phone commands will follow the horn blasts to indicate the site is to be evacuated.
- c. All other personnel will proceed in a calm, orderly manner to the nearest evacuation point listed on table 6-1 and shown on your site map.
 - i. Report to your designated supervisor in the evacuation area for a head count.

Incident Reporting

1. All incidents, injuries, illnesses and near misses on site must be reported to your supervisor immediately and the supervisor must report it immediately to their then in turn to the project Superintendent.
2. Make every attempt to preserve the scene until cleared by Superintendent. If problems or questions arise contact Project Manager.
3. Superintendent or Site Safety Supervisor will insure accident personnel is given maximum care needed, then:
 - a. Make determination if personnel can be treated with first aid on site only, or
 - b. Call 911 if AMR if paramedics are needed (SUNPOWER ON SITE SAFETY MUST BE NOTIFIED IMMEDIATELY OF ANY INJURY OR ILLNESS ON SITE)
 - c. Superintendent or Site Safety Supervisor will escort to the designated care facility,
 - d. Treatment with maximum care with the lowest OSHA recording level possible and,
 - e. **In all cases Ted Smith (303) 550-5292 or Marshall Redlin (303) 802-0962 will be involved in proper case management.**

Assist supervisors in meeting doctor restriction or modified duty

Environmental

1. Immediately report any spill hazard of hazardous material, no matter how small, to your supervisor for appropriate containment and remediation:
 - a. Notify Site Safety Supervisor, of any spills of hazardous material
 - b. All spills that cannot be positively identified as water shall be scooped up with a shovel and placed in a spill container.
 - c. Site Safety Supervisor, will determine clean up procedures for all spills of hazardous material.

2. Be respectful of all wildlife and ranch animals. Report any injured/ dead animals to Superintendent and Site Safety Supervisor.
3. Do not violate any environmental restrictions and requirements
4. All hazardous material materials brought on site must be reported to Superintendent or Site Safety Supervisor and a current SDS must be presented before any hazardous material is used on site. This includes any material that is required to have an SDS such as corrosives, cleaning agents, Windex, pulling soaps, concrete, fuel, etc.
5. No chemicals shall be allowed on site until the SDS sheets are received and approved. All fuel stored on site must be contained in approved containers. All fuel storage tanks must be of the pump fed type and must be equipped with containment and static grounds. Superintendent or Site Safety Supervisor must approve all fuel storage on site.

Personal Protective Equipment

1. 100% hardhat protection REQUIRED AT ALL TIMES ON SITE.
 - a. Exception: Hardhats are not required in the construction trailers or the boundaries established around the office trailers by JE Dunn.
2. 100% eye protection REQUIRED AT ALL TIMES IN SITE.
 - a. Exception: Eye protection is not required in the construction trailers. or the boundaries established around the office trailers .
3. Hard sole, safety toe work boots, meeting ANZI 41, 1 and EH designation that provide ankle support are required, NO SNEAKERS OR SOFT SHOES ARE ALLOWED.
4. Gloves are required anytime a tool is being used, lumber or metal is handled or the situation or conditions require using them.
 - a. Leather gloves must be worn while performing any work requiring impact such as driving rods, piers, etc.
5. Use all appropriate PPE when handling hazardous materials. Information about the required PPE for handling materials can be found in the SDS located in the safety office and such information must be included on the pre task safety card whenever a task involves handling hazardous materials.
6. Long Pants in good condition. NO SHORTS
 - a. Any person that may be exposed to live electrical parts during the course of the shift must wear clothing of all cotton or natural fibers.
7. Shirts must have a 4" sleeve minimum.
8. Ear protection must be worn anytime they are exposed to noise of 85 dBA and greater.
 - a. Double hearing protection must be worn at all times when an employee is within 100 feet of active pier driving machines.

9. Face-shields and safety glasses are required when cutting, chipping, grinding or drilling.

Fall Protection

1. 100% Fall Protection for any work that is 6 feet or greater above the work surface or ground. ZERO TOLERANCE- for violations.
2. Fall protection equipment is to be inspected prior to each use.
 - a. The equipment must be inspected by the contractor's competent person and a record of inspection turned into Superintendent or designee each day.
 - b. The equipment must then be inspected by the person who will use the equipment.
 - c. No person shall use the equipment unless they have been trained on basic fall protection and how to properly inspect and use the fall protection equipment. Record indicating this training must be given to Supervisor prior to any person using fall protection equipment.
 - d. DO NOT USE DAMAGE FALL PROTECTION EQUIPMENT
3. Tie-off points must be rated for at least 5000 lbs. per person attached.
 - a. All tie off points must be inspected and approved by the competent person before use.
4. 100% tie off is required when working from aerial and boom lifts.
5. Guard Railing- Standard
 - a. Top Rail must be 42" +/- 3" above the working level.
 - b. Mid rail shall be located midway between the working level and the top rail.
 - c. Toe boards shall be 3 ½" in height.
 - d. Guardrails will not be used as an anchorage for personal fall arrest equipment.

Ladders

1. Employees shall be trained on ladder use and safety.
2. No aluminum or painted wooden ladders are permitted.
3. Ladders will be construction grade material:
 - a. All ladders used must have a clear and legible weight limit permanently displayed on each ladder.
4. All ladders will be used according to the manufacturer's specifications.
5. Inspect ladders before each use. Damaged ladders will be destroyed and removed from the jobsite.
6. A-frame ladders will be used only in the fully opened and locked position.
7. Extension ladders will extend 3 feet above the landing surface.
8. Extension ladders must be used as designed by the manufacturer; do not separate sections and use individually.
9. Never use the top three steps of an extension ladder or the top 2 of an A frame ladder.

10. Never store materials or tools on the steps of a ladder or leave them un-attended on top of a ladder.
11. Use the 3-point rule; 2 hands and foot or vice versa to be in contact with ladder at all times.

Excavations

1. All excavations 5 feet deep or greater shall be sloped, benched, shored or have a trench box in accordance with excavation conditions prior to entering.
 - a. A JSA shall be submitted to Superintendent or Site Safety Supervisor, for approval, before any employee may enter a trench.
2. Trenches 4 feet deep or require ladders for access and egress.
3. Access/ egress points will be placed so that no person must travel farther than 25 feet to use the egress point.
4. Trenches shall be inspected daily by a competent person and anytime working conditions change.
 - a. An inspection record shall be kept on site and available for inspection.

Electrical

1. Industrial heavy weight, extra hard usage cords with proper grounds are to be used at all times on site.
2. 100% Ground Fault Circuit Interrupter (GFCI) protection is required.
 - a. Any contractor using temporary power must submit a GFCI and Equipment inspection report to Superintendent each month before the 12th of the month.
3. Inspect all cords and welding leads before each use. Damaged items must be repaired or removed from the site.
4. All electrical and mechanical systems are to be considered LIVE AT ALL TIMES unless an electrically safe work condition has been achieved.
 - a. An Electrically Safe Work Condition may only be achieved if all of the following have been completed.
 - i. All sources of power have been identified
 - ii. All sources of power have been de-energized and locked out
 - iii. All circuitry and equipment has been tested with a Cat. III meter and verified to be De-energized.
5. All portable generators must be grounded if the metal frame is not contacting the ground
6. Follow the Lock Out and Tag Out procedure when work is performed on systems which could become energized.
 - a. A JSA and Energized Work Permit shall be completed and submitted to Ted Smith for review and approval before any work may be performed on systems which could become energized.
7. Only persons with an Orange Sticker or Blue Sticker may enter an area that contains equipment that could potentially become energized.

Vehicles and Equipment

1. Personal vehicles shall be allowed only in the employee parking area.
2. Only company vehicles with Logo or Company identification will be allowed to operate on the site outside of the employee parking area.
3. Each contractor is responsible for providing safe transportation from the trailer area to the worksite for their employees.
4. Proper training, certification and authorization are required prior to operating any equipment.
 - a. Only persons that have been approved and have UTV training may operate a UTV on site.
 - b. All approved persons for operating a UTV will have a UTV hard sticker to identify those that have been trained. .
5. A spotter is mandatory when view is obstructed by load or the equipment being operated.
6. Back-up alarms must be present on all vehicles and all equipment and must be verified to operating before each use.
 - a. Exception: Motor vehicles registered and licensed for street use shall not need back up alarms.
7. Always follow the manufacturer's operating instructions for all equipment and tools used.
8. Use of vehicles and equipment shall be limited to approved roadways and work areas. Right of ways shall be granted to construction equipment.
9. Use of cell phones while operating equipment is prohibited at all times
10. All personnel driving vehicles shall have a valid driver's license.
11. Vehicles/ equipment shall be parked on the road shoulder or isolated area to allow free travel to others
12. When a parked vehicle/ equipment is left unattended, the engine shall be turned off and the keys removed
13. When driving, seat belts shall be worn at all times. Transport of personnel shall only be permitted when safe and in designated areas only. Personnel will only ride in designed seating equipped with a seatbelt; NO RIDING IN PICK UP BEDS OR ONFLATBEDS
14. Posted speed limits shall be maintained at all times. The site speed limit is 15 MPH. Should adverse weather conditions exist or conditions warrant; adjust speed and driving as required.
15. Reckless driving is strictly prohibited.
16. When driving/ operating equipment, headlights shall be on and workable.
17. Use of cell phones or radios is prohibited when driving. Hands free cell phone usage is permissible.

Cranes

1. A completed lift plan shall be submitted and approved prior to lifting operations.
2. Awareness of overhead loads- listen for horns.
3. Never stand or walk under a suspended load.
4. Crane swing radius area will be barricaded.

Barricade Tape

1. Red = imminent danger exists. Only authorized personnel performing actual work are to be allowed in this barricade tape area. The only exception for entry into a red area is with prior permission from the persons authorized to work within the area and after the safety pre-task plan card has been reviewed by the person entering the area.
2. Yellow = a hazard exists that would warrant caution. A Yellow area can be accessed by anyone who is authorized to be on the job site, and who stops to observe the existing hazard and takes the proper precautions prior to entering the tape barricade area.
3. All persons entering an area where work is being performed must be challenged by the persons performing the work and the safety pre-task plan card must be reviewed by the person entering the area.

Training Requirements

1. All personnel must be trained, certified, and authorized to operate any and all equipment.
2. Training will be ongoing as required
3. All training will be documented and submitted / emailed to "Training" on the E Light network.

Hazardous Material

1. Any and all hazardous materials are to be stored in the designated HAZMAT area. (See Site Map)
2. All hazardous material must also be disposed of in the correct Hazardous Waste container.
3. In the event of a spill there are spill kits for containment and clean up.
4. Notify your supervisor and, Site Safety Supervisor, if a spill occurs immediately.
5. Only "safety type" cans will be used as secondary containers.
6. All containers must be clearly marked as to their contents
7. Any hazardous material brought on site must be approved by Superintendent or Site Safety Supervisor, prior to being brought on site.

Housekeeping

1. Messy job-sites or work areas WILL NOT BE TOLERATED.
2. All trash/ debris must be cleaned up and disposed of in dumpsters AS YOU GO; this includes lunch/break trash.
3. E Light Electric Services reserves the right to hire labor to perform clean up and back charge subcontractors responsible for the mess.

Wildlife Contact

Scorpions, Tarantula's, Rattlesnakes, Coral snakes and Coyotes are present in this area and a watchful eye must be maintained to avoid contact with this wildlife.

Be sure to carefully inspect and move conduits, pipes and other stored material to ensure that wildlife has not taken up residence in this material. Tilt all conduits up above your head so that it will drain away from your body before handling or moving material.

Be sure to shake out jackets and items of clothing before putting them on to ensure scorpions have not taken up residence in the clothing.

Tarantulas are not dangerous and are best to be ignored. If they are on material or other items, simply push them away using a stick and they will move away. They do not bite and they are not venomous.

Scorpions do sting and they are venomous. Any person suffering a scorpion sting should be taken for minor first aid care at the occupational health clinic.

Rattlesnakes are venomous and can be dangerous particularly if they are startled. If a rattlesnake is encountered personnel should immediately freeze in place for 30 seconds minimum and allow the snake to relax slightly. Then slowly take two steps backwards, moving only your legs slowly. If the snake does not relax and uncoil, remain in place until the snake does so. If the snake does relax and uncoil, continue walking slowly backwards until you are safe distance away and then alert the Project Manager or Superintendent of the presence of the snake. Alert other employees in the area to stay away from the area.

Although venomous (poisonous) snakes are relatively common in the U.S., bites from venomous snakes are a rare cause of death in this country. While there are about 8,000 venomous snake bites reported each year in the U.S., no more than 12 deaths were reported each year from 1960-1990 as a result of poisonous snake bites. About half of all reported snake bites occur in children.

Pit vipers are a family of snakes whose scientific name is *Crotalidae*. This group, which is responsible for 99% of poisonous snake bites in the U.S., includes the rattlesnakes, copperheads, and water moccasins (cottonmouths). Within this group, rattlesnakes have the most deadly venom and cause the majority of snakebite-related deaths. Rattlesnakes can be found in both the Eastern and Western areas of the country. In particular, the Mojave rattlesnake has one of the most potent venoms of all rattlesnakes. Copperheads, common in the Eastern U.S., have milder venom than that of rattlesnakes. Water moccasins live around natural waters in the Southeast; their venom has an intermediate potency between that of the rattlesnakes and copperheads. Coral snakes found in the southern U.S., related to the Asian cobras and not part of the pit viper family, are a rare cause of poisonous snake bites in the U.S.

What are the symptoms of a poisonous snake bite?

Symptoms of snake bites are dependent upon the type and size of the snake, the location of the bite on the body, and the age, size, and health of the victim. Children are more likely to have severe symptoms because they receive a larger concentration of venom due to their smaller body size. Also, not all snake bites involve the discharge of venom into the victim (known as envenomation). At least 25% of poisonous snake bites do not result in envenomation.

Snake venoms are either hemotoxic (causing damage to blood and other tissues) or neurotoxic (causing damage to nerves). The pit vipers, with the exception of some Mojave rattlesnakes, have hemotoxic venom. The extremely potent venom of the Mojave rattlesnake has neurotoxic activity. Coral snakes also have neurotoxic venom.

Pit viper bites often show two characteristic fang marks at the site of the bite. Intense pain usually results at the site within five minutes of the bite, and swelling is common.

Other symptoms that may result from pit viper hemotoxin include:

- weakness,
- rapid pulse,
- numbness,
- tingling sensations,
- bruising,
- bleeding disorders,
- vomiting,
- an unusual metallic taste
- confusion.

Bites from snakes such as coral snakes and their exotic relatives whose venom is neurotoxic may result in minimal pain and no visible marks on the skin. Instead of pain and swelling, these bites often cause local numbness along with a number of other symptoms including:

- drooping of the eyelid (ptosis),
- difficulty swallowing (dysphagia),
- double vision (diplopia),
- sweating,
- excessive salivation,
- a decrease in reflexes,
- respiratory depression, and
- Paralysis.

What is appropriate first aid for poisonous snake bites?

If someone is bitten by a poisonous snake, the bitten area should be immobilized and the victim transported to a hospital as quickly as possible. The bitten area should be washed with soap and water. A wide constriction bandage (tourniquet) may be applied two to four inches upstream of the bitten area (if on an extremity) so long as the pressure is not too tight (one or two fingers should be able to slide under the band). Overly tight tourniquets should never be used as these can block arterial blood flow to the affected area and worsen tissue damage.

Incising (cutting) and suctioning the bite area has not been shown to be beneficial.

Ice or cooling packs should *never* be applied to the area as these may result in greater harm, and incisions of the bitten area are also potentially harmful and have no benefit.

