



# COMPANY SAFETY POLICY

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## Introduction

The journey began in 1964 as S&S Electric, providing electrical services for residents and businesses around Pittsburg, Kansas. By the time we changed our name to CDL Electric in 1996, we were also maintaining signals and providing electrical services for companies in the shortline railroad business.

In the 2000's, our expansion included divisions that relied heavily on our quality electricians including; business signs, generators, solar energy, security radios, systems and alarms. In the past few years, we have added plumbing, high voltage maintenance, refrigeration and heating and air to make CDL one destination that solves many needs for homes and businesses. All the while expanding our services and customer base in the shortline railroad industry.

With our significant growth, especially in recent years, our quality staff has increased to over 400 people working in 15 distinct divisions of products and services. We continue to be a dominant force in the four-state region with offices in Pittsburg, Parsons, Ft. Scott, and Humboldt Kansas. CDL also has Missouri offices in Joplin and Nevada. When you add our competent staff placed in areas throughout the country, CDL is well positioned for future growth and meeting the needs of our expanding customer base.

## **01. Our Vision**

Our story is one rooted in an unwavering commitment to the people who work for our company, who in turn have a sincere focus on providing customers with superior solutions that help their businesses develop.

## **02. Our Mission**

It's pretty simple: to provide home, business and industrial products and services at a reasonable profit in a safe manner, making sure our customers are happy with the results.

## **03. Our Value**

CDL values hard work by our talented employees and we always follow these principles with our customers and each other: Safety, Honesty, Excellence, Accountability, Respect & Teamwork.

## **04. Expanding Goal**

Our future includes growth, not for growth's sake, but to continue to provide solutions for our customers. Our tremendous growth over the last few years has been due to satisfying the needs of our customers. CDL will continue to provide solutions that benefit our customers' business and livelihoods.

## **Statement of Safety Policy**

It is the policy of CDL Electric Company, LLC "CDL" that its operations be conducted in a safe manner. As integral parts of this policy, the management of CDL believe that:

- a. All injuries can be prevented.
- b. Management and employees at all levels are responsible for maintaining safe working conditions and preventing personal injuries.
- c. Carrying out work functions in a safe manner is equally as important as meeting deadlines, production schedules, and other non-safety criteria.

## **1.1 Job Briefing Policy**

### **1.1.1 Objective**

The objective of this program is to maintain a safe and injury/illness free workplace while working at any job site during hours of light or darkness, and in any weather conditions.

**Before beginning any task, be sure that a complete job briefing is conducted with all individuals involved in the task.**

#### **1.1.1.1 Job Briefing Process**

- a. Before work begins, when all crew members are present
- b. After work begins, if person(s) arrive who missed the original job briefing
- c. When changes occur to the work plan or conditions change
- d. When working in groups, be aware of the work and movement of other groups and equipment
- e. As an avenue to discuss actions having the potential to place employees at risk and develop alternatives to accomplish such tasks safely
- f. Each work plan must consider hazards, assign specific responsibilities, and explain assignments
- g. Group assignments and/or individual assignments
- h. Abilities and experience of individuals

#### **1.1.1.2 The Job Briefing**

- a. Develop your own work plan.
- b. Use the job briefing check list when applicable.
- c. Complete and sign the check list as required.
- d. Consider existing and potential hazards that might be involved because of:
  - i. Job and weather
  - ii. The nature of the work to be done
  - iii. The job location

- iv. The tools, equipment, and materials used. If special tools, materials, equipment or methods are to be used, make sure employees know how to proceed safely.
- v. Safety or personal protective equipment required
- e. For complex jobs:
  - i. Brief only a portion of the job
  - ii. Give additional briefing as the job progresses

#### **1.1.1.3 Job Brief Contents**

- a. Employee in Charge (EIC)
- b. Work location
- c. Work to be performed:
  - i. Discuss existing or potential hazards and ways to eliminate or protect against them
  - ii. Make definite work assignments. (Make sure employees understand assignments)
  - iii. Issue all instructions clearly and concisely; check to see that they are understood
- d. Nearest medical facility and who will notify 911
- e. CPR/AED/First Aid
- f. Rally/muster location
- g. Head count
- h. Weather
- i. Slips/Trips/Falls/Pinch Points (mark any areas of concern, i.e., Crack in pavement, with a traffic cone or other similar identification method easily identifiable).
- j. PPE required

The individual who is typically alert and focused, but who is thinking of other things today, might be the same person to whom you are entrusting your life.

We have the right and the responsibility to make decisions based on experience, personal judgment, and training. We must make certain that:

- i. Enough time is allowed to perform all work safely.
- ii. Job briefings are conducted prior to work and when activity changes.
- iii. Co-workers are warned of known hazards.
- iv. Warning signs, posted instructions, placards, or barriers marking restricted areas are displayed and complied with at all times.
- v. Oral and written reports (statement) of accidents and injuries are made to the supervisor or employee in charge as soon as possible, but no later than the end of day.
- vi. One person does not engage in work activity that can only be done safely by two or more.
- vii. Anyone performing an unsafe act is redirected to safe work practices immediately.
- viii. Only personnel with the proper authority and training will perform job tasks.

We must comply with all CDL rules and policies and with local, state/provincial, and federal laws and regulations that relate to your job task(s).

#### **1.1.1.4 Lone Workers**

- a. Some job functions at CDL Electric will be performed by lone workers. This program encourages awareness and promote safe work procedures for employees who work alone. Working alone describes situations during the course of employment when an employee is:
  - The only worker at the workplace
  - Not directly supervised by the employer
  - Working at a site where assistance is not readily available
  - In an area where direct contact with a co-worker or supervisor is not available
  - In a dangerous area (either due to work processes or likelihood of being robbed)
  - Traveling away from the base office to meet clients
- b. The objectives of the Working Alone Program are:



- Identify hazards to workers working alone and to try to eliminate, minimize or control them
- Aid with workers working alone in the event of an accident or emergency
- Identify responsibilities of employees and supervisors
- Recognize who should not work alone
- Provide training assistance
- c. The Working Alone Program applies to CDL employees whose job duties require them to work alone in any facets of the job.
- d. Responsibilities
  - i. Director of Safety maintains, reviews, and updates the Working Alone Safety Program and provides assistance and recommendations at the request of supervisors.
  - ii. Employees Working Alone are responsible for:
    - Recognizing the hazards associated with their jobs and how to minimize them.
    - Reporting hazards to supervisors.
    - Working alone only when necessary, rescheduling assignments (when possible) to keep from working alone.
    - Participate in a check-in system by contacting someone at regular intervals.
    - Carry a personal alarm, cell phone or two-way radio. Ensure sufficient operation and battery life.
  - iii. Department Supervisors/Foremen are responsible for:
    - Communicating these guidelines to employees, students and contractors through training programs.
    - Ensuring work performed alone or in isolation has a completed risk assessment that has been shared with the lone worker.
    - Adequate control measures are implemented prior to approval of work.
    - Consulting and training staff, students and visitors that work alone.
    - Provide communication devices such as cell phones (primary), radios (alternate), personal safety alarms.
      - If electronic communication is not practicable or readily available at the worksite or has been diminished/lost, CDL Electric must ensure that a representative of CDL Electric or another competent employee visits the employee at intervals of time appropriate to the nature of the hazards associated with the employee's work. As a minimum contact shall occur no less than every four hours.
    - Ensure employee health and safety.
    - Ensure lone workers understand the risks associated with their work and that the necessary safety precautions are carried out.
    - Provide guidance in situations of uncertainty.
    - Implement controls to eliminate or control hazards prior to lone work.
    - Supervision of health and safety issues when checking the progress and quality of work; periodic site visits and discussions in which health and safety issues are raised.
    - Provide video surveillance cameras, limit public access, lock all unused doors, coded cards or keys to control access to buildings, alarms, panic buttons, emergency phones, fire alarm or security guards when necessary.
- e. Risk Assessment
  - i. Before allowing a worker to work alone, the attached assessment should be completed, and the findings recorded. The assessment includes:
    - Identification of hazards within the area.
    - Identification of methods and frequency of communications.
    - Can any temporary access equipment, such as portable ladders or trestles, be safely handled by one person?
    - Can all the machinery and goods involved in the workplace be safely handled by one person?

- Are there any chemicals or hazardous substances being used that may pose a risk to the worker?
- Does the work involve lifting objects too large for one person?
- Is more than one person needed to operate essential controls for the safe running of equipment or workplace transport?
- Possibility of violence.
- History of client/customer – is it safe to visit alone?
- Medical fitness of the person working alone – possibility of illness.
- Possibility of accidents – consider the activities taking place e.g. accessing ladders or steps
- If the lone worker's first language is not English, are provisions made for clear communications, especially in case of emergency?
- Requirements for first aid training.
- How can supervision/advice be provided easily?
- Methods of raising the alarm in the event of no contact within an agreed time.
- Can a person be left alone at their place of work?
- ii. The risk assessment should help decide the right level of supervision.
- iii. Identify the hazards of the work, assess the risks involved, and put measures in place to avoid or control the risks.
- iv. It is important to talk to employees and their safety representatives as they are a valuable source of information and advice. This will help to ensure that all relevant hazards have been identified and appropriate controls chosen.
- f. Who shouldn't work alone? Some job functions have inherent hazards that will require more than one employee at the job site.
  - i. Some examples of work functions that present hazards that require more than one worker include:
    - Permit-required Confined Spaces
    - High energy materials (radioactive, high temperature)
    - Cryogenic (low temperature) materials/processes
    - Toxic gases, liquids or solids
    - Flammable liquids
    - High pressure or high voltage systems
    - Using fall arrest equipment and scaffolding
    - Equipment or machinery
    - Extreme weather conditions
    - Shop Machinery
- g. Training:
  - i. Training is particularly important where there is limited supervision to control, guide and help in situations of uncertainty. Training may be critical to avoid panic reactions in unusual situations. Lone workers need to be sufficiently experienced and /or trained to understand the risks and how to fully take precautions.
  - ii. Set limits for the worker as to what can and cannot be done while working alone.
  - iii. Ensure employees are competent to deal with circumstances which are new, unusual or beyond the scope of training, such as when to stop work and seek advice from a supervisor.
  - iv. Those individuals working alone must have the appropriate training for the identified hazards, training can include providing workers with a safety checklist to assist them to identify and anticipate their own hazards.
  - v. Individuals who perform hazardous work will be provided written safe work procedures by the supervisor.
  - vi. All equipment must be used as intended, according to the manufacturer's specification and as set out in the safe work procedure. All equipment must be maintained in good working order.

- vii. Appropriate first aid and emergency supplies will be provided by the employer. The employee must know where first aid and emergency supplies are stored and how to use them properly. Employees shall also be trained in methods of notifying a supervisor when the needs arise.
- viii. Individuals who may be at risk of violence because they work alone may need training in the use of different communication equipment and/or how to behave when confronted with a situation such as an intruder. The employee will work with the supervisor to identify the potential situation, options for its resolution and the supervisor will arrange for appropriate training, as required.

#### **1.1.1.5 Stop Work Authority**

##### **a. Policy and Program Overview**

This program formally establishes the Stop Work Authority (SWA) of all CDL Electric employees to stop individual tasks or group operations when the control of HSE risk is not clearly established or understood.

It is the policy of CDL Electric that:

- i. All employees have the authority and obligation to stop any task or operation where concerns or questions regarding the control of HSE risk exist;
  - ii. No work will resume until all stop work issues and concerns have been adequately addressed, and
  - iii. Any form of retribution or intimidation directed at any individual or company for exercising their authority as outlined in this program will not be tolerated.
  - iv. As with any policy, accountability for non-compliance will follow established CDL Electric disciplinary procedures.
- ##### **b. Roles and Responsibilities**
- Persons in the following roles have responsibilities in support of this program:
- i. Company employees are responsible to initiate a “stop work” intervention when warranted, support the intervention of others and properly report all “stop work” actions.
  - ii. Forman/Supervisors are responsible to create a culture where SWA is exercised freely, honor request for “stop work”, work to resolve issues before operations resume, recognized proactive participation and ensure that all “stop work” actions are properly reported with required follow-up completed.
  - iii. Site Managers must establish a clear expectation to exercise SWA, create a culture where SWA is exercised freely, resolve SWA conflicts when they arise and hold those accountable that choose not to comply with established SWA policies.
  - iv. HSE in support of operations is responsible for monitoring compliance with the requirements of this program, maintenance of associated documents, processes and training materials, identification of trends, and sharing of lessons learned.

##### **c. Intervention Protocol**

In general terms, the SWA process involves a stop, notify, correct and resume approach for the resolution of a perceived unsafe work actions or conditions.

Much like behavior-based safety processes, a workforce that clearly understands how to initiate, receive and respond to a “stop work” intervention is more likely to participate. Though obvious to some, the following protocol creates an environment where people know how to act and respond.

Though situations may differ, the following steps should be the framework for all stop work interventions.

##### **d. Protocol Instruction**

Steps:

1. When a person identifies a perceived unsafe condition, act, error, omission, or lack of understanding that could result in an undesirable event, a “stop work” intervention shall be immediately initiated with the person(s) potentially at risk.

2. If the supervisor is readily available and the affected person(s) are not in immediate risk, the “stop work action” should be coordinated through the supervisor. If the supervisor is not readily available or the affected person(s) are in immediate risk, the “stop work” intervention should be initiated directly with those at risk.
  3. “Stop work” interventions should be initiated in a positive manner by briefly introducing yourself and starting a conversation with the phrase “I am using my stop work authority because...” Using this phrase will clarify the users’ intent and set expectations as detailed in this procedure.
  4. Notify all affected personnel and supervision of the stop work issue. If necessary, stop associated work activities, remove person(s) from the area, stabilize the situation and make the area as safe as possible.
  5. All parties shall discuss and gain agreement on the stop work issue.
  6. If determined and agreed that the task or operation is OK to proceed as is (i.e., the stop work initiator was unaware of certain facts or procedures) the affected persons should thank the initiator for their concern and proceed with the work.
  7. If determined and agreed that the stop work issue is valid, then every attempt should be made to resolve the issue to all affected person’s satisfaction prior to the commencement of work.
  8. If the stop work issue cannot be resolved immediately, work shall be suspended until proper resolution is achieved. When opinions differ regarding the validity of the stop work issue or adequacy of the resolution actions, the Site Manager shall make the final determination.
  9. Positive feedback should be given to all affected employees regarding resolution of the stop work issue. Under no circumstances should retribution be directed at any person(s) who exercise in good faith their stop work authority as detailed in this program.
  10. All stop work interventions and associated detail shall be documented and reported as detailed in this program.
- e. Reporting
- i. All “stop work” interventions exercised under the authority of this program shall be documented on the CDL Electric Incident Investigation Report Appendix L of this Safety Policy.
  - ii. “STOP WORK” reports shall be reviewed by the supervisor/foreman in order to:
    - Measure participation;
    - Determine quality of interventions and follow-up;
    - Trend common issues and identify opportunities for improvement;
    - Facilitate sharing of learning’s;
    - Feed recognition programs.

The HSE department will regularly publish incident details regarding the number of “stop work” actions reported by location as well as details regarding common trends and learning’s.

f. Follow-Up

It is the desired outcome of any “stop work” intervention that the identified safety concerns be addressed to the satisfaction of all involved persons prior to resuming work. Although most issues can be adequately resolved in a timely fashion at the job site, occasionally additional investigation and corrective actions may be required to identify and address root causes.

“Stop Work” interventions that required additional investigation or follow-up will be handled utilizing existing protocols and procedures for incident investigation and follow-up.

g. Recognition

In order to build and reinforce a culture in which SWA is freely exercised and accepted, line supervisors are encouraged to positively recognize employee and contractor participation in the program.

Minimally, each line supervisor should informally recognize individuals when they exercise their authority to “stop work” or demonstrate constructive participation in a “stop work” intervention.

This informal recognition need be no more than an expression of appreciation for a job well done or the awarding of a nominal item (hat, gloves, flashlight, etc.) or recognition. Additionally, formal recognition of selected examples of “stop work” interventions and those responsible should be made during regularly scheduled safety meeting.

**h. Training**

Training regarding this SWA Policy and Program will be conducted as part of all new employee and contractor orientations before initial assignments. Additionally, a review of the SWA Policy shall be completed as part of all field location safety briefings and regular safety meetings.

Documentation of all training must include the employee’s name, the date of training, and subject. Reviews shall be maintained as per established procedures.

**1.1.1.6 Alerting Techniques**

The following alerting techniques shall be used to warn and protect the general public from hazards which could cause injury due to electric shock or burns:

- a. Safety signs, safety symbols, or accident prevention tags shall be used where necessary to warn the public about electrical hazards, which may endanger them, as required.
- b. Barricades shall be used in conjunction with safety signs where it is necessary to prevent or limit public access to work areas. Conductive barricades may not be used where they might cause an electrical contact hazard.
- c. Attendants. If signs and barricades do not provide sufficient warning and protection from electrical hazards, an attendant shall be stationed to warn and protect the public.

Public places (schools, malls, stores, etc.) will have protection provided before work begins on electrical circuits.

**1.1.1.7 First Aid**

**1.1.1.7.1 CPR and First Aid**

It is the policy of CDL Electric that training in first aid response is not a requirement for employment, but that local Emergency Medical Services are utilized for emergency medical care.

The Designated Safety Coordinator is designated as the administrator of the Medical Services Program.

- a. Medical services for employee evaluations, employment requirements, and special conditions of work are provided to employees at no cost as specified in OSHA requirements
- b. A person(s) who has a valid certificate in first aid training, the American Red Cross, or equivalent will be available at work sites to render emergency first aid when an infirmary, clinic, or hospital is not in the proximity where accidents resulting in suffocation, severe bleeding, or other life-threatening injury or illness can be expected.
- c. Provisions will be made prior to commencement of a project for prompt medical attention in case of serious injury
- d. First aid supplies will be easily accessible and available when required
- e. Proper equipment for prompt transportation of the injured person to a physician or hospital or a communication system for contacting necessary ambulance service will be provided
- f. The Designated Safety Coordinator is the designated first aid provider and certified in cardiopulmonary resuscitation CPR and is responsible for rendering first aid in the event of an injury requiring immediate response when emergency medical services are not available, and will also be responsible for first aid training of any employee required
- g. Injured employees are to be transported promptly to medical facilities by emergency medical services. If emergency medical service is not available in a timely manner, the injured employee will be transported to the nearest medical service in a company vehicle by the job foreman
- i. In areas where 911 service is not available employees will be notified of phone numbers to contact local emergency response medical services. The Designated Safety Coordinator will be responsible for posting of emergency phone numbers at all jobsites. The phone numbers will be conspicuously posted in all work locations

- h. The Designated Safety Coordinator is responsible for the accessibility of First Aid Kits and for checking the contents of all First Aid Kits before being sent out to each job and at least weekly on each job to ensure that the expended items are replaced
- i. A valid certificate in first aid training must be obtained from the American Red Cross or equivalent training that can be verified by documentary evidence
- j. First aid kits are readily available in all company vehicles and in the company office. First aid kits will consist of appropriate items and stored in a weatherproof container with individual sealed packages of each type of item and will stock a minimum of the following items:

1 PPE for First Aid: <ul style="list-style-type: none"> <li>• 3-Pair latex gloves</li> <li>• Surgical masks</li> <li>• Clear eye protection or Face Shield</li> <li>• Dust Masks or other needed Face Protection</li> <li>• Mouth-to-mouth barrier</li> </ul> 2 Sterile gauze pads (6 each: 2X2's, 3X3's, and 4X4's)	9 Antiseptics and ointments: <ul style="list-style-type: none"> <li>• Alcohol</li> <li>• Burn gel or cream</li> <li>• Alcohol swabs</li> <li>• Peroxide</li> <li>• Antiseptic spray and ointment</li> </ul> 10 Pain relief tabs
3 3-Compress Dressings (4X8)	11 6 burn treatment single-use packages, 0.5gm
4 3-Rolled gauze bandages: 2" and 3" wide	12 Good quality eye-wash solution, with eye cup
5 Large box assorted "Band-Aids"	13 1-eye covering bandages (for two eyes)
6 Two elastic wrap bandages (ace)	14 Self-activating cold packs, 4x5 inches
7 Cotton balls and Q-tips	15 Liquid antiseptic hand soap
8 2-Surgical or athletic tape; 1" and 2" wide	16 Blunt-nose surgical scissors / Forceps, tweezers and safety pins / Snake-bite kit
General First-aid Guidebook, or manual will be readily available, but not necessarily inside of the first-aid kit.	

k. Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities will be provided within the work area for quick drenching or flushing of eyes or body

l. Eye wash bottles are available wherever eye wash stations are not available, for any employee required to work in an environment where exposure to eye hazards may exist. Wash facilities or drench barrels are available at each jobsite for employees

m. Procedure for flushing eyes - Eye membranes absorb chemicals quickly. This can lead to eye damage within minutes. Flood the eye with lukewarm (never hot) water poured from a large glass two to three inches from the eye. Continue for 15 minutes. Blink your eye as much as possible during the flooding. Do not force the eyelid open and do not allow the eyes to be rubbed. If lukewarm water is not available, rinse the eye quickly using a gentle stream from a hose for at least 15 minutes

n. Procedure for drenching skin - If poisons come in contact with the skin, they must be removed as quickly as possible. Remove contaminated clothing and flood the skin area with water for 10 minutes. Then gently wash the skin area with soap and water and rinse. Later, destroy contaminated clothing. For a chemical skin burn, rinse the area with lots of water, remove the clothes and cover with a soft, clean cloth. Do not apply grease or ointments

o. It is the policy of CDL Electric High Voltage Services that all of the requirements of OSHA 1926.50 will be met

#### 1.1.1.7.2 Equipment and Supplies

- An approved first aid kit shall be carried, and the location identified on motor vehicles used in the field; and, in addition, an approved kit shall be maintained at the company's main warehouse, inspected before being sent out, inspected at least weekly for construction activities or periodically inspected for general industry activities, and centrally located in its office area.
- Employees shall be familiar with the location, the contents and the instructions given with the first aid kit. Each employee shall learn to use this equipment, so they can render treatment when needed.
- First aid kit shall be inspected monthly and expended items replaced as needed. Approved first aid kit(s) shall meet the appropriate standard (ANSI Z308.1)

## **2.1 Confined Space Policy – 29 CFR 1926**

### **2.1.1 Confined Space Entry Program**

#### **2.1.1.1 Objective**

The objective of this program is to maintain a safe and injury/illness free workplace while working in confined spaces on construction sites. To comply with the Occupational Safety and Health Administration (OSHA) standard, this written program has been established for CDL Electric Company, LLC, (hereafter referred to as “the Company”). State and OSHA requirements may differ. All company projects and facilities are included and comply with this program. Copies of this written program, including a copy of the OSHA Standard, are available for review by any employee.

This program is to provide an overview of confined space entry program responsibilities and requirements in the role of an Entry Employer (as defined herein) when performing work on a construction site. The intent of this program is to provide the Company (in the role of Entry Employer) with a plain language guide to confined space entry for construction compliance as well as a ready access reference while on the construction site.

Due to the nature of the work the Company performs, it is possible that employees may be required to enter areas or spaces defined by OSHA as “confined spaces.” This program sets forth the requirements for practices and procedures to protect employees engaged in construction activities at a worksite with confined spaces. The development and implementation of this policy covers the requirements set forth by OSHA but also has been created utilizing the expertise of Company employees.

CDL Electric, at no time will enter a confined space that is IDLH (Immediately Dangerous to Life and Health).

#### **2.1.1.2 Background**

It is critical to recognize that the Confined Space Entry Program in Construction only applies to construction operations as defined by the OSHA regulation as “construction, alteration and/or repair, including painting and decorating.” Federal OSHA Section 1910.12(a) further provides that OSHA’s construction industry standards apply “to every employment and place of employment of every employee engaged in construction work.” All other work is considered “maintenance” and when confined space entry is required when conducting maintenance, the Confined Space Entry Program for General Industry (29 CFR 1910.146) regulation applies.

If uncertainty still exists as to the differences between the OSHA general industry standard (maintenance) and construction standard, as well as whether the work being performed is construction or maintenance, see Appendix A.

Exceptions to this program include (1) Construction work regulated by §1926 subpart P - Excavations. (2) Construction work regulated by §1926 subpart S - Underground Construction, Caissons, Cofferdams and Compressed Air. (3) Construction work regulated by §1926 subpart Y - Diving.

1. OSHA has developed a construction standard for confined spaces (29 CFR 1926 Subpart AA) that applies to any space that meets the following three criteria:
  - a. Is large enough for a worker to enter it
  - b. Has limited or restricted means of entry or exit
  - c. Is not designed for continuous occupancy
2. A confined space that contains certain hazardous conditions may be considered a permit-required confined space under the standard. Permit required confined spaces can be immediately dangerous to workers’ lives if not properly identified, evaluated, tested and controlled. A permit-required confined space means a confined space that has one or more of the following characteristics:
  - a. Contains or has the potential to contain a hazardous atmosphere
  - b. Contains a material that has the potential for engulfing an entrant
  - c. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section

- d. Contains any other recognized serious safety or health hazard
3. How employers can determine if confined spaces or permit-required confined spaces exist before beginning work on a residential homebuilding project, each employer must ensure that a competent person identifies all confined spaces in which one or more employees it directs may work and identifies each space that is a permit-required confined space. The competent person does not have to physically examine each attic, basement or crawl space, provided that the competent person can reliably determine whether the spaces with the same or similar configuration contain a hazard or potential hazard that would require the permit space classification. The initial evaluation may be done using existing experience and knowledge of the space by the competent person and does not need to be documented. For example, a competent person responsible for inspecting new homes being built to identical specifications with the same materials need not physically inspect each attic separately to determine if it is a permit-required confined space. How common spaces in residential construction are impacted by the standard spaces in a residential home may be considered confined spaces or permit-required confined spaces during the construction or remodeling process. However, the vast majority of the standard's requirements only apply to permit required confined spaces, and attics, basements, and crawl spaces in a residential home (three common spaces) will not typically trigger these requirements.

### 2.1.1.3 Key Definitions

For the purposes of this program, the following OSHA definitions related to confined space and permit-required confined space in construction shall apply:

**Attendant** is an individual stationed outside one or more permit spaces who assesses the status of authorized entrants and who must perform the duties specified in §1926.1209.

**Attics** in many instances, an attic will not be considered a confined space because there is no limited or restricted means for entry and exit. For example, an attic that can be accessed via pull downstairs that resemble the structure of a stationary stairway and do not require an employee to ascend /descend hand-over-hand would not be considered a confined space if there are no impediments to egress. Attics that are determined to be confined spaces would generally not be permit-required confined spaces because they typically do not contain the types of hazards or potential hazards that make a confined space a permit-required confined space (those that could impair an entrant's ability to exist the space without assistance). However, extreme heat in an attic can be considered a serious physical hazard such that the attic could be considered permit-required confined space. OSHA has not quantified how hot it must be to trigger the permit-required confined spaces requirements. However, heat that is extreme enough to cause heat exhaustion (e.g., dizziness, headaches, severe sweating, cramps) may impede an entrant's ability to exit the attic without assistance and would make a confined space permit required.

**Authorized entrant** is an employee who is authorized by the entry supervisor to enter a permit space.

**Basements** in a residential home that are designed for continuous occupancy by a homeowner are not considered confined spaces under the standard, provided the basement is configured as designed (e.g., has permanent stairs, a walk-out entry/exit, or an egress window installed).

**Competent Person** is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees and who has the authorization to take prompt corrective measures to eliminate them.

**Confined space** is defined as a space meeting **all** the following conditions:

- a. Is large enough and so configured that an employee's body can enter it (any part of the body breaks the plane of the opening)
- b. Has limited or restricted means for entry and exit
- c. Is not designed for continuous occupancy
- d. Examples of the types of confined spaces that may be found on construction sites include, but are not limited to:
  - bins
  - attics & crawl spaces



- pits (such as elevator, escalator, pump, valve)
- mixers/reactors
- tanks (such as fuel, chemical, water or other liquid)
- scrubbers
- sewers
- heating, ventilation & air conditioning (HVAC) ducts
- precast concrete and other pre-formed manhole units
- digesters
- lift stations
- air receivers
- sludge gates
- step up transformers
- open top spaces more than 4 feet in depth such as: pits, tubs, vaults and vessels
- manholes (sewer, storm drain, electrical, communication, utility)
- incinerators
- boilers
- chillers
- transformer vaults
- storm drains
- water mains
- enclosed beams
- vessels
- cesspools
- silos
- air preheaters
- turbines

**Control** is the action taken to reduce the level of any hazard inside a confined space using engineering methods (for example, by ventilation), and then using these methods to maintain the reduced hazard level. Control also refers to the engineering methods used for this purpose. *Personal protective equipment is not a control.*

**General Contractor** is the employer that has overall responsibility for construction at the worksite.

**Crawl spaces** in a residential home will not typically trigger most of the requirements of the standard unless they contain a physical hazard such as an exposed active electric wire.

**Early warning system** is any method used to alert authorized entrants and attendants that an engulfment hazard may be developing. Examples of early-warning systems include but are not limited to: alarms activated by remote sensors and lookouts with equipment for immediately communicating with the authorized entrants and attendants.

**Emergency** is any occurrence (including any failure of power, hazard control or monitoring equipment) or event, internal or external, to the permit space that could endanger entrants.

**Engulfment** is the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by constriction, crushing, or suffocation.

**Entry** is the action by which any part of a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space, whether such action is intentional, or any work activities are performed in the space.

**Entry Employer** means any employer who decides that an employee it directs will enter a permit space.

**Note:** An employer cannot avoid the duties of the standard merely by refusing to decide whether its employees will enter a permit space, and OSHA will consider the failure to so decide to be an implicit decision to allow employees to enter those spaces if they are working in the proximity of the space.

**Entry permit** is the written or printed document that is provided by the employer who designated the space a permit space to allow and control entry into a permit space and that contains the information specified in this program.

**Entry Supervisor** is the qualified person (such as the site supervisor, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this standard.

**Note:** An entry supervisor may also serve as an attendant or as an authorized entrant, if that person is trained and equipped as required by this standard for each role, he/she fills. Also, the duties of entry supervisor may be passed from one individual to another during an entry operation.

**Hazard** is any physical hazard or hazardous atmosphere as defined herein.

**Hazardous atmosphere** is any atmosphere that has the potential to expose employees to the risk of death, incapacitation, asphyxiation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following conditions:

- a. Flammable gas, vapor, or mist more than 10 percent of its lower flammable limit (LFL)
- b. Airborne combustible dust at a concentration that meets or exceeds its LFL  
**Note:** This concentration may be approximated as a condition in which the combustible dust obscures vision at 5 feet (1.52 meters) or less.
- c. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent; Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart D - Occupational Health and Environmental Control, or in Subpart Z - Toxic and Hazardous Substances, of applicable OSHA regulations and which could result in employee exposure more than its dose or permissible exposure limit  
**Note:** An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury or acute illness due to its health effects is not covered by this definition.
- d. Any other atmospheric condition that is immediately dangerous to life or health  
**Note:** For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Safety Data Sheets that comply with the Hazard Communication Standard, §1926.59 of applicable OSHA regulations, published information and internal documents can provide guidance in establishing acceptable atmospheric conditions.

**Host Employer** the employer that owns/manages the property where the work is taking place.

**Note:** In no case will there be more than one Host Employer. If the owner of the property on which the construction activity occurs has contracted with an entity for the general management of that property and has transferred to that entity the required information, OSHA will treat the contracted management entity as the Host Employer for as long as that entity manages the property. Otherwise, OSHA will treat the owner of the property as the Host Employer.

**Immediately Dangerous to Life or Health (IDLH)** is any condition that would interfere with an individual's ability to escape unaided from a permit space and that poses a threat to life or that would cause irreversible adverse health effects.

**Note:** Some materials - hydrogen fluoride gas and cadmium vapor, for example - may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim "feels normal" after recovery from transient effects until collapse. Such materials in hazardous quantities are "immediately" dangerous to life or health.

**Limited or restricted means for entry or exit** is a condition that has a potential to impede an employee's movement into or out of a confined space. Such conditions include, but are not limited to, trip hazards, poor illumination, slippery floors, inclining surfaces and ladders.

**Monitor or monitoring** is the process used to identify and evaluate the hazards after an authorized entrant enters the space. This is a process of checking for changes that is performed in a periodic or continuous manner after the completion of the initial testing or evaluation of that space.

**Non-entry rescue** occurs when a rescue service, usually the attendant, retrieves employees in a permit space without entering the permit space.

**Non-permit confined space** is a confined space that meets the definition of a confined space but does not meet the requirements for a permit-required confined space, as defined in this subpart.