Most importantly, any victim of a venomous snake bite should be evaluated in an emergency medical care facility as soon as possible.

How are poisonous snake bites treated?

Treatment of poisonous snake bites involves thorough cleansing of the wound and observation of the victim to determine whether symptoms suggestive of envenomation develop over time. In most cases of poisonous snake bites, an antivenin (also called antivenom) is given, preferably by intravenous administration. For rattlesnake, cottonmouth, and copperhead (pit viper) bites, Antivenin (Crotalidae) Polyvalent (ACP) equine (horse)-derived antivenin was the standard treatment in emergency departments for many years. ACP, however, is known to cause a number of potentially severe allergic reactions because of its equine origin. In 2000 the U.S. FDA approved the sheep-derived antivenin CroFab which appears to have a lower incidence of associated allergic reactions, although clinical trials comparing the two have not been performed.

Drug and Alcohol Policy

PURPOSE

E Light Electric Services is committed to a safe, healthy, and productive work environment for all employees free from the effects of substance abuse. Abuse of alcohol, drugs, and controlled substances impairs employee judgment, resulting in increased safety risks, injuries, and faulty decision-making.

STATEMENT OF POLICY

To ensure a safe and productive work environment E Light Electric Services prohibits the use, sale, dispensation, manufacture, distribution or possession of alcohol, drugs, controlled substances, or drug paraphernalia on any company premises or worksites. This prohibition includes company owned vehicles, or personal vehicles being used for company business or parked on company property.

No person shall report to work or be at work with alcohol in their system above the detectible amount or with any detectible amount of prohibited drugs in the employee's system. No person shall report to the jobsite with the odor of alcohol on their person.

Any person who is prescribed drugs by a licensed medical professional shall inquire of the side effects of that drug and if the side effects may affect job performance or safety your supervisor must be notified immediately. Your supervisor will inform The Project Manager or Superintendent.

Illegal use of drugs off duty and off company premises or work sites is not acceptable. It can affect on-the-job performance and the confidence of the public, and our customers in the company's ability to meet its responsibilities.

Any violation of this policy may result in disciplinary action up to and including permanent removal from the jobsite.

EMPLOYEE AND APPLICANT DRUG AND ALCOHOL TESTING

To promote a safe and productive workplace, E Light Electric Services will enforce the requirement of the following types of testing:

- Pre-Employment or Pre- Assignment
- Reasonable Suspicion
- Post-accident Testing
- Random

CATEGORIES OF EMPLOYEE SUBSTANCE TESTING

Pre-Employment or Pre-Assignment Testing

All persons assigned to work on the Bonnybrooke project shall undergo pre-assignment drug testing unless the contractor has submitted their Drug and Alcohol Policy to E Light Electric Services and the Contractor can demonstrate that they perform pre-employment drug screening on all employees. Employees will be informed that, as a condition of assignment, they must pass a drug-screening test. Written verification of a drug screen with negative results must be presented to The Project Manager or Superintendent before any employee will be allowed to work on site unless the employee's employer has been verified to be in compliance of pre-employment drug screening.

Each contractor is responsible for arranging, implementing and paying for all pre-assignment/pre-employment drug testing for their employees.

Random Testing

E Light Electric Services may require periodic random testing of personnel on site. All persons on site are subject to random testing and any person on site who refuses a random drug screen will be removed permanently from the job site.

Reasonable Suspicion Testing

Any person on site at the Bonnybrooke project will be asked to submit to tests for alcohol and/or illegal drugs when the employee is reasonably suspected of being impaired in the performance of his or her job. The employee's employer will be responsible for conducting the test and will be liable for all costs.

Reasonable suspicion testing may result from one of the following examples, but is not limited to the following:

- Specific and personal observations concerning the appearance, behavior, speech or performance of the employee; or
- Violation of a safety rule, or other unsafe work incident which, after further investigation of the employee's behavior, leads the supervisor(s) /manager(s) to believe that the employee's functioning is impaired; or
- Any physical, circumstantial, or other indicators of impairment.
- When a supervisor/manager has reasonable suspicion to request testing, the Supervisor/Manager will arrange to transport the employee to the collection site, and will arrange for the employee's transport home.
- Employee will not be allowed to return to work until written verification of a negative result test is given to The Project Manager, Superintendent or Safety Manager

Post-Accident Testing

An employee must submit to a drug and/or alcohol test after an on the job accident.

- An accident for purposes of this policy is defined as an incident or occurrence in which:
 - A person requires medical treatment or
 - Property damage is estimated at greater than \$200 or more and the property damage is estimated and determined by the company.
 - It involves use of a motor vehicle, cart, or equipment
 - It involves an employee in a personal vehicle accident while on the job.
- Whenever a supervisor/manager observes or is notified of an accident as defined above, the supervisor/manager will initiate drug and alcohol testing. The supervisor/manager will order the employee to submit to a urine and/or breath test. The supervisor/manager will arrange to transport the employee to the collection site and will arrange for the employee's transport home. Each contractor is responsible for implementing this policy for their employees.

THE KINDS OF SUBSTANCES TESTED FOR WILL INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING SUBSTANCES OR THEIR METABOLITES:

- Marijuana
- Cocaine
- Amphetamines -AMP
- Methamphetamine- mAMP, Meth, Ice, Speed, Crank, Ecstasy

- Oxycodone
- Propoxyphene PPX
- Benzodiazepines , BZO, Benzos
- Methadone MTD
- Opiates MOP

E Light Electric Services reserves the right to change the substances that are tested for or add to the above list at any time.

INSPECTION AND SEARCHES

E Light Electric Services may conduct unannounced inspection for violations of this policy in the workplace, worksites, or company premises.

SAFEGUARDS AND CONFIDENTIALITY

The drug screen analysis is accomplished through urinalysis testing. Alcohol testing may be through breath testing. Samples will be collected in a sanitary environment designed to maximize employee's privacy while minimizing the possibility of sample tampering. If there is a positive drug and/or alcohol result on the initial screening test, the laboratory or blood alcohol technician will automatically do a second test to confirm the results. The second drug test will be performed using gas chromatography/mass spectrometry or other scientifically accepted method. In the event the drug and/or alcohol test results are a dilute negative, the applicant will be required to re-test. A positive breath alcohol test will be confirmed by a second breath test.

All drug tests must be performed by a government-certified outside laboratory. All government-certified outside laboratories strictly follow chain of custody guidelines to ensure the integrity of the testing process. The company shall use a Medical Review Officer (MRO) who will receive the laboratory results of the testing procedure. The MRO shall be a licensed physician and have knowledge of substance abuse disorders and the appropriate medical training to evaluate positive results, medical histories, and any other relevant biomedical information. The MRO shall review all medical records made available by the tested individual when a confirmed positive test could have resulted from legally prescribed medication.

If the results of the initial test are negative, the testing laboratory will report the results to the MRO retained by the contractor. The MRO or the testing laboratory reports the negative results to the contractor. In this instance, no additional tests on the specimen will be done.

If the results of the initial test are positive, that is, if the results exceed the permitted levels for any of the five drugs tested or if the blood alcohol test comes back positive, a second confirmatory test shall be performed. The employee is prohibited from performing any duties and will not be allowed access to the site if the initial test is positive, and while the confirmatory testing is being performed. Only specimens that are confirmed positive on the second (confirmatory) test are reported positive to the MRO for review and analysis. The MRO will

contact the employee personally, in the case of a positive test result. The MRO has the responsibility of reporting to E Light Electric Services whether the test results are positive or negative.

DISCIPLINARY ACTION AND REASONS FOR TERMINATION

Any person that has not completed the required testing, has tested positive or has refused to comply with testing requirements will be removed from the site and not allowed access the site in the future.

Motor Vehicles On-Site

- All motor vehicles on site must be marked with a company logo or name for easy identification. No unmarked vehicles will be allowed on site other than in the employee parking area.
- UTV's and Carts may only be used on site after they have been inspected and approved by the Project Manager or Superintendent when they are first brought onto site.
- All operators of UTV's and Carts must be approved by the Project Manager or Superintendent.
- Seat Belts must be worn at all times by all passengers of UTV's and carts
- The posted jobsite speed limit is 12.5 MPH
- Distracted driving, careless driving and unsafe driving will not be tolerated on site.
- Do not operate UTV's and carts in high wind, low visibility conditions.

Emergency Response and First Aid

First Aid and Work Related Occupational Incidents not requiring immediate medical attention shall be referred to:

FastMed Urgent Care
495 N Pinal Parkway, Suite 106
Florence, Arizona 85132
520-868-0573

Florence Hospital
4545 N Hunt Hwy.,
Florence, Arizona 85132
520-868-3333

In the event of an emergency or an accident the following shall be contacted:

1. Emergency Personnel if required
2. The E Light Electric Services Superintendent or Safety Manager
3. The E Light Electric Services Project Manager
4. Director of Safety and Loss Prevention (Ted Smith) or Region Safety Manager (Marshall Redlin) for case management
5. The Project Construction Manager / Senior Project Manager

Emergency Response Personnel shall be the local ambulance service and the Kern County Fire Department. First Aid kits are located in the E Light Electric Services and the Safety Manager's Trailer. The Safety Manager and Safety Specialist in the field will have first aid kits on their carts in addition to 40 other carts used by E Light personnel.

The Safety Manager shall monitor the weather and the weather forecasts throughout each work shift. The Project Manager or Superintendent in conjunction with the Safety Manager shall declare a weather emergency in the event of tornado.

In the event of a thunderstorm the Project Manager or Superintendent in conjunction with the Safety Manager shall monitor the location for lightning with a lightning detector and determine when employees need to seek shelter. The Project Manager, Superintendent or the Safety Manager shall make two long blasts on an air-horn and communications with hand held radios to inform personnel they need to seek shelter from the thunderstorm. Personnel shall remain in the shelters until such time as the Project Manager or Superintendent has declared that it is safe to return to work.

Personnel may use the jobsite trailers for shelter in the event of electrical thunderstorm. Personnel shall not use the jobsite trailers in the event of a tornado. The site shall be evacuated in the event of a tornado watch in the area.

Safety Inspections: Bonnybrooke Solar Facility

Daily and weekly safety inspections are required to be performed using the iAuditor tablet application. These shall be submitted to the regional safety manager each week and kept on file at the project safety office.

PHYSICAL DEMANDS ANALYSIS

Do you have any allergies?

Yes _____ No _____ if yes, please explain.

Do you have a fear of heights?

Yes _____ No _____ If yes, please explain.

Have you ever been diagnosed with a respiratory illness? Yes _____ No _____
If yes, please explain:

Have you ever been diagnosed with Alpha-1 Antitrypsin Deficiency?

Yes _____ No _____

Are you color blind?

Yes _____ No _____

Are you currently taking any medications that can cause impairment?

Yes _____ No _____ If yes, please explain.

Are you able to repetitively bend, squat or otherwise work on your knees for an extended period of time?

Yes _____ No _____ If no, please explain.

Are you able to lift at least 50 lbs. repetitively throughout the day?

Yes _____ No _____ If no, please explain

Are you able to work in adverse weather conditions including but not limited to, snow, rain, heat, wind etc.?

Yes _____ No _____ If no, please explain

Have you ever diagnosed with heat stress or cold weather injuries?

Yes _____ No _____

Are you able to move about safely on all terrains that could include obstacles and other obstructions throughout the work day?

Yes _____ No _____ If no, please explain

Are you able to work on your feet throughout the work day which could be 8 hours or longer?

Yes _____ No _____ If no, please explain

Have you ever been diagnosed with any hearing loss?

Yes _____ No _____

Do you have any reason, encumbrances or responsibilities that will limit your ability to work in areas other than the current project assignment? Yes _____ No: _____

If _____ yes, _____ please _____ explain:

I understand that I am required to notify Project Manager, Superintendent or Safety Manager in writing immediately if any of the conditions of my health change, my physical abilities, my life circumstances or any other factor change that may affect the above answers in any way. I am required to notify my direct supervisor of any circumstances which may preclude me from

performing the duties and requirements of the offered position or that would cause me to suffer hardship based on the project location and/or task assignment.

Yes _____ No _____

PRINTED NAME

SIGNATURE

DATE

Emergency Contacts:
Bonnybrooke E 15020

Project Manager: Stacy Koehler	303-952-1141
Construction Manager: Mike Hasselhorst	303-819-4670
Director of Safety and Loss Prevention: Ted Smith	303-550-5292
Region Safety Manager: Marshall Redlin	303-802-0962

Local Occupational Medical provider:

FastMed Urgent Care
495 N Pinal Parkway, Suite 106
Florence, Arizona 85132
520-868-0573

Local Hospital:

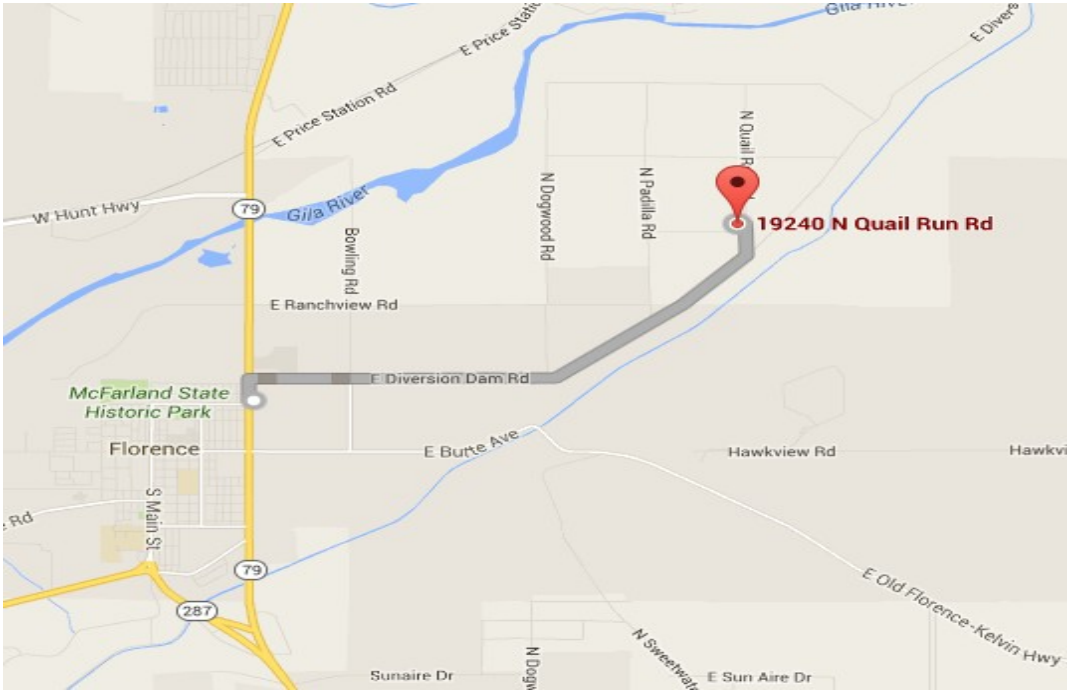
Florence Hospital
4545 N Hunt Hwy.,
Florence, Arizona 85132
520-868-3333

Dial: 911 for Emergency Response

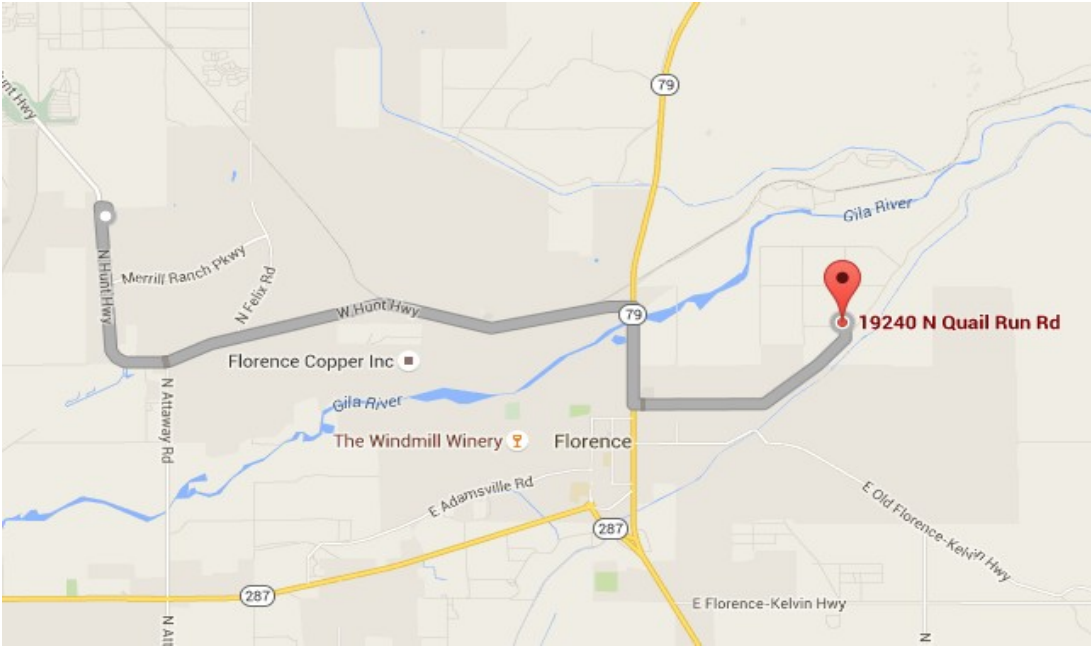
Ted Smith must be notified before going to a work compensation clinic for treatment. Contact Ted Smith at any time or day BEFORE going to a clinic for a work related injury or illness.