**Permit required confined space (Permit Entry)** is a confined space (as defined above), that has **one or more** of the following characteristics:

- a. Contains or has the potential to contain a hazardous atmosphere
- b. Contains a material that has potential for engulfing an entrant
- c. Has an internal configuration such that an entrant could be trapped or asphyxiated by the inwardly converging walls or by a floor which slopes downward and tapers to a smaller section
- d. Contains any other recognized serious safety or health hazards

**Important Notes:**

**\*Work performed within the space, including hot work (welding, cutting, soldering, brazing, etc.), painting, applying sealants, solvent use or running gasoline or diesel-powered engines can result in hazardous atmospheres in the space.**

**\*Workers should be reminded that welding fumes and chemical vapors (glue, seam sealer, etc.) can travel to other parts of a confined space. Consider these activities in the assessment of the confined space hazards.**

**Physical hazard** is an existing or potential hazard that can cause death or serious physical damage. Examples include, but are not limited to explosives, mechanical, electrical, hydraulic and pneumatic energy, radiation, temperature extremes, engulfment, noise, and inwardly converging surfaces. Physical hazard also includes chemicals that can cause death or serious physical damage through skin or eye contact (rather than through inhalation).

**Prohibited condition** is any condition in a permit space that is not allowed by the permit during the period when entry is authorized. A hazardous atmosphere is a prohibited condition unless the employer can demonstrate that personal protective equipment (PPE) will provide effective protection for each employee in the permit space and provides the appropriate PPE to each employee.

**Qualified person** is one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems relating to the subject matter, the work or the project.

**Rescue** is the act of retrieving and providing medical assistance to one or more employees who are in a permit space.

**Ventilate or ventilation** is the means of controlling a hazardous atmosphere using continuous forced-air mechanical systems that meet the requirements of §1926.57—Ventilation.

#### **2.1.1.4 Assignment of Responsibility**

Typically, while performing work on a construction site, the Company may serve in the role of an *Entry Employer* (versus a Host Employer or General Contractor), as defined herein. In some cases, where the Company's scope of work is much broader, they may serve as the role of the *General Contractor*. The following outlines the Assignment of Responsibilities as well as guidance and recommendations pertaining to each of these roles.

Company Policy: When the scale of the project is such that Host Employer does not possess confined space entry resources and the requirements of the OSHA regulation are beyond the capability of the Company, contracting the confined space entry work to a qualified entity that has this capability is highly recommended to ensure the health and safety of the Company's workers is protected.

The effectiveness of this program depends on proactive engagement and communication of construction site management and employees. Before work begins at a construction site, each employer must ensure that a competent person identifies all confined spaces in which one or more of the employees it directs may work and identifies each space that is a permit space, through consideration and evaluation of the elements of that space, including testing as necessary.

If any employer conducting work on a construction site decides that employees it directs will enter a permit space, that employer (*Entry Employer*) must have a written permit space program implemented at the construction site. A written program, as outlined here, must be made available prior to and during entry operations for inspection by employees and their authorized representatives.

Interaction and information sharing with client facility representatives, general contractors and all related trade contractors is critical to this construction confined space process since hazards may be part of the jobs, tasks, and processes being completed by these multi-employer work environments. Clients may have confined spaces in their facilities or on active construction sites and it is important the Company work closely with these related organizations to identify these areas and take proper precautions.

This program (and the OSHA standard) is dependent upon the General Contractor, rather than the Host Employer or Entry Employer, being the primary point of contact for information about permit spaces at the work site. The Host Employer must provide information it has about permit spaces at the work site to the General Contractor, who then passes it on to the employers whose employees will enter the spaces (deemed “Entry Employers”).

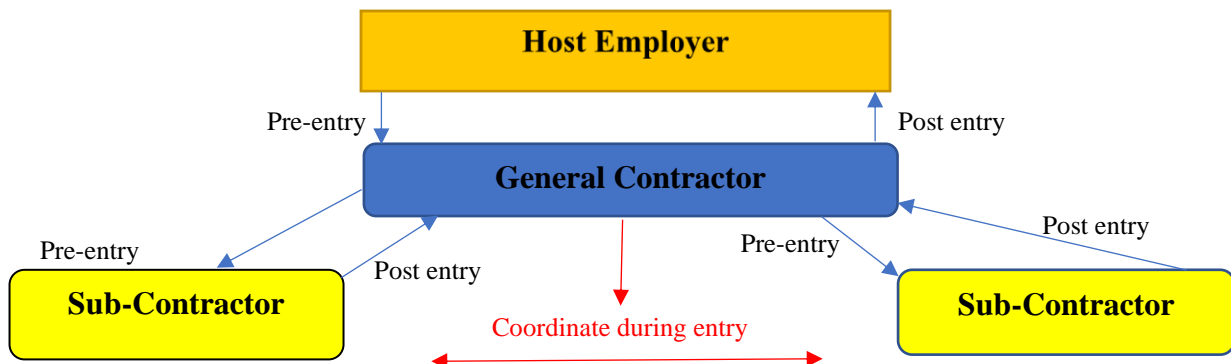
Likewise, Entry Employers must give the General Contractor information about their entry program and hazards they encounter in the space and the General Contractor passes that information on to other Entry Employers and back to the Host Employer.

The General Contractor is also responsible for making sure employers outside a space know not to create hazards in the space and that Entry Employers working in a space at the same time do not create hazards for one another’s workers.

**Note:** If there is no General Contractor, the Host Employer or another employer will perform these duties; or if the Controlling Contractor owns or manages the property, then it is both a Controlling Employer and a Host Employer.

1. Before entry operations begin, the General Contractor must:
  - a. Obtain the Host Employer’s information about the permit space hazards and previous entries
  - b. Provide the following information to each entity entering a permit space and any other entity at the worksite whose activities could foreseeably result in a hazard in the permit space:
    - i. The information received from the Host Employer
    - ii. Any additional information the General Contractor has about the subjects the Host Employer is responsible for listed above
    - iii. The precautions that the Host Employer, General Contractor, or other Entry Employers implemented for the protection of employees in the permit spaces
2. Before entry operations begin, the Host Employer must provide the following information, if it has it, to the General Contractor:
  - a. The location of each known permit space and inform exposed employees by posting signs reading “DANGER - PERMIT REQUIRED CONFINED SPACE, DO NOT ENTER” providing sufficient notification of the existence and location of, and danger posed by each permit space.
  - b. Inform, in a timely manner and in a manner other than posting, its employees’ authorized representatives and General Contractor of the existence and location of, and the danger posed by, each permit space.
  - c. The hazards or potential hazards in each space or the reason it is a permit space.
  - d. Any precautions that the Host Employer or any previous General Contractor or Entry Employer implemented for the protection of employees in the permit space.

The following diagram should help to illustrate this flow of communication requirements, their assigned responsibilities within this program and the critical relationships between these key roles.



3. The Company Safety Director is responsible for:
  - a. Providing oversight and technical support

- b. Securing the resources necessary to implement this program
  - c. Ensuring that routine safety checks of work operations are performed
  - d. Conducting an annual review of this program
  - e. Updates (as needed) to ensure the effectiveness of the program
  - f. Ensuring that proper reporting and record keeping is executed
4. The Entry Supervisor is the Company qualified person (such as the site supervisor, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this standard.
- Note:** An entry supervisor may also serve as an attendant or as an authorized entrant, if that person is trained and equipped as required by this standard for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during an entry operation.
- a. Specifically, the Entry Supervisor is responsible for:
    - i. Assessing the space prior to entry to determine if the space meets the characteristics of a permit-required confined space
    - ii. Knowing space hazards including information on the mode of exposure, signs, or symptoms and consequences of exposure
    - iii. Verifying emergency plans and specified entry conditions such as permits, tests, procedures, equipment, and availability of rescue services before allowing entry
    - iv. Terminating entry and canceling permits when entry operations are complete or if a new condition exists
    - v. Taking appropriate measures to remove unauthorized entrants
    - vi. Ensuring that entry operations remain consistent with the entry permit and acceptable entry conditions are maintained
  - b. The Authorized Entrant is the properly trained employee who has been authorized by the Entry Supervisor to enter a permit space. Specifically, the Authorized Entrant is responsible for:
    - i. Knowing the hazards that may be faced during entry, including information on the mode, signs, or symptoms and consequences of the exposure
    - ii. Properly using equipment as required obtaining a facial seal
    - iii. Communicating with the Attendant during the entry so that the Attendant can monitor the status of the entry
    - iv. Exiting from the permit space as soon as possible when ordered by the Attendant, when the entrant recognizes the warning signs or symptoms of exposure exists, when a prohibited condition exists, or when an automatic alarm is activated
    - v. Alert the Attendant immediately when a prohibited condition exists or when warning signs or symptoms of exposure exist
  - c. The Attendant is an individual stationed outside one or more permit spaces who assesses the status of authorized entrants and who must perform the following duties:
    - i. Is familiar with and understands the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure
    - ii. Is aware of possible behavioral effects of hazard exposure in authorized entrants
    - iii. Continuously maintains and ensures an accurate count of Authorized Entrants in the permit space
    - iv. Remains outside the permit space during entry operations until relieved by another attendant;
 

**Note:** Once an Attendant has been relieved by another Attendant, the relieved attendant may enter a permit space to attempt a rescue when the employer's permit space program allows attendant entry for rescue and the Attendant has been trained and equipped for rescue operations
    - v. Communicates with authorized entrants as necessary to assess entrant status and to alert entrants of the need to evacuate the space

- vi. Assesses activities and conditions inside and outside the space to determine if it is safe for entrants to remain in the space and orders the Authorized Entrants to evacuate the permit space immediately under any of the following conditions:
  - If there is a prohibited condition
  - If the behavioral effects of hazard exposure are apparent in an authorized entrant
  - If there is a situation outside the space that could endanger the entrants
  - If the Attendant cannot effectively and safely perform all the duties as required under this standard
- vii. Summons rescue and other emergency services as soon as the Attendant determines that authorized entrants may need assistance to escape from permit space hazards
- viii. Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:
  - Warns the unauthorized persons that they must stay away from the permit space
  - Advises the unauthorized persons that they must exit immediately if they have entered the permit space
  - Informs the Authorized Entrants and the entry supervisor if unauthorized persons have entered the permit space
- ix. Performs non-entry rescues as specified by the employer's rescue procedure
- x. Performs no duties that might interfere with the Attendant's primary duty to assess and protect the Authorized Entrants

#### **2.1.1.5 Confined Space Emergencies**

**\*\*\*\*\* In the event of an emergency, call 911 \*\*\*\*\***

- a. At least one person trained in first aid and cardiopulmonary resuscitation (CPR) must be immediately available whenever the use of respiratory protective equipment is required.
- b. An effective means of communication between employees inside a confined space and a standby employee will be utilized if respiratory protective equipment is being used, or whenever employees inside a confined space are out of sight of the standby employee(s). All affected employees will be trained in the applicable communication system, and the system must be tested before each use to confirm its effective operation.
- c. Only trained and qualified rescuer can perform rescues. Qualifications must include knowledge of and experience working with all hazards associated with rescue and confined space entry.
- d. Depending on the severity of the emergency, different rescue method can be used:
  - i. Self-Rescue: When the emergency is minor, self-rescue is the best approach.
  - ii. Non-Entry Rescue: When the worker is disabled, the use of equipment and other rescue aids shall be used when possible, by the attendant, without creating additional hazard or injury to the trapped employee.
  - iii. Entry Rescue: Entry rescues can only be performed by trained and qualified individuals. Call 911 for emergency assistance.

#### **2.1.1.6 General Procedures - Planning Confined Space Entries in Construction**

**Only properly trained employees enter confined spaces in construction**

**\*\*No employee is to enter a confined space or perceived confined space without at least first notifying a Supervisor and the Supervisor taking appropriate actions as outlined in this program\*\***

- a. No confined space entry shall be performed unless at least one person who has been trained and certified in basic first aid and cardiopulmonary resuscitation (CPR) is present on-site and immediately available for the duration of the entry.

- b. Entry Supervisors must coordinate escape equipment and procedures, as well as rescue and emergency services, with the Responsible Person prior to executing any entry. No entry shall be conducted until appropriate rescue and/or retrieval procedures have been coordinated with the Responsible Person.
  - c. Any confined space must be properly secured and protected from hazards outside of the space prior to any entry.
  - d. All entries, regardless of the type of space, must have a qualified Attendant stationed at the opening of the space who can maintain constant communication with Entrants for the duration.
  - e. The *Confined Space Entry Decision Tree* (Appendix A) can be used as a guide to determine the necessary actions prior to executing any confined space entry.
  - f. The *Confined Space Entry Permit* (Appendix B) shall be completed for every confined space entry. The level of detail required on the *Confined Space Permit* depends on the size and configuration of the confined space, the work conducted inside the confined space, and the types of hazards present (or potentially present).
  - g. No space shall be entered while gasoline or diesel-powered engines or equipment are operating within 50 feet of the entrance to the space.
  - h. Respiratory protection shall not be used to execute any entry where levels of O<sub>2</sub>, LEL, CO or H<sub>2</sub>S levels are not within acceptable entry criteria.
  - i. At no time will CDL Electric Employees be permitted into an IDLH (Immediately Dangerous to Life and Health) space.
  - j. Provide pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards
1. Atmospheric Testing in Construction

Prior to any entry, atmospheric testing shall be conducted at various levels within the space, including the lowest level within the space. Atmospheric testing should be conducted using a calibrated multi-gas meter capable of measuring the following parameters:

Atmospheric Test Parameter	Acceptable Entry Criteria Level
Oxygen (O <sub>2</sub> )	19.5% to 23.5%
Lower Explosive Limit (LEL)	Less than (<) 10%
Carbon Monoxide (CO)	Less than (<) 25 parts per million (ppm)
Hydrogen Sulfide (H <sub>2</sub> S)	Less than (<) 10 parts per million (ppm)

The meter should be equipped with an audible alarm set to activate when measured levels are outside the range of acceptable atmospheric criteria shown above.

The atmosphere within the space must be continuously monitored unless the Entry Employer can demonstrate that equipment for continuous monitoring is not commercially available or periodic monitoring is sufficient. If continuous monitoring is used, the employer must ensure that the monitoring equipment has an alarm that will notify all entrants if a specified atmospheric threshold is achieved, or that an employee will check the monitor with sufficient frequency to ensure that entrants have adequate time to escape. If continuous monitoring is not used, periodic monitoring is required. All monitoring must ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. Any employee who enters the space, or that employee's authorized representative, must be provided with an opportunity to observe the testing required by this paragraph.

If the *Confined Space Entry Permit* is used to document the entry, the intervals at which atmospheric tests are required must be determined prior to entry. The table below provides guidelines for determining the intervals of atmospheric testing; however, the Entry Supervisor and/or Entrant(s) must make the determination based on space, worksite characterizations, and the work to be performed within the space.

Test Interval	Guideline
Initial	Required for all entries, regardless of the type of space. Must be conducted prior to entry.
Prior to Each Entry	Required if multiple entries into the <u>same space</u> are required during a <u>single shift</u> , and no indication that more frequent testing is required. Testing must be conducted prior to each entry into the space.
Continuous	Required in all cases. Required if initial monitoring indicates any atmospheric testing parameter measured is outside the acceptable entry criteria and ventilation is required. Continuous monitoring can be conducted from outside the space or by equipping entrants with personal monitors capable of measuring all the parameters required.

If an extension hose or tubing is required to sample the lowest level of the space, the tester must allow sufficient time for the air sample to travel through the tubing to the instrument detector, as specified in the equipment manufacturer's instruction manual.

If the *Confined Space Entry Permit* is used to document the entry, the frequency that tests are required, the tester's name, and the model, manufacturer, serial number and date of last calibration should be entered on the permit.

## 2. Space Ventilation in Construction

If atmospheric testing measures levels outside of the acceptable criteria range:

- Ventilation of the space shall be provided using a positive pressure ventilator or blower equipped with a duct long enough to reach the lowest level of the space.
- Ventilate the space for at least 15 minutes prior to retesting the atmosphere.
- Do not enter the space until atmospheric testing results are within acceptable criteria limits.

**Note:** An alternate procedure for permit required confined space entry (essentially by-passing most program requirements) is allowed under the OSHA regulation at §1926.1203 (e)(2) provided that certain conditions are met including atmospheric testing and continuous forced air ventilation. Only the Company representative (competent person), in cooperation with the Company management and General Contractor, can make that determination.

## 3. Procedures for Entering Confined Spaces in Construction

A *Confined Space Entry Permit* (Appendix B) must be completed for every confined space entry.

No entry permit shall extend beyond the period of one work shift. If entries are required for multiple days, complete a separate permit for each day an entry will occur.

Prior to any entry, the Entry Supervisor and Entrant(s) determine if any of the following hazards are or could be present:

- Continuous or potential hazardous atmosphere (consider the type of work to be performed)
- Engulfment hazard
- Entrapment hazard
- Other hazardous energy or residual energy

Check the appropriate box on the *Confined Space Entry Permit* for all hazards that are or may be present.

## 4. Procedures for Spaces with No Hazards

- If no hazards are present, check the appropriate box on the *Confined Space Entry Permit*. You CANNOT check the NO HAZARDS box if any work activities that can create hazards, such as hot work, painting, solvent use, or running gasoline or diesel-powered engines, will be performed in the space.
- Conduct initial atmospheric testing and record the results on the *Confined Space Entry Permit*.



- i. If initial atmospheric testing indicates unacceptable entry conditions, the entry becomes a PERMIT ENTRY, and the controls referenced below must be implemented. Enter the test results on the *Confined Space Entry Permit*.
    - ii. If initial atmospheric testing indicates acceptable entry conditions, enter the test results on the *Confined Space Entry Permit* and all Entrants, Attendants and the Entry Supervisor sign the permit and proceed with the entry.
  - c. An Attendant is required for all entries into NO HAZARD spaces. The Attendant remains in constant communication with the Entrant(s).
  - d. At the completion of the entry or at the end of the shift, whichever is first, close the permit by entering the date and time at the bottom of the permit. Either an Entrant or the Entry Supervisor must sign the permit closure.
  - e. **When there are changes in the use or configuration of a “non-permit” confined space that might increase the hazards to entrants (or some indication that the initial evaluation of the space may not have been adequate), each entry employer MUST have a competent person reevaluate that space and, if necessary, reclassify it as a ‘permit-required’ confined space.** [1926.1203(f)]
5. Procedures for Permit Entry of a Space with any Identified Hazard
- a. Before entry operations begin, the Host Employer must provide the following information, if it has it, to the General Contractor:
    - i. The location of each known permit space
    - ii. The hazards or potential hazards in each space or the reason it is a permit space
    - iii. Any precautions that the Host Employer or any previous General Contractor or Entry Employer implemented for the protection of employees in the permit space
  - b. Before entry operations begin, the General Contractor must:
    - i. Obtain the Host Employer’s information about the permit space hazards and previous entry operations
    - ii. Provide the following information to each entity entering a permit space and any other entity at the worksite whose activities could foreseeably result in a hazard in the permit space:
      - The information received from the Host Employer
      - Any additional information the General Contractor has about the subjects listed in paragraph (h)(1) of this section
      - The precautions that the Host Employer, General Contractor, or other Entry Employers implemented for the protection of employees in the permit spaces
  - c. Before entry operations begin, each Entry Employer must:
    - i. Obtain all the General Contractor’s information regarding permit space hazards and entry operations
    - ii. Inform the General Contractor of the permit space program that the entry employer will follow, including any hazards likely to be confronted or created in each permit space
  - d. The General Contractor and Entry Employer(s) must coordinate entry operations when:
    - i. More than one entity performs permit space entry at the same time or
    - ii. Permit space entry is performed while any activities could foreseeably result in a hazard in the permit space
    - iii. If any hazards listed on the *Confined Space Entry Permit* are or may be present at any time during the entry, check the appropriate box(es) on the permit
    - iv. If any activities that would change the characterization of the space, such as hot work, painting, solvent use, or running gasoline or diesel-powered engines, check the appropriate box on the permit
    - v. Select and check the appropriate Controls, Personal Protective Equipment, and Rescue/ Retrieval Equipment required for the hazards identified on the *Confined Space Entry Permit*. The Entry Supervisor or Entrant verifies that all the appropriate controls for ensuring a safe entry are available prior to entry

- vi. Conduct initial atmospheric testing and record the results on the *Confined Space Entry Permit*:
    - If initial atmospheric testing indicates acceptable entry conditions, record the test results on the permit and all Entrants, Attendants and the Entry Supervisor sign the permit and proceed with the entry
    - If initial atmospheric testing indicates unacceptable entry conditions, implement space ventilation (described above). Record the test results on the permit
  - e. An Attendant is required for all entries into PERMIT ENTRY spaces
  - f. The Attendant remains in constant communication with the Entrant(s)
  - g. At the completion of the entry or at the end of the shift, whichever is first, close the permit by entering the date and time at the bottom of the permit. Either an Entrant or the Entry Supervisor must sign the permit closure
6. Procedure for Evacuating Spaces
- Entrants must leave the space or be hoisted from the space immediately if, at any time during the entry:
- a. Any of the parameters monitored are found to be outside of the acceptable criteria ranges.
  - b. The Entrant(s) or Attendant(s) determine that conditions present pose a risk to the Entrants.
  - c. The Attendant orders an evacuation of the space because:
    - i. An Entrant shows signs of physiological effects of hazard exposure
    - ii. An emergency outside the confined space exists
    - iii. The Attendant cannot effectively and safely perform his/her required duties
  - d. At no time shall an Attendant or other person enter a confined space to affect a rescue or assist with an evacuation by entering the space unless they are appropriately qualified and have the appropriate equipment, including an atmosphere supplying respirator suitable for rescue in an atmosphere considered immediately dangerous to life and health (IDLH).
  - e. If evacuation of a space is necessary, record the reason and time the evacuation occurred on the Confined Space Entry Permit.
  - f. DO NOT re-enter the space until the Entry Supervisor and/or the Entrant(s) verify that appropriate controls have been implemented and that all conditions are safe for re-entry. Re-establish all procedures for entry before re-entering the space, including repeating atmospheric monitoring. Record the re-entry time on the permit.
7. After Entry Operations (Closing Permit)
- a. The General Contractor must debrief each entity that entered a permit space regarding the permit space program followed and any hazards confronted or created in the permit space(s).
  - b. The Entry Employer must inform the General Contractor in a timely manner of the permit space program followed and of any hazards confronted or created in the permit space(s).
  - c. The General Contractor must apprise the Host Employer of the information exchanged with the entry entities.
  - d. If there is no General Contractor present at the worksite, the requirements for, and role of, General Contractors must be fulfilled by the Host Employer or other employer who arranges to have employees of another employer perform work that involves permit space entry.

#### **2.1.1.7 Training**

The employer must provide training to each employee whose work is affected by this program, at no cost to the employee, and ensure that the employee possesses the understanding, proficiency, knowledge, and skills necessary for the safe performance of the duties assigned under this standard. Training will be provided upon assignment to and when there is a change of position assignment where the employee may serve as Entry Supervisor, Entrant, or Attendant on a job site. Additional training shall be provided when there has been a change in the procedures referenced in this program, whenever there is a change in the permit spaces entry operations that presents a hazard about which an employee has not been previously trained and; whenever there is evidence of a deviation from the permit space

entry procedures of this standard or there are inadequacies in the employee's knowledge of use of these procedures.

All Entry Supervisors, Entrants and Attendants receive the same training.

Training must address the following:

- a. What constitutes a permit (confined) space?
- b. Understanding of the hazards of permit space and the methods used to isolate, control or in other ways protect employees from these hazards
- c. Countermeasures for controlling the hazards identified
- d. Review of the OSHA standards and other guidelines referenced in this Program
- e. Review of the procedures for confined space entries established in this Program
- f. Dangers of attempting a rescue if not an authorized entrant
- g. Procedures for evacuating spaces during entries
- h. Procedures for rescue and retrieval

Each employee who receives training, should receive a certificate documenting the training. The certificate shall include the date of training and the signature of the training provider.

#### **2.1.1.8 Recordkeeping**

To comply with OSHA requirements for record retention and recordkeeping, the following records related to this Confined Space Entry Program are maintained:

- a. All *Confined Space Entry Permits* issued in an annual file
- b. All employee training records in each employee's file

#### **2.1.1.9 Program Review**

Regular evaluation of the Confined Space Entry Program is important to its effectiveness. It is also important that the procedures and protocols accurately reflect changes in work activities and changes to current regulations and guidelines.

Review the program annually. The annual review should include the following:

- a. Review all permits to determine compliance with this program.
- b. Review any available documentation regarding space evacuations to identify "lessons learned".
- c. Review all confined space accidents or incidents, and update procedures to minimize the risk of those types of accidents or incidents from occurring.
- d. Evaluate the efficiency of the procedures specified in this program in the context of work activities and update as necessary.

#### **2.1.2.0 Permit Required Confined Space**

If the scope of the Company's work requires workers to enter a Permit Required Confined Space (PRCS), then the role of the Company is the Entry Employer, and they must:

- a. Implement the measures necessary to prevent unauthorized entry
- b. Identify and evaluate the hazards of permit spaces before employees enter them
- c. Develop and implement the means, procedures, and practices necessary for safe permit space entry operations, including, but not limited to, the following:
  - i. Specifying acceptable entry conditions
  - ii. Providing each authorized entrant or that employee's authorized representative with the opportunity to observe any monitoring or testing of permit spaces to include additional monitoring
  - iii. Isolating the permit space and physical hazard(s) within the space
  - iv. Purging, inerting, flushing or ventilating the permit space as necessary to eliminate or control atmospheric hazards

**Note:** When an employer is unable to reduce the atmosphere below 10 percent LFL, the employer may only enter if the employer inerts the space to render the entire atmosphere in the space noncombustible and the employees use PPE to address any other atmospheric

- hazards (such as oxygen deficiency), and the employer eliminates or isolates all physical hazards in the space.
- v. Determining that, in the event the ventilation system stops working, the monitoring procedures will detect an increase in atmospheric hazard levels in sufficient time for the entrants to safely exit the permit space
  - vi. Providing pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards
  - vii. Verifying that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry and ensuring that employees are not allowed to enter, or remain in, a permit space with a hazardous atmosphere unless the employer can demonstrate that personal protective equipment (PPE) will provide effective protection for each employee in the permit space and provides the appropriate PPE to each employee
  - viii. Eliminating any conditions (for example, high pressure) that could make it unsafe to remove an entrance cover
- d. Provide the following equipment (specified in the OSHA standard) at no cost to each employee, maintain that equipment properly, and ensure that each employee uses that equipment properly:
- i. Testing and monitoring equipment needed to comply with space ventilation requirements
  - ii. Ventilating equipment needed to obtain acceptable entry conditions
  - iii. Communications equipment including any necessary electronic communication equipment for attendants assessing entrants' status in multiple spaces
  - iv. Personal protective equipment insofar as feasible engineering and work-practice controls do not adequately protect employees
- Note:** The requirements of this part and other PPE requirements continue to apply to the use of PPE in a permit space. For example, if employees use respirators, then the respirator requirements in the OSHA standards for respiratory protection must be met.
- v. Lighting equipment that is approved for the ignitable or combustible properties of the specific gas, vapor, dust, or fiber that will be present, and that is sufficient to enable employees to see well enough to work safely and to exit the space quickly in an emergency
  - vi. Barriers/barricades shall be utilized to prevent unauthorized entry into a confined space.
  - vii. Equipment, such as ladders, needed for safe ingress and egress
  - viii. Rescue and emergency equipment, except to the extent that the equipment is provided by rescue services
  - ix. Any other equipment necessary for safe entry, safe exit, and rescue from permit spaces
- e. Evaluate permit space conditions in accordance with the following paragraphs of this section when entry operations are conducted:
- i. Test conditions in the permit space to determine if acceptable entry conditions exist before changes to the space's natural ventilation are made, and before entry is authorized to begin, except that, if an employer demonstrates that isolation of the space is infeasible because the space is large or is part of a continuous system (such as a sewer) the employer must:
    - Perform pre-entry testing to the extent feasible before entry is authorized
    - If entry is authorized, continuously monitor entry conditions in the areas where authorized entrants are working, except that employers may use periodic monitoring in accordance with the OSHA standard for monitoring an atmospheric hazard if they can demonstrate that equipment for continuously monitoring that hazard is not commercially available
    - Provide an early-warning system that continuously monitors for non-isolated engulfment hazards. The system must alert authorized entrants and attendants in sufficient time for the authorized entrants to safely exit the space
  - ii. Continuously monitor atmospheric hazards unless the employer can demonstrate that the equipment for continuously monitoring a hazard is not commercially available or that periodic monitoring is of sufficient frequency to ensure that the atmospheric hazard is being controlled at safe levels. If continuous monitoring is not used, periodic monitoring is required with

sufficient frequency to ensure that acceptable entry conditions are being maintained during entry operations

- iii. When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors
- iv. Provide each authorized entrant or that employee's authorized representative an opportunity to observe the pre-entry and any subsequent testing or monitoring of permit spaces
  - v. Reevaluate the permit space in the presence of any authorized entrant or that employee's authorized representative who requests that the employer conduct such reevaluation because there is some indication that the evaluation of that space may not have been adequate
  - vi. Immediately provide each authorized entrant or that employee's authorized representative with the results of any testing conducted in accordance with this program
- f. Provide at least one attendant outside the permit space into which entry is authorized for the duration of entry operations;
  - i. Attendants may be assigned to more than one permit space provided the duties described in the OSHA standard can be effectively performed for each permit space
  - ii. Attendants may be stationed at any location outside the permit space as long as the duties described in the OSHA standard can be effectively performed for each permit space to which the attendant is assigned
- g. If multiple spaces are to be assigned to a single attendant, include in the permit program the means and procedures to enable the attendant to respond to an emergency affecting one or more of those permit spaces without distraction from the attendant's responsibilities under the OSHA standard.
- h. Designate each person who is to have an active role (as, for example, authorized entrants, attendants, entry supervisors, or persons who test or monitor the atmosphere in a permit space) in entry operations, identify the duties of each such employee, and provide each such employee with the training required by the OSHA standard.
- i. Develop and implement procedures for summoning rescue and emergency services (including procedures for summoning emergency assistance (call 911) in the event of a failed non-entry rescue) for rescuing entrants from permit spaces, for providing necessary emergency services to rescued employees, and for preventing unauthorized personnel from attempting a rescue.

**Note:** Emergency services relied upon for rescue must be able to notify the Company immediately if rescue service becomes unavailable.
- j. Develop and implement a system for the preparation, issuance, use, and cancellation of entry permits as required by this standard, including the safe termination of entry operations under both planned and emergency conditions.
- k. Develop and implement procedures to coordinate entry operations, in consultation with the General Contractor, when employees of more than one employer are working simultaneously in a permit space or elsewhere on the worksite where their activities could, either alone or in conjunction with the activities within a permit space, foreseeably result in a hazard within the confined space, so that employees of one employer do not endanger the employees of any other employer.
- l. Develop and implement procedures (such as closing off a permit space and canceling the permit) necessary for concluding the entry after entry operations have been completed.
- m. Review entry operations when the measures taken under the permit space program may not protect employees and revise the program to correct deficiencies found to exist before subsequent entries are authorized.

**Note:** Examples of circumstances requiring the review of the permit space program include, but are not limited to: any unauthorized entry of a permit space, the detection of a permit space hazard not covered by the permit, the detection of a condition prohibited by the permit, the occurrence of an injury or near-miss during entry, a change in the use or configuration of a permit space and employee complaints about the effectiveness of the program.

- n. Review the permit space program using the canceled permits retained under this program within 1 year after each entry and revise the program as necessary to ensure that employees participating in entry operations are protected from permit space hazards.

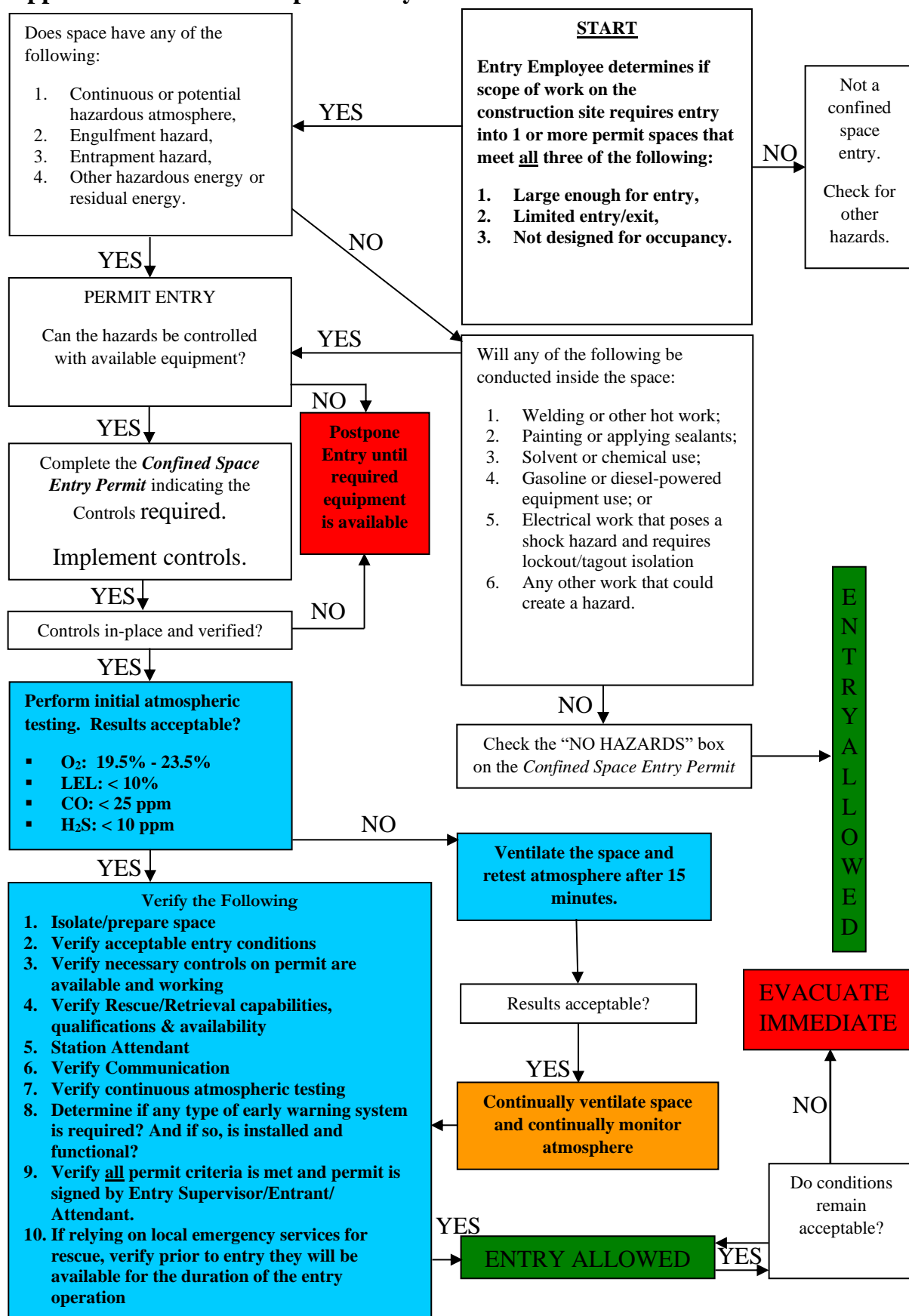
**Note:** Employer may perform a single annual review covering all entries performed during a 12-month period. If no entry is performed during a 12-month period, no review is necessary.

- o. **A space classified by an employer as a ‘permit required’ confined space may only be ‘reclassified’ as a ‘non-permit’ confined space when a competent person determines that all the applicable requirements have been met.**

#### **2.1.2.1 Changes in Use or Reconfiguration of a “NON-Permitted” Confined Space**

- a. If there is a change in the use or configuration of a “non-permit” confined space that might increase the hazard to entrants (or some indication that the initial evaluation of the space may not have been adequate), each Entry Employer must have a competent person reevaluate the space and, if necessary, reclassify the space as a “permit-required” confined space.
- b. A space classified by an employer as a “permit-required” confined space may only be “reclassified” as a “non-permit” confined space when a competent person determines that all the applicable requirements have been met.

## Appendix A – Confined Space Entry in Construction Decision Tree



## Appendix B - Confined Space Entry Permit

This permit must remain at job site until the entry is completed

Project Address: \_\_\_\_\_ Project No: \_\_\_\_\_

Space Description: \_\_\_\_\_ Date: \_\_\_\_\_

Purpose of Entry: \_\_\_\_\_ Time of Entry: \_\_\_\_\_

Entry Supervisor: \_\_\_\_\_ Time Expires: \_\_\_\_\_

Hazards and Controls

Check here if NO HAZARDS are Present: ☐

Atmospheric Hazards (check if present)		Controls Required (check if required)	
Oxygen levels below 19.5%		Initial testing (O <sub>2</sub> , LEL, CO, H <sub>2</sub> S)	
Oxygen levels above 23.5%		Continuous monitoring (O <sub>2</sub> , LEL, CO, H <sub>2</sub> S)	
Flammable/combustible gases, vapors or dust (specify):		Other testing* (specify type and duration):	
Toxic gases, vapors or dust (specify):		Ventilation – Blower w/ sufficient duct length	
Pressurized atmosphere		Air purifying respirator (circle)	
Other (specify):		Mask type: Half-face    Full-face Cartridge: P100    Combo P100/organic vapor Other (specify):	
Configuration Hazard (specify):		Lines Broken-Capped or Blanked	
Engulfment Hazard (specify):		Purge-Flush and Vent	
Shock hazard/electrocution		Lockout De-energize -Tested and Verified	
Slips, trips, falls (specify):		If Early Warning System is required, is it installed and operational:	
Moving parts (specify):		Lighting (Explosion Proof)	



Connecting pipes, drains, ducts (specify):		Form of Communication (circle): Voice    Radio    Other:	
Biological hazard (specify):		Visual Contact with Attendant	
Other (specify):		Ground Fault Circuit Interrupter	
<b>Person Protective Equipment (check if required)</b>		<b>Rescue / Retrieval (check if required)</b>	
Safety glasses / goggles (circle one)		Full body harness	
Hearing protection		Retrieval tripod with winch	
Hard hat		Lanyard and lifeline	
Steel-toed/steel shank shoes		Coordination with Responsible Person	
Disposable coveralls (Tyvek)		Coordination with local EMS and verify EMS is available the entire duration of the entry operation. If EMS become unavailable, require immediate notification and suspend entry operations until EMS becomes available	
Shoe covers		SCBA available for rescue	
Gloves (circle): Disposable    Chemical Protective    Leather		Other (specify):	
Face shield		Fire Extinguisher	
Other (specify):			

## Appendix C - Atmospheric Testing

Test Interval (circle): Initial      Prior to Each Entry      Continuous

Tester's Name: \_\_\_\_\_

	Time of Test							
	Initials of Tester							
Parameter	Acceptable Entry Criteria	Initial Test	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7
% Oxygen	19.5% to 23.5%							
% LEL*	Less than 5%							
Carbon Monoxide	Less than 25 ppm							
Hydrogen sulfide	Less than 10 ppm							

List other gases or parameters to be tested in blank fields.

Was evacuation of space required at any time?      \_\_ YES      \_\_ NO

If so, why? \_\_\_\_\_

Time of evacuation: \_\_\_\_\_ Time of re-entry: \_\_\_\_\_

Controls or actions taken to correct reason for evacuation: \_\_\_\_\_

Testing Instrument Used	Manufacturer	Serial No.	Date of Last Calibration

### Permit Authorization

I certify that I have reviewed the permit, understand the hazards that are or may be present, and have verified that the appropriate controls have been implemented. I understand the procedures necessary to ensure safe entry. No entry can be initiated until this permit is completed and signed by all Entrants, Attendants and the Entry Supervisor.

#### Authorized Entrants

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

#### Authorized Attendants

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

#### Entry Supervisor

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

---

PERMIT CLOSED AT: Date: \_\_\_\_\_ Time: \_\_\_\_\_ By: \_\_\_\_\_

## **Appendix D - Additional Definitions Applicable to Confined Space for Construction**

**Acceptable entry conditions** must exist in a permit space, before an employee may enter that space, to ensure that employees can safely enter, and safely work within, the space.

**Barrier** a physical obstruction that blocks or limits access.

**Blanking or blinding** the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that can withstand the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

**Double block and bleed** the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

**Entry rescue** when a rescue service enters a permit space to rescue one or more employees.

**Hot work** operations capable of providing a source of ignition (example: riveting, welding, cutting, burning, and heating).

**Inerting** displacing the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

**Isolate or isolation** the process by which employees in a confined space are completely protected against the release of energy and material into the space, and contact with a physical hazard, by such means as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tag-out of all sources of energy; blocking or disconnecting all mechanical linkages; or placement of barriers to eliminate the potential for employee contact with a physical hazard.

**Line breaking** the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

**Lockout** the placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

**Lower flammable limit or lower explosive limit** the minimum concentration of a substance in air needed for an ignition source to cause a flame or explosion.

**Oxygen deficient atmosphere** is an atmosphere containing less than 19.5 percent oxygen by volume.

**Oxygen enriched atmosphere** is an atmosphere containing more than 23.5 percent oxygen by volume.

**Permit-required confined space program** (permit space program) the employer's overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.

**Rescue service** the personnel designated to rescue employees from permit spaces.

**Retrieval system** the equipment (including a retrieval line, chest or full body harness, wristlets, anklets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

**Serious physical damage** an impairment or illness in which a body part is made functionally useless or is substantially reduced in efficiency. Such impairment or illness may be permanent or temporary and includes, but is not limited to, loss of consciousness, disorientation, or other immediate and substantial reduction in mental efficiency. Injuries involving such impairment would usually require treatment by a physician or other licensed health-care professional.

**Tag-out** Placement of a tag-out device on a circuit or equipment that has been de-energized, in accordance with an established procedure, to indicate that the circuit or equipment being controlled may not be operated until the tag-out device is removed; and the employer ensures that:

- a. Tag-out provides equivalent protection to lockout
- b. That lockout is infeasible, and the employer has relieved, disconnected, restrained and otherwise rendered safe stored (residual) energy

## 2.2 Health Hazards in Construction

### 2.2.1 Asbestos Awareness Program

Asbestos is a naturally occurring mineral. It is distinguished from other minerals by the fact that its crystals form long, thin fibers. The different types of asbestos are:

- Amosite
  - Chrysotile
  - Tremolite
  - Actinolite
  - Anthophyllite
  - Crocidolite
- a. Uses of asbestos:
- Asbestos has been used in literally thousands of products because of its unique properties:
- Fire resistance
  - High tensile strength
  - Poor heat and electrical conductivity
  - Impervious to chemical
- b. Be aware of materials that could contain asbestos. By knowing where asbestos is likely to be located and then taking measures not to disturb it, you will protect yourself and others from exposure to this hazardous substance.
- Floor tiles
  - Vinyl sheet flooring
  - Mastic
  - Ceiling tiles
  - Roofing tiles
  - Putties, caulks and cements
  - Siding shingles
  - Wall and ceiling textures
  - Wall insulation
  - Asbestos cement and pipe and sheet
  - Fire-resistant drywall
  - Pipe and boiler insulation
  - Sprayed-on building insulation
  - Automotive brake and clutch linings
  - Fire-resistant clothing
  - Laboratory counter tops
  - Laboratory ventilation hoods
- c. Asbestos Dangers
- i. The most common way for asbestos fibers to enter the body is through breathing. In fact, asbestos-containing material is not generally considered to be harmful unless it is releasing dust or fibers into the air where they can be inhaled or ingested.
  - ii. Asbestos is most hazardous when it is friable. The term "friable" means that asbestos is easily crumbled by hand, releasing fibers into the air. Sprayed on asbestos insulation is highly friable. Asbestos floor tile is not.
  - iii. Asbestos-containing ceiling tiles, floor tiles, undamaged laboratory cabinet tops, shingles, fire doors, siding shingles, etc. will not release asbestos fibers unless they are disturbed or damaged in some way. If an asbestos ceiling tile is drilled or broken, for example, it may release fibers into the air. If it is left alone and not disturbed, it will not.
  - iv. Damage and deterioration will increase the friability of asbestos-containing materials. Water damage, continual vibration, aging, and physical impact such as drilling, grinding, buffing, cutting, sawing, or striking can break the materials down making fiber release more likely.

d. Health effects associated with asbestos exposure.

There are three primary diseases associated with asbestos exposure:

- Asbestosis
- Mesothelioma
- Lung Cancer

Typically, there is a long latency period for diseases associated with asbestos. (This means it may take many years for the disease to show up.) Following proper work practices and using appropriate personal protective equipment can prevent exposure to asbestos.

- i. Asbestosis- Asbestosis is a disease characteristic of fibrotic scarring of the lung. It is a restrictive lung disease, which reduces the overall volume of the lung. Asbestosis is prevalent among workers who have been exposed to large doses of asbestos fibers over a long period of time. The typical latency period for asbestosis is 10-20 years.
  - ii. Mesothelioma- Mesothelioma is a cancer of the chest cavity lining (mesothelium). Mesothelioma can also occur in the lining of the abdominal cavity. This type of cancer spreads very rapidly and is always fatal. It is the disease associated with asbestos, which is of the greatest concern, however, it is also the rarest. Like other diseases associated with asbestos, it has a long latency period and may not develop for 20 to 40 years after initial exposure.
  - iii. Lung Cancer- There are many causes for lung cancer. Asbestos exposure is only one of them. While employees exposed to large concentrations of asbestos fibers for many years have an increased risk of getting lung cancer, their risk is not as great as the cigarette smoker. A cigarette smoker who has worked with asbestos is more than 50 times more likely to contract lung cancer than the normal non-smoking population. The latency period associated with lung cancer from exposure to asbestos is typically 20 years.
- e. Procedure: Dealing with Asbestos – Containing or Suspect Asbestos Containing Materials:
- i. NEVER sand, grind, drill, hammer, cut, saw, break, damage, move or disturb asbestos-containing building materials or SUSPECT asbestos-containing building materials.
  - ii. If you come in contact with a material you suspect to contain asbestos, NOTIFY YOUR SUPERVISOR!
  - iii. Your supervisor will notify Environmental Health & Safety Services to have the material sampled for asbestos content.
  - iv. If the material is determined to contain asbestos, it cannot be disturbed or removed unless it is done so by a licensed asbestos abatement contractor.
  - v. Never try to collect a sample of the suspect material yourself. State laws require all suspect materials to be sampled by a State licensed asbestos inspector.
  - vi. Before moving or disturbing any building materials, it will be necessary to ensure they do not contain asbestos. If they do contain asbestos, they will need to be removed by State licensed asbestos abatement workers before the work may be performed.

## **2.2.2 Arsenic Awareness and Protection**

The purpose of this procedure is to identify the controls and actions necessary to prevent adverse health effects to employees from occupational exposure to arsenic, and to ensure that CDL Electric Company, LLC, herein referred to as CDL, arsenic exposure management practices meet regulatory requirements.

This procedure applies to all CDL operations where employees may be exposed to arsenic. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers CDL employees and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

Arsenic exposure in the workplace occurs through inhalation, ingestion, dermal or eye contact. Chronic exposure to arsenic can lead to dermatitis, mild pigmentation keratosis of the skin, vasospasticity, gross

pigmentation with hyperkeratinisation of exposed areas, wart formation, decreased nerve conduction velocity, and lung cancer. Acute exposures can cause lung distress and death.

a. Responsibilities

i. Managers and Supervisors

- In coordination with the Safety Department, develop and implement written project/task specific arsenic exposure management procedures prior to the start of activities to reduce exposure to or below the permissible limits.
- Ensure personnel are aware of work that has the potential of exposure to arsenic.
- Ensure individuals responsible for monitoring areas of exposure are properly trained.
- Ensure personnel receive documented medical surveillance if required.
- Ensure that all affected employees receive initial and annual arsenic required training.
- Inform Safety of upcoming work involving arsenic-containing materials, allowing Safety to provide any necessary monitoring and training.
- Ensure employees have the appropriate personal protective equipment (PPE) and are properly trained in its use and care, including respiratory protection.
- Ensure employees comply with the arsenic compliance program.

ii. Safety Shall:

- Implement a written arsenic compliance program when the PEL of 10 ug/m is exceeded.
- Maintain the arsenic compliance program, notifying management of any regulatory changes and ensuring compliance with federal and state requirements.

iii. Employees

- Comply with the arsenic compliance program, consulting with the supervisor or Safety to ensure the proper PPE is used when required.
- Comply with the medical surveillance program.
- Attend required training.
- Wear respiratory protection equipment and other specified PPE as required by the project/task specific control program.
- Maintain respiratory protection equipment in good working order, notifying the supervisor or Safety Manager of any problems prior to starting work.
- Review material safety data sheets or consult with the supervisor to identify any container with arsenic-containing material.

b. Procedure

i. Written Arsenic Compliance Program

- Each worksite shall develop and implement a written arsenic compliance program if arsenic poses any occupational exposure. The minimum criteria to be contained within the written program shall include:
  - A description of each operation where arsenic is omitted, machinery use, material processed, controls in place, crew size, employee job responsibilities and maintenance practices.
  - A description of the specific means that will be employed to meet compliance.
- The arsenic compliance program must be reviewed and updated annually or more often to reflect the status of the program.
- The arsenic compliance program must be provided for examination and copying upon request of affected employees, their representatives or OSHA.

ii. Exposure Monitoring

Determinations of airborne exposure levels shall be made from air samples that are representative of each employee's exposure to inorganic arsenic over an eight (8) hour period.

iii. Housekeeping Plan

A written housekeeping and maintenance plan shall be kept at each worksite and shall list appropriate frequencies for carrying out housekeeping operations and for cleaning and maintaining dust collection equipment. The plan shall be available for inspection by OSHA.

iv. Signage

Adequate signs shall be in place demarcating the regulated areas. If CDL is not the host employer, then CDL will verify proper signs are placed at the work location.

The host employer or CDL shall post signs demarcating regulated areas bearing the following legend:

**DANGER INORGANIC ARSENIC CANCER HAZARD AUTHORIZED PERSONNEL ONLY  
NO SMOKING OR EATING RESPIRATOR REQUIRED**

c. Respiratory Protection & PPE

Respiratory protection shall be provided in accordance with 29 CFR 1910.134 (see CDL Respiratory Protection Program).

Respiratory protection will be used during the following circumstances required while working with arsenic:

- Periods necessary to install or implement feasible engineering or work-practice controls.
- Work operations, such as maintenance and repair activities, for which CDL establishes that engineering and work-practice controls are not feasible.
- Work operations for which engineering, and work-practice controls are not yet sufficient to reduce employee exposures to or below the permissible exposure limit.
- Emergencies.

Where the possibility of skin or eye irritation from inorganic arsenic exists, and for all workers working in regulated areas, CDL shall provide at no cost to the employee and shall ensure that employees use appropriate and clean protective work clothing and equipment including, but not limited to, coveralls, gloves, shoes or coverlets, and face shields or vented goggles.

d. Change Rooms & Showers

CDL shall provide for employees working in regulated areas or subject to the possibility of skin or eye irritation from inorganic arsenic, clean change rooms equipped with storage facilities for street clothes and separate storage facilities for protective clothing and equipment. CDL shall assure that employees working in regulated areas or subject to the possibility of skin or eye irritation from inorganic arsenic shower at the end of the work shift.

e. Record Keeping

CDL will maintain accurate biological and environmental monitoring records of employee exposures to potentially toxic materials, including arsenic. These records shall be maintained for at least the duration of employment plus 30 years. Employees will have unlimited access to their records and the following exposure monitoring records:

- Exposure assessment
- Medical surveillance results
- Medical removals
- Objective data for exemption from requirement for initial monitoring
- Procedures for making records available
- Procedures for transfer of records

f. Training Documentation

CDL will provide employees with information and training at the time of their initial assignment to a work area where arsenic is present. Requisite training will be provided to ensure that our employees acquire an understanding of the specific hazards, kinds of monitoring, testing, and protective measures required by OSHA's arsenic regulations. These standards are designed to protect anyone who could be exposed to arsenic from suffering serious health consequences.

### **2.2.3 Benzene Awareness and Protection**

This safety awareness program is intended to provide suitable information to CDL Electric Company, LLC, herein referred to as CDL, employees regarding the potential toxic effects of Benzene so that adequate measures can be taken to limit exposures through controls in the workplace. All CDL

employees that perform work activities, where the potential of exposure to benzene may be apparent, will be provided awareness training in this program in order to be familiar with the potential hazards and proper safe work procedures to follow if exposed to this health hazard.

OSHA 29 CFR § 1910.1028 does not apply to “containers and pipelines carrying mixtures with less than 0.1 percent benzene and natural gas processing plants processing gas with less than 0.1 percent benzene”.

a. Safe Work Practices

CDL employees are not permitted to work in areas where there may be a potential for Benzene exposure. It is the responsibility of the CDL Project Manager and the on-site supervisor/foreman to see that any jobsite that may expose employees to Benzene is not manned with personnel until it is proven that it is safe to work within the acceptable OSHA limits without personal protective equipment.

Locations where potential benzene exposure may be detectable such as areas such as refineries and laboratories, during refueling and tank gauging, and when completing oil and gas pipeline related field operations including maintenance work tasks. Communication must be made with the host facility to ensure our employees are not exposed. This will be performed during pre-job meetings, contractor orientation and at the direction of customer facilities. Employees should be aware of owners' contingency plans and provisions. Employees must be informed where benzene is used in the host facility and aware of additional plant safety rules.

b. Definitions

Action Level (AL) – an airborne concentration of benzene of 0.5 ppm calculated as an 8-hour timeweighted time-weighted average.

Benzene – liquefied or gaseous benzene. It includes benzene contained in liquid mixtures and the benzene vapors released by these liquids. It does not include trace amounts of unreacted benzene contained in solid materials.

Employee Exposure – exposure to airborne concentrations of benzene exceed or can reasonably be expected to exceed, the permissible exposure limits, either the 8-hour time weighted average exposure of 1 ppm or the short-term exposure limit of 5 ppm for 15 minutes.

Permissible Exposure Limit (PEL) - Time weighted average limit (TWA). The employer shall assure that no employee is exposed to an airborne concentration of benzene in excess of one part of benzene per million parts of air (1 ppm) as an 8-hour time-weighted average.

Short-term exposure limit (STEL) - The employer shall assure that no employee is exposed to an airborne concentration of benzene in excess of five (5) ppm as averaged over any 15-minute period. Some people may begin to smell the sweet odor of benzene at around 5 ppm in the air, but many will not, so they would not know by the sense of smell that they are breathing benzene. In other words, the odor is not a good way of knowing if you are exposed to benzene above the permissible limit.

Personal Protective Equipment (PPE) – Personal protective equipment includes equipment designed to protect individuals from hazards and includes head, face, eye, foot, ear, and respiratory protection.

c. Benzene Characteristics

Benzene is a clear liquid solvent made from petroleum.

Benzene has a recognizable odor described as “pleasant and sweet”.

The odor of benzene does not provide adequate warning of its presence.

Benzene vapors are heavier than air and may travel to a source of ignition and flash back. The vapors are readily dispersed by wind movement and/or air currents. It evaporates into the air very quickly and dissolves slightly in water. Benzene liquid is a highly flammable liquid that can accumulate static electricity. It should be stored in tightly closed containers in a cool, well-ventilated area. Benzene vapor may form explosive mixtures in the air. All sources of ignition must be controlled. Smoking is prohibited in areas where benzene is used or stored. Benzene has a very



low flash point making it dangerous to have any open flame, spark or source of ignition when vapors are present. Explosive limits in air 1.5 to 8% by volume: benzene is highly flammable at low levels of vapor quantity in air.

Liquid benzene tends to float on water and may travel to a source of ignition and spread fire. Benzene is highly reactive with oxidizing materials.

It used to be used as an all-round solvent until it was found to cause cancer. It is now mostly used to make other chemicals. Rarely, it may still be found as an ingredient in some products, usually in small amounts. You can check the product material safety data sheet if you suspect it contains benzene.

Toluene is now often used as a substitute for benzene. The solvent-properties of the two are similar, but toluene is less toxic and has a wider liquid range.

#### d. Health Effects of Benzene

Of all the hydrocarbons, Benzene poses the most serious long-term threat. Exposure over time, to even low levels of Benzene, can cause leukemia, blood changes and aplastic anemia.

Benzene is one of the most hazardous of all petroleum products because of its adverse health hazards and high flammability.

Breathing very high levels of benzene can result in death, while high levels can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Eating or drinking foods containing high levels of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death.

Benzene can affect your health if you inhale it, or if it comes in contact with your skin or eyes. Benzene is also harmful if you happen to swallow it. The following adverse health effects are important to remember where there may be a potential exposure to Benzene:

- i. Short term - Acute: At high concentrations (1000 PPM) Benzene has an acute effect on the central nervous system. Exposure to high concentrations of benzene, well above the levels where its odor is first recognizable, you may feel breathless, irritable, euphoric, or giddy; you may experience irritation in eyes, nose, and respiratory tract. You may develop a headache, feel dizzy, nauseated, or intoxicated.
- ii. Severe Exposure - Chronic: Severe exposures may lead to convulsions and loss of consciousness. Long-term (chronic) exposure. Repeated or prolonged exposure to benzene, even at relatively low concentrations, may result in various blood disorders, ranging from anemia to leukemia, an irreversible, fatal disease. Many blood disorders associated with benzene exposure may occur without symptoms. These symptoms can take months or years to surface and can develop without physical or visible indications.
- iii. Repeated skin contact leads to irritant contact dermatitis (rash); as with any petroleum solvent (which Benzene is also classified as); it will leach the natural oils out of the skin. Direct contact with the skin can cause erythema and/or blistering.
- iv. Benzene is irritating to the eyes and mucous membranes.

#### e. Basic Guidelines

Following are basic guidelines if an employee has been or is exposed to levels above OSHA permissible limits:

- i. Regular jobsite inspections by the Project Manager or competent person.
- ii. Engineering controls help keep the source emissions low or limit the amount of exposure to the employee. Controls include ventilation systems that capture the contaminant at the source, or process changes to minimize the amount of time the employee spends around exposure sources.

- iii. “The areas where benzene levels are above the permissible exposure limit of 1 ppm are called “exposure control areas”. These areas may change depending on the type of work that is done and the measured level of benzene in the air.
- iv. The boundaries of the exposure area must be marked. These are areas where exposures are dangerous without proper protection and training. If you aren’t authorized and trained to use a respirator, you can’t enter these areas.
- v. Benzene liquid is highly flammable, and vapors may form explosive mixtures in air. Fire extinguishers must be readily available in areas where benzene is used or stored.
- vi. Remember, you must wear an approved respirator in designated “exposure control areas” – the areas with the warning signs. Wear respirators assigned to you.
- vii. Wash your hands before eating, drinking or smoking or using the bathroom.
- viii. Don’t eat, drink or smoke in the work area where you are exposed to benzene.
- ix. Cover containers when they aren’t in use. The rule points out that this helps prevent unnecessary vapor exposure and helps prevent spills.
- x. Rigorous housekeeping is necessary to keep airborne benzene levels below permissible limits.
- xi. If benzene liquid could splash on your skin or eyes, you’ll need to wear protection.
- xii. If you know or believe you have inhaled benzene, let your supervisor know immediately.
- xiii. As mentioned earlier, benzene has a pleasant, sweet odor which most people detect at a level above the permissible limit. If you can smell it, it probably means you have been overexposed to it. If you develop any symptoms commonly associated with benzene exposure, we will make a medical exam available to you.
- xiv. Leave the area immediately.
- xv. Do not attempt to clean up the spill.
- xvi. Notify your supervisor.
- xvii. If benzene is spilled on you, or if you think you may have inhaled benzene in the incident, we will make a medical exam available to you.
- xviii. Benzene is one of the Lower Explosive Limit (LEL) components detected by gas monitors.
- xix. Employees who fail to comply with this policy will be subject to disciplinary action per company policy.



f. Medical Evaluations

We will provide initial medical surveillance to employees who are occupationally exposed to airborne benzene levels greater than the action level 30 days a year or above the PEL for greater than 10 days a year. This monitoring consists of visits with the physician to include a detailed occupational history and laboratory analysis per OSHA 29 CFR §1910.1028(i), as required. To ensure appropriate medical surveillance is performed, we will provide to the physician and/or representative:

- i. Copies of the Regulation and appendices
- ii. a description of the employee’s duties
- iii. a list of the personal protective equipment worn by the employee ☐ and past exposure assessment data.

In addition to this medical surveillance, if an employee is exposed to benzene in an emergency situation, the employee will be required to provide a urine sample at the end of the employee’s shift. All medical examinations, procedures, and blood Benzene level sampling/analysis shall be conducted by licensed healthcare practitioners and/or physicians. Our medical surveillance program shall meet the requirements of OSHA 29 CFR §1910.1028(i).

If abnormalities show up in the blood tests, the doctor may ask for additional tests and temporary removal from the employee’s current job. In that case, we will find other work in an area where the employee is not exposed to benzene. Employees who are removed from work will receive all wages, benefits, for a period of 6 months without loss of seniority or promotion opportunities. The

company reserves the right to place an employee in a position of equal responsibility, where the employee will not be occupationally exposed to benzene.

g. Initial Determination Results

If our initial determination reveals employee exposures to be at the PEL/STEL, we will conduct air monitoring and personal air sampling of 25% of the represented work force. Determinations of employee exposure shall be made from breathing zone air samples that are representative of each employee's average exposure to airborne benzene.

If our initial determination reveals that employee's exposures will be above the PEL, attempts will be made through administrative and engineering controls to reduce exposures below the PEL. If this should fail to reduce the exposure level, employees shall wear the appropriate level of PPE necessary to reduce exposures below the PEL.

If changes in equipment, process, control, personnel or tasks occur after initial determination, we reevaluate to determine if employees are exposed to higher concentrations of benzene. We will conduct periodic air monitoring of the work site to determine if changes occur in the exposure levels.

Exposure, periodic and termination of monitoring will be according to OSHA 29 CFR §1910.1028(e).

h. Personal Protective Equipment and Respiratory Protection

If an employee is occupationally exposed to benzene, additional protective work clothing will be provided at no cost to the employee. This equipment is considered disposable and is to be disposed of at the job site. Such protective work clothing would be:

- i. Respirators are required for those operations in which engineering controls or work practice controls are not feasible to reduce exposure to the permissible level.
- ii. Protective Clothing. You must wear appropriate protective clothing (such as boots, gloves, sleeves, aprons, etc.) over any parts of your body that could be exposed to liquid benzene. Saranex coated or Tyvek coveralls with hood,
- iii. Latex gloves with taped interfaces,
- iv. Splash-proof safety goggles if it is possible that benzene may get into your eyes.
- v. A face shield if your face could be splashed with benzene liquid.

Protective Engineering controls and work practices are generally sufficient to reduce exposures to at or below the PEL/STEL without the use of respirators, unless an employee specifically requests a respirator, respiratory protection will not be routinely used on our worksites. Any employee may ask his supervisor for a respirator, and one will be provided upon that request in accordance with CDL company respirator policy.

i. Record Keeping

CDL will maintain accurate biological and environmental monitoring records of employee exposures to potentially toxic materials, including benzene. These records shall be maintained for at least the duration of employment plus 30 years. Employees will have unlimited access to their records and the following exposure monitoring records:

- Exposure assessment
- Medical surveillance results
- Medical removals
- Objective data for exemption from requirement for initial monitoring
- Procedures for making records available
- Procedures for transfer of records

j. Training Documentation

CDL will provide employees with information and training at the time of their initial assignment to a work area where benzene is present. Requisite training will be provided to ensure that our employees acquire an understanding of the specific hazards, kinds of monitoring, testing, and

protective measures required by OSHA's benzene regulations. These standards are designed to protect anyone who could be exposed to benzene from suffering serious health consequences.

## 2.2.4 Beryllium Safety

CDL Electric Company, LLC (CDL) may come into contact with beryllium-containing materials in manners that meet the scope and application section of 29 CFR 1910.1024 Occupational Safety and Health Administration (OSHA) – Occupational Exposure to Beryllium standard.

Beryllium is a grey metal that is stronger than steel and lighter than aluminum. Its physical properties of great strength-to-weight, high melting point, excellent thermal stability and conductivity, reflectivity, and transparency to X-rays make it an essential material in the aerospace, telecommunications, information technology, defense, medical, and nuclear industries. Beryllium-copper alloys are widely used because of their electrical and thermal conductivity, hardness, and good corrosion resistance. Beryllium oxide is used to make ceramics for electronics and other electrical equipment because of its heat conductivity, high strength and hardness, and good electrical insulation.

Along with a lower Permissible Exposure Limit (PEL) OSHA's final rule establishes an Action Level (AL), a Short-Term Exposure Limit (STEL) and requires employers who process or may come in contact with beryllium containing materials to comply with a number of additional provisions.

Action Level (AL) <sup>1</sup> µg/m <sup>3</sup>	Permissible Exposure Limit (PEL) <sup>1</sup> µg/m <sup>3</sup>	Short-Term Exposure Limit (STEL) <sup>2</sup> µg/m <sup>3</sup>
0.1	0.2	2.0
µg/m <sup>3</sup> – microgram per cubic meter of air <sup>1</sup> calculated as an 8-hour time-weighted average (TWA) <sup>2</sup> as determined over a sampling period of 15 minutes		

This Safety Policy will be evaluated at least annually or when changes occur that may affect beryllium exposures (e.g. changes in materials, equipment, personnel, work practices), when new or additional exposures may be occurring, or when there is a medical necessity (i.e. signs or symptoms associated with beryllium exposure). The Beryllium Safety Policy is posted in BambooHR under files 28.1-28.17 CDL Safety Policy High Voltage for shared access to all employees.

### a. Exposure Control Plan

Employees working in industries where beryllium is present may be exposed to beryllium by inhaling or contacting beryllium in the air or on surfaces. Occupational exposure to beryllium can occur from inhalation of dusts, fume, and mist. Beryllium dusts are created during operations where beryllium is cut, machined, crushed, ground, or otherwise mechanically sheared. Mists can also form during operations that use machining fluids. Beryllium fume can form while welding with or on beryllium components, and from hot processes such as those found in metal foundries. Occupational exposure to beryllium can also occur from skin, eye, and mucous membrane contact with beryllium particulate or solutions.