MEDICAL PROVIDER MAP

FastMed Urgent Care



Florence Hospital



Addendum A

E Light Electric Services Bonnybrooke E-15034

High Heat Illness Prevention Plan

Heat Illness Prevention regulations, the six parts; Scope and Application, Definitions, Provisions of Water, Access to Shade, High Heat Procedures and Training are included/addressed in this plan. The following plan is in effect for the Project when the ambient temperature reaches 80 degrees. This plan is an addendum to the project Injury and Illness Prevention Plan.

Scope and Application

These procedures provide steps applicable to most outdoor work settings and are essential to reducing the incidence of heat related illnesses. In working environments with a higher risk for heat illness (e.g., during a heat wave, hot summer months exceeding 80 degrees Fahrenheit, or other severe working or environmental conditions), it is E Light Electric Services, Inc. duty to exercise greater caution and ensure these procedures are implemented, including additional protective measures beyond what is listed in this document, as needed to protect employees affected by high heat conditions.

Cal OSHA Definitions

“Acclimatization” means temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.

“Heat Illness” means a serious medical condition resulting from the body's inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope and heat stroke.

“Environmental risk factors for heat illness” means working conditions that create the possibility that heat illness could occur, including air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees.

“Personal risk factors for heat illness” means factors such as an individual's age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body's water retention or other physiological responses to heat.

“Shade” means blockage of direct sunlight. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning. Shade may be provided by any natural or artificial means that does not expose employees to unsafe or unhealthy conditions.

“Temperature” means the dry bulb temperature in degrees Fahrenheit obtainable by using a thermometer to measure the outdoor temperature in an area where there is no shade. While the temperature measurement must be taken in an area with full sunlight, the bulb or sensor of the

thermometer should be shielded while taking the measurement, e.g., with the hand or some other object, from direct contact by sunlight.

“Provision of water”. Employees shall have access to potable drinking water meeting the requirements of Sections 1524, 3363, and 3457, as applicable including but not limited to the requirement that water is to be fresh, pure, suitably cool, and provided to employees free of charge. The water shall be located as close as practicable to the areas where employees are working. Where drinking water is not plumbed or otherwise continuously supplied, it shall be provided in sufficient quantity at the beginning of the work shift to provide one quart per employee per hour for drinking for the entire shift. Employers may begin the shift with smaller quantities of water if they have effective procedures for replenishment during the shift as needed to allow employees to drink one quart or more per hour. The frequent drinking of water, as described in subsection (h) (1) (C), shall be encouraged.

Provisions of Water (Water Distribution Plan)

Bottled water is provided on site to employee's working for E Light Electric Services, Inc. Sub-Contractor's on site working for E-Light Electric Services, Inc. are required to provide a written Heat Illness and Water Distribution Plan, as well as the required potable water and ice for their personnel on site daily.

In temperatures starting at 80 degrees, shade structures shall be provided on site so that any employee can take a cool off break, sit down and consume water with a place to sit in a posture as to allow the body temp to cool down. In temps forecasted of 95 degrees or higher, the site is under a high heat condition, and all personal shall consume one bottle of water with a packet of electrolyte added to the bottle of water, under observation of their supervisor during a.m. stretch and flex in addition to the following:

- All personnel shall consume approx. 1 cup (One half bottle of water) every 15 minutes.
- Employees shall keep track of the number of bottles of water they consumed during the work shift and shall note the number on the front of their Pre-task card.
- Supervisors shall initial the number of bottles of water consumed on the back of each person's Pre-task card and if the number is inadequate they shall counsel the person to consume the appropriate amount of water and shall note this on the back of the Pre-task card.
- Any person that is challenged shall take note of the number of bottles of water consumed thus far in the day at that time and if the number is inadequate they shall counsel the employee to consume the correct amount of water and shall note the time and counseling on the back of the Pre-task card. The person making a note does not need to be a supervisor.
- Safety Manager or designee shall monitor water consumption for all personnel on site, to make sure reasonable effort is being made to keep hydrated, but at the same time **not** over hydrating themselves which could cause further problems.

E Light company vehicles will have an ice chest containing cool bottled water available to their crews. The site shall have enough water to supply each person on site a minimum of 2 (two) 16 ounce bottles of water per hour, per person. Water shall be made available throughout the work day to all employees. Water shall be made available to the employees so that no employee shall be required to travel more than 50 meters to obtain fresh water.

Water and ice will be stored in ice chests each day. Water shall be stored under shade.

Access to Shade

Shade is required to be present when the temperature exceeds 80 degrees Fahrenheit. When the outdoor temperature in the work area exceeds 80 degrees Fahrenheit, E Light Electric Services, Inc. shall have and maintain one or more areas with shade at all times while employees are present that are either open to the air or provided with ventilation or cooling. The amount of shade present shall be at least enough to accommodate the number of employees on meal, recovery, or rest periods, so that they can sit in a normal posture fully in the shade without having to be in physical contact with each other. The shade

shall be located as close as practicable to the areas where employees are working. Shade provided while sitting in UTV's can be utilized as long as UTV shade is not the only access to shade.

Shade is required to be available when the outdoor temperature exceeds 80 degrees Fahrenheit. When the outdoor temperature in the work area exceeds 80 degrees Fahrenheit E Light Electric Services, Inc. shall either provide shade per subsection (d)(1) or provide timely access to shade upon an employee's request.

Employees shall be allowed and encouraged to take a preventative cool-down rest in the shade when they feel the need to do so to protect them from overheating. Such access to shade shall be permitted at all times. An employee who takes a preventative cool-down rest:

- A. Shall be monitored and asked if he or she is experiencing symptoms of heat illness.
- B. Shall be encouraged to remain in the shade.
- C. Shall not be ordered back to work until any sign or symptom of heat illness have been abated, but in no event less than 5 minutes in addition to the time needed to access the shade.

If an employee exhibits signs or reports symptoms of heat illness while taking a preventative cool-down rest or during a preventative cool-down rest period E Light Electric Services Inc. will provide appropriate first aid or emergency response. Refer to Emergency Response section. Exception: Where E Light Electric Services Inc. can demonstrate that it is infeasible or unsafe to have a shade structure, or otherwise to have shade present on a continuous basis, E Light Electric Services, Inc. may utilize alternative procedures for providing access to shade if the alternative procedures provide equivalent protection.

Shade will be provided several different ways:

Cool down sheds-(Air conditioned enclosed sheds) four sheds located at TBD and one located at Block TBD. The site superintendent shall nominate an apprentice who will be required to start the generators and A/C units between 0800-0900 each morning and shut down no earlier than 13:45. Also ensure fuel is replenished using the materials manager auxiliary fuel tank and pump. Specific rules shall be posted in each cool down shed and shall be numbered on the outside and identified with signage stating "Cool Down Shed".

Shaded picnic tables- Safety monitors shall ensure shaded picnic tables are assembled at the requested locations by the foreman no later than first break.

Pop up umbrellas- Foreman are responsible for ensuring pop up umbrellas are utilized by each crew who require this type of shade and are located at the tool room for issue.

Base type umbrellas- Foreman are responsible for distributing the base type umbrellas to the required crews as required and are located at the tool room for issue.

Supervision shall not deny any employee who requests a break in a shaded area the ability to take this break.

High Heat Procedures

E Light Electric Services Inc. shall implement high-heat procedures when the temperature equals or exceeds 80 degrees Fahrenheit. These procedures shall include the following to the extent practicable:

The Safety Manager or designee shall monitor the weather forecast daily and inform supervision at the morning stretch and flex.

Supervision

Pre-shift Meetings (Stretch and Flex)

After the morning Stretch and Flex the workforce shall be given the following information:

- A brief discussion covering the high heat program.

- The right to ask for a preventative cool down period and a reminder to drink water at the recommended levels.

Supervisors shall:

- Monitor work activities closely and shall initiate additional breaks as needed based on temperature and the type of work being completed.
- All employees shall receive a short briefing concerning heat related topics at the start of each shift by their supervisor and shall include these hazards on their Pre-task card and Job Hazard Analysis.
- Supervision shall ensure the use of the “buddy system”, not being allowed to work alone in temperatures exceeding 95 degrees or higher.

Acclimatization/New Hires

All new personnel shall be provided a copy of this plan during site specific orientation for their review. Any questions or concerns shall be reviewed with the safety manager, or designee, and if need be the Director of Safety, Ted Smith.

Supervision/Safety Manager shall interview employees for acclimatization to the location. At 80 degrees, all new employees reporting to the site shall be considered un-acclimated, unless the employee:

- Must have lived 30 days or greater in the same heat stress environment.
- Of those 30 days must have physically worked 10 or more of those 30 days with physical activity.
- The worker must have worked for four hours per day of these 10 days.

All new personnel reporting to the site shall be observed for the following:

- Previous heat stress illness
- General physical condition
- Ability to perform the task assigned

Any person that displays poor physical condition, or unfit for high heat environment duty conditions shall be observed throughout the day for signs of heat related illnesses. The supervisor they are assigned to shall be alerted that they may be more susceptible to heat related injuries and will need closer observation throughout the day.

All new personnel reporting to the site that does not meet the above criteria shall be issued a RED hard hat sticker for the first 14 days on site. After the completion of the 14 day period they shall be issued another appropriate colored hard hat sticker. All personnel wearing a RED hard hat sticker shall be subject to the following:

- They shall be assigned to work directly with one person that has completed the E Light High Heat Conditions Training Program.
- They shall be closely monitored and observed by site supervision.
- Site supervision shall be informed daily of the number of RED hard hat sticker employees are on site and to which crews they are assigned at the daily POT meeting.

Heat Index:

The superintendent shall check the heat index once per hour anytime the ambient temperature is 80 degrees or greater. When the heat index reaches a temperature of 100 degrees, the Director of Safety and Loss Prevention and the Regional Safety Manager will be called immediately and they will be notified of the current temperatures. The Director of Safety and Loss Prevention will be notified immediately if the temperature rise 2 degrees or more. The Director of Safety and Loss Prevention will consult during this time with the site management and will make a determination on a case by case basis concerning shutting down, adding breaks or continuing with the current schedule.

If the Heat Index reaches 115 degrees, the site will be immediately shut down all work suspended until the temperature drops to a safe level. The Director of Safety and Prevention shall make a determination if the work should be suspended for the rest of the day.

Alternate High Heat Work Schedule

When temperatures remain at and exceed 95 degrees Fahrenheit, the WBGT index temperatures and the alternate high heat work schedule will be in effect:

The project will go to an 8 hour shift five days a week Monday thru Friday: (proposed work scheduleThis schedule does have the potential to be modified based on project needs)

06:00 am Morning stretch and Flex
 08:30-08:45 am break in shade
 11:00-11:35 am Lunch in shade
 12:30-12:40 pm break in shade
 2:00-2:15 pm pick up
 2:30 pm out the gate.

Attire

All personal shall be encouraged to dress in light colors, and use long sleeved cotton shirts and sun screen as a precaution while working in the field. This is encouraged only, and not a requirement.

Signs and Symptoms of Heat Stress

CONDITIONS	SYMPTOMS	INITIAL FIRST AID
Heat Stroke (medical emergency)	A life threatening emergency that occurs when the body temperature regulating mechanisms fail during excessive heat. Skin is hot, usually dry red or spotted. Victim is confused, delirious or maybe unconscious.	Call 911 immediately. Attempt to cool the body. Apply cooling vest. Soak clothing in water and vigorously fan the body.
Heat Exhaustion	A mild form of shock caused by the loss of body fluids and minerals. Skin is clammy and moist. Victim is pale and experiencing fatigue, extreme weakness, nausea or headache.	Get victim to a cool place and provide liquids for them to drink.
Heat Cramps	A cramping condition brought on by loss of body fluids and minerals due to profuse perspiration.	Get victim to a cool place and give them plenty of liquids. Provide electrolyte replacement drink if possible.
Heat Rash	Rash appears in areas that are persistently wet with un-evaporated sweat and where clothing is restrictive.	Get worker to a cool place. Wash and dry skin in affected areas.
(Fainting) Heat Syncope	Worker stands still in one place too long. Blood pools in the legs so less blood goes to the brain. Prevention: MOVE AROUND.	Quick recovery after lying down in a cool place.

Training Requirements

All personnel will complete the High Heat Stress Conditions Training and will consist of a power point module and an overview of this document, emphasizing emergency response protocol, the HIPP Sign In Sheet (Appendix A) shall be utilized documenting each employee has received the required training. The training consists of the following topics:

- a. The environmental and personal risk factors for heat illness.
- b. E Light Electric Services Inc., procedures for complying with the requirements of this standard and includes E Light Electric Services, Inc. responsibility to provide water, shade, cool-downrests, and access to first aid and employees rights to exercise their rights under this procedure without retaliation.
- c. The importance of frequent consumption of small quantities of water, up to 4 cups per hour, when the work environment is extremely hot.
- d. The importance of acclimatization.
- e. The different types of heat illness and the common signs and symptoms of heat illness and appropriate first aid and/or emergency response and that heat illness may progress quickly from mild symptoms and signs to a serious life threatening illness.
- f. The importance to employees of immediately reporting to E Light, directly or through the employee's supervisor, symptoms or signs of heat illness in themselves, or in co-workers.
- g. The E Light Electric Services, Inc. procedure for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary.
- h. The E Light Electric Services, Inc. procedure for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider.
- i. The employer's procedures for ensuring that, in the event of an emergency, clear and precise direction to the work site can and will be provided as needed to emergency responders.

This HIPP, including the emergency response plan for heat related illness, shall be posted in a conspicuous location (cool down shelters, construction office, bulletin boards) etc. for employees review.