This plan identifies the areas/operations having potential beryllium exposure, the exposure controls and work practices our company has implemented along with the personal protective clothing and equipment (PPE) we require our workers to wear.

Occupations with Potential Exposure to Beryllium:

- Primary Beryllium Production Workers
- Workers Processing Beryllium Metal/Alloys/Composites
- Foundry Workers
- Furnace Tenders
- Machine Operators
- Machinists
- Metal Fabricators

- Welders
  - Dental Technicians
  - Trace metal in fly ash
  - Secondary smelting and refining (recycling electronic and computer parts, metals)
  - Abrasive Blasters (slags) as certain types of slags (coal, copper) used in abrasive blasting operations may contain trace amounts of beryllium
- b. Health Effects of Beryllium Exposure
- Beryllium-associated health effects, including acute beryllium disease (ABD), beryllium sensitization (also referred to as "sensitization"), chronic beryllium disease (CBD), and lung cancer, can lead to a number of highly debilitating and life-altering conditions including pneumonitis, loss of lung capacity (reduction in pulmonary function leading to pulmonary dysfunction), loss of physical capacity associated with reduced lung capacity, systemic effects related to pulmonary dysfunction, and decreased life expectancy.
- c. Procedures
- i. Beryllium Exposure Areas
- The following site-specific procedures, common to all beryllium containing areas are being used, as part of our Written Exposure Control Plan:
- Dry brushing or sweeping are prohibited.
  - Use of compressed air for cleaning is prohibited unless it is used in conjunction with a ventilation system that adequately captures beryllium particulate.
  - All broken skin and cuts shall be covered.
  - Employees' hands are washed before eating, drinking, smoking, applying cosmetics, or when they become visibly dirty.
  - Designated disposal containers are available and properly labeled for contaminated materials.
  - Rotation of workers to control exposure is prohibited.
  - Unauthorized employees are not allowed to enter beryllium regulated areas. Regulated area means an area, including temporary work areas where maintenance or non-routine tasks are performed, where an employee's airborne exposure exceeds, or can reasonably be expected to exceed, either the time-weighted average (TWA) permissible exposure limit (PEL) or short-term exposure limit (STEL). Access to these areas must be limited to only:
    - Persons authorized or required to be in a work area to perform work duties;
    - Persons entering a work area as designated representatives of employees for the purpose of exercising the right to observe exposure monitoring procedures; and
    - Persons authorized by law to be in a beryllium working area.
- ii. Minimizing Cross-Contamination
- CDL uses the following procedures for minimizing the cross-contamination or transfer of beryllium onto walking & working surfaces and work clothing within areas containing beryllium:
- Disposable gloves (e.g. nitrile) are used when handling contaminated materials (including shoes, shoe covers, and respirators).
  - Double-gloving techniques are used to facilitate frequent contaminated disposable glove removal/change-out.
  - PPE that is visibly contaminated will be changed at the earliest reasonable opportunity.
  - Aprons/smocks/disposable impermeable coveralls are used when performing tasks where work uniform contamination is anticipated.
  - Rags or wet wipes used for cleaning are disposed of or containerized immediately after use in properly labeled containers.
  - Where practicable, equipment, processes and workstations are designated for "beryllium use only" (e.g., a parts cleaner).

- Intercoms/phone are used whenever practicable for communications to lessen foot traffic into areas containing beryllium.
  - The use of “personnel cooling fans” are carefully evaluated with respect to placement, use, and directional influence that minimizes disruption of local exhaust ventilation performance; fans are fixed in-place whenever possible and not positioned in the direction of an LEV hood or enclosure.
  - Electronic recordkeeping is used to minimize paperwork from entering/exiting areas containing beryllium.
- iii. Keeping Surfaces as Free as Practicable of Beryllium
- CDL uses the following procedures to keep walking and working surfaces in areas containing beryllium, materials designated for recycling, and eating, drinking and smoking areas as free as practicable of beryllium:
- We recognize that preventing the accumulation of beryllium dust and immobilizing and containing beryllium particulate in a controlled manner are essential to minimizing employee beryllium exposures. Workers are instructed on the importance of exceptional housekeeping practices and proper cleaning techniques for minimizing exposure in areas containing beryllium.
  - Wet methods are used for cleaning.
  - Disposable cleaning supplies are used whenever possible.
  - Surfaces are maintained in an “easy to clean” condition.
  - The storage of unnecessary items and inventory is minimized within beryllium containing areas.
  - Lighting and illumination levels are measured and meet a minimum of 100 lux (i.e. 10-foot candles) in all beryllium containing areas.
- iv. Minimizing the migration of Beryllium from Beryllium containing areas to other locations within or outside the workplace
- Disposable nitrile or similar impervious gloves are used, gloves are removed, and hands are washed upon exiting areas containing beryllium.
  - Wall-mounted pass-thru openings are used between beryllium processing and adjacent areas to reduce unnecessary worker exposure.
  - Intercoms/phones are used for communication to lessen foot traffic into areas containing beryllium.
  - Dedicated tools and equipment that remain in areas containing beryllium are used whenever practicable.
  - Access to areas containing beryllium is restricted to authorized personnel (signage, physical barrier).
  - Transitions zone have been developed at entry and exit from areas containing beryllium (e.g. PPE donning and doffing locations and instructions).
  - All equipment prior to leaving the areas containing beryllium for repair or servicing shall be cleaned to remove visible contamination.
  - Disposable liners are used to prevent contamination of containers (e.g. waste, recycling, and shipping containers).
  - Contaminated PPE or work clothing is prohibited from leaving areas containing beryllium into lunch/break rooms, offices, control rooms and other common areas.
  - The use of woven materials (e.g., shop rags, belts, shoestrings, cloth gloves, etc.) which have the potential to collect beryllium particulate is minimized.
- v. Removing, laundering, storing, cleaning, repairing, and disposing of beryllium-contaminated personal protective clothing and equipment, including respirators.
- PPE handling:
- Disposable PPE is used whenever possible to minimize laundering needs.

- Nitrile or similar impervious gloves are used whenever cleaning equipment and PPE to remove beryllium contamination.
- Disposable wet wipes (or similar) are used to clean respirators, face shields, etc.
- Respiratory protection is always stored in a sealed bag or closed container when not in use.
- Disposable personal protective equipment garments (e.g. coveralls, gloves, booties, etc.) are removed by turning them inside out to help contain contamination.
- Employees will remove all beryllium-contaminated personal protective clothing and equipment at the end of the work shift, at the completion of all tasks involving beryllium, or when personal protective clothing or equipment becomes visibly contaminated with beryllium, whichever comes first.
- Employees will store and keep beryllium-contaminated personal protective clothing and equipment separate from street clothing to prevent cross-contamination.
- A written notice is sent to all vendors who launder/repair beryllium-contaminated clothing and equipment informing them of beryllium contamination.

## **2.2.5 Cadmium Awareness and Protection**

The purpose of this program is to inform of cadmium awareness and protection complying with the OSHA cadmium standard 1926.1127 and 1910.1027 by:

- Ensuring that no employee is exposed to cadmium at concentrations greater than 5 ug/m<sup>3</sup> of air averaged over an eight (8) hour period.
- Knowing that when respirators are used to limit employee exposure as required by paragraph (c) of Section 1926.1127, and all requirements of paragraphs (e)(1) and (f) of Section 1926.1127, have been met, employee exposure may be considered to be at the level provided by the protection factor of the respirator for those periods the respirator is worn. Those periods may be averaged with exposure levels during periods when respirators are not worn to determine the employee's daily TWA exposure.

This program applies to all abatement, construction, demolition, or renovation work where one of our employees may be occupationally exposed to cadmium. All work related to construction, alteration, including painting is included.

The Project Manager is responsible for its implementation and maintenance of this program. Copies of this written program is available to all employees electronically. This written safety plan covers the multiple potential job sites of CDL.

The written program shall be reviewed and updated annually or more often to reflect significant changes in the employer's compliance status.

### **a. Exposure to cadmium**

Cadmium exerts toxic effects on the kidney, the skeletal system and the respiratory system and is classified as a human carcinogen. It is generally present in the environment at low levels; however, human activity has greatly increased those levels. Cadmium can travel long distances from the source of emission by atmospheric transport. It is readily accumulated in many organisms, notably mollusks and crustaceans. Lower concentrations are found in vegetables, cereals and starchy roots. Human exposure occurs mainly from consumption of contaminated food, active and passive inhalation of tobacco smoke and inhalation by workers in the non-ferrous metal industry. National, regional and global actions are needed to decrease global environmental cadmium releases and reduce occupational and environmental exposure.

### **b. Sources of exposure**

- i. Cadmium is used frequently as a rust-preventive coating on steel and also as an alloying element. Acute exposures to high concentrations of cadmium fumes can produce severe lung irritation. Long-term exposure to low levels of cadmium in air can result in emphysema (a disease affecting the ability of the lung to absorb oxygen) and can damage the kidneys.

- ii. Cadmium fumes or fine dust are capable of causing serious injury or death when inhaled. It is easy to mistake cadmium-plated steel for galvanized steel. However, when heated, cadmium leaves an olive-drab color as it oxidizes. Always know the metal you are working with. Cadmium oxide fumes often cause no symptoms until a few hours after exposure.
- iii. Cadmium can be released to the environment in a number of ways, including:
  - natural activities, such as volcanic activity (both on land and in the deep sea), weathering and erosion, and river transport;
  - human activities, such as tobacco smoking, mining, smelting and refining of non-ferrous metals,<sup>6</sup> fossil fuel combustion, incineration of municipal waste (especially cadmium-containing batteries and plastics), manufacture of phosphate fertilizers, and recycling of cadmium-plated steel scrap and electric and electronic waste;
  - remobilization of historic sources, such as the contamination of watercourses by drainage water from metal mines.
  - Cadmium releases can be carried to and deposited in areas remote from the sources of emission by means of long-range atmospheric transport.

c. Industrial processes

Commercial cadmium production started only at the beginning of the 20th century. Initially, its main use was in electroplating, but since 1960, cadmium has been used for manufacturing nickel–cadmium batteries. Cadmium is also used in paint pigments, for electroplating and in making polyvinyl chloride plastics. The majority of cadmium present in the atmosphere is the result of human activities, especially smelting of nonferrous metal ores, fossil fuel combustion and municipal waste incineration.

Soluble inorganic cadmium compounds are of greatest concern for occupational safety.

Occupational exposure of workers in the non-ferrous smelting industry can be significant. Smelting and mining operations contaminate the aquatic environment, as does the effluent produced by air pollution control (gas scrubbers, in the absence of strict control measures). Atmospheric deposition of cadmium on arable soils exceeds its elimination in many countries, resulting in a gradual increase in cadmium levels in soils and crops. Application of municipal sewage sludge to agricultural soil can also be a significant source of cadmium.

d. Food and drinking water

Cadmium contained in soil and water can be taken up by certain crops and aquatic organisms and accumulate in the food chain. Food constitutes the main environmental source of cadmium for nonsmokers. Highest cadmium levels are found in the kidney and liver of mammals fed with cadmium-rich diets and in certain species of oysters, scallops, mussels and crustaceans. Lower cadmium concentrations are found in vegetables, cereals and starchy roots. Owing to the larger consumption of such food items, they represent the greater part of daily cadmium intake in most populations. Some crops, such as rice, can accumulate high concentrations of cadmium if grown on cadmium-polluted soil. Acidification of cadmium containing soils may increase the cadmium concentrations in crops.

Cadmium exposure from drinking-water is relatively unimportant compared with exposure from the diet. However, impurities in the zinc of galvanized pipes and solders in fittings, water heaters, water coolers and taps can sometimes lead to increased cadmium levels in drinking-water.

e. Smoking

The tobacco plant naturally accumulates relatively high concentrations of cadmium in its leaves. Thus, smoking tobacco is an important source of exposure, and the daily intake may exceed that from food in the case of heavy smokers. Cigarette smoking can cause significant increases in the concentrations of cadmium in the kidney, the main target organ for cadmium toxicity.

f. Health Effects



The kidney is the critical target organ. Cadmium accumulates primarily in the kidneys, and its biological half-life in humans is 10–35 years. This accumulation may lead to renal tubular dysfunction, which results in increased excretion of low molecular weight proteins in the urine. This is generally irreversible.

High intake of cadmium can lead to disturbances in calcium metabolism and the formation of kidney stones. Softening of the bones and osteoporosis may occur in those exposed through living or working in cadmium contaminated areas. In an area of Japan where soil has been contaminated with cadmium from zinc/lead mines, Itai-itai disease used to be widespread and is still seen in women over 50 years of age. It is characterized by osteomalacia, osteoporosis, painful bone fractures and kidney dysfunction.

High inhalation exposure to cadmium oxide fume results in acute pneumonitis with pulmonary oedema, which may be lethal. Long-term, high-level occupational exposure is associated with lung changes, primarily characterized by chronic obstructive airway disease.

There is sufficient evidence that long-term occupational exposure to cadmium (e.g. through cadmium fume) contributes to the development of lung cancer. There is limited evidence that cadmium may also cause cancers of the kidney and prostate. The International Agency for Research on Cancer (IARC) has classified cadmium and cadmium compounds as carcinogenic to humans (Group 1), meaning that there is sufficient evidence for their carcinogenicity in humans.

g. Risk mitigation recommendations

To decrease global environmental cadmium releases and reduce occupational and environmental exposure to cadmium and associated health effects, the following actions are needed:

- Prohibit smoking in public places.
- Reduce as far as is practicable emissions of cadmium—particularly into surface waters—from mining and smelting, waste incineration, application of sewage sludge to the land, and use of phosphate fertilizers and cadmium-containing manure. Develop techniques for the safe disposal of cadmium-containing wastes and effluents.
- Promote effective measures to increase recycling of cadmium and to restrict non-recyclable uses.
- Reduce cadmium exposure by, for instance, improving working conditions in the non-ferrous smelting industry and disseminating information on the proper use of fertilizers (which sometimes contain high levels of cadmium).
- Raise global awareness on the importance of minimizing waste discharges of cadmium.

h. Safe work practices / Exposure assessment

Protection of employees during exposure assessment

When tasks are presumed to generate cadmium exposures greater than the permissible exposure limit (PEL) of 5 ug/m<sup>3</sup> of air averaged over an eight-hour period, we will treat affected employees as if they were exposed above the PEL and implement procedures to protect workers until we perform an employee exposure assessment and document that an employee's cadmium exposure is not above the PEL.

Tasks estimated to generate a TWA of 5 ug/m<sup>3</sup> of air include:

- Manual demolition, manual scraping, manual sanding, heat gun applications, and power tool cleaning with dust collection systems where cadmium coatings or contaminants are present.
- Emergency operations involving cadmium or cadmium burning.
- Power tool cleaning without dust collection systems where cadmium contamination is present.
- Cleanup activities, where dry expendable abrasives are used, and abrasive blasting enclosure movement and removal where cadmium containing coatings or contaminants are present.

Based on historical data from previous cadmium jobs, we will take measures as recommended in 29 CFR 1926.62 to protect our employees. These measures include but are not limited to:

- Appropriate respiratory protection (protection factor of 10, 25, 5, or 100 depending on the tasks involved and the estimated exposures).
- Proper personal protective clothing and equipment
- Change areas
- Hand washing facilities
- Biological monitoring

Procedures shall be developed and implemented to minimize employee exposure to cadmium when maintenance of ventilation systems and changing of filters.

Where the PEL is exceeded, a written compliance program shall be established and implemented to reduce employee exposure to or below the PEL by means of engineering and work practice controls.

i. Emergency Situations

In emergency situations, which involve a substantial release of cadmium, CDL shall ensure workers are protected by following all aspects of this program. This will include limiting access to authorized employees, provision and use of PPE, exposure monitoring, medical surveillance, hygiene facilities, work practices, fugitive emission controls, and proper disposal. A site-specific safety and health plan shall be developed.

j. Training Documentation

A training program must be provided for all employees who are potentially exposed to cadmium. Employees can do much to protect themselves from the risks of occupational cadmium exposure if they know about them. In our training programs we inform employees of the specific hazards associated with their work environment, protective measures which can be taken, and their rights under the standard (29 CFR 1926.1127) prior to the time of initial assignment and annually thereafter. All employees working in areas with airborne cadmium levels above the PEL are required to possess appropriate training certifications. Training documentation will detail identity of employee trained, signature of qualified trainer, and date(s) of training. Training records will be retained in the employee's safety training file at the CDL corporate office. Files will be retained for 5 years.

## **2.2.6 Hexavalent Chromium Exposure Program**

Hexavalent Chromium (Cr(VI)) is a heavy metal component of stainless steel. Stainless steel is widely used in industrial processes because of its resistance to corrosion. The fume from welding processes may contain compounds of chromium, including hexavalent chromium, and of nickel. The composition of the base metals, the welding materials used, and the welding processes affect the specific compounds and concentrations found in the welding fume.

The major concern in the mechanical construction industry is the potential for overexposure from fumes created by welding or plasma cutting on stainless steel pipe and ducts, dust from grinding on stainless steel, and from skin exposure. In most applications, engineering controls such as using localized exhaust ventilation and good welding work practices will mitigate the chances of overexposure. Respiratory protection will be required when adequate ventilation is not achievable.

It shall be the policy of CDL, to implement the various requirements of the Chromium Exposure Regulation as required by the U.S. Department of Labor, Occupational Safety and Health Administration §1910.1026. CDL's Chromium Exposure Plan applies to all construction work where an employee may be occupationally exposed to chromium. All work related to construction, alteration or repair is included. Under this plan, construction is to include, but not limited to the following: Fumes from welding processes.

- a. Health effects of overexposure to fumes containing chromium and nickel:

- Depending upon the level of exposure, Hexavalent Chromium can irritate the nose, throat and lungs, leading to nasal ulcers, lung cancer, and can cause skin rashes, skin ulcers and permanent eye damage.
- Stainless Steel contains nickel and chromium. Nickel can cause asthma. Nickel and Chromium can cause cancer. Chromium cancer may not show up for 10 to 40 years. Similar to the effects produced by fumes from other metals.
- Can cause symptoms such as runny nose, sneezing, coughing, sores in nose and on skin, nausea, headaches, dizziness, and respiratory irritation.
- May develop sensitivity to chromium or nickel which can result in dermatitis or skin rash. Prolonged skin contact can result in dermatitis and skin ulcers. Some workers develop an allergic sensitization to chromium. In sensitized workers, contact with even small amounts can cause a serious skin rash. Kidney damage has been linked to high dermal exposures.
- Chromium can irritate the nose, throat, and lungs. Repeated or prolonged exposure can damage the mucous membranes of the nasal passages and result in ulcers. In severe cases, exposure causes perforation of the septum (the wall separating the nasal passages).
- Direct eye contact with chromic acid or chromate dusts can cause permanent eye damage.

b. Exposure limits

The U.S. Department of Labor establishes maximum limits of exposure to chromium for all workers covered, including a Permissible Exposure Limit and Action Level. The Permissible Exposure Limit, or PEL sets the maximum exposure limit for workers to chromium. The exposure limits for Hexavalent Chromium are as follows:

- .5 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) of air – When airborne concentrations are at or below this level, the standard is not applicable.
- 2.5 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) of air – When airborne concentrations are at or above 2.5 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) of air (this is the Action Level), but under 5 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) of air, employers are required to implement certain measures to protect workers from over exposure.
- 5 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) of air – Airborne concentrations above this level require compliance with more comprehensive requirements of the standard.
- Regulated areas must be established when an employee's exposure is or is expected to be in excess of the PEL. Regulated areas shall be marked with warning signs to alert employees. Access is restricted to "authorized persons".

CDL will implement effective engineering and safe work practice controls if the exposure level is above the permissible limit for more than 30 days per year. Medical surveillance must be provided to employees who are exposed above the PEL for 30 days or more per year or exposed in an emergency.

c. Action level

Action Level is the level at which CDL will begin compliance activities. The Action level, regardless of respirator use, for chromium in this program is an airborne concentration of 50 micrograms per cubic meter as calculated as an 8-hour Time Weighted Average (TWA).

d. Compliance Program

- i. Prior to each job where employee exposure exceeds the PEL, CDL will establish a program to reduce employee exposure to the PEL or below. The compliance program will provide the following:
  - A description of each activity in which chromium is emitted.
  - Specific plans to achieve compliance and engineering plans where engineering controls are required.
  - Information on the technology considered meeting the PEL.

- Air monitoring data that document the source of chromium emissions.
- A work practice program including regulations for the use of protective work clothing, equipment, housekeeping and hygiene guidelines.
- ii. An employee should report to their foreman and CDL Safety Director if they feel:
  - They have been exposed to at or above safe levels
  - Experience symptoms of exposure
  - Are exposed to an emergency situation to an uncontrolled release
- e. Engineering controls
 

Ventilation such as local exhaust systems that capture airborne Cr (VI) near its source and remove it from the workplace

  - Local exhaust or shop fans to extract fumes from work areas
  - Dust collection systems with Hepa filters
  - Substitute less toxic material or a process that results in lower exposures for a process that causes higher exposures
  - Isolation such as placing a barrier between employees and source of exposure
- f. Safe work practices
 

Safe work practices require maintenance of separate hygiene facilities (change rooms, showers, hand wash facilities and lunch areas), and require proper housekeeping practices.
- g. Protecting against over-exposure
  - Use enough ventilation or exhaust at the arc or both to keep fumes and gases from your breathing zone and general area.
  - Use localized exhaust ventilation to remove fumes and gases from their source in still air. Keep the exhaust trunk / hood as close to the fume source as possible in order to keep fumes and gases from your breathing zone.
    - Use air blowers to draw fumes away from you and your immediate work area.
    - If ventilation is questionable, use air sampling to determine the need for corrective measures.
    - OSHA says you must remove all paint and solvents before welding or torch cutting. Follow written instructions. Make sure all residues are removed.
  - Use the safest welding method for the job. Stick welding makes much less fume than flux core welding. Tig welding reduces Cr(VI) emissions by 90%.
  - Use welding rods that produce a low fume. 90% of the fume can come from the rod. Larger diameter rods produce much higher emissions than electrodes of smaller diameter. Welding guns that extract fumes can capture 95% of the fume.
  - In a confined space, follow all the OSHA confined space rules – like air monitoring, not storing torches in the space, and ventilation.
    - Do not breathe fumes and gases. Keep your head out of the smoke plume.
    - Use proper Protective Protection Equipment.
    - Position your welding hood so that fumes will not rise up under it and into your breathing zone.
    - If the ventilation is not adequate, such as confined spaces, respiratory protection is required.
    - When respiratory protection is required, be sure that you have the required training and proper respirator before starting work.
  - Implement good housekeeping procedures. Keep the area as free as practicable of accumulations of chromium dust and buildup.
    - Vacuums with Hepa filters should be used to keep dust emissions at a minimum.
    - Do not blow dust from clothing with air hose. Doing so can embed the dust particles into your skin and eyes and expose others to airborne particles.

- Wash hands and face at the end of every shift and before eating, drinking, smoking, chewing gum, applying cosmetics or using the bathroom.
  - Never eat or drink in areas where Hexavalent Chromium may come in contact with your food, skin or eyes.
- h. Protective clothing and equipment
- CDL will provide and ensure the proper use of personal protective equipment where employees are exposed to chromium above the PEL.
- Wear long-sleeved shirt, welding jacket or welding sleeves
  - Wear long pants
  - Wear welding gloves
  - Wear safety glasses or goggles
  - Wear a face shield over eye protection when grinding
  - Wear a welding helmet over eye protection when welding
  - Wear appropriate respirator when needed
- i. Respirators
- Engineering and safe work practice controls should be provided to reduce exposure to the lowest feasible level. When engineering and administrative controls do not reduce hazards below the OSHA's permissible exposure level (PEL), employees must wear respirators. CDL will provide respiratory protection for the employee at no cost, and must ensure that the respirator is used when:
- Employee exposure to chromium exceeds PEL.
  - The employee requests a respirator.
  - Employees must be medically evaluated, respirator fit tested, and trained before being issued and instructed to wear a respirator.
- j. Record keeping
- CDL will establish and maintain an accurate record of all monitoring and other data used to conduct employee exposure assessments. Effective management of worker safety and health protection is a decisive factor in reducing the extent and severity of work-related injuries and illnesses and their related costs. CDL is committed to this process.

### 2.2.7 Hydrogen Sulfide H<sub>2</sub>S

a. Purpose

The purpose of this program is to establish minimum requirements for site specific H<sub>2</sub>S safety, which will enhance safety in the occupational setting where hydrogen sulfide is present or is recognized as being potentially present.

b. Scope

This program sets forth accepted practices for Hydrogen Sulfide (H<sub>2</sub>S). This program applies to all employees of CDL Electric, temporary employees, and any contractors working for CDL Electric. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers CDL Electric employees and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

c. Definitions

**Contingency Plan** - a site-specific written document that provides an organized plan for alerting and protecting the public within an area of exposure following the accidental release of all potentially hazardous atmospheric concentrations of hydrogen sulfide.

**Exposure Level** - permissible exposure level of hydrogen sulfide is 10 PPM for an 8-hour, time weighted average.

**Gas Detector Instrument** - An instrument/detector to measure levels of H<sub>2</sub>S. Instruments may be electronically or manually operated.

**Hydrogen Sulfide (H<sub>2</sub>S)** - is an extremely deadly, toxic gas that in its pure state is colorless and is heavier than air. Additionally:

- It is the second most toxic gas known to man, ranking behind hydrogen cyanide and ahead of carbon monoxide.
- It has the odor of rotten eggs at low concentrations.
- In higher concentrations rapidly paralyze the olfactory nerves (sense of smell).
- Is soluble in water and is flammable and poses a definite threat of explosion.

**Parts Per Million (PPM)** - parts of vapor or gas per million parts of contaminated air by volume.

**Personal H2S Monitor** - An electronic device worn on the person that is set to alarm at 10 PPM of H2S.

**Possible Locations of H2S** – While clients are required to notify CDL Electric of known H2S locations the majority of time H2S can be located in drilling operations, recycled drilling mud, water from sour crude wells, blowouts, tank gauging, during routine field maintenance involving hydrocarbons, tank batteries and wells.

**Venting** - the process of discharging a material to the atmosphere through a series piping and/or venting devices, facilitating the proper and safe dispersion of toxic materials and minimizing exposure.

d. Key Responsibilities

i. Managers and Supervisors

- Shall ensure all employees who are to be assigned to work at locations where hydrogen sulfide is known to be present, or suspected to be present in any concentration, have been trained in hydrogen sulfide safety.
- To ensure employees have been medically approved to wear respirators and trained on the safe use of respirators, including a respirator fit test in accordance with CDL Electric's Respiratory Protection Program.
- To ensure employees have been trained and familiar with personal H2S monitors and gas detection instruments.
- To have been provided with the client's safety procedures.
- To ensure the necessary respiratory equipment to perform the work safely is available.
- That each employee has been provided with a copy of this program.

ii. Employees

Employees are responsible to comply with this program.

e. Procedure

i. Physical Effects of Hydrogen Sulfide

- H2S paralyzes the sense of smell. Do Not Rely On Smell To Detect H2s – Rely Strictly On Instruments Designed To Measure Concentrations Of H2s.
- Hydrogen sulfide is a very dangerous and deadly gas - it is colorless and heavier than air.
- It can accumulate in low places and in small concentrations it has a strong, pungent, somewhat distasteful odor similar to rotten eggs. In higher concentrations, it can deaden the sense of smell (olfactory nerve).
- Exposure to certain concentrations of H2S can cause serious injury or death.

f. Toxic Effects of Hydrogen Sulfide

Concentration	Physical Effect
.01 PPM	Can smell odor.
10 PPM	Obvious and unpleasant odor. Beginning eye irritation. ANSI PEL for 8 hrs.
100 PPM	IDLH Kills smell in 3-15 minutes; may sting eyes and throat. May cause coughing and drowsiness. Possible delayed death within 48 hours.
200 PPM	Kills smell shortly, stings eyes and throat, respiratory irritation. Death after 1-2 hours exposure.
500 PPM	Dizziness; breathing ceases in a few minutes. Need prompt rescue breathing (CPR). Self-rescue is impossible because of loss of muscle control.

700 PPM	Unconscious quickly; death will result if not rescued promptly. 1000 PPM Unconscious at once, followed by death within minutes.
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g. General

CDL Electric shall have a written confined space program per 29 CFR 1910.146 and employees should be trained under CF 1910.146(g) and CDL Electric will be aware of owner's contingency plan provisions.

Each person entering a H2S designated location, regardless of the concentration, shall wear a personal H2S monitor that is set to alarm at 10 PPM and shall carry a 5-minute escape pack with them always.

When work requires opening any equipment on location that has the potential of releasing concentrations of H2S at 100 PPM or higher, two or more H2S trained persons shall be present and follow these procedures prior to and during the opening of the equipment:

- i. Each person entering the H2S location shall don a personal H2S monitor prior to entry.
- ii. A tailgate meeting will be held with everyone on location to discuss the work plan, the responsibilities of each person and the site-specific contingency plan.
- iii. Each person shall have either a self-contained breathing apparatus (SCBA) or a supplied airline respirator equipped with a 5-minute escape pack and shall be worn when opening the equipment to the surrounding atmosphere.
- iv. At least one person (per two workers), equipped with a SCBA will act as a stand-by person and may not participate in the work being performed until the atmosphere has been tested and found to have no H2S present in quantities over 10 PPM. The stand-by person shall be stationed up wind, within 100 feet and in clear view of the workers.
- v. If an operator or other third party provides the stand-by person, it will be the responsibility of the CDL Electric manager/supervisor in charge to verify that the person has been H2S, CPR, and First Aid trained, and that they have been provided the proper respiratory equipment.
  - Only CDL Electric employees may wear CDL Electric respirator equipment.
  - If CDL Electric employees will be using client or other third-party equipment, the equipment must be inspected to ensure it is safe to use and meets CDL Electric's requirements.

After the equipment has been locked and tagged out (per CDL Electric Lockout/Tagout Program), opened and the H2S concentration has been cleared to less than 10 PPM, the stand-by person will no longer be required. Work may then be performed without respiratory equipment, except for the required 5-minute escape pack.

h. Safe Work Procedures

- i. Maintain compliance with permit requirements of CDL Electric and any requirements by the client.
- ii. Verify that proper safety equipment is available, functioning properly and is utilized.
- iii. Check and remain aware of wind conditions and direction.
- iv. Perform a thorough check of the downwind area prior to the start of any potentially hazardous work activity.
- v. Check for other personnel and ignition sources.
- vi. Ventilate work areas by venting and purging lines and vessels prior to beginning any work activities.
- vii. Keep all non-essential personnel away from work areas.
- viii. Immediately vacate the area when any H2S monitor sounds and do not re-enter without proper respiratory protection.

i. Equipment

The following equipment shall be provided and used as required by this program:

- i. Personal H<sub>2</sub>S monitor set to alarm at permissible exposure limit of 10 PPM for OSHA 1926 requirements and 20 PPM for OSHA 1910 requirements. Fixed monitors may be present as well at the same alarm setting.
- ii. Portable H<sub>2</sub>S gas testing instrument, either electronic or manual pump operated, capable of testing the suspected concentrations of H<sub>2</sub>S in the system.
- iii. Each testing instrument must be capable of testing the suspected concentrations of H<sub>2</sub>S by using the manufacturer's recommended calibrated tube or other means of measuring the concentration of gas.
- iv. Testing instruments shall be calibrated periodically according to the manufacturer's recommendation, and at least annually.
- v. Calibration kits with regulator for calibrating the personal monitor.
- vi. Calibration gas cylinder for testing the personal monitor.
- vii. NIOSH-certified self-contained breathing apparatus (air pack) with a minimum of a 30-minute air supply or airline respirator with escape SCBA should be used.
- viii. Full face, air supplied, positive pressure hose line respirator, with 5-minute escape pack attached.
- ix. Respirator wearers requiring corrective eyewear will be fitted with spectacle kits according to the respirator manufacturer, at no expense to the employee.
- x. Respirators and their components, including all fittings of hoses, shall not be interchanged, which if done, would violate the approval rating of said respirator or related equipment.
- j. Medical
  - i. Each employee shall have completed a medical evaluation by a physician or licensed health care professional to determine the employee's ability to wear a respirator as required by the CDL Electric Respiratory Protection Program.
  - ii. Each employee will successfully complete the medical questionnaire and examination before being allowed to be fit tested with a respirator.
- k. Training
  - i. Employees required to work on H<sub>2</sub>S locations will be trained. Training shall consist of:
    - Physical and chemical properties of H<sub>2</sub>S
    - Sources of H<sub>2</sub>S
    - Human physiology
    - Signs and symptoms of H<sub>2</sub>S exposure, acute and chronic toxicity
    - Symptomatology of H<sub>2</sub>S exposure
    - Medical evaluation
    - Work procedures
    - Personal protective equipment required working around H<sub>2</sub>S
    - Use of contingency plans and emergency response
    - Burning, flaring, and venting of H<sub>2</sub>S
    - State and federal regulatory requirement
    - H<sub>2</sub>S release dispersion models
    - Rescue techniques, first aid, and post exposure evaluation
    - Use, care, and calibration of personal monitors and gas detection instruments
    - Respirator inspections and record keeping
  - ii. Each respirator wearer will complete Respiratory Protection training and a Respirator Fit Test, after being given a medical clearance and before entering any H<sub>2</sub>S location.
  - iii. Employees and other personnel visiting H<sub>2</sub>S locations who will not be involved in the work shall be briefed on the following prior to entering:
    - Site-specific sources of H<sub>2</sub>S
    - Health hazards of H<sub>2</sub>S
    - Routes of egress
    - Emergency assembly areas



- Applicable alarm signals and
- How to respond in the event of an emergency.

l. Rescue

Each employee, when working alone in a H2S designated area, shall plan and become familiar with self-escape procedures to include being aware of wind direction and obstacles to avoid when exiting the work area.

Employees working under the buddy system shall pre-plan an emergency rescue and/or evacuation procedure prior to commencing work and arrange for periodic communications with his/her supervisor and document the discussion on each employee's service report.

m. Respirator Inspections

- Respirators will be inspected by the employee before each use and at least monthly.
- The inspection will include the respirator face piece, hose, harness, 5minute escape pack cylinder and all other components of the air supply systems used.
- Monthly inspections will be documented as per CDL Electric Respiratory Protection Program and will be kept on file at the local office for review during safety audits.

n. Monitors and Gas Detector Calibration

Each personal H2S monitor shall be calibrated at least monthly, and the results recorded on the calibration log.

Those monitors that do not require calibrating shall be bump checked with calibration gas to test alarms, monthly or prior to use if not used routinely.

## 2.2.8 Lead, Heavy Metals

The purpose of this policy is to protect our team members from potential exposure to airborne lead particles. Employees with potential exposure to airborne lead at any level shall be informed of the content of Appendices A and B of the Regulation. Employees must be included if exposure to lead is at or above the action level, or if the possibility of skin or eye irritation exists. The company shall provide initial training prior to the time of the initial job assignment. The training program shall be repeated at least annually for each employee. Training shall include where lead containing materials may be located: such as in lead paints, leaded solders, pipes, batteries, leaded glass, circuit boards, cathode tubes, and salvage materials

a. Activities Which Emit Lead

Employees performing maintenance activities not associated with construction work are covered by the general industry standard for lead, 29 CFR 1910.1025. Maintenance activities covered by the general industry standard are those which involve making or keeping a structure, fixture or foundation in proper condition in a routine, scheduled, or anticipated fashion.

Renovations are considered construction-related activities, and this work is covered in the Construction Industry Lead Standard, 29 CFR 1926.62.

b. Responsibility

The implementation of this program shall be the responsibility of the various departments to which it applies, particularly Railroad Division and Trades Service Divisions (Electrical, HVAC, and Plumbing).

Department Managers/Supervisors are responsible for:

- Responding to requests or employee inquiries within 48 hours;
- Performing inspections of job sites, materials and equipment;
- Conducting Lead Awareness training for employees; and
- Contacting EHS for evaluation of project activities in pre-1978 structures that may disturb any painted surface;
- Distributing the lead compliance program to the work group and referencing the pertinent sections or writing the pertinent section of the policy into job specifications; and

- Bringing any safety-related concerns pertaining to unsafe working practices (i.e., chemical stripping, burning, dry sanding) or procedures conducted on painted surfaces to the attention of EHS.

No employee shall be exposed to lead at concentrations greater than fifty micrograms per cubic meter of air (50 ug/m<sup>3</sup>) averaged over an 8-hour period.

Employees shall not disturb lead containing materials and must abide by any signs, labels, and assessment reports that indicate the presence of lead.

c. Classification of Work and Work Procedures

i. Class A work involves:

- Manual demolition of structures (e.g., removing a wall)
- Manual Scraping (includes chemical stripping) or sanding
- Utilizing a heat gun on painted surfaces
- Power tool cleaning with dust collection systems
- Spray painting with lead-based paint

ii. Class B work involves:

- Using lead-based mortar
- Burning lead
- Rivet busting
- Power tool cleaning without duct collection systems
- Cleanup activities where dry expendable abrasives are used
- Moving or tearing down the enclosure used for abrasive blasting

iii. Class C work involves:

- Abrasive blasting
- Welding and cutting
- Torch burning

**Note:** All Class 3 work shall be conducted by a state-certified lead abatement contractor with arrangements made by a representative from CDL Electric to ensure appropriate procedures are conducted.

Full shift personal samples shall be representative of the monitored employee's regular, daily exposure to lead. If the initial determination or subsequent monitoring reveals employee exposure to be at or above the action level but below the permissible exposure limit, the company shall repeat monitoring at least every 6 months. The employer shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are below the action level at which time the employer may discontinue monitoring for that employee. If the initial monitoring reveals employee exposure is above the permissible exposure limit, the company shall repeat monitoring quarterly. They shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are below the PEL but at or above the action level at which time the employer shall repeat monitoring for that employee. Employees must be notified within 15 working days after the receipt of the results of monitoring performed, either individually in writing or by posting the results in an appropriate location that is accessible to affected employees. Whenever the results indicate that the representative employee exposure, without regard to respirators, exceeds the permissible exposure limit, the company shall include in the written notice a statement that the permissible exposure limit was exceeded, and a description of the corrective action taken or to be taken to reduce exposure to or below the permissible exposure limit.

d. Compliance Program

Where any employee is exposed to lead above the Permissible Exposure Limit (PEL) of 50 mg/m<sup>3</sup> for more than 30 days per year, the employer shall establish and implement a written compliance program, identified in Compliance Program, to reduce employee exposure to the PEL or below.

CDL Electric shall implement engineering and/or work practice controls including administrative controls to reduce and maintain employee exposure to lead at or below the PEL to the extent that such controls are feasible. Whenever all feasible engineering and work practices controls that can be instituted are not sufficient to reduce employee exposure at or below the PEL, the CDL Electric shall use them nonetheless to reduce employee exposure to the lowest feasible level and shall supplement them by the use of respiratory protection. Refer to the Respiratory Protection Program.

At this time CDL Electric has not identified tasks that exceed the Permissible Exposure Level. If an exposure potential is identified, we will coordinate personnel air monitoring to quantify the exposure level.

The company must provide appropriate respirators. Employees must be provided with: a) full face-piece respirators instead of half mask respirators for protection against lead aerosols that cause eye or skin irritation at the use concentrations. b) HEPA filters for powered and non-powered air-purifying respirators. c) Powered air-purifying respirator (PAPR) instead of a negative pressure respirator when an employee chooses to use a PAPR, and it provides adequate protection to the employee.

If an employee is exposed to lead above the PEL, the company shall provide at no cost to the employee, and assure that the employee uses, appropriate protective work clothing and equipment such as, but not limited to: a) Coveralls or similar full-body work clothing; b) Gloves, hats, and shoes or disposable shoe coverlets; and c) Face shields, vented goggles, or other appropriate protective equipment.

e. Medical Surveillance

Medical surveillance includes initial surveillance, on-going surveillance (e.g., biological monitoring, six-part medical exam, medical exam and consultation) medical treatment and medical removal.

A medical surveillance program shall be implemented for all employees who are or may be exposed at or above the action level for more than 30 days per year. The employer shall establish medical surveillance requirements based on the OSHA lead standard, 29 CFR 1910.1030. The company shall ensure that all medical examinations and procedures are performed by or under the supervision of a licensed physician. The company shall provide the required medical surveillance without cost to employees and at a reasonable time and place. The medical surveillance requirements are identified in the Medical Surveillance Program.

f. Training, Recordkeeping and Signage

i. Training

All CDL Electric employees whose job classification airborne lead concentrations above the action level shall be trained by representatives from EHS in the following:

- The content of the standard and its appendices;
- The specific nature of the operations that could result in exposure to lead above the Action Level;
- The purpose, proper selection, fitting, use and limitations of respirators;
- The purpose and a description of the medical surveillance program and the medical removal protection program;
- The engineering controls and work practices associated with the employee's job assignments;
- The contents of the compliance program in effect;
- Instructions to employees that special drugs (e.g., chelating agents) shall not be used routinely to remove lead from their bodies and when necessary, used only under medical supervision; and
- The right to access employee records.

ii. Recordkeeping

Environmental Health and Safety shall establish and maintain accurate records of the following:

- All monitoring and other data used in conducting employee exposure assessments;
- Training records;
- Each employee subject to medical surveillance; and
- Medical removal records.

All records including exposure monitoring, medical removal and medical records are available upon request to affected employees, former employees and their designated representatives and shall be maintained for at least thirty years.

iii. Signage

The employer shall post the following warning signs in each work area where the PEL is exceeded:

DANGER LEAD  
MAY DAMAGE FERTILITY OR THE UNBORN CHILD  
CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM  
DO NOT EAT, DRINK OR SMOKE IN THIS AREA

## **Appendix AA.1 - Substance Data Sheet for Occupational Exposure to Lead**

Appendix A to §1926.62

### *I. Substance Identification*

A. *Substance*: Pure lead (Pb) is a heavy metal at room temperature and pressure and is a basic chemical element. It can combine with various other substances to form numerous lead compounds.

B. *Compounds covered by the standard*: The word *lead* when used in this interim final standard means elemental lead, all inorganic lead compounds and a class of organic lead compounds called lead soaps. This standard does not apply to other organic lead compounds.

C. *Uses*: Exposure to lead occurs in several different occupations in the construction industry, including demolition or salvage of structures where lead or lead-containing materials are present; removal or encapsulation of lead-containing materials, new construction, alteration, repair, or renovation of structures that contain lead or materials containing lead; installation of products containing lead. In addition, there are construction related activities where exposure to lead may occur, including transportation, disposal, storage, or containment of lead or materials containing lead on construction sites, and maintenance operations associated with construction activities.

D. *Permissible exposure*: The permissible exposure limit (PEL) set by the standard is 50 micrograms of lead per cubic meter of air (50 µg/m<sup>3</sup>), averaged over an 8-hour workday.

E. *Action level*: The interim final standard establishes an action level of 30 micrograms of lead per cubic meter of air (30 µg/m<sup>3</sup>), averaged over an 8-hour workday. The action level triggers several ancillary provisions of the standard such as exposure monitoring, medical surveillance, and training.

### *II. Health Hazard Data*

A. *Ways in which lead enters your body*. When absorbed into your body in certain doses, lead is a toxic substance. The object of the lead standard is to prevent absorption of harmful quantities of lead. The standard is intended to protect you not only from the immediate toxic effects of lead, but also from the serious toxic effects that may not become apparent until years of exposure have passed. Lead can be absorbed into your body by inhalation (breathing) and ingestion (eating). Lead (except for certain organic lead compounds not covered by the standard, such as tetraethyl lead) is not absorbed through your skin. When lead is scattered in the air as a dust, fume respiratory tract. Inhalation of airborne lead is generally the most important source of occupational lead absorption. You can also absorb lead through your digestive system if lead gets into your mouth and is swallowed. If you handle food, cigarettes, chewing tobacco, or make-up which have lead on them or handle them with hands contaminated with lead, this will contribute to ingestion. A significant portion of the lead that you inhale or ingest gets into your blood stream. Once in your blood stream, lead is circulated throughout your body and stored in various organs and body tissues. Some of this lead is quickly filtered out of your body and excreted, but some remains in the blood and other tissues. As exposure to lead continues, the amount stored in your

body will increase if you are absorbing more lead than your body is excreting. Even though you may not be aware of any immediate symptoms of disease, this lead stored in your tissues can be slowly causing irreversible damage, first to individual cells, then to your organs and whole body systems.

*B. Effects of overexposure to lead -*

(1) *Short term (acute) overexposure.* Lead is a potent, systemic poison that serves no known useful function once absorbed by your body. Taken in large enough doses, lead can kill you in a matter of days. A condition affecting the brain called acute encephalopathy may arise which develops quickly to seizures, coma, and death from cardiorespiratory arrest. A short term dose of lead can lead to acute encephalopathy. Short term occupational exposures of this magnitude are highly unusual, but not impossible. Similar forms of encephalopathy may, however, arise from extended, chronic exposure to lower doses of lead. There is no sharp dividing line between rapidly developing acute effects of lead, and chronic effects which take longer to acquire. Lead adversely affects numerous body systems and causes forms of health impairment and disease which arise after periods of exposure as short as days or as long as several years.

(2) *Long-term (chronic) overexposure.* Chronic overexposure to lead may result in severe damage to your blood-forming, nervous, urinary and reproductive systems. Some common symptoms of chronic overexposure include loss of appetite, metallic taste in the mouth, anxiety, constipation, nausea, pallor, excessive tiredness, weakness, insomnia, headache, nervous irritability, muscle and joint pain or soreness, fine tremors, numbness, dizziness, hyperactivity and colic. In lead colic there may be severe abdominal pain. Damage to the central nervous system in general and the brain (encephalopathy) in particular is one of the most severe forms of lead poisoning. The most severe, often fatal, form of encephalopathy may be preceded by vomiting, a feeling of dullness progressing to drowsiness and stupor, poor memory, restlessness, irritability, tremor, and convulsions. It may arise suddenly with the onset of seizures, followed by coma, and death. There is a tendency for muscular weakness to develop at the same time. This weakness may progress to paralysis often observed as a characteristic “wrist drop” or “foot drop” and is a manifestation of a disease of the nervous system called peripheral neuropathy. Chronic overexposure to lead also results in kidney disease with few, if any, symptoms appearing until extensive and most likely permanent kidney damage has occurred. Routine laboratory tests reveal the presence of this kidney disease only after about two-thirds of kidney function is lost. When overt symptoms of urinary dysfunction arise, it is often too late to correct or prevent worsening conditions, and progression to kidney dialysis or death is possible. Chronic overexposure to lead impairs the reproductive systems of both men and women. Overexposure to lead may result in decreased sex drive, impotence and sterility in men. Lead can alter the structure of sperm cells raising the risk of birth defects. There is evidence of miscarriage and stillbirth in women whose husbands were exposed to lead or who were exposed to lead themselves. Lead exposure also may result in decreased fertility, and abnormal menstrual cycles in women. The course of pregnancy may be adversely affected by exposure to lead since lead crosses the placental barrier and poses risks to developing fetuses. Children born of parents either one of whom were exposed to excess lead levels are more likely to have birth defects, mental retardation, behavioral disorders or die during the first year of childhood. Overexposure to lead also disrupts the blood-forming system resulting in decreased hemoglobin (the substance in the blood that carries oxygen to the cells) and ultimately anemia. Anemia is characterized by weakness, pallor and fatigability as a result of decreased oxygen carrying capacity in the blood.

(3) *Health protection goals of the standard.* Prevention of adverse health effects for most workers from exposure to lead throughout a working lifetime requires that a worker's blood lead level (BLL, also expressed as PbB) be maintained at or below forty micrograms per deciliter of whole blood (40 µg/dl). The blood lead levels of workers (both male and female workers) who intend to have children should be maintained below 30 µg/dl to minimize adverse reproductive health effects to the parents and to the developing fetus. The measurement of your blood lead level (BLL) is the most useful indicator of the amount of lead being absorbed by your body. Blood lead levels are most often reported in units of milligrams (mg) or micrograms (µg) of lead (1 mg = 1000 µg) per 100 grams (100g), 100 milliliters (100 ml) or deciliter (dl) of blood. These three units are essentially the same. Sometime BLLs are

expressed in the form of mg% or µg%. This is a shorthand notation for 100g, 100 ml, or dl. (References to BLL measurements in this standard are expressed in the form of µg/dl.)

BLL measurements show the amount of lead circulating in your blood stream, but do not give any information about the amount of lead stored in your various tissues. BLL measurements merely show current absorption of lead, not the effect that lead is having on your body or the effects that past lead exposure may have already caused. Past research into lead-related diseases, however, has focused heavily on associations between BLLs and various diseases. As a result, your BLL is an important indicator of the likelihood that you will gradually acquire a lead-related health impairment or disease.

Once your blood lead level climbs above 40 µg/dl, your risk of disease increases. There is a wide variability of individual response to lead, thus it is difficult to say that a particular BLL in a given person will cause a particular effect. Studies have associated fatal encephalopathy with BLLs as low as 150 µg/dl. Other studies have shown other forms of diseases in some workers with BLLs well below 80 µg/dl. Your BLL is a crucial indicator of the risks to your health, but one other factor is also extremely important. This factor is the length of time you have had elevated BLLs. The longer you have an elevated BLL, the greater the risk that large quantities of lead are being gradually stored in your organs and tissues (body burden). The greater your overall body burden, the greater the chances of substantial permanent damage. The best way to prevent all forms of lead-related impairments and diseases - both short term and long term - is to maintain your BLL below 40 µg/dl. The provisions of the standard are designed with this end in mind.

Your employer has prime responsibility to assure that the provisions of the standard are complied with both by the company and by individual workers. You, as a worker, however, also have a responsibility to assist your employer in complying with the standard. You can play a key role in protecting your own health by learning about the lead hazards and their control, learning what the standard requires, following the standard where it governs your own actions, and seeing that your employer complies with provisions governing his or her actions.

*(4) Reporting signs and symptoms of health problems.* You should immediately notify your employer if you develop signs or symptoms associated with lead poisoning or if you desire medical advice concerning the effects of current or past exposure to lead or your ability to have a healthy child. You should also notify your employer if you have difficulty breathing during a respirator fit test or while wearing a respirator. In each of these cases, your employer must make available to you appropriate medical examinations or consultations. These must be provided at no cost to you and at a reasonable time and place. The standard contains a procedure whereby you can obtain a second opinion by a physician of your choice if your employer selected the initial physician.

## **Appendix AA.2 - Employee Standard Summary**

### **Appendix B to §1926.62**

This appendix summarizes key provisions of the interim final standard for lead in construction that you as a worker should become familiar with.

#### ***I. Permissible Exposure Limit (PEL) - Paragraph (C)***

The standard sets a permissible exposure limit (PEL) of 50 micrograms of lead per cubic meter of air (50 µg/m<sup>3</sup>), averaged over an 8-hour workday which is referred to as a time-weighted average (TWA). This is the highest level of lead in air to which you may be permissibly exposed over an 8-hour workday. However, since this is an 8-hour average, short exposures above the PEL are permitted so long as for each 8-hour workday your average exposure does not exceed this level. This interim final standard, however, takes into account the fact that your daily exposure to lead can extend beyond a typical 8-hour workday as the result of overtime or other alterations in your work schedule. To deal with this situation, the standard contains a formula which reduces your permissible exposure when you are exposed more than 8 hours. For example, if you are exposed to lead for 10 hours a day, the maximum permitted average exposure would be 40 µg/m<sup>3</sup>.

#### ***II. Exposure Assessment - Paragraph (D)***

If lead is present in your workplace in any quantity, your employer is required to make an initial determination of whether any employee's exposure to lead exceeds the action level (30 µg/m<sup>3</sup> averaged over an 8-hour day). Employee exposure is that exposure which would occur if the employee were not using a respirator. This initial determination requires your employer to monitor workers' exposures unless he or she has objective data which can demonstrate conclusively that no employee will be exposed to lead in excess of the action level. Where objective data is used in lieu of actual monitoring the employer must establish and maintain an accurate record, documenting its relevancy in assessing exposure levels for current job conditions. If such objective data is available, the employer need proceed no further on employee exposure assessment until such time that conditions have changed and the determination is no longer valid.

Objective data may be compiled from various sources, e.g., insurance companies and trade associations and information from suppliers or exposure data collected from similar operations. Objective data may also comprise previously collected sampling data including area monitoring. If it cannot be determined through using objective data that worker exposure is less than the action level, your employer must conduct monitoring or must rely on relevant previous personal sampling, if available. Where monitoring is required for the initial determination, it may be limited to a representative number of employees who are reasonably expected to have the highest exposure levels. If your employer has conducted appropriate air sampling for lead in the past 12 months, he or she may use these results, provided they are applicable to the same employee tasks and exposure conditions and meet the requirements for accuracy as specified in the standard. As with objective data, if such results are relied upon for the initial determination, your employer must establish and maintain a record as to the relevancy of such data to current job conditions.

If there have been any employee complaints of symptoms which may be attributable to exposure to lead or if there is any other information or observations which would indicate employee exposure to lead, this must also be considered as part of the initial determination.

If this initial determination shows that a reasonable possibility exists that any employee may be exposed, without regard to respirators, over the action level, your employer must set up an air monitoring program to determine the exposure level representative of each employee exposed to lead at your workplace. In carrying out this air monitoring program, your employer is not required to monitor the exposure of every employee, but he or she must monitor a representative number of employees and job types. Enough sampling must be done to enable each employee's exposure level to be reasonably represent full shift exposure. In addition, these air samples must be taken under conditions which represent each employee's regular, daily exposure to lead. Sampling performed in the past 12 months may be used to determine exposures above the action level if such sampling was conducted during work activities essentially similar to present work conditions.

The standard lists certain tasks which may likely result in exposures to lead in excess of the PEL and, in some cases, exposures in excess of 50 times the PEL. If you are performing any of these tasks, your employer must provide you with appropriate respiratory protection, protective clothing and equipment, change areas, hand washing facilities, biological monitoring, and training until such time that an exposure assessment is conducted which demonstrates that your exposure level is below the PEL. If you are exposed to lead and air sampling is performed, your employer is required to notify you in writing within 5 working days of the air monitoring results which represent your exposure. If the results indicate that your exposure exceeds the PEL (without regard to your use of a respirator), then your employer must also notify you of this in writing, and provide you with a description of the corrective action that has been taken or will be taken to reduce your exposure.

Your exposure must be rechecked by monitoring, at least every six months if your exposure is at or over the action level but below the PEL. Your employer may discontinue monitoring for you if 2 consecutive measurements, taken at least 7 days apart, are at or below the action level. Air monitoring must be repeated every 3 months if you are exposed over the PEL. Your employer must continue monitoring for you at this frequency until 2 consecutive measurements, taken at least 7 days apart, are below the PEL but above the action level, at which time your employer must repeat monitoring of your exposure every

six months and may discontinue monitoring only after your exposure drops to or below the action level. However, whenever there is a change of equipment, process, control, or personnel or a new type of job is added at your workplace which may result in new or additional exposure to lead, your employer must perform additional monitoring.

### *III. Methods of Compliance - Paragraph (E)*

Your employer is required to assure that no employee is exposed to lead in excess of the PEL as an 8-hour TWA. The interim final standard for lead in construction requires employers to institute engineering and work practice controls including administrative controls to the extent feasible to reduce employee exposure to lead. Where such controls are feasible but not adequate to reduce exposures below the PEL they must be used nonetheless to reduce exposures to the lowest level that can be accomplished by these means and then supplemented with appropriate respiratory protection. Your employer is required to develop and implement a written compliance program prior to the commencement of any job where employee exposures may reach the PEL as an 8-hour TWA. The interim final standard identifies the various elements that must be included in the plan. For example, employers are required to include a description of operations in which lead is emitted, detailing other relevant information about the operation such as the type of equipment used, the type of material involved, employee job responsibilities, operating procedures and maintenance practices. In addition, your employer's compliance plan must specify the means that will be used to achieve compliance and, where engineering controls are required, include any engineering plans or studies that have been used to select the control methods. If administrative controls involving job rotation are used to reduce employee exposure to lead, the job rotation schedule must be included in the compliance plan. The plan must also detail the type of protective clothing and equipment, including respirators, housekeeping and hygiene practices that will be used to protect you from the adverse effects of exposure to lead.

The written compliance program must be made available, upon request, to affected employees and their designated representatives, the Assistant Secretary and the Director.

Finally, the plan must be reviewed and updated at least every 6 months to assure it reflects the current status in exposure control.

### *IV. Respiratory Protection - Paragraph (F)*

Your employer is required to provide and assure your use of respirators when your exposure to lead is not controlled below the PEL by other means. The employer must pay the cost of the respirator.

Whenever you request one, your employer is also required to provide you a respirator even if your air exposure level is not above the PEL. You might desire a respirator when, for example, you have received medical advice that your lead absorption should be decreased. Or, you may intend to have children in the near future, and want to reduce the level of lead in your body to minimize adverse reproductive effects. While respirators are the least satisfactory means of controlling your exposure, they are capable of providing significant protection if properly chosen, fitted, worn, cleaned, maintained, and replaced when they stop providing adequate protection.

Your employer is required to select your respirator according to the requirements of 29 CFR 1926.62(f)(3), including the requirements referenced in 29 CFR 1910.134(d)(3)(i)(A) of this chapter. Any respirator chosen must be approved by NIOSH under the provisions of 42 CFR part 84. These respirator selection references will enable your employer to choose a type of respirator that will give you a proper amount of protection based on your airborne lead exposure. Your employer may select a type of respirator that provides greater protection than that required by the standard; that is, one recommended for a higher concentration of lead than is present in your workplace. For example, a powered air-purifying respirator (PAPR) is much more protective than a typical negative pressure respirator, and may also be more comfortable to wear. A PAPR has a filter, cartridge, or canister to clean the air, and a power source that continuously blows filtered air into your breathing zone. Your employer might make a PAPR available to you to ease the burden of having to wear a respirator for long periods of time. The standard provides that you can obtain a PAPR upon request.



Your employer must also start a Respiratory Protection Program. This program must include written procedures for the proper selection, use, cleaning, storage, and maintenance of respirators.

Your employer must ensure that your respirator facepiece fits properly. Proper fit of a respirator facepiece is critical to your protection from airborne lead. Obtaining a proper fit on each employee may require your employer to make available several different types of respirator masks. To ensure that your respirator fits properly and that facepiece leakage is minimal, your employer must give you either a qualitative or quantitative fit test as specified in appendix A of the Respiratory Protection standard located at 29 CFR 1910.134.

You must also receive from your employer proper training in the use of respirators. Your employer is required to teach you how to wear a respirator, to know why it is needed, and to understand its limitations.

The standard provides that if your respirator uses filter elements, you must be given an opportunity to change the filter elements whenever an increase in breathing resistance is detected. You also must be permitted to periodically leave your work area to wash your face and respirator facepiece whenever necessary to prevent skin irritation. If you ever have difficulty in breathing during a fit test or while using a respirator, your employer must make a medical examination available to you to determine whether you can safely wear a respirator. The result of this examination may be to give you a positive pressure respirator (which reduces breathing resistance) or to provide alternative means of protection.

#### *V. Protective Work Clothing and Equipment - Paragraph (G)*

If you are exposed to lead above the PEL as an 8-hour TWA, without regard to your use of a respirator, or if you are exposed to lead compounds such as lead arsenate or lead azide which can cause skin and eye irritation, your employer must provide you with protective work clothing and equipment appropriate for the hazard. If work clothing is provided, it must be provided in a clean and dry condition at least weekly, and daily if your airborne exposure to lead is greater than 200 µg/m<sup>3</sup>. Appropriate protective work clothing and equipment can include coveralls or similar full-body work clothing, gloves, hats, shoes or disposable shoe coverlets, and face shields or vented goggles. Your employer is required to provide all such equipment at no cost to you. In addition, your employer is responsible for providing repairs and replacement as necessary, and also is responsible for the cleaning, laundering or disposal of protective clothing and equipment.

The interim final standard requires that your employer assure that you follow good work practices when you are working in areas where your exposure to lead may exceed the PEL. With respect to protective clothing and equipment, where appropriate, the following procedures should be observed prior to beginning work:

1. Change into work clothing and shoe covers in the clean section of the designated changing areas;
2. Use work garments of appropriate protective gear, including respirators before entering the work area; and
3. Store any clothing not worn under protective clothing in the designated changing area.

Workers should follow these procedures upon leaving the work area:

1. HEPA vacuum heavily contaminated protective work clothing while it is still being worn. At no time may lead be removed from protective clothing by any means which result in uncontrolled dispersal of lead into the air;
2. Remove shoe covers and leave them in the work area;
3. Remove protective clothing and gear in the dirty area of the designated changing area. Remove protective coveralls by carefully rolling down the garment to reduce exposure to dust.
4. Remove respirators last; and
5. Wash hands and face.

Workers should follow these procedures upon finishing work for the day (in addition to procedures described above):

1. Where applicable, place disposal coveralls and shoe covers with the abatement waste;

2. Contaminated clothing which is to be cleaned, laundered or disposed of must be placed in closed containers in the change room.
3. Clean protective gear, including respirators, according to standard procedures;
4. Wash hands and face again. If showers are available, take a shower and wash your hair. If shower facilities are not available at the work site, shower immediately at home and wash hair.

#### *VI. Housekeeping - Paragraph (H)*

Your employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. Vacuuming is the preferred method of meeting this requirement, and the use of compressed air to clean floors and other surfaces is generally prohibited unless removal with compressed air is done in conjunction with ventilation systems designed to contain dispersal of the lead dust. Dry or wet sweeping, shoveling, or brushing may not be used except where vacuuming or other equally effective methods have been tried and do not work. Vacuums must be used equipped with a special filter called a high-efficiency particulate air (HEPA) filter and emptied in a manner which minimizes the reentry of lead into the workplace.

#### *VII. Hygiene Facilities and Practices - Paragraph (I)*

The standard requires that hand washing facilities be provided where occupational exposure to lead occurs. In addition, change areas, showers (where feasible), and lunchrooms or eating areas are to be made available to workers exposed to lead above the PEL. Your employer must assure that except in these facilities, food and beverage is not present or consumed, tobacco products are not present or used, and cosmetics are not applied, where airborne exposures are above the PEL. Change rooms provided by your employer must be equipped with separate storage facilities for your protective clothing and equipment and street clothes to avoid cross-contamination. After showering, no required protective clothing or equipment worn during the shift may be worn home. It is important that contaminated clothing or equipment be removed in change areas and not be worn home or you will extend your exposure and expose your family since lead from your clothing can accumulate in your house, car, etc. Lunchrooms or eating areas may not be entered with protective clothing or equipment unless surface dust has been removed by vacuuming, downdraft booth, or other cleaning method. Finally, workers exposed above the PEL must wash both their hands and faces prior to eating, drinking, smoking or applying cosmetics.

All of the facilities and hygiene practices just discussed are essential to minimize additional sources of lead absorption from inhalation or ingestion of lead that may accumulate on you, your clothes, or your possessions. Strict compliance with these provisions can virtually eliminate several sources of lead exposure which significantly contribute to excessive lead absorption.

#### *VIII. Medical Surveillance - Paragraph (J)*

The medical surveillance program is part of the standard's comprehensive approach to the prevention of lead-related disease. Its purpose is to supplement the main thrust of the standard which is aimed at minimizing airborne concentrations of lead and sources of ingestion. Only medical surveillance can determine if the other provisions of the standard have effectively protected you as an individual. Compliance with the standard's provision will protect most workers from the adverse effects of lead exposure, but may not be satisfactory to protect individual workers (1) who have high body burdens of lead acquired over past years, (2) who have additional uncontrolled sources of non-occupational lead exposure, (3) who exhibit unusual variations in lead absorption rates, or (4) who have specific non-work related medical conditions which could be aggravated by lead exposure (e.g., renal disease, anemia). In addition, control systems may fail, or hygiene and respirator programs may be inadequate. Periodic medical surveillance of individual workers will help detect those failures. Medical surveillance will also be important to protect your reproductive ability-regardless of whether you are a man or woman.

All medical surveillance required by the interim final standard must be performed by or under the supervision of a licensed physician. The employer must provide required medical surveillance without cost to employees and at a reasonable time and place. The standard medical surveillance program has two parts - periodic biological monitoring and medical examinations. Your employer's obligation to

offer you medical surveillance is triggered by the results of the air monitoring program. Full medical surveillance must be made available to all employees who are or may be exposed to lead in excess of the action level for more than 30 days a year and whose blood lead level exceeds 40 µg/dl. Initial medical surveillance consisting of blood sampling and analysis for lead and zinc protoporphyrin must be provided to all employees exposed at any time (1 day) above the action level.

Biological monitoring under the standard must be provided at least every 2 months for the first 6 months and every 6 months thereafter until your blood lead level is below 40 µg/dl. A zinc protoporphyrin (ZPP) test is a very useful blood test which measures an adverse metabolic effect of lead on your body and is therefore an indicator of lead toxicity.

If your BLL exceeds 40 µg/dl the monitoring frequency must be increased from every 6 months to at least every 2 months and not reduced until two consecutive BLLs indicate a blood lead level below 40 µg/dl. Each time your BLL is determined to be over 40 µg/dl, your employer must notify you of this in writing within five working days of his or her receipt of the test results. The employer must also inform you that the standard requires temporary medical removal with economic protection when your BLL exceeds 50 µg/dl. (See Discussion of Medical Removal Protection-Paragraph (k).) Anytime your BLL exceeds 50 µg/dl your employer must make available to you within two weeks of receipt of these test results a second follow-up BLL test to confirm your BLL. If the two tests both exceed 50 µg/dl, and you are temporarily removed, then your employer must make successive BLL tests available to you on a monthly basis during the period of your removal.