Supervisor Training

Project Managers and Superintendents have the option of taking the High Heat Training module on the E Light training web site.

All foreman and above shall receive a copy of this procedure and shall be reviewed with the safety manager. Foreman and above shall be trained in basic heat stress first aid, how to respond to symptoms of a possible heat illness emergency and the procedure for contacting emergency medical services and be trained in the above (a) thru (i) requirements.

Safety personnel shall be trained in heat stress emergency response protocols and maintain F/A CPR certification.

Emergency drills for safety personnel, and the workforce shall be conducted at a minimum once per month When the HIPP is in effect.

Responding to a possible heat illness emergency

When an employee has been impacted with a heat related illness, E Light Electric Services, Inc. employees will follow this process: The Site Safety manager or his designee shall be the designated person to call 911 in case emergency medical services are required.

1. When an employee displays possible signs or symptoms of heat illness a trained first aid worker, supervisor, or safety personnel will check the employee and determine whether resting in the shade or cooling shelter, applying the dunk vest and drinking cool water will suffice or if emergency service provider is required. Under no circumstances will the sick worker be left alone in the shade or cooling shelter.
2. When an employee displays possible signs or symptoms of heat illness and no trained first aid worker or supervisor is available at the site, the designated person will call emergency service provider using the Emergency Response Request Form. (Appendix B)
3. The designated person will call emergency service provider immediately if an employee displays signs or symptoms of severe heat illness, does not look OK, or does not get better after drinking cool water, resting in shade or cooling shelter and dunk vest applied. While the ambulance is in route, safety personnel will cool the worker by placing him or her in the cooling shelter, removing excess layers of clothing, placing the cooling vest on and fanning the victim.
4. If an employee is displaying signs and symptoms of severe heat illness and the worksite is located more than 20 minutes away from a hospital, the designated person will call emergency service providers immediately, communicate the signs and symptoms of the victim and request an air ambulance.

Procedure for contacting emergency medical services

1. Prior to assigning a crew to a particular worksite, the designated person(s) will ensure that a qualified, appropriately trained and appropriately equipped person will be available at the site to render first aid if necessary. (Site safety personnel)
2. Prior to the start of the shift, the supervisor will determine if a language barrier is present at the site and take steps (such as assigning the responsibility to call emergency medical services to the foreman or an English speaking worker) to ensure emergency medical services can be immediately called in the event of an emergency.
3. All foreman and supervisors will carry cell phones, hand held radio or other means of communication to ensure that emergency medical services can be called. Prior to each shift, each foreman will check to make sure that the cell phone or other means of communication is functional at the worksite.
4. At the jobsite, the designated person will designate an employee or employees to physically go to the nearest road or highway and/or an entrance to the jobsite where emergency responders can see them and guide them to the victim location.

Providing **clear and precise directions** to the jobsite can and will be provided as needed to emergency medical responders in the event of an emergency by utilizing the Emergency Response Request Form (Appendix B). This form must be filled out by the designated employee when requesting assistance.

All employees will be issued a hard hat sticker indicating the project address, employee name, emergency contact number and room to write important medical information for emergency response personnel.

Recommended Equipment/Gear (quantities are estimates and will be updated when exact manpower is determined).

Type	Quantity Required	Quantity On Hand	Order date	Arrival date
Water				
Ice				
Cool Down Shelters				
Dunk vests				
Coolers for dunk vests				
Sun Screen Lotion				
Cooling Vests				
Cooling Pumps				
Umbrellas				
Pop ups				
Break shelters (picnic tables)				
Hard Hat Brim Extenders				
Dew Rags				
Squincher's				

Emergency Response Request

If the first aid recommendations on page 7 do not reduce the employee's symptoms, their condition becomes worse, or the employee exhibits signs of severe heat exhaustion or heat stroke, use the following:

1. Immediately call **911** for assistance.
2. Give the address and, if needed, any special instructions on how to enter the work site. A map to the jobsite is attached.

19240 N. Quail Run Road
Address

Florence, Arizona 85132
City, State and Zip Code

Call Back Phone Number (The number you used to call)

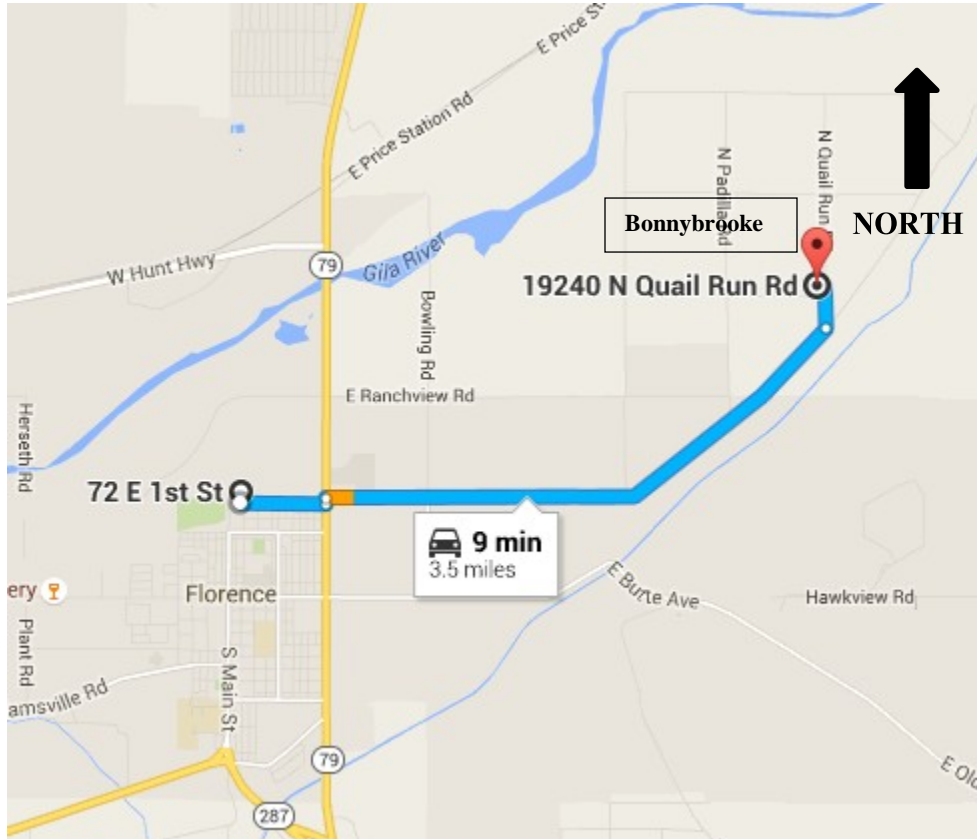
Special Instructions on How to Reach the Victim:

Remember; send personnel to flag down emergency services and guide them to the victim.

Map of Site Location

Job Site Address:

19240 N Quail Run Rd, Florence, AZ 85132



- ↑ Head east on E 1st St toward N Pinal St
0.4 mi
- ↶ Turn left onto N Pinal Pkwy
167 ft
- ↷ Turn right onto E Diversion Dam Rd
2.8 mi
- ↶ Slight left onto N Quail Run Rd
Destination will be on the left
0.2 mi

19240 N Quail Run Rd
Florence, AZ 85132

Addendum B

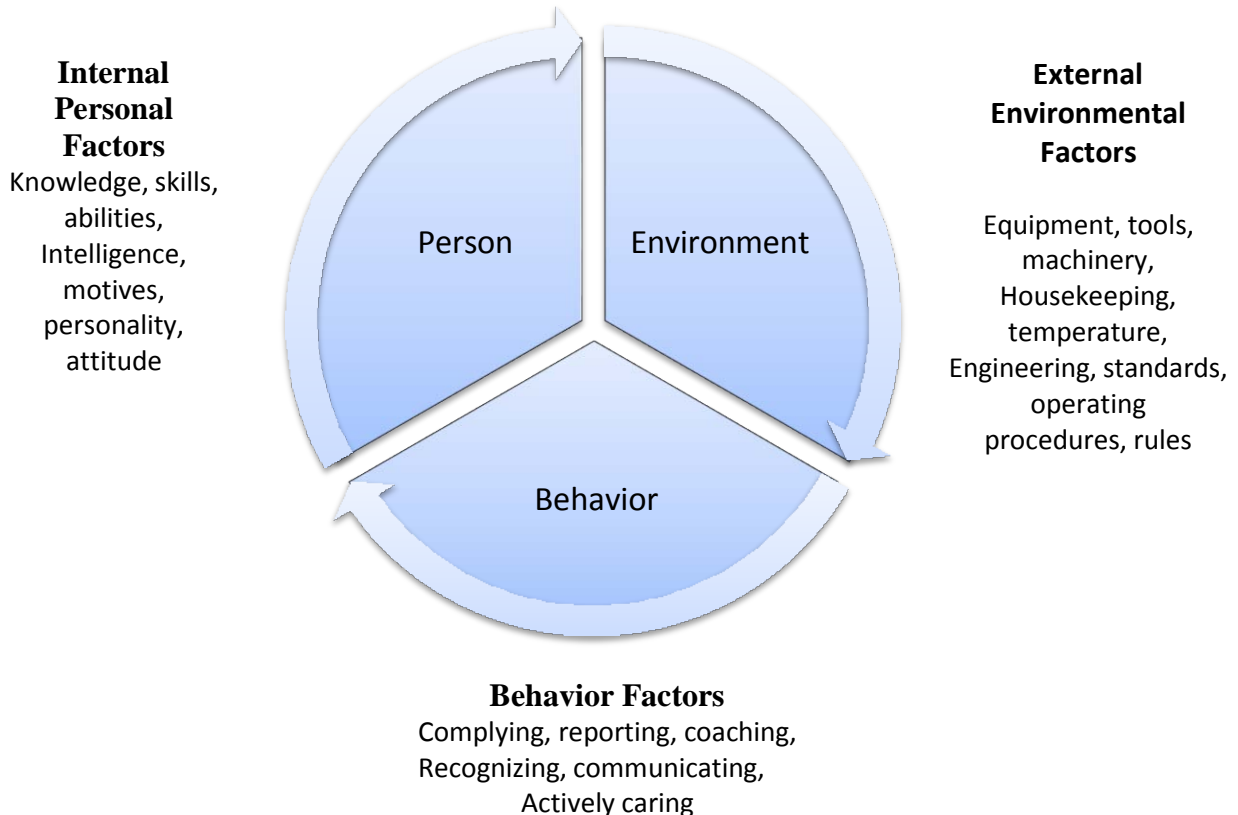
Behavioral Based Safety Program (STOP)

PURPOSE

The Safety Observation Program proactively prevents incidents and injuries through the monitoring, trending, and management of safe vs. unsafe behaviors. Effective communication of safe and unsafe behavior trends to the management team is critical to a successful program. Not knowing why things get better for a reason is always difficult. If it gets better “for no reason,” later it will probably get worse “for no reason.” The point is; it’s not enough to know that something works, it is vitally important to know why it works.

Total Safety Culture

An “actively caring” Total Safety Culture requires continual attention in three domains:



This program will focus in on the behavior factors of our work force. Focusing on behavior factors can help measure compliance of external environmental factors and internal personal factors listed above by capturing and documenting various snap shots of worker behavior in the field. Focusing and correcting the top unsafe behaviors will reduce project injuries and incidents. Also by properly correcting unsafe behaviors systematically and immediately in the field by proper coaching techniques will help encourage positive results and discourage repeated unsafe behavior which is usually the cause of most accidents.

SCOPE

This program is intended to be used for all 20 MW and greater construction projects. Each site may vary on selecting their trained controlled group of observer's.

PROCEDURE

A trained controlled group of observers shall make observations of employees at work, out on the site. The observations will note the name of the observer, date and time, area, and number of employees observed. Each observation will be designated safe or unsafe, and if unsafe, further information and categorization of the unsafe act. Also, observers shall be trained to constructively correct unsafe behaviors and provide positive feedback on safe behaviors.

On a weekly basis, the observations are entered into a tracking database from which the behavioral trends of the workforce are determined. The results of the week's observations should be communicated both to the project as a whole, to the client and on individual basis to the sub-contractor. Focus areas from the previous week's data are identified and should be emphasized to the work force.

OBSERVERS

Observers shall be comprised of the following:

Project Manager	Safety Manager	QA Manager
Superintendent(s)	Safety Supervisors	

The observers must have knowledge of the E Light construction safety requirements including but not limited to:

- Fall Protection/Ladder Safety
- Mobile Elevated Work Platforms
- Control of Hazardous Energies/LO/TO
- Barricades

- PPE Guidelines
- Housekeeping Requirements

Safety Observation Process:

Step 1: PLAN where and when to make observations and recall what to look for.

Step 2: OBSERVE worker behavior for safe and at-risk/unsafe performance:

- Snapshots of behavior
- Allow no distractions
- Observe people and surroundings
- Stop any at-risk/unsafe behavior immediately
- Stop observing after 30 seconds or at-risk behavior is observed, whichever comes first

Step 3: COACH for improved performance by positively reinforcing or redirecting:

- Provide positive reinforcement if safe, give praise
- Coach by shaping behavior if at-risk:
- - Communicate the behavior you saw
 - Check for understanding of the job
 - Coach for improved performance
- Don't ignore what you saw
- Explain why this behavior is right and/or safe
- Encourage continued safe behavior

Step 4: RECORD what was observed, why it occurred, and now what will be done:

- Keep the worker anonymous, be specific and timely and record on the STOP card.
- Remember what, why, now what.

COACHING TIPS

- Use “I” vs. “you” language
- Appeal to other’s interests and goals
- Reflect feelings or emotions that go beyond the words
- Clarify expectations
- Talk about the behavior, not the person
- Keep calm
- Find common ground
- Move to problem solving

The team must know that it is very damaging to the program for an observer to condone behaviors that are unsafe.

DATA COLLECTION

All observers shall complete two STOP Observation cards per week and turned into the safety office by the end of each week.

The STOP cards will be reviewed by the safety team to answer three essential questions:

What behaviors are being observed?

Why are those behaviors present?

Now what will be done to correct the system deficiencies?

The safety team will chart the STOP card information into the following graph examples using the top three unsafe categories and determine corrective action required to correct the system deficiency. This information will be shared with the observation team members for their input and after approval, to the project, client and home office.

When the improvements between observations graphed are displayed for employees to view, it can provide positive reinforcing feedback to the employees.

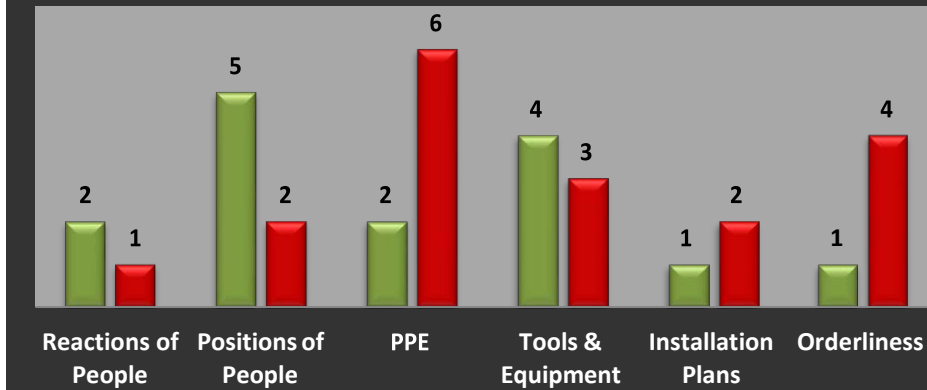
CONDITIONS

Unsafe Safe



ACTIONS

Safe Unsafe



Addendum C

Blood borne Pathogens

Blood borne Pathogens are organisms that can cause disease. They are primarily viruses and are called Blood borne because they are carried in blood and other bodily fluids. Employees who are certified to provide first aid may be exposed to human bodily fluids while providing first aid. To protect employees who are potentially occupationally exposed to Blood borne pathogens the following is required: following:

- Hepatitis B vaccine shall be made available to any employee who provides first aid as part of his or her duty and requests the vaccine.
-
- Training in how to avoid getting exposed by reviewing the following company training video: "Blood borne Pathogens for the First Responder".
- Provide/issue Blood borne Pathogen kits in all first aid bags and to first aid personnel. These kits include: disposable gloves and masks and an aerosol disinfectant spray.