Medical examinations beyond the initial one must be made available on an annual basis if your blood lead level exceeds 40 µg/dl at any time during the preceding year and you are being exposed above the airborne action level of 30 µg/m<sup>3</sup> for 30 or more days per year. The initial examination will provide information to establish a baseline to which subsequent data can be compared.

An initial medical examination to consist of blood sampling and analysis for lead and zinc protoporphyrin must also be made available (prior to assignment) for each employee being assigned for the first time to an area where the airborne concentration of lead equals or exceeds the action level at any time. In addition, a medical examination or consultation must be made available as soon as possible if you notify your employer that you are experiencing signs or symptoms commonly associated with lead poisoning or that you have difficulty breathing while wearing a respirator or during a respirator fit test. You must also be provided a medical examination or consultation if you notify your employer that you desire medical advice concerning the effects of current or past exposure to lead on your ability to procreate a healthy child.

Finally, appropriate follow-up medical examinations or consultations may also be provided for employees who have been temporarily removed from exposure under the medical removal protection provisions of the standard. (See Part IX, below.)

The standard specifies the minimum content of pre-assignment and annual medical examinations. The content of other types of medical examinations and consultations is left up to the sound discretion of the examining physician. Pre-assignment and annual medical examinations must include (1) a detailed work history and medical history; (2) a thorough physical examination, including an evaluation of your pulmonary status if you will be required to use a respirator; (3) a blood pressure measurement; and (4) a series of laboratory tests designed to check your blood chemistry and your kidney function. In addition, at any time upon your request, a laboratory evaluation of male fertility will be made (microscopic examination of a sperm sample), or a pregnancy test will be given.

The standard does not require that you participate in any of the medical procedures, tests, etc. which your employer is required to make available to you. Medical surveillance can, however, play a very important role in protecting your health. You are strongly encouraged, therefore, to participate in a meaningful fashion. The standard contains a multiple physician review mechanism which will give you a chance to have a physician of your choice directly participate in the medical surveillance program. If you are dissatisfied with an examination by a physician chosen by your employer, you can select a second physician to conduct an independent analysis. The two doctors would attempt to resolve any differences of opinion and select a third physician to resolve any firm dispute. Generally

your employer will choose the physician who conducts medical surveillance under the lead standard—unless you and your employer can agree on the choice of a physician or physicians. Some companies and unions have agreed in advance, for example, to use certain independent medical laboratories or panels of physicians. Any of these arrangements are acceptable so long as required medical surveillance is made available to workers.

The standard requires your employer to provide certain information to a physician to aid in his or her examination of you. This information includes (1) the standard and its appendices, (2) a description of your duties as they relate to occupational lead exposure, (3) your exposure level or anticipated exposure level, (4) a description of any personal protective equipment you wear, (5) prior blood lead level results, and (6) prior written medical opinions concerning you that the employer has. After a medical examination or consultation the physician must prepare a written report which must contain (1) the physician's opinion as to whether you have any medical condition which places you at increased risk of material impairment to health from exposure to lead, (2) any recommended special protective measures to be provided to you, (3) any blood lead level determinations, and (4) any recommended limitation on your use of respirators. This last element must include a determination of whether you can wear a powered air purifying respirator (PAPR) if you are found unable to wear a negative pressure respirator. The medical surveillance program of the interim lead standard may at some point in time serve to notify certain workers that they have acquired a disease or other adverse medical condition as a result of occupational lead exposure. If this is true, these workers might have legal rights to compensation from public agencies, their employers, firms that supply hazardous products to their employers, or other persons. Some states have laws, including worker compensation laws, that disallow a worker who learns of a job-related health impairment to sue, unless the worker sues within a short period of time after learning of the impairment. (This period of time may be a matter of months or years.) An attorney can be consulted about these possibilities. It should be stressed that OSHA is in no way trying to either encourage or discourage claims or lawsuits. However, since results of the standard medical surveillance program can significantly affect the legal remedies of a worker who has acquired a job-related disease or impairment, it is proper for OSHA to make you aware of this.

The medical surveillance section of the standard also contains provisions dealing with chelation. Chelation is the use of certain drugs (administered in pill form or injected into the body) to reduce the amount of lead absorbed in body tissues. Experience accumulated by the medical and scientific communities has largely confirmed the effectiveness of this type of therapy for the treatment of very severe lead poisoning. On the other hand, it has also been established that there can be a long list of extremely harmful side effects associated with the use of chelating agents. The medical community has balanced the advantages and disadvantages resulting from the use of chelating agents in various circumstances and has established when the use of these agents is acceptable. The standard includes these accepted limitations due to a history of abuse of chelation therapy by some lead companies. The most widely used chelating agents are calcium disodium EDTA, (Ca Na<sub>2</sub> EDTA), Calcium Disodium Versenate (Versenate), and d-penicillamine (pencillamine or Cupramine).

The standard prohibits “prophylactic chelation” of any employee by any person the employer retains, supervises or controls. *Prophylactic chelation* is the routine use of chelating or similarly acting drugs to prevent elevated blood levels in workers who are occupationally exposed to lead, or the use of these drugs to routinely lower blood lead levels to predesignated concentrations believed to be “safe”. It should be emphasized that where an employer takes a worker who has no symptoms of lead poisoning and has chelation carried out by a physician (either inside or outside of a hospital) solely to reduce the worker's blood lead level, that will generally be considered prophylactic chelation. The use of a hospital and a physician does not mean that prophylactic chelation is not being performed. Routine chelation to prevent increased or reduce current blood lead levels is unacceptable whatever the setting.

The standard allows the use of “therapeutic” or “diagnostic” chelation if administered under the supervision of a licensed physician in a clinical setting with thorough and appropriate medical monitoring. Therapeutic chelation responds to severe lead poisoning where there are marked symptoms.

Diagnostic chelation involved giving a patient a dose of the drug then collecting all urine excreted for some period of time as an aid to the diagnosis of lead poisoning.

In cases where the examining physician determines that chelation is appropriate, you must be notified in writing of this fact before such treatment. This will inform you of a potentially harmful treatment and allow you to obtain a second opinion.

#### *IX. Medical Removal Protection - Paragraph (K)*

Excessive lead absorption subjects you to increased risk of disease. Medical removal protection (MRP) is a means of protecting you when, for whatever reasons, other methods, such as engineering controls, work practices, and respirators, have failed to provide the protection you need. MRP involves the temporary removal of a worker from his or her regular job to a place of significantly lower exposure without any loss of earnings, seniority, or other employment rights or benefits. The purpose of this program is to cease further lead absorption and allow your body to naturally excrete lead which has previously been absorbed. Temporary medical removal can result from an elevated blood lead level, or a medical opinion. For up to 18 months, or for as long as the job the employee was removed from lasts, protection is provided as a result of either form of removal. The vast majority of removed workers, however, will return to their former jobs long before this eighteen-month period expires.

You may also be removed from exposure even if your blood lead level is below 50 µg/dl if a final medical determination indicates that you temporarily need reduced lead exposure for medical reasons. If the physician who is implementing your employers medical program makes a final written opinion recommending your removal or other special protective measures, your employer must implement the physician's recommendation. If you are removed in this manner, you may only be returned when the doctor indicates that it is safe for you to do so.

The standard does not give specific instructions dealing with what an employer must do with a removed worker. Your job assignment upon removal is a matter for you, your employer and your union (if any) to work out consistent with existing procedures for job assignments. Each removal must be accomplished in a manner consistent with existing collective bargaining relationships. Your employer is given broad discretion to implement temporary removals so long as no attempt is made to override existing agreements. Similarly, a removed worker is provided no right to veto an employer's choice which satisfies the standard.

In most cases, employers will likely transfer removed employees to other jobs with sufficiently low lead exposure. Alternatively, a worker's hours may be reduced so that the time weighted average exposure is reduced, or he or she may be temporarily laid off if no other alternative is feasible.

In all of these situation, MRP benefits must be provided during the period of removal - i.e., you continue to receive the same earnings, seniority, and other rights and benefits you would have had if you had not been removed. Earnings includes more than just your base wage; it includes overtime, shift differentials, incentives, and other compensation you would have earned if you had not been removed. During the period of removal you must also be provided with appropriate follow-up medical surveillance. If you were removed because your blood lead level was too high, you must be provided with a monthly blood test. If a medical opinion caused your removal, you must be provided medical tests or examinations that the doctor believes to be appropriate. If you do not participate in this follow up medical surveillance, you may lose your eligibility for MRP benefits.

When you are medically eligible to return to your former job, your employer must return you to your "former job status." This means that you are entitled to the position, wages, benefits, etc., you would have had if you had not been removed. If you would still be in your old job if no removal had occurred that is where you go back. If not, you are returned consistent with whatever job assignment discretion your employer would have had if no removal had occurred. MRP only seeks to maintain your rights, not expand them or diminish them.

If you are removed under MRP and you are also eligible for worker compensation or other compensation for lost wages, your employer's MRP benefits obligation is reduced by the amount that you actually receive from these other sources. This is also true if you obtain other employment during the time, you are laid off with MRP benefits.

The standard also covers situations where an employer voluntarily removes a worker from exposure to lead due to the effects of lead on the employee's medical condition, even though the standard does not require removal. In these situations MRP benefits must still be provided as though the standard required removal. Finally, it is important to note that in all cases where removal is required, respirators cannot be used as a substitute. Respirators may be used before removal becomes necessary, but not as an alternative to a transfer to a low exposure job, or to a lay-off with MRP benefits.

#### *X. Employee Information and Training - Paragraph (L)*

Your employer is required to provide an information and training program for all employees exposed to lead above the action level or who may suffer skin or eye irritation from lead compounds such as lead arsenate or lead azide. The program must train these employees regarding the specific hazards associated with their work environment, protective measures which can be taken, including the contents of any compliance plan in effect, the danger of lead to their bodies (including their reproductive systems), and their rights under the standard. All employees must be trained prior to initial assignment to areas where there is a possibility of exposure over the action level.

This training program must also be provided at least annually thereafter unless further exposure above the action level will not occur.

#### *XI. Signs - Paragraph (M)*

The standard requires that the following warning sign be posted in work areas when the exposure to lead is above the PEL:

DANGER LEAD WORK AREA  
MAY DAMAGE FERTILITY OR THE UNBORN CHILD  
CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM  
DO NOT EAT, DRINK OR SMOKE IN THIS AREA

#### *XII. Recordkeeping - Paragraph (N)*

Your employer is required to keep all records of exposure monitoring for airborne lead. These records must include the name and job classification of employees measured, details of the sampling and analytical techniques, the results of this sampling, and the type of respiratory protection being worn by the person sampled. Such records are to be retained for at least 30 years. Your employer is also required to keep all records of biological monitoring and medical examination results. These records must include the names of the employees, the physician's written opinion, and a copy of the results of the examination. Medical records must be preserved and maintained for the duration of employment plus 30 years. However, if the employee's duration of employment is less than one year, the employer need not retain that employee's medical records beyond the period of employment if they are provided to the employee upon termination of employment.

Recordkeeping is also required if you are temporarily removed from your job under the medical removal protection program. This record must include your name, the date of your removal and return, how the removal was or is being accomplished, and whether or not the reason for the removal was an elevated blood lead level. Your employer is required to keep each medical removal record only for as long as the duration of an employee's employment.

The standard requires that if you request to see or copy environmental monitoring, blood lead level monitoring, or medical removal records, they must be made available to you or to a representative that you authorize. Your union also has access to these records. Medical records other than BLL's must also be provided upon request to you, to your physician or to any other person whom you may specifically designate. Your union does not have access to your personal medical records unless you authorize their access.

#### *XIII. Observation of Monitoring - Paragraph (O)*

When air monitoring for lead is performed at your workplace as required by this standard, your employer must allow you or someone you designate to act as an observer of the monitoring. Observers are entitled to an explanation of the measurement procedure, and to record the results obtained. Since results will not normally be available at the time of the monitoring, observers are

entitled to record or receive the results of the monitoring when returned by the laboratory.

Your employer is required to provide the observer with any personal protective devices required to be worn by employees working in the area that is being monitored. The employer must require the observer to wear all such equipment and to comply with all other applicable safety and health procedures.

#### *XIV. For Additional Information*

A. A copy of the interim standard for lead in construction can be obtained free of charge by calling or writing the OSHA Office of Publications, room N-3101, United States Department of Labor, Washington, DC 20210: Telephone (202) 219-4667.

B. Additional information about the standard, its enforcement, and your employer's compliance can be obtained from the nearest OSHA Area Office listed in your telephone directory under United States Government/Department of Labor.

### **2.2.9 Respirable Crystalline Silica Policy**

The purpose of this policy is to protect our team members from exposure to airborne silica dust by defining the requirements, responsibilities, and procedures necessary to reduce the risk of our employees to Silica exposure. OSHA 29CFR 1926.1153 Respirable Crystalline Silica ACGIH, TLV TWA & BEIs.

The work procedures we establish will protect not only our workers but all workers on our customers' worksites. This policy will outline the protective measures needed when performing tasks that create silica dusts; cutting, grinding, drilling or sawing concrete or natural rock.

Protective procedures will be accomplished by using personal monitoring techniques as well as monitoring the area around dust generation activities.

#### **a. Definitions**

**Competent person** an individual who is capable of identifying existing and foreseeable respirable crystalline silica hazards in the workplace and who has authorization to take prompt corrective measures to eliminate or minimize them. The competent person must have the knowledge and ability necessary to fulfill the responsibilities set forth in this policy.

**Employee Exposure** the exposure to airborne respirable crystalline silica that would occur if the employee were not using a respirator.

**High-efficiency particulate air [HEPA] filter** a filter that is at least 99.97 percent efficient in removing mono-dispersed particles of 0.3 micrometers in diameter.

**Respirable crystalline silica** quartz, cristobalite, and/or tridymite contained in airborne particles that are determined to be respirable by a sampling device designed to meet the characteristics for respirable-particle-size-selective samplers specified in the International Organization for Standardization (ISO) 7708:1995: Air Quality – Particle Size Fraction Definitions for Health-Related Sampling.

**Physician or Other Licensed Health Care Professional [PLHCP]** an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him/her to independently provide or be delegated the responsibility to provide some or all of the particular health care services required by this policy.

#### **b. Responsibilities**

##### **i. Safety Director**

- Issuing and administering this program and making sure that it satisfies all applicable federal, state and local requirements.
- Conducting a periodic review of the effectiveness of the policy. This would include a review of the available dust-control technologies to ensure these are selected and used when practical.
- Initiating sampling of worker exposure to concrete dust when there are non-standard work practices for which the control methods to be used have not been proven to be adequately protective.

- This Silica Exposure Policy must be evaluated at least once per year and as necessary. Situations where reevaluation may be necessary include regulatory updates, changes in equipment, and exposure incidents. Any changes resulting from this process must be communicated to affected employees.
- ii. Project Managers, Supervisors/Foremen
  - Substitution of less hazardous products for those that contain crystalline silica is required.
  - Ensuring that the materials (tools, equipment, PPE) and other resources (i.e., worker training materials) required to fully implement and maintain this policy are readily available where and when they are required.
  - Providing a job brief for each project, which outlines in detail the work methods and practices that will be followed on each site. Considerations will include:
    - Availability and/or delivery of all required tools/equipment.
    - Scope and nature of silica dust generation work to be conducted.
    - Control methods to be used and the level of respiratory protection required.
    - Ensuring supervisors and workers are educated and trained to an acceptable level of competency.
    - Coordinate work with other on-site contractors to ensure a safe work environment.
  - Selecting, implementing, and documenting the appropriate site-specific control measures.
- iii. Ensuring that employees have available to them initial and refresher training on the use of respirators.
- iv. Providing adequate instruction to workers on the hazards of working with silica-containing materials (e.g., concrete) and on the precautions specified in the job-specific plan covering hazards at the location.
- v. Ensuring that workers are using the proper respirators and have been fit-tested, and that the results are recorded.
- vi. Directing the work in a manner that ensures the risk to workers is minimized and adequately controlled.
- vii. Communicating with the prime contractor and other subcontractors to ensure a safe work environment.
- viii. Maintain records of training, fit-test results, crew talks, and inspections (equipment, PPE, work methods/practices).
- ix. Ensures that all required tools, equipment, and PPE are available.
- x. Employees
  - Knowing the hazards of silica dust exposure.
  - Using the assigned PPE in an effective and safe manner.
  - If utilizing a respirator, inspect before each use.
  - Using the appropriate control methods outlined within the Silica Control Permit.
  - Ensure you are trained before using equipment.
  - Following established work procedures as directed by the supervisor.
  - Reporting any unsafe conditions or acts to the supervisor.
  - Knowing how and when to report exposure incidents.
  - Properly clean and store respirator according to manufacturer's instructions.
- c. General
  - i. Silica is the second most common mineral on earth and makes up nearly all of what we call "sand" and "rock." Silica exists in many forms - one of these, "crystalline" silica (including quartz), is the most abundant and poses the greatest concern for human health. Some common materials that contain silica include:
    - Rock and sand
    - Topsoil and fill
    - Concrete, cement, and mortar
    - Masonry, brick, and tile



- Granite, sandstone, and slate
- Asphalt (containing rock and stone)
- Fibrous-cement board containing silica
- ii. Silica is a primary component of many common construction materials, and silica-containing dust can be generated during many construction activities, including:
  - Abrasive blasting (e.g., of concrete structures)
  - Jackhammering, chipping, or drilling rock or concrete
  - Cutting brick or tiles
  - Sawing or grinding concrete
  - Tuck point grinding
  - Road construction
  - Loading, hauling, and dumping gravel
  - Demolition of structures containing concrete
  - Sweeping concrete dust
- iii. Unprotected workers performing these activities, or working in the vicinity, can be exposed to harmful levels of airborne silica.
- d. Health Effects
  - i. Exposure to silica has been shown to cause silicosis, lung cancer, pulmonary tuberculosis and other airway diseases. Crystalline silica dust can cause a disabling, sometimes fatal disease called silicosis. The fine particles are deposited in the lungs, causing thickening and scarring of the lung tissue. The scar tissue restricts the lungs' ability to extract oxygen from the air. This damage is permanent, but symptoms of the disease may not appear for many years.
  - ii. A worker may develop any of three types of silicosis, depending on the concentrations of silica dust and the duration of exposure:
    - Chronic silicosis - develops after 10+ years of exposure at relatively low concentrations
    - Accelerated silicosis - develops 5 to 10 years after initial exposure at high concentrations
    - Acute silicosis - can develop within a few weeks, or 4-5 years, after exposure to very high concentrations
  - iii. Initially, workers with silicosis may have no symptoms; however, as the disease progresses, a worker may experience:
    - Shortness of breath
    - Severe cough
    - Weakness

These symptoms can worsen over time and lead to death. Exposure to silica has also been linked to other diseases, including bronchitis, tuberculosis, and lung cancer.

- e. Industrial Hygiene
 

CDL Electric Company, LLC will employ the American Conference of Governmental Industrial Hygienists (ACGIH) values. The permissible exposure over an 8-hour workday is defined as the TLV TWA or Threshold Limit Value Time Weighted Average. The TLV TWA for Respirable Silica is 0.025 mg/m<sup>3</sup> and 2.5 mg/m<sup>3</sup> for Respirable dust. A worker's exposure to silica is kept as low as reasonably achievable. Employees must not be exposed or expected to be exposed to airborne concentrations of silica more than 0.025 mg/m<sup>3</sup> over an 8-hour period will be assessed by conducting personal air monitoring. Atmospheric testing results should be assessed before a worker is exposed.

  - i. Method of Compliance - Personal Air Monitoring
  - ii. All protective procedures will be driven using personal monitoring techniques as well as monitoring the area around dust generation activities.
- f. Methods of Compliance
 

Where feasible, silica dust exposure must be controlled through engineering controls and work practices in preference to respiratory protection. Respirators can and should be used in conjunction

with engineering, administrative & work practice controls. PPE (provided by CDL) should always be selected as the last line of defense and should not be the first and only control method.

In cases of exposure levels above the limit, a written plan to reduce that exposure will be prepared.

- i. A key step in developing a silica exposure control plan is to identify the work activities that would put workers at risk of exposure.
  - Work activities - Appendix AB Equipment/Task and Control Methods that may generate airborne silica dust. The route of exposure is through the inhalation of airborne dust.
  - Identify workers at risk of exposure.
  - Amount/Duration of exposure - Appendix AB Equipment/Task and Control Methods is separated between workers who will be creating silica dusts for <4 hours and >4 as the workers who are exposed for a full shift would be at greater risk than workers exposed for an hour.
- ii. Effective control options must be used to eliminate or reduce the risk to workers from the hazards of silica dust exposure. The following control measures must be followed:
  - Elimination/Substitution (e.g., using products with less silica or using work methods that would eliminate the need for surface grinding)
  - Engineering Controls (e.g., local exhaust ventilation, negative pressure enclosure, dust collection system)
    - Local exhaust ventilation (LEV) - When LEV is used, we will employ the following systems and safe work practices:
    - Restricting or isolating the work activity with barriers or full enclosures (this may be the only option where LEV or WDS is not practical or effective). This includes use of a Negative Pressure Enclosure utilizing negative air machines.
    - Work Practice Controls (e.g., water).
    - Administrative controls (e.g., coordination of tasks, signage).
    - The use of proper PPE such as gloves, coveralls and eye protection will be used to control silica exposures.
- g. Elimination & Substitution
  - i. Barriers and Enclosures

When barriers or enclosures are used in our work, we will follow these safe work practices:

    - The site foreman will determine the type and design of barrier or enclosure (based on the work activity and the work area) and ensure it is constructed in accordance with the work plan.
    - Barriers may be simple hazard-flagging ribbon or more restrictive enclosure.
    - We will use commercially available negative air units when constructing a full enclosure. And will outfit the enclosure with enough negative air units to maintain at a minimum 4 air changes per hour. (Conduct Negative Air Machine equipment training before use).
  - ii. Administrative/Work Practice Controls

We will be following administrative work practice controls:

    - The Silica Exposure Control permit (Appendix AA) and the Equipment/Task and Control Methods (Appendix AB) shall be utilized prior to the start of work.
    - Establish procedures for housekeeping, restricting work areas, personal hygiene, worker training, and supervision.
    - As part of project planning, assess when silica dust may be generated and plan to eliminate or control the dust at the source.
    - Warning signs will be posted to warn workers about the hazards of silica and to specify any protective equipment required (i.e. respirators).
    - Work that generates silica dust will be conducted after hours, when access to other unprotected workers cannot be restricted.

- Develop a site-specific exposure control plan to cover project-specific issues (e.g., scope of work, project location and site-specific hazards) and to be kept available at the worksite.
- When water spray systems are used in our work, we will follow these safe work practices:
  - Pressure and flow rate of water will be controlled in accordance with tool manufacturers' specifications (for cutting saws, a minimum of 0.5 liters of water per minute should be used)
  - When sawing/drilling concrete or masonry, use only saws that provide water to the blade
  - Wet slurry will be cleaned from work surfaces when the work is completed, using a wet vacuum or wet sweeping

#### h. Respiratory Protection

- i. Respirators shall be provided at Company expense and used by the employee, based on the respiratory hazards in the following circumstances:
  - During the period, necessary to install and/or implement feasible engineering controls
  - Where feasible engineering controls and work practices by themselves are not sufficient to reduce employee exposure to or below the exposure limits
  - During intermittent or limited duration work operations where engineering controls and work practices are not feasible or required
  - In emergencies
- ii. Generally, for exposures in atmospheres between 0.025 mg/m<sup>3</sup> and 0.125 mg/m<sup>3</sup>, the appropriate respirator will be a negative pressure respirator with P-100 HEPA cartridges. Filter elements must be changed at the end of the service life or at the beginning of each shift, whichever comes first.
- iii. Employees exposed to Silica shall be given adequate time to wash their face and respirator to prevent skin irritation and to change filter elements.
  - The supervisor is responsible for ensuring the proper respirators are worn in the approved manner, and that all hygiene considerations (wash-up time, filter element changes and protective clothing) are followed.
  - Before an employee can use a negative pressure respirator for silica exposure, that employee must be fit tested properly on an annual basis. Employees without a current fit test shall not be assigned to jobs that are known to create silica exposures.
  - The Authorized Entrant is the properly trained employee who has been authorized by the Entry Supervisor to enter a permit space. Specifically, the Authorized Entrant is responsible for:
    - Knowing the hazards that may be faced during entry, including information on the mode, signs, or symptoms and consequences of the exposure
    - Properly using equipment as required obtaining a facial seal
    - Communicating with the Attendant during the entry so that the Attendant can monitor the status of the entry
    - Exiting from the permit space as soon as possible when ordered by the Attendant, when the entrant recognizes the warning signs or symptoms of exposure exists, when a prohibited condition exists, or when an automatic alarm is activated
    - Alert the Attendant immediately when a prohibited condition exists or when warning signs or symptoms of exposure exist
- iv. If at any time during respirator use the employee detects a leak in the respirator, he/she must leave the contaminated area immediately to a designated safe area.
- v. CDL Electric, at no time will enter a confined space that is IDLH (Immediately Dangerous to Life and Health).
- i. Medical Surveillance
  - i. A medical surveillance program must be made available to those employees who are or may be exposed to silica:
    - At no cost to the employee

- At a reasonable time and place
- For each employee who will be required under this policy to wear a respirator for >30 days per year
- All medical examination and procedures are performed by a PLHCP

j. Initial Exam

CDL Electric Company, LLC will make available an initial baseline medical exam within 30 days after initial assignment, unless the employee has received a medical examination that meets the requirements of this policy within the last three years.

The examination shall consist of:

- i. A medical work history concentrating on silica exposure in the past, present and future. Any history of respiratory system dysfunction, including signs and symptoms of respiratory disease; history of tuberculosis; and smoking status and history.
  - ii. A physical exam with emphasis on the respiratory system.
  - iii. A chest X-ray (a single posteroanterior radiographic projection or radiograph of the chest at full inspiration recorded on either film (no less than 14 x 17 inches and no more than 16 x 17 inches) or digital radiography systems), interpreted and classified according to the International Labor Office (ILO) International Classification of Radiographs of Pneumoconioses by a NIOSH-certified B Reader.
  - iv. A pulmonary function test to include forced vital capacity (FVC) and forced expiratory volume in some second (FEV1) and FEV1/FVC ratio, administered by a spirometry technician with a current certificate from a NIOSH-approved spirometry course.
- k. Periodic Exams
- CDL Electric Company, LLC shall make available medical examinations that include the procedures outlined above at least every 3 years, or more frequently if recommended by the PLHCP.

## Appendix AA - Silica Exposure Control Permit

Silica Exposure Control Permit			
Date Completed:			
Crew Foreman:		Competent Person:	
Customer Site/Project #:			
Worker(s):			
Scope of work to be completed:			
Work start date:		Duration: <input type="checkbox"/> Days <input type="checkbox"/> Months <input type="checkbox"/> Years	
Workers trained in (training records must be available for review):			
Proper use of equipment	Y <input type="checkbox"/> N <input type="checkbox"/>	Proper use of admin & work practice controls	Y <input type="checkbox"/> N <input type="checkbox"/>
Proper use of engineering controls	Y <input type="checkbox"/> N <input type="checkbox"/>	Proper use of PPE	Y <input type="checkbox"/> N <input type="checkbox"/>
Proper disposal methods	Y <input type="checkbox"/> N <input type="checkbox"/>	Other (fall protection, confined spaces, etc.)	Y <input type="checkbox"/> N <input type="checkbox"/>
Respirators			
Required: Y <input type="checkbox"/> N <input type="checkbox"/>	Available: Y <input type="checkbox"/> N <input type="checkbox"/>	Fit-tested: Y <input type="checkbox"/> N <input type="checkbox"/>	
Documents to be attached to control plan ( <input checked="" type="checkbox"/> if present)			
<input type="checkbox"/> TSTI <input type="checkbox"/> SDS <input type="checkbox"/> Training records			
Supervisor Signature		Position:	Date:

## Appendix AB - Equipment / Task and Control Methods

Equipment/task	Engineering and work practice control methods	Required respiratory protection and minimum Assigned Protection Factor	
		≤ 4 hours/shift	>4 hours/shift
Stationary masonry saws	Use saw equipped with integrated water delivery system that continuously feeds water to the blade	None	None
	Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
Handheld power saws (any blade diameter)	Use saw equipped with integrated water delivery system that continuously feeds water to the blade		
	Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions:		
	-When used outdoors	None	APF 10
	-When used indoors or in an enclosed area	APF 10	APF 10

Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less)	For tasks performed outdoors only:	None	None
	Use saw equipped with commercially available dust collection system		
	Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
	Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency		
Walk-behind saws	Use saw equipped with integrated water delivery system that continuously feeds water to the blade		
	Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions:		
	-When used outdoors	None	None
	-When used indoors or in an enclosed area	APF 10	APF 10
Drivable saws	For tasks performed outdoors only:	None	None
	Use saw equipped with integrated water delivery system that continuously feeds water to the blade		
	Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
Rig-mounted core saws or drills	Use tool equipped with integrated water delivery system that supplies water to cutting surface	None	None
	Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
Handheld and stand-mounted drills (including impact and rotary hammer drills)	Use drill equipped with commercially available shroud or cowl with dust collection system	None	None
	Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
	Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism		
	Use a HEPA-filtered vacuum when cleaning holes		
Dowel drilling rigs for concrete	For tasks performed outdoors only:	APF 10	APF 10
	Use shroud around drill bit with a dust collection system. Dust collector must have a filter with 99% or greater efficiency and a filter-cleaning mechanism		
Vehicle-mounted drilling rigs for rock and concrete	Use dust collection system with close capture hood or shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector	None	None
	-OR-		
	Operate from within an enclosed cab and use water for dust suppression on drill bit	None	None
Jackhammers and handheld powered chipping tools	Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact:		
	-When used outdoors	None	APF 10
	-When used indoors or in an enclosed area	APF 10	APF 10
	-OR-		
	Use tool equipped with commercially available shroud and dust collection system		
	Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
	Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism:		
	-When used outdoors	None	APF 10

	-When used indoors or in an enclosed area	APF 10	APF 10
Handheld grinders for mortar removal (i.e., tuckpointing)	Use grinder equipped with commercially available shroud and dust collection system	APF 10	APF 25
	Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
	Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism		
Handheld grinders for uses other than mortar removal	For tasks performed outdoors only:	None	None
	Use grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface		
	Operate and maintain tool in accordance with manufacturer's inst. to minimize dust emissions		
	-OR-		
	Use grinder equipped with commercially available shroud and dust collection system		
	Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
	Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism:		
	-When used outdoors	None	None
	-When used indoors or in an enclosed area	None	APF 10
Walk-behind milling machines and floor grinders	Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface	None	None
	Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
	-OR-		
	Use machine equipped with dust collection system recommended by the manufacturer	None	None
	Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
	Dust collector must provide the air flow recommended by the manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism		
	When used indoors or in an enclosed area, use a HEPA-filtered vacuum to remove loose dust in between passes		
Small drivable milling machines (less than half-lane)	Use a machine equipped with supplemental water sprays designed to suppress dust. Water must be combined with a surfactant	None	None
	Operate and maintain machine to minimize dust emissions		
Large drivable milling machines (half-lane and larger)	For cuts of any depth on asphalt only:	None	None
	Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust		
	Operate and maintain machine to minimize dust emissions		
	For cuts of 4" in depth or less on any substrate:		
	Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust	None	None
	Operate and maintain machine to minimize dust emissions		

	<b>-OR-</b>		
	Use a machine equipped with supplemental water spray (w/ surfactant) designed to suppress dust.	<b>None</b>	<b>None</b>
	Operate and maintain machine to minimize dust emissions		
<b>Crushing machines</b>	Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated (e.g., hoppers, conveyers, sieves/sizing or vibrating components, and discharge points)	<b>None</b>	<b>None</b>
	Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions		
	Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote-control station		
<b>Heavy equip/utility vehicle used to abrade or fracture silica-containing materials or used during demo</b>	Operate equipment from within an enclosed cab	<b>None</b>	<b>None</b>
	When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions	<b>None</b>	<b>None</b>
<b>Heavy equip and utility vehicle for tasks such as grading and excavating but not including: Demolishing, abrading, or fracturing silica-containing materials</b>	Apply water and/or dust suppressants as necessary to minimize dust emissions	<b>None</b>	<b>None</b>
	<b>-OR-</b>		
	When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab	<b>None</b>	<b>None</b>

### 2.2.10 Wildlife Awareness

There are many different types of hazardous wildlife in a work area that can be found, from insects, to animals, and plants. It is important to recognize the dangers that nature provides and to know the area that you are working in.