Disinfection of bodily fluids:

- All equipment and areas contaminated with bodily fluids shall be disinfected using bleach and/or aerosol disinfectant spray.

All training documentation shall be kept on file at the project site and copy sent to the home office for file.

HAZARD COMMUNICATIONS WRITTEN PROGRAM

This program applies to all work operations in E Light, where you may be exposed to a hazardous substance under normal occupational conditions, or during emergency situations.

The program will be available at each job site and a master file will be kept in the main office. Each Superintendent is acting as the representative of E Light, and has the overall responsibility for maintaining and updating the program as necessary. Any employee can obtain a copy of the Hazard Communications Program or any part of it from site Superintendent during normal working hours.

This program is written with the intention of compliance with OSHA, 29 CFR 1910.1200(g) and Appendix D. United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

All employees are required to complete Hazard Communications Program 2016 training annually. The program will be made available by on line access.

CONTAINER LABELING

The Superintendent for each site has the responsibility to insure all containers on the site are labeled as to what they contain, and note the appropriate hazard warnings and part of body effected. Labeling shall be done in accordance with the new SDS system as detailed below and shall have the new Hazard Communication Pictograms. Labels shall include:

- Name, Address and Telephone Number
- Product Identifier
- Signal Word
- Hazard Statement(s)
- Precautionary Statement(s)
- Pictogram(s)

No container will be released for use until the above data is verified. Labels can be in common name, trade name, and actual name. Example: Window Wash, Window Cleaner, Windex. E Light will rely on manufacturers applied labels whenever possible, and will insure that these labels are maintained.

Pictograms

<p>Health Hazard</p>  <ul style="list-style-type: none"> • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity 	<p>Flame</p>  <ul style="list-style-type: none"> • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides 	<p>Exclamation Mark</p>  <ul style="list-style-type: none"> • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
<p>Gas Cylinder</p>  <ul style="list-style-type: none"> • Gases Under Pressure 	<p>Corrosion</p>  <ul style="list-style-type: none"> • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals 	<p>Exploding Bomb</p>  <ul style="list-style-type: none"> • Explosives • Self-Reactives • Organic Peroxides
<p>Flame Over Circle</p>  <ul style="list-style-type: none"> • Oxidizers 	<p>Environment (Non-Mandatory)</p>  <ul style="list-style-type: none"> • Aquatic Toxicity 	<p>Skull and Crossbones</p>  <ul style="list-style-type: none"> • Acute Toxicity (fatal or toxic)

SDS (Safety Data Sheets) :

The Superintendent of each site is responsible for obtaining necessary SDS's for hazardous materials, so a comprehensive SDS file can be maintained. The SDS shall include only those items on site at the project and shall be verified by comparison to the chemical and item inventory once per month to ensure accuracy. A SDS log shall be

maintained on site and kept in a location that is accessible to employees.

E Light projects will not provide MSDS sheets on a project for items that are not on that site.

The SDS inventory log shall include the approximate quantity on site and the location of storage.

All employees will be informed of the location of the written program and all Material Safety Data Sheets (MSDS's).

- Copies of the SDS's for all hazardous chemicals to which E Light employees may be exposed on the project will be kept by the supervisor and in the job trailer at each site. The SDS's will be kept in the order they appear on the SDS log and will be available for review to all employees during normal working hours.
- All vendors shall be required to supply an SDS sheet with all orders and the superintendent shall be responsible for ensuring the SDS on site are accurate and up to date. Do not accept deliver of hazardous classified material without a copy of the current SDS attached to the delivery. Ensure the new SDS is entered into the log on site and placed with the log.
- All sub-contractors working on any job site for E Light are required to bring a copy of their hazard communications program to the site before working with any hazardous chemicals. Upon leaving the job site and taking all hazardous materials with them, they may take their copy of the hazard communications program with them.
- The site Superintendent will recommend to all employees, in case of an emergency take a copy of the applicable SDS's to the medical facility, if the emergency is caused by a chemical exposure.
- Field and Service employees can call the office and have any SDS's faxed, emailed to their location. In case of emergency faxed to the doctor's office.

Safety Data Sheets shall conform to the following:

The Hazard Communication Standard (HCS) (29 CFR 1910.1200(g)), revised in 2012, requires that the chemical manufacturer, distributor, or importer provide Safety Data Sheets (SDSs) (formerly MSDSs or Material Safety Data Sheets) for each hazardous chemical to downstream users to communicate information on these hazards. The information contained in the SDS is largely the same as the MSDS, except now the SDSs are required to be presented in a consistent user-friendly, 16-section format. This brief provides guidance to help workers who handle hazardous chemicals to become familiar with the format and understand the contents of the SDSs.

The SDS includes information such as the properties of each chemical; the physical, health, and environmental health hazards; protective measures; and safety precautions for handling, storing, and transporting the chemical. The information contained in the SDS must be in English (although it may be in other languages as well). In addition, OSHA requires that SDS preparers provide specific minimum information as detailed in Appendix D of 29 CFR 1910.1200. The SDS preparers may also include additional information in various section(s).

Sections 1 through 8 contain general information about the chemical, identification, hazards, composition, safe handling practices, and emergency control measures (e.g., firefighting). This information should be helpful to those that need to get the information quickly. Sections 9 through 11 and 16 contain other technical and scientific information, such as physical and

chemical properties, stability and reactivity information, toxicological information, exposure control information, and other information including the date of preparation or last revision. The SDS must also state that no applicable information was found when the preparer does not find relevant information for any required element.

The SDS must also contain Sections 12 through 15, to be consistent with the UN Globally Harmonized System of Classification and Labeling of Chemicals (GHS), but OSHA will not enforce the content of these sections because they concern matters handled by other agencies.

A description of all 16 sections of the SDS, along with their contents, is presented below:

Section 1: Identification

This section identifies the chemical on the SDS as well as the recommended uses. It also provides the essential contact information of the supplier. The required information consists of:

- Product identifier used on the label and any other common names or synonyms by which the substance is known.
- Name, address, phone number of the manufacturer, importer, or other responsible party, and emergency phone number.
- Recommended use of the chemical (e.g., a brief description of what it actually does, such as flame retardant) and any restrictions on use (including recommendations given by the supplier). ¹

Section 2: Hazard(s) Identification

This section identifies the hazards of the chemical presented on the SDS and the appropriate warning information associated with those hazards. The required information consists of:

- The hazard classification of the chemical (e.g., flammable liquid, category¹).
- Signal word.
- Hazard statement(s).
- Pictograms (the pictograms or hazard symbols may be presented as graphical reproductions of the symbols in black and white or be a description of the name of the symbol (e.g., skull and crossbones, flame).
- Precautionary statement(s).
- Description of any hazards not otherwise classified.
- For a mixture that contains an ingredient(s) with unknown toxicity, a statement describing how much (percentage) of the mixture consists of ingredient(s) with unknown acute toxicity. Please note that this is a total percentage of the mixture and not tied to the individual ingredient(s).

Section 3: Composition/Information on Ingredients

This section identifies the ingredient(s) contained in the product indicated on the SDS, including impurities and stabilizing additives. This section includes information on substances, mixtures, and all chemicals where a trade secret is claimed. The required information consists of:

Substances

- Chemical name.
- Common name and synonyms.
- Chemical Abstracts Service (CAS) number and other unique identifiers.
- Impurities and stabilizing additives, which are themselves classified and which contribute to the classification of the chemical.

Mixtures

- Same information required for substances.
- The chemical name and concentration (i.e., exact percentage) of all ingredients which are classified as health hazards and are:
 - Present above their cut-off/concentration limits or
 - Present a health risk below the cut-off/concentration limits.
- The concentration (exact percentages) of each ingredient must be specified except concentration ranges may be used in the following situations:
 - A trade secret claim is made,
 - There is batch-to-batch variation, or
 - The SDS is used for a group of substantially similar mixtures.

Chemicals where a trade secret is claimed

- A statement that the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret is required.

Section 4: First-Aid Measures

This section describes the initial care that should be given by untrained responders to an individual who has been exposed to the chemical. The required information consists of:

- Necessary first-aid instructions by relevant routes of exposure (inhalation, skin and eye contact, and ingestion).
- Description of the most important symptoms or effects, and any symptoms that are acute or delayed.
- Recommendations for immediate medical care and special treatment needed, when necessary.

Section 5: Fire-Fighting Measures

This section provides recommendations for fighting a fire caused by the chemical. The required information consists of:

- Recommendations of suitable extinguishing equipment, and information about extinguishing equipment that is not appropriate for a particular situation.

- Advice on specific hazards that develop from the chemical during the fire, such as any hazardous combustion products created when the chemical burns.
- Recommendations on special protective equipment or precautions for firefighters.

Section 6: Accidental Release Measures

This section provides recommendations on the appropriate response to spills, leaks, or releases, including containment and cleanup practices to prevent or minimize exposure to people, properties, or the environment. It may also include recommendations distinguishing between responses for large and small spills where the spill volume has a significant impact on the hazard. The required information may consist of recommendations for:

- Use of personal precautions (such as removal of ignition sources or providing sufficient ventilation) and protective equipment to prevent the contamination of skin, eyes, and clothing.
- Emergency procedures, including instructions for evacuations, consulting experts when needed, and appropriate protective clothing.
- Methods and materials used for containment (e.g., covering the drains and capping procedures).
- Cleanup procedures (e.g., appropriate techniques for neutralization, decontamination, cleaning or vacuuming; adsorbent materials; and/or equipment required for containment/clean up)

Section 7: Handling and Storage

This section provides guidance on the safe handling practices and conditions for safe storage of chemicals. The required information consists of:

- Precautions for safe handling, including recommendations for handling incompatible chemicals, minimizing the release of the chemical into the environment, and providing advice on general hygiene practices (e.g., eating, drinking, and smoking in work areas is prohibited).
- Recommendations on the conditions for safe storage, including any incompatibilities. Provide advice on specific storage requirements (e.g., ventilation requirements)

Section 8: Exposure Controls/Personal Protection

This section indicates the exposure limits, engineering controls, and personal protective measures that can be used to minimize worker exposure. The required information consists of:

- OSHA Permissible Exposure Limits (PELs), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available.

- Appropriate engineering controls (e.g., use local exhaust ventilation, or use only in an enclosed system).
- Recommendations for personal protective measures to prevent illness or injury from exposure to chemicals, such as personal protective equipment (PPE) (e.g., appropriate types of eye, face, skin or respiratory protection needed based on hazards and potential exposure).
- Any special requirements for PPE, protective clothing or respirators (e.g., type of glove material, such as PVC or nitrile rubber gloves; and breakthrough time of the glove material).

Section 9: Physical and Chemical Properties

This section identifies physical and chemical properties associated with the substance or mixture. The minimum required information consists of:

- Appearance (physical state, color, etc.);
- Upper/lower flammability or explosive limits;
- Odor;
- Vapor pressure;
- Odor threshold;
- Vapor density;
- pH;
- Relative density;
- Melting point/freezing point;
- Solubility(ies);
- Initial boiling point and boiling range;
- Flash point;
- Evaporation rate;
- Flammability (solid, gas);
- Partition coefficient: n-octanol/water;
- Auto-ignition temperature;
- Decomposition temperature; and
- Viscosity.

The SDS may not contain every item on the above list because information may not be relevant or is not available. When this occurs, a notation to that effect must be made for that chemical property. Manufacturers may also add other relevant properties, such as the dust deflagration index (Kst) for combustible dust, used to evaluate a dust's explosive potential

Section 10: Stability and Reactivity

This section describes the reactivity hazards of the chemical and the chemical stability information. This section is broken into three parts: reactivity, chemical stability, and other. The required information consists of:

Reactivity

- Description of the specific test data for the chemical(s). This data can be for a class or family of the chemical if such data adequately represent the anticipated hazard of the chemical(s), where available.

Chemical stability

- Indication of whether the chemical is stable or unstable under normal ambient temperature and conditions while in storage and being handled.
- Description of any stabilizers that may be needed to maintain chemical stability.
- Indication of any safety issues that may arise should the product change in physical appearance.

Other

- Indication of the possibility of hazardous reactions, including a statement whether the chemical will react or polymerize, which could release excess pressure or heat, or create other hazardous conditions. Also, a description of the conditions under which hazardous reactions may occur.
- List of all conditions that should be avoided (e.g., static discharge, shock, vibrations, or environmental conditions that may lead to hazardous conditions).
- List of all classes of incompatible materials (e.g., classes of chemicals or specific substances) with which the chemical could react to produce a hazardous situation.
- List of any known or anticipated hazardous decomposition products that could be produced because of use, storage, or heating. (Hazardous combustion products should also be included in Section 5 (Fire-Fighting Measures) of the SDS.)

Section 11: Toxicological Information

This section identifies toxicological and health effects information or indicates that such data are not available. The required information consists of:

- Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact). The SDS should indicate if the information is unknown.
- Description of the delayed, immediate, or chronic effects from short- and long-term exposure.
- The numerical measures of toxicity (e.g., acute toxicity estimates such as the LD50 (median lethal dose)) - the estimated amount [of a substance] expected to kill 50% of test animals in a single dose.
- Description of the symptoms. This description includes the symptoms associated with exposure to the chemical including symptoms from the lowest to the most severe exposure.
- Indication of whether the chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions) or found to be a potential carcinogen by OSHA

Section 12: Ecological Information (non-mandatory)

This section provides information to evaluate the environmental impact of the chemical(s) if it were released to the environment. The information may include:

- Data from toxicity tests performed on aquatic and/or terrestrial organisms, where available (e.g., acute or chronic aquatic toxicity data for fish, algae, crustaceans, and other plants; toxicity data on birds, bees, plants).
- Whether there is a potential for the chemical to persist and degrade in the environment either through biodegradation or other processes, such as oxidation or hydrolysis.
- Results of tests of bioaccumulation potential, making reference to the octanol-water partition coefficient (K_{ow}) and the bioconcentration factor (BCF), where available.
- The potential for a substance to move from the soil to the groundwater (indicate results from adsorption studies or leaching studies).
- Other adverse effects (e.g., environmental fate, ozone layer depletion potential, photochemical ozone creation potential, endocrine disrupting potential, and/or global warming potential).

Section 13: Disposal Considerations (non-mandatory)

This section provides guidance on proper disposal practices, recycling or reclamation of the chemical(s) or its container, and safe handling practices. To minimize exposure, this section should also refer the reader to Section 8 (Exposure Controls/Personal Protection) of the SDS. The information may include:

- Description of appropriate disposal containers to use.
- Recommendations of appropriate disposal methods to employ.
- Description of the physical and chemical properties that may affect disposal activities.
- Language discouraging sewage disposal.
- Any special precautions for landfills or incineration activities

Section 14: Transport Information (non-mandatory)

This section provides guidance on classification information for shipping and transporting of hazardous chemical(s) by road, air, rail, or sea. The information may include:

- UN number (i.e., four-figure identification number of the substance)¹.
- UN proper shipping name¹.
- Transport hazard class(es)¹.
- Packing group number, if applicable, based on the degree of hazard².