#### Dangers of Wildlife Statistics

There are a few common types of wildlife that are a major source of different injuries or illnesses in the United States. A few of them include ticks, mosquitos, stinging insects, snakes, and deer. Here are some interesting facts on these insects and animals:

- The Insurance Information Institute reports that over 1 .6 million deer-[vehicle](#) collisions occur each year and these accidents cause vehicle damage, injuries, and even fatalities at a cost in the neighborhood of \$4.6 billion.
- Over 300,000 people are diagnosed with Lyme disease from tick bites each year in the United States according to the CDC.
- [According to UF Wildlife](#), approximately 7,000 to 8,000 individuals are bitten by poisonous snakes in the U.S. each year.
- According to NIOSH, thousands of people are stung by insects each year, and as many as 90–100 people in the United States die as a result of allergic reactions.
- Mosquitos are the deadliest creature worldwide. It is estimated that they kill approximately 725,000 people a year.

While there are some high-level statistics on major hazards and illnesses these creatures are responsible for, there are many other hazards to be considered for all wildlife.

- a. Ticks - Ticks are commonly found in wooded areas and areas with tall grass. They are active from April through October with the highest activity being from June through August.
  - i. Ticks can carry parasites, cause viral or bacterial infections, or transmit Lyme disease.
  - ii. Preventing tick encounters



- Wear light-colored clothing, tuck your top into your pants, and your pants into your boots or socks.
  - Use insect repellent containing 20–30 percent DEET.
  - Take a shower as soon as possible after working outdoors.
  - Look for ticks on your body. They're often found on the legs, thighs, back, arms, underarms, groin, behind the ears, and above the hairline.
- b. Fire ants - European fire ants are commonly found in moist, shaded places such as lawns, grassy areas, under decaying logs, and in yard waste and potted plants.
- i. The European fire ant has a stinger that can inject venom under the skin. After a sting, a burning sensation develops that can last from between 30 minutes and two hours. Burning is followed by itchiness that can last up to one week. At a minimum, stings cause swelling, redness, and discomfort. In rare cases, stings can result in a severe allergic reaction.
  - ii. Preventing fire ant encounters  
To help prevent stings, wear clothing and footwear that cover exposed skin. For example, wear long-sleeved shirts, long pants, socks, closed-toe shoes (or rubber boots), and gloves. Pants can be tied or taped to socks or boots. Do not disturb fire ant nests.
- c. Spiders - generally occupy dark, undisturbed sites, and they can occur indoors or outdoors. They thrive in human-altered environments. Indoors, they may be found in attics, basements, crawl spaces, cellars, closets, registers, ductwork, or remodeling jobs. Spiders may be also found underneath logs, loose stones in rock piles, and stacks of lumber.
- d. Other wildlife hazards  
Outside of poisonous or disease-carrying insects there can be other hazards wildlife in the workplace poses. One major hazard is the distractions animals or insects can create. Whether it is a huge majestic elk in your construction area or the buzzing fly that keeps landing on your face in the cab of your crane they both serve as a distraction from the task at hand. Eliminating distractions is an important part of creating a safe work environment and when there is certain wildlife in your work area this can create problems. Another hazard is being startled or surprised by wildlife.
- e. Wildlife safety tips
- Don't feed the animals. Any animals. It's not great for them, and it can be potentially dangerous for you. From a slight nip to an all-out attack, giving food to wild animals can set you up for an injury or worse.
  - Don't try to pet the animals. That beautiful baby moose walking across the road probably has a mama moose nearby who'll attack. Don't even go near any cute and cuddly animals. Avoid touching any wildlife you see. It's not safe for you or them.
  - Don't get too close. Believe it or not, you're in their territory. Most wild animals don't love it when you invade their space.
  - Don't provoke, sneak up on, or scare animals. Wild animals are unpredictable, that innocent-looking deer will protect itself at all costs. Trying to provoke them is a recipe for disaster.
  - Don't wander off the trail after dark.
  - Don't surprise a mother who's with her babies.
  - Do make noise. It'll let animals know you're nearby, so you don't startle them.
  - Do watch for animal tracks and poop. They can let you know what might be around.
  - Do carry bear spray if you're in an area known to have bear.
  - Do tell a park ranger if you have an encounter with a wild animal or have a close call or sighting.
- f. Encountering a wild animal
- Snake: back away. Give it as much space as possible. Be calm and quiet and move away from the area where the snake is located. If you're bit, seek medical attention as quickly as possible.

You can avoid snakes by checking logs and rocks before you sit down. Don't stick your hands inside logs or large piles of rocks. When you step over a log, do so carefully.

- Moose: give it space. Unless it has a baby nearby, it'll likely leave you alone. Moose will usually give you warning signs before charging like urinating, tossing its head, or smacking its lips. When a moose charges, run. Try to put a tree between yourself and the moose as that will deter it. If you get knocked down, get up and run again. A moose's hooves are much more dangerous than their antlers.
- Deer or elk: give it space. Much like a moose, deer and elk would rather run away than deal with humans. They'll only charge if provoked. Run away or climb a tree. If a deer is attacking you and you can't run away, play dead. If you get knocked down by an elk, get up and keep running.
- Bear: back away slowly if it hasn't seen you. If it has, talk to it in quiet tones. If it charges, use bear spray and stand your ground. Act like the predator and not the prey. Often, a bear charge will be a bluff. If the bear contacts you, drop to the ground and play dead by covering the back of your neck with your hands and your face with your elbows. Play dead longer than you think, as a bear will try to sniff you. Getting up too early will catch the bear's interest again. In the rare case a bear starts biting you, fight back with all you have.
- Mountain lion: stand tall and make loud noises while backing away slowly. Again, you don't want to give the lion any reason to think you're prey. You must act the part of a predator. Don't turn your back, run away, or crouch down to pick anything up in front of a mountain lion. If a mountain lion attacks, fight back and protect your head and neck.

In the majority of cases, wild animal encounters are a non-issue. While you're on the trail, it's fun to see animals. But you should always use common sense and know what to do if an animal encounter goes wrong.

g. Avoid poisonous plants when working outdoors

Many native and exotic plants are poisonous to humans when ingested or if there is skin contact with plant chemicals. However, the most common problems with poisonous plants arise from contact with the sap oil of several native plants that cause an allergic skin reaction—poison ivy, poison oak, and poison sumac.

If you've ever come in contact with poison ivy, you know how unpleasant it can be. And for many outdoor workers, poisonous plants are a common hazard. Workers at risk include farmers, foresters, landscapers, groundskeepers, gardeners, painters, roofers, pavers, construction workers, laborers, mechanics "and any other workers who spend time outside," according to NIOSH.

The United States is home to a number of poisonous plants, including poison ivy, poison sumac and poison oak. Problems arise when workers come in contact with the sap oil of these plants. NIOSH explains that the oil, called urushiol, is released when the plants are disturbed, bruised, damaged or burned. About 80 to 90 percent of workers who get this oil on their skin will experience an itchy red rash with bumps and blisters. For most people, this rash can be treated by using over-the-counter medication. However, some workers experience more severe reactions that may require medical attention. This often occurs when poisonous plants are burned and workers are exposed by inhaling urushiol, NIOSH states.

i. Prevention

Workers can take a number of steps to protect themselves from poisonous plants, NIOSH states. These include:

- Wear long-sleeved shirts, pants and gloves. Wash any exposed clothing separately to prevent contamination of other clothing.
- Consider using barrier creams that contain bentoquatam - a lotion that helps prevent poison oak, poison ivy and poison sumac rashes.

- Clean tools after every use with rubbing alcohol or soap and water. Be sure to wear disposable gloves while doing so, as urushiol can remain active on objects for up to five years.
- Refrain from burning plants if you believe they may be poisonous.

If exposure to poisonous plants occurs, rinse the affected skin immediately with soap and water or poison plant wash, NIOSH states. Be sure to thoroughly scrub under the nails. Apply a wet compress or calamine lotion to the skin, but never on broken skin or weeping blisters. Consider taking an antihistamine to help reduce swelling.

It is important to not only consider the disease carrying insects or the predators that could be around your work area, but all types of wildlife. There are many unique hazards they can each create. Find ways to mitigate the issues that these creatures can create for you at work.

## **3.1 Fall Protection Program – 29 CFR 1986, Subpart M**

### **3.1.1 Objective**

The objective of the CDL Electric Company, LLC Fall Protection Program is to identify and evaluate fall hazards to which employees will be exposed and to provide specific training as required by the Occupational Safety and Health Administration (OSHA) Fall Protection Standard, 29 CFR 1926, Subpart M, the American National Standards Institute (ANSI) requirements and ASTM Standards.

### **3.1.2 Policy**

It is the policy of CDL Electric Company, LLC to protect its employees from occupational injuries by implementing and enforcing safe work practices and appointing a competent person(s) to manage the Fall Protection Program. The CDL Electric Company, LLC Fall Protection Program shall comply with the OSHA requirements for the construction industry (6 foot). A copy of the OSHA Fall Protection Standard shall be made available to all employees and may be obtained from CDL Safety Director.

### **3.1.3 Assignment of Responsibility**

- Employer - It is the responsibility of CDL Electric Company, LLC to provide fall protection to affected employees, and to ensure that all employees understand and adhere to the procedures of this plan and follow the instructions of CDL Safety Director.
  - Create Fall Protection Program by person or persons who can identify hazardous or dangerous conditions in the personal fall arrest system or any component thereof, as well as in their application and use with related equipment
  - Provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves
  - Managers will be notified by employees who are on after hour callouts and will maintain communication hourly with the employee. If hourly communication is lost manager will check on team member at site and/or designate a team member to do so
- Program Manager - It is the responsibility of CDL Safety Director as the Fall Protection Program Manager to implement this program by:
  - Performing routine safety checks of work operations;
  - Enforcing CDL Electric Company, LLC safety policy and procedures;
  - Correcting any unsafe practices or conditions immediately;
  - Training employees and supervisors in recognizing fall hazards and the use of fall protection systems;
  - Maintaining records of employee training, equipment issue, and fall protection systems used at CDL Electric Company, LLC jobsites; and
  - Investigating and documenting all incidents that result in employee injury
- Employees - It is the responsibility of all employees to:

- i. Understand and adhere to the procedures outlined in this Fall Protection Program
- ii. Follow the instructions of CDL Safety Director
- iii. Bring to management's attention any unsafe or hazardous conditions or practices that may cause injury to either themselves or any other employees
- iv. Report any incident that causes injury to an employee, regardless of the nature of the injury
  - v. If on after-hours callout, will notify supervisor/manager of callout, arrival to site, and hourly checks, until departure from site is completed

### **3.1.4 Training**

- a. All employees who may be exposed to fall hazards are required to receive training on how to recognize such hazards and how to minimize their exposure to them. Employees shall receive training as soon after employment as possible and before they are required to work in areas where fall hazards exist.
- b. A record of employees who have received training and training dates shall be maintained by CDL Safety Director. Training of employees shall include:
  - i. Nature of fall hazards employees may be exposed to
  - ii. Correct procedures for erecting, maintaining, disassembling and inspecting fall protection systems
  - iii. Use and operation of controlled access zone, guardrail, personal fall arrest, safety net, warning line and safety monitoring systems
  - iv. Role of each employee in the Safety Monitoring System (if one is used).
  - v. Limitations on the use of mechanical equipment during roofing work on low-slope roofs (if applicable)
  - vi. Correct procedures for equipment and materials handling, and storage and erection of overhead protection
  - vii. Role of each employee in alternative Fall Protection Plans (if used)
  - viii. Requirements of the OSHA Fall Protection Standard, 29 CFR 1926, Subpart M.
  - ix. Requirements for reporting incidents that cause injury to an employee
- c. Retraining:
  - i. When it is determined that any affected employee who has already received training did not retain the understanding and skill required.
  - ii. Changes in the workplace render previous training obsolete.
  - iii. Changes in the types of fall protection systems or equipment.
- d. Additional training shall be provided on an annual basis or as needed when changes are made to this Fall Protection Program, an alternative Fall Protection Plan, or the OSHA Fall Protection Standard.

### **3.1.5 Controlled Access Zones**

- a. Masons are the only authorized employees permitted to enter controlled access zones and areas from which guardrails have been removed. All other workers are prohibited from entering controlled access zones.
- b. Controlled access zones shall be defined by control lines consisting of ropes, wires, tapes, or equivalent material, with supporting stanchions, and shall be:
  - i. Flagged with a high-visibility material at six (6) foot intervals.
  - ii. Rigged and supported so that the line is between 39 and 45 inches (including sag) from the walking/working surface.
  - iii. Strong enough to sustain stress of at least 200 pounds.
  - iv. Extended along the entire length of an unprotected or leading edge.
  - v. Be approximately parallel to the unprotected or leading edge.
  - vi. Connected on each side to a guardrail system or wall.

- vii. Erected between six (6) feet and twenty-five (25) feet from an unprotected edge, except in the following cases:
  - when working with precast concrete members: between six (6) feet and sixty (60) feet from the leading edge, or half the length of the member being erected, whichever is less; or
  - when performing overhand bricking or related work: between ten (10) feet and fifteen (15) feet from the working edge.
- c. The fall protection plan must include the name (or other method of identification) for each employee who is designated to work in controlled access zones. No other employees may enter controlled access zones.

### **3.1.6 Excavations**

Fall protection will be provided to employees working at the edge of an excavation that is six (6) feet or deeper. Employees in these areas are required to use the fall protection systems as designated in this program.

- a. Excavations that are six (6) feet or deeper shall be protected by guardrail systems, fences, barricades or covers.
- b. Walkways that allow employees to cross over an excavation that is six (6) feet or deeper shall be equipped with guardrails.

### **3.1.7 Fall Protection Systems**

#### **3.1.7.1 Covers**

- a. All covers shall be secured to prevent accidental displacement.
- b. Covers shall be color-coded or bear the markings “HOLE” or “COVER”.
- c. Covers located in roadways shall be able to support twice the axle load of the largest vehicle that might cross them.
- d. Covers shall be able to support twice the weight of employees, equipment and materials that might cross them.

#### **3.1.7.2 Guardrail Systems**

Guardrail systems shall be erected at unprotected edges, ramps, runways, or holes where it is determined by CDL Safety Leader that erecting such systems will not cause an increased hazard to employees. The following specifications will be followed in the erection of guardrail systems. Top rails shall be:

- a. At least 1/4 inch in diameter (steel or plastic banding is unacceptable)
- b. Flagged every six (6) feet or less with a high visibility material if wire rope is used
- c. Inspected by CDL Safety Leader as frequently as necessary to ensure strength and stability
- d. Forty-two (42) inches (plus or minus three (3) inches) above the walking/working level
- e. Adjusted to accommodate the height of the stilts, if they are in use

Mid rails, screens, mesh, intermediate vertical members, and solid panels shall be erected in accordance with the OSHA Fall Protection Standard.

Gates or removable guardrail sections shall be placed across openings of hoisting areas or holes when they are not in use to prevent access.

#### **3.1.7.3 Personal Fall Arrest Systems**

- a. Personal fall arrest systems shall be issued to and used by employees as determined by CDL Safety Leader and may consist of anchorage, connectors, body harness, deceleration device, lifeline, or suitable combinations. Personal fall arrest systems shall:
  - i. Limit the maximum arresting force to 1800 pounds
  - ii. Be rigged so an employee cannot free fall more than six (6) feet or contact any lower level
  - iii. Bring an employee to a complete stop and limit the maximum deceleration distance traveled to three and a half (3) feet

- iv. Be strong enough to withstand twice the potential impact energy of an employee free falling six (6) feet (or the free fall distance permitted by the system, whichever is less)
- v. Be inspected prior to each use for damage and deterioration
- vi. Be removed from service if any damaged components are detected
- b. All components of a fall arrest system shall meet the specifications of the OSHA Fall Protection Standard and shall be used in accordance with manufacturer's instructions.
  - i. The use of non-locking snap hooks is prohibited
  - ii. D-rings and locking snap hooks shall:
    - Have a minimum tensile strength of 5000 pounds
    - Be proof tested to a minimum tensile load of 3600 pounds without cracking breaking, or suffering permanent deformation
  - iii. Lifelines shall be:
    - Designed, installed and used under the supervision of CDL Safety Leader
    - Be protected against cuts and abrasions
    - Equipped with horizontal lifeline connection devices capable of locking in both directions on the lifeline when used on suspended scaffolds or similar work platforms that have horizontal lifelines that may become vertical lifelines
  - iv. Self-retracting lifelines and lanyards must have ropes and straps (webbing) made of synthetic fibers, and shall:
    - Sustain a minimum tensile load of 3600 pounds if they automatically limit free fall distance to two (2) feet
    - Sustain a minimum tensile load of 5000 pounds (includes rip stitch, tearing, and deforming lanyards)
  - v. Anchorages must support at least 5000 pounds per person attached and shall be:
    - designed, installed and used under the supervision of CDL Safety Leader
    - capable of supporting twice the weight expected to be imposed on it
    - independent of any anchorage used to support or suspend platforms

#### **3.1.7.4 Positioning Device Systems**

Body belt or body harness systems shall be set up so that an employee can free fall no farther than two (2) feet and shall be secured to an anchorage capable of supporting twice the potential impact load or 3000 pounds, whichever is greater. Requirements for snap hooks, dee-rings and other connectors are the same as detailed in this Program under *Personal Fall Arrest Systems*.

#### **3.1.7.5 Safety Monitoring Systems**

In situations when no other fall protection has been implemented, CDL Safety Leader(s) shall monitor the safety of employees in these work areas. The CDL Safety Leader(s) shall be:

- a. Competent in the recognition of fall hazards
- b. Capable of warning workers of fall hazard dangers
- c. Operating on the same walking/working surfaces as the employees and able to see them
- d. Close enough to work operations to communicate orally with employees
- e. Free of other job duties that might distract from the monitoring function

No employees other than those engaged in the work being performed under the Safety Monitoring System shall be allowed in the area. All employees under a Safety Monitoring System are required to promptly comply with the fall hazard warnings of the CDL Safety Leader(s).

#### **3.1.7.6 Safety Net Systems**

- a. Safety net systems must be installed no more than 30 feet below the walking/working surface with sufficient clearance to prevent contact with the surface below and shall be installed with sufficient vertical and horizontal distances as described in the OSHA Fall Protection Standard.
- b. All nets shall be inspected at least once a week for wear, damage, or deterioration by CDL Safety Leader. Defective nets shall be removed from use and replaced with acceptable nets.

- c. All nets shall follow the OSHA Fall Protection Standard and be of mesh, mesh crossing, border rope, and connection specifications.
- d. When nets are used on bridges, the potential fall area from the walking/working surface shall remain unobstructed.
- e. Objects that have fallen into safety nets shall be removed as soon as possible, and at least before the next working shift.

#### **3.1.7.7 Warning Line Systems**

Warning line systems consisting of supporting sanctions and ropes, wires, or chains shall be erected around all sides of roof work areas.

- a. Lines shall be flagged at no more than six (6) foot intervals with high-visibility materials.
- b. The lowest point of the line (including sag) shall be between 34 and 39 inches from the walking/working surface.
- c. Sections of warning line systems shall resist at least 16 pounds of force.
- d. Ropes, wires or chains must have a minimum tensile strength of 500 pounds.
- e. Warning line systems shall be erected at least six (6) feet from the edge, except in areas where mechanical equipment is in use. When mechanical equipment is in use, warning line systems shall be erected at least six (6) feet from the parallel edge and at least ten (10) feet from the perpendicular edge.

### **3.1.8 Tasks and Work Areas Requiring Fall Protection**

Unless otherwise specified, CDL Safety Leader shall evaluate the worksite(s) and determine the specific type(s) of fall protection to be used in the following situations.

#### **3.1.8.1 Framework and Reinforcing Steel**

Fall protection will be provided when an employee is climbing or moving at a height of over 24 feet when working with rebar assemblies.

#### **3.1.8.2 Hoist Areas**

Guardrail systems or personal fall arrest systems will be used in hoist areas when an employee may fall six (6) feet or more. If guardrail systems must be removed for hoisting, employees are required to use a personal fall arrest system.

#### **3.1.8.3 Holes**

Covers or guardrail systems shall be erected around holes (including skylights) that are six (6) feet or more above lower levels. If covers or guardrail systems must be removed, employees are required to use a personal fall arrest system.

#### **3.1.8.4 Leading Edges**

Guardrail systems, safety net systems, or personal fall arrest systems shall be used when employees are constructing a leading edge that is six (6) feet or more above lower levels. An alternative Fall Protection Plan shall be used if the CDL Safety Leader determines that the implementation of conventional fall protection systems is infeasible or creates a greater hazard to employees. All alternative Fall Protection Plans for work on leading edges shall:

- a. Be prepared or modified by a Qualified person
- b. Be under the supervision of a Competent Person
- c. Be written specific to the jobsite needs
- d. Include explanation of how conventional fall protection is infeasible or creates a greater hazard to employees
- e. Explain what alternative fall protection will be used for each task
- f. Be maintained in writing at the jobsite by CDL Safety Leader
- g. Meet the requirements of 29 CFR 1926.502(k)

### **3.1.8.5 Overhand Bricklaying and Related Work**

Guardrail systems, safety net systems, personal fall arrest systems, or controlled access zones shall be provided to employees engaged in overhead bricklaying or related work six (6) feet or more above the lower level. All employees reaching more than ten (10) inches below the walking/working surface shall be protected by a guardrail system, safety net system or personal fall arrest system.

### **3.1.8.6 Precast Concrete Erection**

Guardrail systems, safety net systems, or personal fall arrest systems shall be provided to employees working six (6) feet or more above the lower level while erecting or grouting precast concrete members. An alternative Fall Protection Plan shall be used if the CDL Safety Leader determines that the implementation of conventional fall protection systems is infeasible or creates a greater hazard to employees. All alternative Fall Protection Plans for precast concrete erection shall:

- a. Be prepared or modified by a Qualified person
- b. Be under the supervision of a Competent Person
- c. Be written specific to the jobsite needs
- d. Include explanation of how conventional fall protection is infeasible or creates a greater hazard
- e. Explain what alternative fall protection will be used for each task
- f. Be maintained in writing at the jobsite by CDL Safety Leader
- g. Meet the requirements of 29 CFR 1926.502(k)

### **3.1.9 Residential Construction**

#### **3.1.9.1 Roofing**

##### ***3.1.9.1.a Low-Slope Roofs***

Fall protection shall be provided to employees engaged in roofing activities on low-slope roofs with unprotected sides and edges six (6) feet or more above lower levels. The type(s) of fall protection needed shall be determined by the CDL Safety Leader, and may consist of guardrail systems, safety net systems, personal fall arrest systems, or a combination of a warning line system and safety net system, warning line system and personal fall arrest system, or warning line system and safety monitoring system. On roofs 50 feet or less in width, the use of a safety monitoring system without a warning line system is permitted.

##### ***3.1.9.1.b Steep Roofs***

Guardrail systems with toeboards, a safety net system, or a personal fall arrest system will be provided to employees working on a steep roof with unprotected sides and edges six (6) feet or more above lower levels, as determined by the CDL Safety Leader.

An alternative Fall Protection Plan shall be used if the CDL Safety Leader determines that the implementation of conventional fall protection systems is infeasible or creates a greater hazard to employees. All alternative Fall Protection Plans for work on residential construction shall:

- a. Be prepared or modified by a Qualified person
- b. Be under the supervision of a Competent Person
- c. Include explanation of how conventional fall protection is infeasible or creates a greater hazard
- d. Explain what alternative fall protection will be used for each task
- e. Be maintained in writing at the jobsite by CDL Safety Leader
- f. Meet the requirements of 29 CFR 1926.502(k)

#### **3.1.9.2 Wall Openings**

Guardrail systems, safety net systems, or a personal fall arrest system will be provided to employees working on, at, above or near wall openings when the outside bottom edge of the wall opening is six (6) feet or more above lower levels, and the inside bottom edge of the wall opening is less than 39 inches above the walking/working surface. The type of fall protection to be used will be determined by the CDL Safety Leader.



### **3.1.9.3 Ramps, Runways and Other Walkways**

Employees using ramps, runways, and other walkways six (6) feet or more above the lower level shall be protected by guardrail systems.

### **3.2.0 Protection from Falling Objects**

When guardrail systems are in use, the openings shall be small enough to prevent passage of potential falling objects. The following procedures must be followed by all employees to prevent hazards associated with falling objects.

- a. No materials (except masonry and mortar) shall be stored within four (4) feet of working edges.
- b. Excess debris shall be removed regularly to keep work areas clear.
- c. During roofing work, materials and equipment shall be stored no less than six (6) feet from the roof edge unless guardrails are erected at the edge.
- d. Stacked materials must be stable and self-supporting.
- e. Canopies shall be strong enough to prevent penetration by falling objects.
- f. Toeboards erected along the edges of overhead walking/working surfaces shall be:
  - i. Capable of withstanding a force of at least 50 pounds
  - ii. Solid with a minimum of three and a half (3) inches tall and no more than one quarter (1/4) inch clearance above the walking/working surface
- g. Equipment shall not be piled higher than the toeboard unless sufficient paneling or screening has been erected above the toeboard.

### **3.2.1 Recovery/Rescue Operations**

The implementation and maintenance of a safe work environment is the collective responsibility of all employees on the jobsite. It is CDL Electric Company, LLC Inc policy to provide prompt medical treatment when a worker is injured on the jobsite. To do this, workers may have to perform a working at heights rescue to bring down a worker who has fallen and is suspended in a safety harness.

#### **3.2.1.1 Purpose of Working at Heights Rescues**

When a worker falls and is suspended in a harness, it's important to rescue him/her as quickly as possible because of the following reasons.

- a. The worker may have suffered injuries during the fall and may need medical attention.
- b. When workers are suspended in their safety harnesses for extended periods (6 minutes), they may suffer from blood pooling in the lower body. This can lead to suspension trauma.
- c. Suspended workers may panic if they are not rescued quickly.
- d. The event that led to the fall may create additional risks that need to be addressed.

#### **3.2.1.2 Emergency Planning**

The three main parts of emergency planning are:

- a. Training
- b. Creating an emergency plan
- c. Outlining rescue procedures

#### **3.2.1.3 Training**

All site personnel must attend a site-specific safety training session where they will review emergency response procedures and receive instruction on alarms and assembly areas.

Train a designated crew to perform the rescue. This crew must know how to use the equipment that is available to them at the jobsite and where they can find it. They should review the rescue procedure once every two weeks with the crane crews.

#### **3.2.1.4 Emergency Response Plan**

If a worker falls and is suspended by a safety harness, implement the emergency response plan by following the steps below:

**Note:** *It's important to know your role.*

- a. The site supervisor (or alternate foreperson) takes control of the situation.
- b. The site supervisor sounds the emergency alarm—two long blasts from a horn. All workers in the immediate vicinity of the incident stop working. The site supervisor quickly evaluates the situation and identifies any further hazards that could arise.
- c. The site supervisor or their designate goes to get help if workers are close by. If no one is close enough, the site supervisor calls for help.
- d. The site supervisor calls 911 to notify local police, fire, and ambulance if required.
- e. The crane operator remains on standby. The operator frees the hook and waits for further direction in case the designated rescue team must perform a basket rescue.
- f. The site supervisor (or a worker assigned to the task) isolates the accident zone and its perimeter to limit further exposure.
- g. The site supervisor (or a worker assigned to the task) moves all non-affected personnel to a safe zone or directs them to remain where they are.
- h. The site supervisor enables radio silence on the jobsite, except for crisis communications from emergency responders. These communications are conducted on a pre-selected "emergency only" radio channel.
- i. The site supervisor sends a designated worker to the site gate to meet the response team (police, medical, fire, etc.) and ensure that they have a safe access path to the accident scene.
- j. The site supervisor assembles the emergency rescue team at the accident site as quickly as possible to determine the best rescue procedure for the situation.

### **3.2.1.5 Rescue Procedures**

The following rescue procedures are ordered (A) through (D), with (A) being the preferred method and (D) being the method used when there is no other means of rescue.

**3.2.1.5.a Elevating Work Platform Rescue:** If an elevating work platform (EWP) is available on site and the suspended worker can be reached by the platform, follow the procedure below:

- a. Bring the EWP to the accident site and use it to reach the suspended worker.
- b. Ensure that rescue workers wear full-body harnesses attached to appropriate anchors in the EWP.
- c. Ensure that the EWP has the load capacity for both the rescuer(s) and the fallen worker. If the fallen worker is not conscious, two rescuers will probably be needed to safely handle the weight of the fallen worker.
- d. Position the EWP platform below the worker and disconnect the worker's lanyard when it is safe to do so. When the worker is safely on the EWP, reattach the lanyard to an appropriate anchor point on the EWP if possible.
- e. Lower the worker to a safe location and administer first aid. Treat the worker for suspension trauma and any other injury.
- f. Arrange transportation to hospital if required.

**3.2.1.5.b Ladder Rescue:** If an elevating work platform is not available, use ladders to rescue the fallen worker with the procedure outlined below:

- a. If the fallen worker is suspended from a lifeline, move the worker (if possible) to an area that rescuers can access safely with a ladder.
- b. Set up the appropriate ladder(s) to reach the fallen worker.
- c. Rig separate lifelines for rescuers to use while carrying out the rescue from the ladder(s).
- d. If the fallen worker is not conscious or cannot reliably help with the rescue, at least two rescuers may be needed.
- e. If the fallen worker is suspended directly from a lanyard or a lifeline, securely attach a separate lowering line to the harness.
- f. Other rescuers on the ground (or closest work surface) should lower the fallen worker while the rescuer on the ladder guides the fallen worker to the ground (or work surface).

- g. Once the fallen worker has been brought to a safe location, administer first aid and treat the person for suspension trauma and any other injury.
- h. Arrange transportation to hospital if required.

**3.2.1.5.c Rescue from Work Area or Floor Below:** If the fallen worker is suspended near a work area and can be safely reached from the floor below or the area from which they fell, use the following procedure:

- a. Ensure that rescuers are protected against falling.
- b. If possible, securely attach a second line to the fallen worker's harness to help rescuers pull the fallen worker to a safe area. You will need at least two strong workers to pull someone up to the level from which they fell.
- c. Take up any slack in the retrieving line to avoid slippage.
- d. Once the worker has been brought to a safe location, administer first aid and treat the person for suspension trauma and any other injury.
- e. Arrange transportation to hospital if required.

**3.2.1.5.d Basket Rescue:** If a worker has fallen and is suspended in an inaccessible area, you may need to perform a basket rescue.

For basket rescues, the basket must be designed by a professional engineer in accordance with good manufacturing processes to withstand all loads to which it may be subjected. It must be kept on site at all times in an accessible location where it is clear of material or other equipment. Fit the rescue basket with appropriate rigging for quick hookup by the crane operator.

- a. Always keep the following items in the rescue basket:
  - i. First-aid kit
  - ii. Three lanyards equipped with shock absorbers
  - iii. One full-body harness
  - iv. Tag line attached to the basket at all times
  - v. Descent controller rescue device in good working condition
  - vi. Secondary safety line to tie the basket above the headache ball of the crane
- b. To perform a basket rescue, follow the steps below:
  - i. Make sure preferred methods 3.125 (a, b, and c) are not possible.
  - ii. Notify the crane operator right away to position the crane to attach the basket.
  - iii. While the basket is being attached, the crew leader checks that all safety rigging is done, and all the required safety equipment is available.
  - iv. With two rescuers in the basket, hoist it to a position that is above and as close as possible to the fallen worker. A designated worker on the ground guides the basket with a tag line. The designated worker must make sure that when the rescue basket reaches the right elevation, the door of the basket is facing the structural steel to provide an easy exit for rescuer #1.
  - v. Rescuer #1 exits the rescue basket and gets into a position to reach the fallen worker. When doing this, rescuer #1 must be tied-off at all times to either the structure or the rescue basket.
  - vi. Rescuer #2, who is still in the rescue basket, lowers the line that will be used to retrieve the worker. Rescuer #2 attaches an extra lanyard to the line if required.
  - vii. Rescuer #1 assesses the fallen worker for injuries and then decides how to proceed (i.e., treat injuries first, guide the fallen worker into the rescue basket, or lower the basket to the ground with the fallen worker attached to it).
  - viii. Once the fallen worker has been brought to a safe location, administer first aid. Treat the person for suspension trauma and any other injury.
  - ix. Arrange transportation to hospital. A designated worker must accompany the injured worker.
- c. If the basket rescue is the method used, keep the following points in mind:
  - i. Perform a basket rescue only when it is not possible to use conventional equipment to rescue the fallen worker in a safe manner.

- ii. Never exceed the maximum number of workers in the basket as indicated on the nameplate.
- iii. Ensure that a competent worker inspects the crane and equipment being used prior to rescuer lift.
- iv. Always equip the crane with a fail-safe mechanism to prevent the boom from descending in the event of a power source or system failure.
  - v. Maintain an adequate means of communication between the rescuers in the basket and the crane operator at all times.
- vi. Ensure that workers in the rescue basket wear full-body safety harnesses attached to a lanyard and anchored to appropriate points in the basket at all times.
- vii. Make sure that all rigging used to attach the rescue basket to the hook of a load line has a safety factor of 10 against failure. There should be a safety line attached to the load line directly from the basket.
- viii. Do not allow cranes to travel while rescuers are in the basket.
  - ix. Do not use suspended rescue baskets during high winds, electrical storms, snow, ice, sleet, or other adverse conditions that could affect the safety of personnel on the platform or in the basket.