- Environmental hazards (e.g., identify if it is a marine pollutant according to the International Maritime Dangerous Goods Code (IMDG Code)).
- Guidance on transport in bulk (according to Annex II of MARPOL 73/78³ and the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code (IBC Code))).
- Any special precautions which an employee should be aware of or needs to comply with, in connection with transport or conveyance either within or outside their premises (indicate when information is not available).

Section 15: Regulatory Information (non-mandatory)

This section identifies the safety, health, and environmental regulations specific for the product that is not indicated anywhere else on the SDS. The information may include:

- Any national and/or regional regulatory information of the chemical or mixtures (including any OSHA, Department of Transportation, Environmental Protection Agency, or Consumer Product Safety Commission regulations)

Section 16: Other Information

This section indicates when the SDS was prepared or when the last known revision was made. The SDS may also state where the changes have been made to the previous version. You may wish to contact the supplier for an explanation of the changes. Other useful information also may be included here.

Training is to be formal, at orientation and on-the-job, presented prior to any exposure to hazardous materials, periodically throughout the year during safety meetings.

Training must include:

- Methods of protection
- Location of Haz Comm Program
- Details about the Program
- Labeling and markings
- Methods of detection
- Physical hazards
- Where to obtain more personal protection information
- Emergency phone numbers

Employees must be instructed if they are asked to handle, or use a hazardous material. If they have not been trained on the hazardous material, and are asked to handle, or use it, they must inform the supervisor for needed training.

Non-Routine Tasks

Since many tasks are not done on a routine basis, they will be handled through the specific training. It will be the supervisor's responsibility to provide training to his employees, on the performance of specific or specialized hazardous non-routine tasks.

However, if the product is a common product used routinely at home work on and off the job, at it is not part of a specific task, no SDS or specific training will be required on common products.

Articles

Are manufactured items, which is formed to a specific shape or design during manufacturing, which has end use function dependent in whole, or part upon its shape or design during end use and which does not release or otherwise result in exposure to hazardous chemicals under normal use, such as ballasts, capacitors, conduit, most wire, j-boxes etc.

SUB-CONTRACTORS

E Light will inform the sub-contractor entering the job site of the written hazard communications program, and where to locate any MSDS's. It will be the sole responsibility of the sub-contractor to properly train their employees according to the hazard communications program. Any sub-contractor that will be using a hazardous chemical that may or will expose different contractor's employees MUST immediately notify that contractor of the hazards, avoidance, PPE required and emergency procedures for the hazardous material that will be used.

Training material and pamphlets are available at the main office, the local OSHA office Denver area office is 303- 844-5285 and the Englewood area office is 303-843-4500. Our insurance carriers have training and information on Hazard Communication (Haz Com).

E Light Electric Services Henrietta E-15020

High Heat Illness Prevention Plan

As per Cal OSHA 3395: Heat Illness Prevention regulations, the six parts; Scope and Application, Definitions, Provisions of Water, Access to Shade, High Heat Procedures and Training are included/addressed in this plan. The following plan is in effect for the Henrietta Solar Project when the ambient temperature reaches 80 degrees. This plan is an addendum to the project Injury and Illness Prevention Plan.

Scope and Application

These procedures provide steps applicable to most outdoor work settings and are essential to reducing the incidence of heat related illnesses. In working environments with a higher risk for heat illness (e.g., during a heat wave, hot summer months exceeding 80 degrees Fahrenheit, or other severe working or environmental conditions), it is E Light Electric Services, Inc. duty to exercise greater caution and ensure these procedures are implemented, including additional protective measures beyond what is listed in this document, as needed to protect employees affected by high heat conditions.

Cal OSHA Definitions

“Acclimatization” means temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.

“Heat Illness” means a serious medical condition resulting from the body's inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope and heat stroke.

“Environmental risk factors for heat illness” means working conditions that create the possibility that heat illness could occur, including air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees.

“Personal risk factors for heat illness” means factors such as an individual's age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body's water retention or other physiological responses to heat.

“Shade” means blockage of direct sunlight. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning. Shade may be provided by any natural or artificial means that does not expose employees to unsafe or unhealthy conditions.

“Temperature” means the dry bulb temperature in degrees Fahrenheit obtainable by using a thermometer to measure the outdoor temperature in an area where there is no shade. While the temperature measurement must be taken in an area with full sunlight, the bulb or sensor of the thermometer should be shielded while taking the measurement, e.g., with the hand or some other object, from direct contact by sunlight.

“Provision of water”. Employees shall have access to potable drinking water meeting the requirements of Sections 1524, 3363, and 3457, as applicable including but not limited to the requirement that water is to be fresh, pure, suitably cool, and provided to employees free of charge. The water shall be located as close as practicable to the areas where employees are working. Where drinking water is not plumbed or otherwise continuously supplied, it shall be provided in sufficient quantity at the beginning of the work shift to provide one quart per employee per hour for drinking for the entire shift. Employers may begin the shift with smaller quantities of water if they have effective procedures for replenishment during the shift as needed to allow employees to drink one quart or more per hour. The frequent drinking of water, as described in subsection (h) (1) (C), shall be encouraged.

Provisions of Water (Water Distribution Plan)

Bottled water is provided on site to employee's working for E Light Electric Services, Inc. Sub-Contractor's on site working for E-Light Electric Services, Inc. are required to provide a written Heat Illness and Water Distribution Plan, as well as the required potable water and ice for their personnel on site daily.

In temperatures starting at 80 degrees, shade structures shall be provided on site so that any employee can take a cool off break, sit down and consume water with a place to sit in a posture as to allow the body temp to cool down. In temps forecasted of 95 degrees or higher, the site is under a high heat condition, and all personal shall consume one bottle of water with a packet of electrolyte added to the bottle of water, under observation of their supervisor during a.m. stretch and flex in addition to the following:

- All personnel shall consume approx. 1 cup (One half bottle of water) every 15 minutes.
- Employees shall keep track of the number of bottles of water they consumed during the work shift and shall note the number on the front of their Pre-task card.
- Supervisors shall initial the number of bottles of water consumed on the back of each person's Pre-task card and if the number is inadequate they shall counsel the person to consume the appropriate amount of water and shall note this on the back of the Pre-task card.
- Any person that is challenged shall take note of the number of bottles of water consumed thus far in the day at that time and if the number is inadequate they shall counsel the employee to consume the correct amount of water and shall note the time and counseling on the back of the Pre-task card. The person making a note does not need to be a supervisor.
- Safety Manager or designee shall monitor water consumption for all personnel on site, to make sure reasonable effort is being made to keep hydrated, but at the same time **not** over hydrating themselves which could cause further problems.

All foreman assigned ATV's and E-Light company vehicles will have an ice chest containing cool bottled water available to their crews. The site shall have enough water to supply each person on site a minimum of 2 (two) 16 ounce bottles of water per hour, per person. Water shall be made available throughout the work day to all employees. Water shall be made available to the employees so that no employee shall be required to travel more than 50 meters to obtain fresh water.

Water and ice will be stored at the E Light Safety Trailer in the Lay down yard, using two ice freezers each capable of storing 400 bags of ice. Water shall be stored under shade.

All foremen assigned ATV's shall:

- Supply their assigned ATV and cooler with ice and bottled water before leaving the laydown yard after stretch and flex.

Site Monitors shall ensure the following:

- Two site monitors shall load an ATV with water and ice and fill coolers located under the shade structures (picnic tables) and leave two cases of water next to the cooler.
- One site monitor will load another ATV with water and ice to complete the first ATV run (checking and refilling ATV's as needed) before first break.
- Cooling stations are then filled and ready for first break leaving two cases of water next to the ice chest.
- After first break safety monitors shall confer and assist each other in replenishing ATV coolers for the second ATV check.
- After second ATV check is complete, a site monitor must check the cooling stations before lunch and again before last break.
- Lead site monitor shall inform the materials and safety manager of any malfunction regarding coolers, generators, shade structures, etc.

Materials Manager:

- Shall ensure enough water and ice is provided for the total site manpower using the following criteria: Two 16 oz. bottles of water per hour per person using approximately 140 bags of ice per day.
- Shall ensure there is always a one day supply of water (two pallets) as back-up and two days' supply of ice 280 bags at all times.

Access to Shade

Shade is required to be present when the temperature exceeds 80 degrees Fahrenheit. When the outdoor temperature in the work area exceeds 80 degrees Fahrenheit, E Light Electric Services, Inc. shall have and maintain one or more areas with shade at all times while employees are present that are either open to the air or provided with ventilation or cooling. The amount of shade present shall be at least enough to accommodate the number of employees on meal, recovery, or rest periods, so that they can sit in a normal posture fully in the shade without having to be in physical contact with each other. The shade shall be located as close as practicable to the areas where employees are working. Shade provided while sitting in UTV's can be utilized as long as UTV shade is not the only access to shade.

Shade is required to be available when the outdoor temperature does not exceed 80 degrees Fahrenheit. When the outdoor temperature in the work area does not exceed 80 degrees Fahrenheit E Light Electric Services, Inc. shall either provide shade per subsection (d)(1) or provide timely access to shade upon an employee's request.

Employees shall be allowed and encouraged to take a preventative cool-down rest in the shade when they feel the need to do so to protect them from overheating. Such access to shade shall be permitted at all times. An employee who takes a preventative cool-down rest:

- A. Shall be monitored and asked if he or she is experiencing symptoms of heat illness.
- B. Shall be encouraged to remain in the shade.
- C. Shall not be ordered back to work until any sign or symptom of heat illness have been abated, but in no event less than 5 minutes in addition to the time needed to access the shade.

If an employee exhibits signs or reports symptoms of heat illness while taking a preventative cool-down rest or during a preventative cool-down rest period E Light Electric Services Inc. will provide appropriate first aid or emergency response. Refer to Emergency Response section. Exception: Where E Light Electric Services Inc. can demonstrate that it is infeasible or unsafe to have a shade structure, or otherwise to have shade present on a continuous basis, E Light Electric Services, Inc. may utilize alternative procedures for providing access to shade if the alternative procedures provide equivalent protection.

Shade will be provided several different ways:

Cool down sheds-(Air conditioned enclosed sheds) There will be one cool down shed located in each Array. The site construction manager shall nominate an apprentice who will be required to start the generators and A/C units between 0800-0900 each morning and shut down no earlier than 13:45. Also ensure fuel is replenished using the materials manager auxiliary fuel tank and pump. Specific rules shall be posted in each cool down shed and shall be numbered on the outside and identified with signage stating "Cool Down Shed".

Shaded picnic tables- site monitors shall ensure shaded picnic tables are assembled at the requested locations by the foreman no later than first break.

Pop up umbrellas- Foreman are responsible for ensuring pop up umbrellas are utilized by each crew who require this type of shade and are located at the tool room for issue.

Base type umbrellas- Foreman are responsible for distributing the base type umbrellas to the required crews as required and are located at the tool room for issue.

Supervision shall not deny any employee who requests a break in a shaded area the ability to take this break.

High Heat Procedures

E Light Electric Services Inc. shall implement high-heat procedures when the temperature equals or exceeds 80 degrees Fahrenheit. These procedures shall include the following to the extent practicable:

The Safety Manager or designee shall monitor the weather forecast daily and inform supervision at the morning stretch and flex.

Communication:

All foremen in the field shall carry a two way radio to contact the safety department on channel # 2 in order to communicate directly with project safety personnel regarding high heat conditions or a possible medical emergency. Superintendents, General Foreman and Site Safety Personnel shall be issued an operable and reliable cell phone and hand held radio at all times.

Supervision

Pre-shift Meetings (Stretch and Flex)

After the morning Stretch and Flex the workforce shall be given the following information:

- A brief discussion covering the high heat program.

- The right to ask for a preventative cool down period and a reminder to drink water at the recommended levels.

Supervisors shall:

- Monitor work activities closely and shall initiate additional breaks as needed based on temperature and the type of work being completed.
- All employees shall receive a short briefing concerning heat related topics at the start of each shift by their supervisor and shall include these hazards on their Pre-task card and Job Hazard Analysis.
- Supervision shall ensure the use of the “buddy system”, not being allowed to work alone in temperatures exceeding 95 degrees or higher.

Acclimatization/New Hires

All new personnel shall be provided a copy of this plan during site specific orientation for their review. Any questions or concerns shall be reviewed with the safety manager, or designee, and if need be the Director of Safety, Ted Smith.

Supervision/Safety Manager shall interview employees for acclimatization to the location. At 80 degrees, all new employees reporting to the site shall be considered un-acclimated, unless the employee:

- Must have lived 30 days or greater in the same heat stress environment.
- Of those 30 days must have physically worked 10 or more of those 30 days with physical activity.
- The worker must have worked for four hours per day of these 10 days.

All new personnel reporting to the site shall be observed for the following:

- Previous heat stress illness
- General physical condition
- Ability to perform the task assigned

Any person that displays poor physical condition, or unfit for high heat environment duty conditions shall be observed throughout the day for signs of heat related illnesses. The supervisor they are assigned to shall be alerted that they may be more susceptible to heat related injuries and will need closer observation throughout the day.

All new personnel reporting to the site that does not meet the above criteria shall be issued a RED hard hat sticker for the first 14 days on site. After the completion of the 14 day period they shall be issued another appropriate colored hard hat sticker. All personnel wearing a RED hard hat sticker shall be subject to the following:

- They shall be assigned to work directly with one person that has completed the E Light High Heat Conditions Training Program.
- They shall be closely monitored and observed by site supervision.
- Site supervision shall be informed daily of the number of RED hard hat sticker employees are on site and to which crews they are assigned at the daily POT meeting.

Alternate High Heat Work Schedule

When temperatures remain at and exceed 95 degrees Fahrenheit, or beginning May 5, 2015, the WBGT index temperatures and the alternate high heat work schedule will be in effect:

The project will go to an 8 hour shift five days a week Monday thru Friday: (proposed work schedule)

05:45-06:00 am	Morning stretch and Flex
08:30-08:45 am	break in shade
11:00-11:35 am	Lunch in shade
12:30-12:40 pm	break in shade
1:45-2:00 pm	pick up

2:15 pm out the gate.

Wet Bulb Globe Temperature Procedure:

When Wet Bulb Globe Temperature (WBGT) is predicted to reach (WBGT 88 degrees) the Director of Education and Safety and the Regional Safety Manager will be called immediately and they will be notified of the current temperatures both in the glass and out of the glass. A temperature reading in and out of the glass will be taken once every 15 minutes. The Director of Education and Safety will be notified immediately if the temperature rise 2 degrees or more. The Director of Education and Safety will consult during this time with the site management and will make a determination on a case by case basis concerning shutting down, adding breaks or continuing with the current schedule.

If the WBGT reaches 94 degrees, the site will be immediately shut down all work suspended until the temperature drops to a safe level. The Director of Education and Safety shall make a determination if the work should be suspended for the rest of the day.

Temperature Monitoring

On days when the weather forecast is consistently above 95 Fahrenheit, site safety will monitor the temperature by placing WBGT monitors in areas where work is being performed throughout the site. Temperatures will be taken on an hourly basis and recorded in the attached table.

Cooling Equipment

Dunk Vests - A dunk vests will be carried by each foreman in their UTV. The purpose of the dunk vest is to provide a rapid means of cooling a person to prevent heat exhaustion. Each morning after stretch and flex each foreman shall ensure the dunk vest cooler is supplied with ice and water and the vest is immersed in the ice water for quick use. It is the foreman's responsibility to empty the cooler each day and allow the vest to dry inside their assigned UTV.

Cooling vests-All safety personnel and foreman with crews assigned to strenuous work activity (cartridge installation) shall have a cooling vest in their UTV. The assignment of the cooling vests too foreman will be determined by the safety department. The cooling vest provides a deeper cooling affect in the prevention of a possible heat exhaustion/heat stroke exposure. Personnel assigned cooling vests will receive additional training by the site Safety Manager in their use and maintenance.

Attire

All personal shall be encouraged to dress in light colors, and use long sleeved cotton shirts and sun screen as a precaution while working in the field. This is encouraged only, and not a requirement.

Signs and Symptoms of Heat Stress

CONDITIONS	SYMPTOMS	INITIAL FIRST AID
Heat Stroke (medical emergency)	A life threatening emergency that occurs when the body temperature regulating mechanisms fail during excessive heat. Skin is hot, usually dry red or spotted. Victim is confused, delirious or maybe unconscious.	Call 911 immediately. Attempt to cool the body. Apply cooling vest. Soak clothing in water and vigorously fan the body.
Heat Exhaustion	A mild form of shock caused by the loss of body fluids and minerals. Skin is clammy and moist. Victim is pale and experiencing fatigue, extreme weakness, nausea or headache.	Get victim to a cool place and provide liquids for them to drink.
Heat Cramps	A cramping condition brought on by loss of body fluids and minerals due to profuse perspiration.	Get victim to a cool place and give them plenty of liquids. Provide electrolyte replacement drink if possible.
Heat Rash	Rash appears in areas that are persistently wet with un-evaporated sweat and where clothing is restrictive.	Get worker to a cool place. Wash and dry skin in affected areas.
(Fainting) Heat Syncope	Worker stands still in one place too long. Blood pools in the legs so less blood goes to the brain. Prevention: MOVE AROUND.	Call 911 immediately. Attempt to cool the body. Apply cooling vest. Soak clothing in water and vigorously fan the body.

Training Requirements

All personnel will complete the High Heat Stress Conditions Training and will consist of a power point module and an overview of this document, emphasizing emergency response protocol, the HIPP Sign In Sheet (Appendix A) shall be utilized documenting each employee has received the required training. The training consists of the following topics:

- a. The environmental and personal risk factors for heat illness.
- b. E Light Electric Services Inc., procedures for complying with the requirements of this standard and includes E Light Electric Services, Inc. responsibility to provide water, shade, cool-down rests, and access to first aid and employees rights to exercise their rights under this procedure without retaliation.

- c. The importance of frequent consumption of small quantities of water, up to 4 cups per hour, when the work environment is extremely hot.
- d. The importance of acclimatization.
- e. The different types of heat illness and the common signs and symptoms of heat illness and appropriate first aid and/or emergency response and that heat illness may progress quickly from mild symptoms and signs to a serious life threatening illness.
- f. The importance to employees of immediately reporting to E Light, directly or through the employee's supervisor, symptoms or signs of heat illness in themselves, or in co-workers.
- g. The E Light Electric Services, Inc. procedure for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary.
- h. The E Light Electric Services, Inc. procedure for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider.
- i. The employer's procedures for ensuring that, in the event of an emergency, clear and precise direction to the work site can and will be provided as needed to emergency responders.

This HIPP, including the emergency response plan for heat related illness, shall be posted in a conspicuous location (cool down shelters, construction office, bulletin boards) etc. for employees review.

Supervisor Training

Project Managers and Superintendents have the option of taking the High Heat Training module on the E Light training web site.

All foreman and above shall receive a copy of this procedure and shall be reviewed with the safety manager. Foreman and above shall be trained in basic heat stress first aid, how to respond to symptoms of a possible heat illness emergency and the procedure for contacting emergency medical services and be trained in the above (a) thru (i) requirements.

Safety personnel shall be trained in heat stress emergency response protocols and maintain F/A CPR certification.

Emergency drills for safety personnel, and the workforce shall be conducted at a minimum once per month When the HIPP is in effect.

Responding to a possible heat illness emergency

When an employee has been impacted with a heat related illness, E Light Electric Services, Inc. employees will follow this process:

The Site Safety manager or his designee shall be the designated person to call 911 in case emergency medical services are required.

1. When an employee displays possible signs or symptoms of heat illness a trained first aid worker, supervisor, or safety personnel will check the employee and determine whether resting in the shade or cooling shelter, applying the dunk vest and drinking cool water will suffice or if emergency service provider is required. Under no circumstances will the sick worker be left alone in the shade or cooling shelter.
2. When an employee displays possible signs or symptoms of heat illness and no trained first aid worker or supervisor is available at the site, the designated person will call emergency service provider using the Emergency Response Request Form. (Appendix B)
3. The designated person will call emergency service provider immediately if an employee displays signs or symptoms of severe heat illness, does not look OK, or does not get better after drinking cool water, resting in shade or cooling shelter and dunk vest applied. While the ambulance is in route, safety personnel will cool the worker by placing him or her in the cooling shelter, removing excess layers of clothing, placing the cooling vest on and fanning the victim.
4. If an employee is displaying signs and symptoms of severe heat illness and the worksite is located more than 20 minutes away from a hospital, the designated person will call emergency service providers immediately, communicate the signs and symptoms of the victim and request an air ambulance.

Procedure for contacting emergency medical services

1. Prior to assigning a crew to a particular worksite, the designated person(s) will ensure that a qualified, appropriately trained and appropriately equipped person will be available at the site to render first aid if necessary. (Site safety personnel)
2. Prior to the start of the shift, the supervisor will determine if a language barrier is present at the site and take steps (such as assigning the responsibility to call emergency medical services to the foreman or an English speaking worker) to ensure emergency medical services can be immediately called in the event of an emergency.
3. All foreman and supervisors will carry cell phones, hand held radio or other means of communication to ensure that emergency medical services can be called. Prior to each shift, each foreman will check to make sure that the cell phone or other means of communication is functional at the worksite.
4. At the jobsite, the designated person will designate an employee or employees to physically go to the nearest road or highway and/or an entrance to the jobsite where emergency responders can see them and guide them to the victim location.

Providing **clear and precise directions** to the jobsite can and will be provided as needed to emergency medical responders in the event of an emergency by utilizing the Emergency Response Request Form (Appendix B). This form must be filled out by the designated employee when requesting assistance.

All employees will be issued a hard hat sticker indicating the project address, employee name, emergency contact number and room to write important medical information for emergency response personnel.

Recommended Equipment/Gear (quantities are estimates and will be updated when exact manpower is determined).

Type	Quantity Required	Quantity On Hand	Order date	Arrival date
Water				
Ice				
Cool Down Shelters				
Dunk vests				
Coolers for dunk vests				
Sun Screen Lotion				
Cooling Vests				
Cooling Pumps				
Umbrellas				
Pop ups				
Break shelters (picnic tables)				
Hard Hat Brim Extenders				
Dew Rags				
Squincher's				

Emergency Response Request

If the first aid recommendations on page 7 do not reduce the employee's symptoms, their condition becomes worse, or the employee exhibits signs of severe heat exhaustion or heat stroke, use the following:

1. Immediately call **911** for assistance.
2. Give the address and, if needed, any special instructions on how to enter the work site. A map to the jobsite is attached.

1917 Kent Avenue
Address

Lemoore, Ca. 93245
City, State and Zip Code

Call Back Phone Number (The number you used to call)

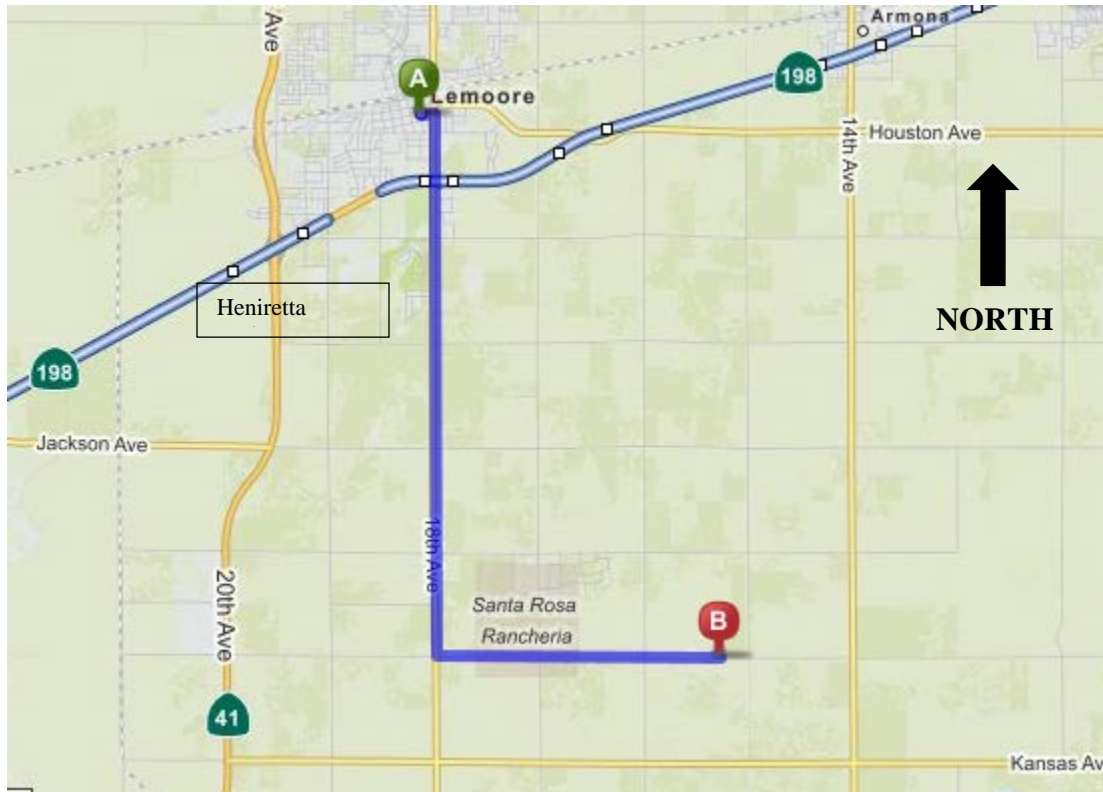
Special Instructions on How to Reach the Victim:

Remember; send personnel to flag down emergency services and guide them to the victim.

Map of Site Location

Job Site Address:

1917 Kent Avenue, Leemore, Ca. 93245



1. Start out going east on C St toward Armstrong St.
2. Turn right onto N Lemoore Ave.
3. Stay straight to go onto 18th Ave.
4. Turn left onto Kent Ave. Kent Ave is 0.4 miles past Java Ave
If you reach Kansas Ave you've gone about 0.9 miles too far
5. 1917 KENT AVE. Your destination is 0.7 miles past 16th Ave
If you reach 15th Ave you've gone about 0.2 miles too far



E Light Electric Services, 361 Inverness Dr. S, Englewood, CO 80112

303-754-0001

EQUIPMENT TURN OVER LOG

Job Name: _____

Address of Job:

Prime Contractor/ Owner: _____

Equipment which may require servicing, testing, startup, or opening while energized produce a potential hazard to property and personnel. The electrical hazards produced can be managed and mitigated by compliance with The Standard for Electrical Safety in the Workplace, NFPA 70E. E Light Electric Services safety policies are based upon the requirements of NFPA 70E. Based on these requirements, which include the requirement for controlled lock out and tag out and also working knowledge of equipment and safety hazards involved with equipment operation. E Light Electric Service personnel are not trained to understand all of the operating procedures of the equipment for which we provide power. It is the policy of E Light Electric Services to “bump” equipment to ensure proper rotation and to test equipment power sources to ensure electrical power delivery to the equipment. Startup of the equipment is the responsibility of the part supplying the equipment. Because of the possibility of electrical shock, burn or arc blast, E Light Electric Services cannot be responsible for exposures to equipment once it has been requested to be energized. Therefore, the following equipment has been tested for rotation, if applicable, and tested to ensure the proper electrical power is being delivered to the equipment and is now being turned over to the control of the prime contractor or owner listed above.

Equipment List:

Signatures:



E Light Electric Services, 361 Inverness Dr. S, Englewood, CO 80112

303-754-0001

Prime Contractor/ Owner: _____ Date: _____

Print Name:

Excerpt from the Standard for Electrical Safety in the Workplace, NFPA 70E, 2009:

110.8 (A) General. Safety related work practices shall be used to safeguard employees from injury while they are working on or near exposed electrical conductors or circuit parts that are or can become energized. The specific safety related work practices shall be consistent with the nature and extent of the associated electric hazards.

110.8 (A)(1) Live Parts- Safe Work Condition: Live parts to which an employee might be exposed shall be put into and electrically safe work condition before an employee works on or near them, unless work on energized components can be justified.

An electrically safe work condition is defined as :

120.1 Process of Achieving and Electrically Safe Work Condition

An electrically safe work condition shall be achieved when performed in accordance with the procedures of 120.2 and verified by the following process:

Determine all possible sources of electrical supply to the specific equipment. Check applicable up-to-date drawings, diagrams, and identification tags.

After properly interrupting the load current, open the disconnecting device for each source.

Whenever possible, visually verify that all blades of the disconnecting devices are fully open or that draw-out type circuit breakers are withdrawn to the fully disconnected position.

Apply lockout/ tag out devices in accordance with a documented and established policy.

Use an adequately rated voltage detector to test each phase conductor or circuit part to verify they are de-energized. Before and after each test, determine that the voltage detector is operating satisfactorily.

120.2 De-energized Electrical Conductors of Circuit Parts That Have Lockout/ Tag out Devices Applied. Each employer shall identify, document, and implement lockout/tag out procedures conforming to Article 120 to safeguard employees from exposure to electrical hazards. The lockout/tag out procedure shall be appropriate for the experience and training of the employees and conditions as they exist in the workplace.

The above experts from NFPA 70E are intended as a guideline and in no way represent a complete process, requirement or responsibility. NFPA 70E should be consulted before



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application of a lockout/ tag out procedure or the application of work to potentially energized equipment or conductors.



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METHOD OF PROCEDURE AUTHORIZATION

STEP 1: MOP DESCRIPTION

MOP Title:

Risk Factor: (**Low, Medium or High**):

Name of Contractor/Owner:

Phone Number:

Date Submitted:

Date Approved:

Tentative Start Date and Time:

Tentative Finish Date and Time:

STEP 2: BUILDING DESCRIPTION

Building Name:

Address:

STEP 3: CONTACT LIST - (Indicate Emergency Phone Numbers):

Medical emergencies call 911

Name	Company	Position	Phone	Cell/Pager
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STEP 4: GENERAL DESCRIPTION OF WORK

Describe general overview of procedure. Details to be described in STEP 5.

Systems affected by Work:

STEP 5: STEP-BY-STEP ACTIVITY (Describe each step in detail as follows):

STEP-BY-STEP PROCEDURE

Step	Date	Time	Description	Action By	Completed
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

DETAIL TESTING METHODS

Step	Date	Time	Description	Action By	Completed
1					
2					

STEP 6: HOISTING /HAULING /STORAGE: Include detailed information for the following:

- Identify routing to space:
- Identify protection of walls/floors:
- Identify weight of object:
- Identify weight capacity of elevator if appropriate:
- If building structural system is utilized to support object, identify structural component, capacity of structural component, and method of support:

STEP 7: PROTECTION REQUIREMENTS: Include detailed information for the following:

- Telecommunications Equipment /Computers /Cable /Fire Alarm.

NOTE: Specifically detail protection when work occurs over telecommunications equipment/computers/cable including plywood enclosures and rubber mats. Attach sketch.

- Protection for Personnel/Tenants:
- Electrical/Mechanical Equipment:
- Miscellaneous Equipment:
- Fire Alarm:

STEP 8: TOOL IDENTIFICATION

Identify types of tools: Hydraulic tools, such as, conduit benders, crimpers, shears, cable pullers, lifts, hoists, and other devices that may be conductive:

- Include specifics regarding methods of cutting, wet methods detailed.
- Include specifics regarding welding/soldering.

STEP 9: SAFETY REQUIREMENTS: Include specifics in regard to the following:

- Fire Protection:
- Fire Watch:
- Dust Protection:
- Asbestos Containment:
- Smoke Containment:
- Noise Containment:
- Water Containment:

STEP 10: WEATHER PROTECTION

Include specifics regarding protection from weather. In particular, address water protection, humidity protection, and temperature stability.

STEP 11: SPECIAL TENANT NEEDS/REQUIREMENTS

This section is to be completed after consultation with owner/contractor representative.

Special needs by Owner:

STEP 12: BUILDING SECURITY

This section is to be completed after consultation with owner/contractor representative.

STEP 13: CONTINGENCY PLANS

This is an extremely important section, which must be completed in detail. In the event of an unforeseen problem associated with any aspect of the M.O.P., a contingency plan is to be developed. Identify potential problems, which may arise. Include safe stop points. Include back out procedures. Spare parts, materials, etc. shall be identified for contingency plans.

Potential Problems:

Contingency Plans:

Backout:

STEP 14: M.O.P. SIGNATURE SHEET

If work procedure does not affect party identified, signature is not required. If you want to be contacted if contingencies are implemented, check the yes box below.

Procedure for obtaining signatures shall be as follows:

- Signatures shall be in the order indicated.
- E-Mail processing shall be an acceptable method of confirmation of concurrence of MOP.
- Originator of M.O.P. shall indicate N/A adjacent to individuals who are not involved and/or affected by the MOP.

Name	Emergency Contact	Emergency Phone #	Date	Signature
E Light Electric Services Author	Yes <input type="checkbox"/> No <input type="checkbox"/>			
Mechanical Subcontractor	Yes <input type="checkbox"/> No <input type="checkbox"/>			
E Light Electric Services Electrical Subcontractor	Yes <input type="checkbox"/> No <input type="checkbox"/>			
Mechanical Engineer	Yes <input type="checkbox"/> No <input type="checkbox"/>			

Electrical Engineer	Yes <input type="checkbox"/> No <input type="checkbox"/>			
Project Manager	Yes <input type="checkbox"/> No <input type="checkbox"/>			
Mechanical	Yes <input type="checkbox"/> No <input type="checkbox"/>			
Building Automation Sys.	Yes <input type="checkbox"/> No <input type="checkbox"/>			
User Group	Yes <input type="checkbox"/> No <input type="checkbox"/>			
Fire Protection	Yes <input type="checkbox"/> No <input type="checkbox"/>			
Fire Alarm	Yes <input type="checkbox"/> No <input type="checkbox"/>			
IT	Yes <input type="checkbox"/> No <input type="checkbox"/>			
Other (Specify)	Yes <input type="checkbox"/> No <input type="checkbox"/>			

STEP 15: MOP CHECKLIST:

All items outlined must be included with the MOP.

- This checklist is to be initialed by the AUTHOR of the MOP, indicating all sections are included and complete.
- Verify breaker/switch/cable/fuse, THAT WILL BE AFFECTED BY THIS MOP, for the right equipment.
- ONE INDIVIDUAL RESPONSIBLE FOR VERIFICATION SHOULD verify and sign off, ON THE MOP.
- If requirement does not apply to MOP, denote "N/A" in initial block.

MOP's must include the following:

<u>STEP NUMBER</u>	<u>REQUIREMENT</u>	<u>INITIAL BLOCK</u>
1.	MOP Description	
2.	Building Description	
3.	Contact List	
4.	General Description of the Work General Notes/Systems Affected by Work	
5.	Step-By-Step Activities	
6.	Hoisting/ Hauling/ Storage	
7.	Protection Requirements	
8.	Tool Identification	
9.	Safety Requirements	

10. Weather Protection
11. Special Tenant Needs/Requirements
12. Building Security
13. Contingency Plan
14. MOP Signature Sheet
15. MOP Checklist



Date:

Integrated Work Plan

Job Name		Prime Contractor	
----------	--	------------------	--

A. Scope of work/activity:

Temporary Power Installation

B. What activities must be complete before this activity can start:

C. Tools/Equipment/Materials required to complete the activity:

D. Crew required to complete the activity:

E. Anticipated production:

--

F. PPE required:



Date:

Integrated Work Plan

ALL PERSONS BELOW HAVE REVIEWED THE SAFETY/QUALITY/ AND PRODUCTION ISSUES ASSOCIATED WITH THIS IWP WEEKLY REVIEWS ARE REQUIRED

	DATE	PRINT NAME	SIGNATURE
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Manhour Goal Sheet
Caissons Building 2

COST CODE	TASK	QTY	UNITS	Man Hour Rate unit/hour	# of Man hours to complete
	SURVEY CAISSONS	158	ea	5	31.6
	DRILL HOLE	158	ea	1	158
	REMOVE SPOILS	158	ea	1	158
	CASE HOLE	158	ea	1	158
	VERIFY LENGTH	158	ea	1	158
	SET REBAR CAGE	158	ea	1	158
	PLACE CAGE SUPPORTS ON TOP OF CASING	158	ea	1	158
	POUR CONCRETE-WATER IN HOLE OR DRY?	158	ea	1	158
	RIG UP CAGE AND REMOVE SUPPORT BARS THEN RELEASE CAGE	158	ea	1	158
	RIG CASING TO DRILL RIG AND PULL	158	ea	1	158
	PLACE SONO TUBE IN TOP 3' OF CAISSON IF MUSHROOM OCCURS	158	ea	10	15.8

NFPA 70E COMPLIANCE GUIDE

This guide shall only be used in conjunction with performing the necessary calculations contained in a flash hazard analysis to determine the proper cal/cm². If the results of the calculations exceed the cal/cm² that correspond to the HRC found on this guide, you must use clothing that complies with the calculation.

Panelboards Rated 240 V and Below - Notes 1 and 3				600 V Class Switchgear (with power circuit breakers or fused switches) - Notes 5 and 6				NEMA E2 (fused contactor) Motor Starters, 2.3 kV through 7.2 kV			
TASK (equipment is energized & work is done within the flash protection boundary)	V-Rated Gloves	V-Rated Tools	HRC	TASK (equipment is energized & work is done within the flash protection boundary)	V-Rated Gloves	V-Rated Tools	HRC	TASK (equipment is energized & work is done within the flash protection boundary)	V-Rated Gloves	V-Rated Tools	HRC
Circuit Breaker (CB) or fused switch operation with covers on			0	CB or fused switch operation with enclosure doors closed			0	Contactor operation with enclosure doors closed			0
CB or fused switch operation with covers off			0	Reading a panel meter while operating a meter switch			0	Reading a panel meter while operating a meter switch			0
Opening hinged covers (to expose bare, energized parts)			0	Work on control circuits with energized parts 120 V or below, exposed	Y	Y	0	Work on control circuits with energized parts 120 V or below, exposed	Y	Y	0
Removal of bolted covers (to expose bare, energized parts)			1	CB or fused switch operation with enclosure doors open			1	Insertion or removal (racking) of starters from cubicles, doors closed			2
Remove or Install CB's or fused switches	Y	Y	1	Insertion or removal (racking) of CB's from cubicles, doors closed			2	Contactor operation with enclosure doors open			2 *
Work on energized parts, including voltage testing	Y	Y	1	Opening hinged covers (to expose bare, energized parts)			2	Insertion or removal (racking) of starters from cubicles, doors open			3
Panelboards / Switchboards Rated 240 V to 600 V (with molded case or insulated case CB's) - Notes 1 & 3				Other 600 V Class (277 V to 600 V, nominal) Equipment - Lighting or small power transformers (600V Max) - Note 3				Metal Clad Switchgear, 1 kV and Above			
TASK (equipment is energized & work is done within the flash protection boundary)	V-Rated Gloves	V-Rated Tools	HRC	TASK (equipment is energized & work is done within the flash protection boundary)	V-Rated Gloves	V-Rated Tools	HRC	TASK (equipment is energized & work is done within the flash protection boundary)	V-Rated Gloves	V-Rated Tools	HRC
CB or fused switch operation with covers on			0	Opening hinged covers (to expose bare, energized parts)			1	Reading a panel meter while operating a meter switch			0
CB or fused switch operation with covers off			1	Removal of bolted covers (to expose bare, energized parts)			2 *	CB or fused switch operation with enclosure doors closed			2
Work on energized parts, including voltage testing	Y	Y	2 *	Application of safety grounds, after voltage test	Y		2 *	Work on control circuits with energized parts 120 V or below, exposed	Y	Y	2
600 V Class Motor Control Centers (MCC's) - Notes 2 (except as indicated) and 3				Other 600 V Class (277 V to 600 V Nom.) Equip - Revenue meters (kWH at primary voltage & current) - Note 3				Other Equipment 1 kV and Above - Metal clad load interrupter switches, fused or unfused			
TASK (equipment is energized & work is done within the flash protection boundary)	V-Rated Gloves	V-Rated Tools	HRC	TASK (equipment is energized & work is done within the flash protection boundary)	V-Rated Gloves	V-Rated Tools	HRC	TASK (equipment is energized & work is done within the flash protection boundary)	V-Rated Gloves	V-Rated Tools	HRC
CB or fused switch or starter operation with enclosure doors closed			0	Cable trough or tray cover removal or installation			1	Switch operation, doors closed			2
Reading a panel meter while operating a meter switch			0	Miscellaneous equipment cover removal or installation			1	Outdoor disconnect switch operation (gang-operated, from grade)			2
Work on control circuits with energized parts 120 V or below, exposed	Y	Y	0	Application of safety grounds, after voltage test	Y		2 *	Insulated cable exam, in open area	Y		2
CB or fused switch or starter operation with enclosure doors open			1	Insertion or removal	Y		2 *	Opening hinged covers (to expose bare, energized parts)			3
Opening hinged covers (to expose bare, energized parts)			1	Work on energized parts, including voltage testing	Y	Y	2 *	Outdoor disconnect switch operation (hookstick operated)	Y	Y	3
Removal of bolted covers (to expose bare, energized parts)			2 *	Minimum Clothing Requirements				Removal of bolted covers (to expose bare, energized parts)			3
Application of safety grounds, after voltage test	Y		2 *	HRC	Protective Clothing		Minimum Cal/cm²	PPE (Safety glasses, leather safety shoes required for all)			
Work on energized parts, including voltage testing	Y	Y	2 *	-1	Natural fiber short-sleeved shirt and long pants		N/A	Hard Hat			
Work on control circuits with energized parts >120 V exposed	Y	Y	2 *	0	Natural fiber long-sleeved shirt and pants		N/A	Hard hat			
Insertion or removal of individual starter "buckets" from MCC - Note 4	Y		3	1	Denim jeans and FR long-sleeved shirt OR FR long-sleeved shirt and pants OR FR coveralls		4	Hard Hat, Arc-Rated Face Shield*			
				2 *	FR long-sleeved shirt and pants OR FR coveralls		8	Hard Hat, Arc-Rated Face Shield			
				3	FR long-sleeved shirt and pants OR FR coveralls		8	Hard Hat, Hearing Protection, Arc-Rated Face Shield and 8 cal/cm ² + Stocking Hood* OR Multi-Layer Switching Hood			
				4	Multi-Layer flash suit over FR long-sleeved shirt and pants over natural fiber short-sleeved T-shirt and pants OR Multi-Layer flash suit over FR coveralls over natural fiber short-sleeved T-shirt and pants		25	Hard Hat, Multi-Layer Switching Hood, Hearing Protection, OR Arc-rated Goggle and Stocking Hood*			
				4	Multi-Layer flash suit over FR long-sleeved shirt and pants over natural fiber short-sleeved T-shirt and pants OR Multi-Layer flash suit over FR coveralls over natural fiber short-sleeved T-shirt and pants		40	Hard Hat, Multi-Layer Switching Hood, Hearing Protection, OR Arc-rated Goggle and Stocking Hood*			
				Note 7 ASTM Recommendations are noted with the *							

HRC	Protective Clothing	Minimum Cal/cm ²	PPE (Safety glasses, leather safety shoes required for all)
-1	Natural fiber short-sleeved shirt and long pants	N/A	Hard Hat
0	Natural fiber long-sleeved shirt and pants	N/A	Hard hat
1	Denim jeans and FR long-sleeved shirt OR FR long-sleeved shirt and pants OR FR coveralls	4	Hard Hat, Arc-Rated Face Shield*
2	FR long-sleeved shirt and pants OR FR coveralls	8	Hard Hat, Arc-Rated Face Shield
2 *	FR long-sleeved shirt and pants OR FR coveralls	8	Hard Hat, Hearing Protection, Arc-Rated Face Shield and 8 cal/cm ² + Stocking Hood* OR Multi-Layer Switching Hood
3	Multi-Layer flash suit over FR long-sleeved shirt and pants over natural fiber short-sleeved T-shirt and pants OR Multi-Layer flash suit over FR coveralls over natural fiber short-sleeved T-shirt and pants	25	Hard Hat, Multi-Layer Switching Hood, Hearing Protection, OR Arc-rated Goggle and Stocking Hood*
4	Multi-Layer flash suit over FR long-sleeved shirt and pants over natural fiber short-sleeved T-shirt and pants OR Multi-Layer flash suit over FR coveralls over natural fiber short-sleeved T-shirt and pants	40	Hard Hat, Multi-Layer Switching Hood, Hearing Protection, OR Arc-rated Goggle and Stocking Hood*

TASK (equipment is energized & work is done within the flash protection boundary)	V-Rated Gloves	V-Rated Tools	HRC
Switch operation, doors closed			2
Outdoor disconnect switch operation (gang-operated, from grade)			2
Insulated cable exam, in open area	Y		2
Opening hinged covers (to expose bare, energized parts)			3
Outdoor disconnect switch operation (hookstick operated)	Y	Y	3
Removal of bolted covers (to expose bare, energized parts)			3
Insulated cable examination, in manhole or other confined space	Y		4
Work on energized parts, including voltage testing	Y	Y	4

*** If the notes cannot be satisfied, work must be performed de-energized.**

Note 1 Maximum of 25 kA short circuit current available, 0.03 second (2 cycle) fault clearing time.
 Note 2 Maximum of 65 kA short circuit current available, 0.03 second (2 cycle) fault clearing time.
 Note 3 For < 10 kA short circuit current available, the HRC required may be reduced by one category.
 Note 4 Maximum of 42 kA short circuit current available, 0.33 second (20 cycle) fault clearing time.
 Note 5 Maximum of 35 kA short circuit current available, ≤ 0.5 second (30 cycle) fault clearing time.
 Note 6 For < 25 kA short circuit current available, the HRC required may be reduced by one category.
 *Circuits over 40cal/cm² should only be worked de-energized.

Definitions: Y=Yes (Required)

V-Rated Gloves : gloves rated and tested for the maximum line-to-line voltage upon which work will be done. Leather protectors must be worn externally if v-rated rubber gloves could be damaged.

V-Rated Tools : tools rated and tested for the maximum line-to-line voltage upon which work will be done.

HRC : Hazard Risk Category **FR** : Flame Resistant