### **3.2.1.6 Post-Rescue Procedure**

All non-affected workers should remain in the designated safe gathering zone until the site supervisor notifies them to do otherwise.

- a. The site supervisor and health and safety representative shall:
  - i. Begin the accident investigation.
  - ii. Quarantine all fall-arrest equipment that may have been subjected to fall fatigue effects and/or shock loading for further investigation.
  - iii. Secure the area (the OSHA requires that an accident scene not be disturbed where a fatal or critical injury has occurred).
  - iv. Determine if the jobsite-specific rescue and evacuation plans were followed as designed.
  - v. Record modifications or additions to the plans that the rescue team deems necessary.
  - vi. Record all documented communications with fire, police, MOL, and other contractors involved (When a fall occurs and is arrested, you must notify the MOL in writing.).
  - vii. Record all documented statements from employees, witnesses, and others.
  - viii. Save all photographs of the incident.
  - ix. Record all key information such as dates, time, weather, general site conditions, and specific accident locales including sketches of the immediate incident area, complete with measurements if applicable.
- b. This rescue plan is intended to reduce risks to an employee's health after a fall arrest event. The rescue plan should also minimize the amount of at-risk behavior of the rescuer during the rescue attempt and help to ensure that the rescue is conducted promptly in a safe and professional manner.
  - i. This rescue plan applies to all locations where personnel are employed to work at height.
  - ii. The requirements of this rescue plan shall be observed by all personnel involved in working at heights.
  - iii. This rescue plan must be reviewed or included in any job safety analysis or pre-task planning for activities that require working at heights.

### **3.2.2 Accident Investigations**

All incidents that result in injury to workers, as well as near misses, regardless of their nature, shall be reported and investigated. Investigations shall be conducted by the CDL Safety Leader as soon after an incident as possible to identify the cause and means of prevention to eliminate the risk of reoccurrence.

In the event of such an incident, the Fall Protection Program (and alternative Fall Protection Plans, if in place) shall be reevaluated by the CDL Safety Director to determine if additional practices, procedures or training are necessary to prevent similar future incidents.

### 3.2.3 Changes to the Plan

Any changes to the Fall Protection Program (and alternative Fall Protection Plan, if in place) shall be approved by the CDL Safety Director and shall be reviewed by a qualified person as the job progresses to determine additional practices, procedures or training needs necessary to prevent fall injuries. Affected employees shall be notified of all procedure changes and trained if necessary. A copy of this plan, and any additional alternative Fall Protection Plans, shall be maintained at the jobsite by CDL Safety Leader.

### 3.2.4 Glossary

**Anchorage** is a secure point of attachment for lifelines, lanyards, or deceleration devices.

**Body belt** a strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.

**Body harness** straps that may be secured about the person in a manner that distributes the fall-arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with a means for attaching the harness to other components of a personal fall arrest system.

**Connector** a device that is used to couple (connect) parts of a personal fall arrest system or positioning device system together.

**Controlled access zone** a work area designated and clearly marked in which certain types of work (such as overhand bricklaying) may take place without the use of conventional fall protection systems (guardrail, personal arrest or safety net) to protect the employees working in the zone.

**Deceleration device** any mechanism, such as rope, grab, rip stitch lanyard, specially woven lanyard, tearing or deforming lanyards, and automatic self-retracting lifelines/lanyards, which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limits the energy imposed on an employee during fall arrest.

**Deceleration distance** the additional vertical distance a falling person travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which a deceleration device begins to operate.

**Guardrail system** a barrier erected to prevent employees from falling to lower levels.

**Hole** a void or gap two (2) inches (5.1 centimeters) or more in the least dimension in a floor, roof, or other walking/working surface.

**Lanyard** a flexible line of rope, wire rope, or strap that generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage.

**Leading edge** the edge of a floor, roof, or formwork for a floor or other walking/working surface (such as a deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed.

**Lifeline** a component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), that serves as a means for connecting other components of a personal fall arrest system to an anchorage.

**Low slope roofs** a roof having a slope less than or equal to 4 in 12 (vertical to horizontal).

**Opening** a gap or void 30 inches (76 centimeters) or higher and 18 inches (46 centimeters) or wider, in a wall or partition, through which employees can fall to a lower level.

**Personal fall arrest system** a system including but not limited to an anchorage, connectors, and a body harness used to arrest an employee in a fall from a working level.

**Positioning device system** a body belt or body harness system rigged to allow an employee to be supported on an elevated vertical service, such as a wall, and work with both hands free while leaning backwards.

**Rope grab** a deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest a fall.

**Safety monitoring system** is a safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.

**Self-retracting lifeline/lanyard** a deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under minimal tension during normal employee movement and which, after onset of a fall, automatically locks the drum and arrests the fall.

**Snap hook** a connector consisting of a hook-shaped member with a normally closed keeper, or a similar arrangement, which may be opened to permit the hook to receive an object and, when released automatically, closes to retain the object.

**Steep roof** a roof having a slope greater than 4 in 12 (vertical to horizontal).

**Toeboard** a low protective barrier that prevents material and equipment from falling to lower levels and which protects personnel from falling.

**Unprotected sides and edges** any side or edge (except at entrances to points of access) of a walking/working surface (e.g., floor, roof, ramp, or runway) where there is no wall or guardrail system at least 39 inches (1 meter) high.

**Walking/working surface** any surface, whether horizontal or vertical, on which an employee walks or works, including but not limited to floors, roofs, ramps, bridges, runways, formwork, and concrete reinforcing steel. Does not include ladders, vehicles, or trailers on which employees must be located to perform their work duties.

**Warning line system** a barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect employees in the area.

## **3.3 Tower Climbing Safety Policy**

### **3.3.1 Objective**

To establish safety requirements and procedures for working at heights on tower sites and other structures as noted in the scope.

### **3.3.2 Scope**

This procedure applies to all CDL Electric employees, contract workers, and contractors, who work on elevated platforms and structures; including towers where workers are exposed to potential falls with height of 6-feet (1.8 meters) or more. This includes, but is not limited to, self-supporting and guyed towers, water towers, monopoles, and other structures of similar construction.

### **3.3.3 Responsibilities**

#### **3.3.3.1 Managers/Supervisors and Project Managers**

- a. Ensure that the requirements of this procedure are implemented and audit contractor performance at the job sites/towers under your responsibility.
- b. Ensure that an evaluation of a contractor has been conducted to confirm that the contractor is competent and qualified for tower construction, maintenance, etc. prior to signing a contract and initiating any work with the contractor. The requirements of this procedure should be included in the contract language with the contractor.
- c. Ensure all employees, contract employees, and contractors required to use personal fall protection equipment and devices have the proper equipment and devices in safe operating condition and have received training on such equipment and devices prior to use.
- d. Ensure that notifications are made in the event of an accident or injury at a tower or other site where workers are exposed to potential falls of six feet (1.8 m) or more to the appropriate authorities and the EHS contacts noted below.
- e. Conduct accident investigations to determine the root cause of the accident and take the necessary steps to prevent future accidents.

#### **3.3.3.2 Tower Climbers**

- a. All persons that climb towers must attend a working at heights qualified climber training course to include tower climbing, fall protection and a written qualified climber certification in order to become an Authorized Climber.

- b. Climbers with the additional responsibility of a Competent Climber/Competent Rescuer must attend additional training that includes medical and rescue techniques.
- c. All persons authorized to climb must understand the hazards, risks and danger involved with climbing. Before climbing they must ensure that they have and will use personal fall protection equipment; and meet the requirements of an Authorized Climber.
- d. All climbers must adhere to the 100% tie-off requirement at all times, and no-one is to ascend or descend a tower unless their hands are free. Free Climbing will never be permitted.
- e. All climbers must utilize and document the inspection of their PPE, including fall protection equipment, to ensure that it is in good working condition and in accordance with the manufacturer's recommendations.
- f. All climbers need to assess the conditions or potential conditions that could hinder a safe climb and decide whether it is safe to climb. Conditions may include but not be limited to hazardous weather, insect or animal infestations, PPE not available or damaged, tower damage or insufficient tie-off points, etc. Climbers should only climb in conditions that are determined to be safe.

### 3.3.3.3 EHS

- a. Advise and make available to management and employees the requirements of this procedure.
- b. Monitor and periodically review the effectiveness of the Tower Climbing Program. This may include conducting inspections of tower climbing activities, equipment reviews, review of contractors working on CDL Electric's behalf, conducting meetings with project managers or field service organizations to review tower climbing practices and accident/injury investigations.

### 3.3.3.4 Independent Contractors

Ensure that your employees and any contracted by you to climb towers meet all the requirements of an Authorized Climber as described in this procedure and have a written safety program that addresses fall protection and that they have a Radio Frequency energy safety program.

### 3.3.4 Reference Documents

Document Number	Document Description
<a href="#">ANSI/ASSE Z.359</a>	Fall Arrest Code: 2007
<a href="#">NATE</a>	National Association of Tower Erectors
<a href="#">ANSI/ASSE A10.42-200x</a>	Rigging Standard

### 3.3.5 Abbreviations, Acronyms, and Definitions

100% tie-off requirement	The expectation that whenever there is a risk of an employee falling from a work level over six feet (1.8 m) above the ground or from a workstation, where feasible, the employee must be protected by some conventional means of fall protection, which may include an integral fall arrest system. This also means that when climbers are using a personal fall arrest system to provide fall protection, the personal fall arrest system must be tied to an anchorage point at all times (100% tie-off)
ANSI	American National Standards Institute
ASSE	American Society of Safety Engineers
EHS	Environmental, Health and Safety
Tower	Steel lattice structures, masts, self-supporting and guyed towers, water towers, monopoles and other structures of similar construction.
Anchorage	A secure point of attachment for lifelines, lanyards or deceleration devices.
Body belt	A strap with a means for both securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device. This should be used for positioning only.

Body harness	Straps that may be secured about the person in a manner that distributes the fall-arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with a means for attaching the harness to other components of a PFAS.
Authorized climber	A person knowledgeable with the physical capabilities to climb; who may or may not have previous climbing experience; has been trained in fall protection regulations, the equipment that applies to communications structures work, and instruction for proper use of the equipment.
Competent climber	An individual with the physical capabilities to climb; has actual tower climbing experience; is trained in fall protection regulations and requirements, including the equipment that applies to tower work; is capable of identifying existing and potential hazards; and has the employer's authority to take corrective action to eliminate those hazards
Competent Rescuer	A Competent Climber with training in rescue who is capable of identifying predictable rescue needs of climbers and has the authority to prepare and implement rescue operations for them.
Connector	A device that is used to couple (connect) parts of a personal fall arrest system or positioning device system together.
Contractors	A company hired for the purpose of a tower construction/ installation project, the revision of existing tower sites or fulfilling tower maintenance and/or service agreements. This would include any contracted employees by a contractor in the completion of the project.
RF/EME	Radio Frequency/Electromagnetic Energy
Free Climbing	Climbing without the use of fall protection equipment. Practice is forbidden.
Fall arrest block (Inertia reel)	Inertia reel (also known as a self-retracting lanyard or fall arrest block) is a mechanical device that arrests a fall by locking onto a drop line and at the same time allows freedom of movement.
Fall Protection System	A system designed to prevent injuries by falls from a height. The system can include but not be limited to fall arrest systems, fall restraint systems such as Cage Ladder systems.
Lanyard	A flexible line of rope, wire rope, or strap that generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage.
Protective footwear	Covered shoes that provide adequate traction (rubber soles) and depending on the hazard safety shoes with steel toes.
Personal fall arrest system	A system including but not limited to an anchorage, connectors, and a body harness used to arrest an employee in a fall from a working level.
Pole strap	A restraining device that attaches a person to a pole with a strap that goes around the pole.
Positioning device system	A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, and work with both hands free while leaning backwards.
PPE	Personal Protective Equipment. This includes all aspects of personal fall protection equipment.



Rescue kit	An approved system that is designed to enable safe descending from a tower in cases of emergency or rescue of a climber. This system is designed to provide descending at a pace of 0.7- 1 m per second. It must be readily available during the work on the tower.
Weather protection clothing	A set of clothing that provide the appropriate protection according to the weather conditions.
RF Personal Monitor	A device to enable the employee to receive warning sounds when RF / EME levels are approaching or exceeding the permissible levels

### **3.3.6 Procedure**

#### **3.3.6.1 Training Requirements**

- a. All climbers must meet the requirements of an Authorized Climber as described in this procedure, including being trained and certified in the nature of fall hazards on towers and the proper use of personal fall arrest equipment and systems before the employee is allowed to climb. (Examples of recommended training courses can be found at the [NATE website](#))
- b. All climbers that could potentially be exposed to RF/EME hazards must be trained in regard to the potential hazards of radio frequency energy (EME/RF) and how to maintain exposure within acceptable limits.
- c. All climbers that could potentially be exposed to electrical hazards must be trained in regard to the electrical hazards and relevant electrical safety procedures. All climbers working on electrical installations must have the appropriate certifications for electrical work.
- d. The onsite manager/supervisor or the responsible project manager will ensure that climbers are qualified to climb towers prior to starting work.

#### **3.3.6.2 Evaluating Qualified Contractors**

- a. All contractors performing tower climbing activities must be qualified. EHS will perform a review of the contractors/sub-contractors safety programs. The evaluation may include but not be limited to:
  - i. Review of scope of work
  - ii. Verify the necessary experience, references, and capability to properly perform the job.
  - iii. Determine if the contractor has a written safety program and conduct safety audits of job sites.
    - For tower climbing it is expected that the written safety program includes fall protection, lockout/tagout, RF safety procedures, appropriate training and personal protective equipment at a minimum.
- b. Based on the results of the evaluation, the responsible person shall decide of whether or not the contractor is qualified to safely conduct the intended work. Only those contractors that are determined to be qualified will be utilized or requested to bid on a project.

#### **3.3.6.3 Pre-climb Safety Measures**

- a. A list of general safety guidelines for working on towers can be found in Appendix A.
- b. All applicable laws, regulations and the requirements of this procedure must be complied with in addition to the following:
  - i. Under no circumstances will anyone be compelled or coerced to climb. If the authorized climber has a reason to believe that a climb presents an unusual risk to their safety and health, the employee is obligated to inform their management of those risks, so they can be mitigated.
  - ii. No person is permitted to climb at a site without another person present.
  - iii. Working at heights involves a certain amount of physical and mental exertion. Since certain medical conditions may prevent an employee from performing a climb safely, it is the responsibility of the employee to inform management of a medical condition that would hinder or prevent a safe climb.

- c. Before any climbing takes place, a pre-planning safety meeting must take place with all of the climbers and support personnel on the ground. The content of the meeting will at a minimum include the following:
  - i. Conduct a site evaluation before any work/climbing starts. The following should be considered during the evaluation and safety meeting:
    - Determine the type and height of tower, the location and types of antennas, the tools and safety equipment required to perform the job, how to access the site, and whether the owner/customer needs to be notified.
    - Determine if the tower or structure appears to be sound. Determine if the guyed wires are secure and in good condition, if the ladder or bolts are secure, and that a safety cable is installed and in good condition. Never climb a tower or structure that is believed to be not safe. Check for any signs or rust or degradation of the tower structure, examples could include any movement or degradation to the foundation slabs.
    - Determine the path to climb, whether power to equipment needs to be turned off or reduced, whether the current weather is satisfactory, and if the weather is expected to change before completing the job.
    - Check/Inspect all required personal protection equipment, such as hard hat, RF meter, safety glasses, gloves, foot protection and fall protection equipment to ensure that they are in proper condition. A checklist/form should be developed and utilized to ensure that the equipment's condition is checked and verified prior to being utilized.
    - Determine the communication needs such as two-way radio equipment or other suitable means of communications. Communication equipment must always be available and used when necessary to provide communications between the person climbing and the ground crew.
    - Review Emergency Medical and Rescue Plan
  - d. The responsible parties, including on-site manager/supervisor, field operations leadership, the responsible project manager or qualified contractor for a tower or region of towers shall maintain a list of the authorized/competent climbers, qualified contractors, by climber name and company.

#### **3.3.6.4 Tower Climbing Requirements**

- a. Hazardous Environmental Conditions (Weather, Low Visibility)
  - i. The weather must be safe and stable for the climb to occur. Never climb when lightning/thunder is known to be or expected in the area. Extreme caution is to be used during rainy, windy, icy or other condition that may significantly increase the risk of the climb and/or degrade the structure.
  - ii. Climbing during daylight is the preferred procedure, but it is recognized that it may be necessary under some circumstances to climb at night or during a time of low visibility, such as fog. Extreme caution must be exercised during such climbs, in addition to the following requirements:
    - All climbers must use flashlights or lighting equipment attached to the safety helmet to enable their identification from the ground and their ability to see the work they are performing. Additional flashlights may be utilized as needed; however, these must be attached to the climber in a manner that will not restrict the climbers' movement or safety.
- b. Personal Protective Equipment (PPE)
  - i. Employees working on or around towers must wear and use the correct Personal Protective Equipment (PPE). A list of required PPE for Tower climbers follows:
    - Full Body (5-point) Fall Arrest Safety Harness
    - Fall Arrest Block (inertia reel)
    - Energy Absorbing Lanyards and restraint lines
    - Head protection – hard hat/ safety helmet if there is the possibility of being struck by falling objects such as tools, etc.

- Occupational Protective Footwear
- Rescue/Retrieval Kit
- ii. Dependent on the evaluation of the climb during the climb preplanning safety meeting, the following PPE may also be required:
  - RF Personal Monitors
  - Hand protection – safety gloves
  - Safety Glasses
  - Communication Device (Radio, phone, mobile phone)
  - Wet weather gear
  - Personal Portable Light for night work
  - Pole Strap (where appropriate)
- iii. The following safety equipment should also be available when working at each site:
  - First Aid Safety Kit
- iv. Climbers at the site must complete and document a thorough equipment check/inspection to be certain the correct safety harness, footwear, safety glasses and helmets/hard hats are in good condition, and safe to use before the climb begins. Damaged or defective PPE should be removed from service immediately and rendered unusable.

### **3.3.6.5 Emergency Medical and Rescue Plan**

- a. The responsible parties, to include on-site manager/supervisor, field operations leadership or the responsible project manager, for a tower or region of towers must develop and have available an emergency plan which includes provisions for medical emergencies and tower rescues prior to start of work at a tower site. The Plan must include the following:
  - i. The methodology to be used in the event of a medical emergency or tower rescue. The methodology must include the use and availability of a competent rescuer to ensure the safest rescue is planned and conducted. A minimum of two competent trained rescue climbers will be on site when performing elevated tower work.
  - ii. Emergency phone numbers on a site-by-site basis and identify the communications equipment available to notify emergency or medical response services.
  - iii. Notification procedures in-case of serious injury or death to ensure that the proper authorities are notified.
- b. The tower site must post all applicable warning and danger signs in prominent locations.
- c. The tower site must have access controls such as gates, fences, locking out of ladders, etc. in order to prevent access and potential climbing by unauthorized persons.

### **3.3.6.6 Accident Investigation and Reporting**

- a. In the event of an accident or injury at a tower site, the responsible manager/supervisor must investigate the accident to determine what happened, identify the root cause of the accident/injury, and what steps need to be taken to prevent this type of accident/injury from occurring in the future.
- b. The EHS Department shall be contacted/informed of all tower climbing incidents, regardless of the severity.
- c. All documentation associated with the incident and subsequent corrective actions must be supplied to EHS. If requested/needed, Regional EHS support can assist with the accident investigation and determination of corrective actions.

### **3.3.6.7 Contracting Tower Climbers**

When contracting with Tower climbing companies EHS requirements should be stipulated in the contract language. Contact your regional or country law department to determine the appropriate language to include in the contracts.

### 3.3.7 Records

Record	Location	Retained for	Maintained by
Emergency Medical & Rescue Plan	Present at each tower climbing event	Current plan must be available for all active tower sites	Responsible management for tower or region of towers
Accident Investigation Documentation	With responsible manager/supervisor	5 years from year of accident/incident	Responsible manager/supervisor
Completed Safety Equipment Inspections	With responsible manager/supervisor	1 year	Responsible manager/supervisor
Site Specific Work at Height Procedure	At jobsite with responsible manager/supervisor	Life of project	Contractor

### 3.3.8 General Health and Safety Guidelines - Working on Towers and Similar Structures

- a. General
  - i. All workers must have received safety training to include tower climbing
  - ii. A written survey of the risks and hazards must be performed at the site
  - iii. A pre-climb planning meeting must be conducted
  - iv. A PPE inspection checklist must be completed
  - v. A competent person must be designated and located at the climbing site
  - vi. At least one person on-site must be certified in First Aid and CPR
  - vii. A first aid kit must be on-site
  - viii. The Emergency Medical Plan must be reviewed, and rescue equipment staged for use
- b. Work on Tower Mast/Structure
  - i. A competent person must establish that the tower structure is safe to climb
  - ii. All climbers must be certified and authorized to climb
  - iii. All climbers shall be tied-off 100% at all times even when ascending/descending or moving horizontally
  - iv. The climber's hands must be free to climb. Work tools and parts should be hoisted separately
  - v. While climbing or descending the tower the climber must be tied to the safety cable
  - vi. No one will be permitted to climb at night without special authorization
- c. Personal Protective Equipment (PPE)
  - i. All workers must wear safety helmets/hard hats if there is the possibility of being struck by falling objects (e.g. tools)
  - ii. All workers must wear occupational protective footwear
  - iii. Workers must wear a full-body harness designed for tower climbing, a shock absorbing lanyard attached to the rear D-ring, and side positioning lanyards
  - iv. When working in humid conditions the workers must use gloves to prevent sliding
  - v. In the summer, workers shall wear clothes and hats to protect them from sun damage and eye protection to filter out the sun's radiation
  - vi. In the winter, workers should wear clothes to protect against the cold weather
- d. Electromagnetic Energy/Radio Frequency Exposure (EME/RF)
  - i. All climbers must receive EME/RF exposure training
  - ii. A review of potential EME/RF sources must be reviewed as part of a pre-climb meeting
  - iii. All climbers have personal monitors when working near EME/RF fields
- e. Cranes & Hoists
  - i. The crane/hoist operator shall be qualified through certification and/or experience
  - ii. Daily/Monthly crane/hoist inspections must be performed and documented
  - iii. Annual inspections tags or reports must be on-site
  - iv. Crane/Hoist capacity must be posted at operator's station along with the load charts
  - v. The crane/hoist must be properly secured and anchored for the loads to be lifted

- vi. Communication techniques (i.e. hand signals) must be reviewed prior to lifting any material(s)
- f. Rigging
  - i. Compliance with ANSI/ASSE A10.42-200x or equivalent regional standards that establishes the criteria of knowledge and performance requirements for a qualified rigger and to assist in achieving reasonable safety of all persons and materials during the rigging, lifting, or movement of loads
  - ii. Must perform and document daily inspections of rigging equipment
  - iii. The weight of the load and center of gravity must be known
  - iv. The rated capacity of slings and hardware must be known
  - v. Tag lines must be used to control suspended loads
- g. Ladders
  - i. The proper ladder for the work to be performed must be selected
  - ii. Must maintain 4 to 1 incline/slope ratio on extension and straight ladders
  - iii. Workers hands must remain free while ascending/descending the ladder
  - iv. Must maintain 36" (91.4 cm) above the landing on extension and straight ladders
- h. Electrical
  - i. Workers must be licensed/certified as electricians
  - ii. Workers must be trained in electrical and lockout/tagout safety
  - iii. Ground Fault Circuit Interrupters (GFCI) must be used for all power tools
  - iv. Proximity to power lines must be maintained (10 ft (3 m) @ 50 kV, 20 ft @ 300 kV)

## **4.1 Trenching and Excavation – 29 CFR 1926, Subpart P**

### **4.1.1 Objective**

The objective of the CDL Electric Company, LLC Trenching and Excavation Safety Program is to identify and evaluate potential hazards from trenching and excavation sites to which employees will be exposed and to provide specific training as required by the Occupational Safety and Health Administration (OSHA) Fall Protection Standard, 29 CFR 1926, Subpart P – Excavations.

Serious injuries can result from cave-ins or earth collapse when working in trenches and excavations. The procedures of this policy are in accordance with the Occupational Safety and Health Administration (OSHA) Standard 29 CFR 1910, Subpart P-Excavations. Failure to comply with the procedures of this policy and of the OSHA standard is cause for disciplinary action up to and including dismissal.

### **4.1.2 Policy**

It is the policy of CDL Electric Company, LLC to protect its employees from occupational injuries by implementing and enforcing safe work practices and appointing a competent person(s) to manage the Trenching and Excavation Program. The CDL Electric Company, LLC Trenching and Excavation Safety Program shall comply with the OSHA requirements. A copy of the OSHA Trenching and Excavation Standard shall be made available to all employees and may be obtained from the CDL Safety Director.

### **4.1.3 Procedures**

#### **4.1.3.1 Underground Installations**

Prior to starting any excavation work, Dig Safe must be notified to locate all underground utilities. The supervisor or competent person will contact the "call before you dig" number so that the various public utilities will have the opportunity to locate and mark their lines.

#### **4.1.3.2 Surface Encumbrances**

All surface encumbrances that are located to create a hazard to employees shall be removed or supported, as necessary, to safeguard employees.

#### **4.1.3.3 Barricades and Warnings**

Excavations must be isolated from public access by a substantial physical barrier. Barricades, lighting and posting shall be installed as appropriate prior to the start of excavation operations. All temporary excavations of this type shall be backfilled as soon as possible

Due to the dangerous nature of the work, exceptional measures to protect the public must be taken at all times. Barricades are not enough in high traffic areas near sidewalks and roadways subject to pedestrian traffic. Snow fencing shall be placed around the excavation in such a way as to provide maximum protection. As an additional precaution, barricades with flashing lights will be used whenever possible on pedestrian walkways and roadways. Employees shall wear appropriate Personal Protective Equipment (PPE) at all times.

#### **4.1.3.4 Fall Protection**

Fall protection will be provided to employees working at the edge of an excavation that is six (6) feet or deeper. Employees in these areas are required to use the fall protection systems as designated in this program.

- a. Excavations that are six (6) feet or deeper shall be protected by guardrail systems, fences, barricades, or covers.
- b. Walkways that allow employees to cross over an excavation that is six (6) feet or deeper shall be equipped with guardrails.

#### **4.1.3.5 Competent Person**

Each excavation site will have a competent person on site whenever employees are in the excavation. The competent person oversees all aspects of the work performed and documents any issues related to the work. Must ensure that the location of underground installations or utilities have been properly located. Must identify and ensure the use of adequate protective systems, work methods and personal protective equipment (PPE) on the excavation site.

##### **a. Soil Classification**

The competent person in charge of the excavation shall be responsible for determining the soil type. All previously disturbed soil is automatically considered Type B or C soil. Because most excavations on UF property will be conducted in order to repair / replace existing pipelines or equipment (i.e. the soil has been previously disturbed), excavations shall be made to meet the requirements for Type B or C soils only, as appropriate. Soil may be considered Type C by default and no additional tests required.

To classify soil as type B the competent person shall use a visual test coupled with one or more manual tests.

##### **i. Visual test:**

Evaluate the conditions around the site including the soil adjacent to the site and the soil being excavated.

Identify any signs of vibration. Check for crack-line openings along the failure zone, look for existing utilities that indicate that the soil has been previously disturbed, and observe the open side of the excavation for indications of layered geologic structuring.

Look for signs of bulging, boiling, or sloughing, as well as signs of water seepage from the sides or bottom of the excavation.

The area adjacent to the excavation should be evaluated for foundations or other intrusions into the failure zone, and the evaluator should check the spoil distance from the edge of the excavation.

Any one of the following will cause soil to be classified as Type C:

- Water seepage into excavation
- Vibration from road traffic or equipment
- Signs of bulging, boiling, or sloughing
- Crack lines along failure zone

ii. Manual tests:

Thumb penetration test: Attempt to press the thumb firmly into the soil in question. If the thumb penetrates no further than the length of the nail, it is probably Type B soil. If the thumb penetrates the full length of the thumb, it is Type C. It should be noted that the thumb penetration test is the least accurate testing method.

Dry strength test: Take a sample of dry soil. If it crumbles freely or with moderate pressure into individual grains it is considered granular (Type C). Dry soil that falls into clumps that subsequently break into smaller clumps (and the smaller clumps can only be broken with difficulty) it is probably clay in combination with gravel, sand, or silt (Type B).

Plasticity or Wet Thread Test Take a moist sample of the soil. Mold it into a ball and then attempt to roll it into a thin thread approximately 1/8 inch in diameter by two inches in length. If the soil sample does not break when held by one end, it may be considered Type B. A pocket penetrometer, shear vane, or torvane may also be used to determine the unconfined compression strength of soils.

#### 4.1.4 Protective Systems

In excavations greater than 4 feet in depth a method to protect people entering the excavation from cave in must be employed. Acceptable protective methods include sloping, benching, shielding and shoring.

##### 4.1.4.1 Benching, Sloping, Shoring, and Shielding Requirements

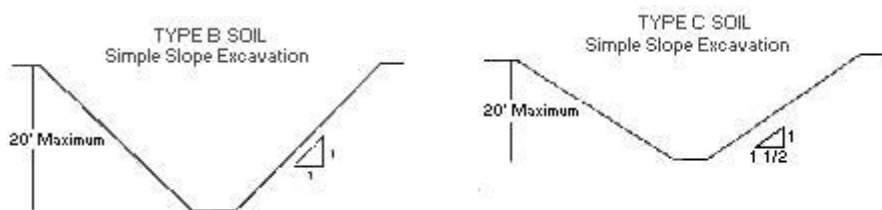
General: Excavations under the base of the footing of a foundation or wall require a support system designed by a registered professional engineer. Sidewalks, pavement, utility vaults or other similar structures shall not be undermined unless a support system or another method of protection is provided to protect employees from their possible collapse. Sloping or benching are often the preferred methods of protection; however, shoring or shielding is used when the location or depth makes sloping to the allowable angle impractical.

##### 4.1.4.1.a Sloping

Maximum allowable slopes for excavations less than 20' based on soil type and angle to the horizontal are as follows:

Type B soil must have walls sloped to a maximum angle of 45-degrees (1:1 slope) from horizontal in all directions.

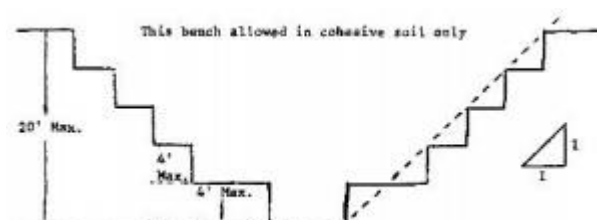
Type C soil must have walls sloped at a maximum angle of 34-degrees (1:1.5 slope) from horizontal in all directions.



##### 4.1.4.1.b Benching

In Type B soil, the vertical height of the benches must not exceed 4 feet. Benches in increments of 2 feet or less is preferred. The angle developed by the edge of the benches must not exceed the maximum allowable slope for that soil type (Type B soil 45-degrees).

Benching is not permitted in Type C soil.



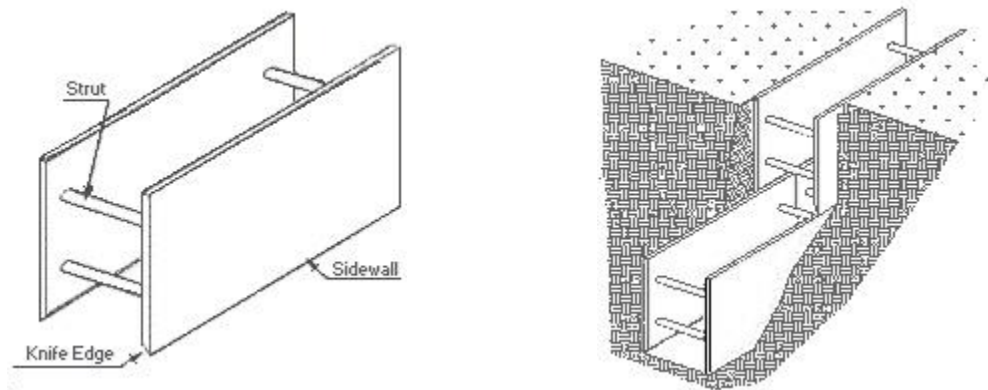
#### **4.1.4.1.c Shielding**

Trench boxes or trench shields are intended to protect workers from cave-ins and similar incidents. The trench shield is lowered into the excavation and workers may then enter the protected area within the shield. Only trench shields designed or certified by a registered professional engineer may be used. The use is limited to those trenches for which the shield is certified (e.g. maximum depth and material). The manufacturer must approve any modifications to the shields. The excavated area between the outside of the trench box and the face of the trench should be as small as possible. The space between the trench box and the excavation side should be backfilled to prevent lateral movement of the box.

Trench boxes may be used in combination with sloping and benching. The box must extend at least 18 inches above the surrounding area if there is sloping toward the excavation. This can be accomplished by providing a benched area adjacent to the box.

Shields may be placed two feet above the bottom of an excavation, provided they are calculated to support the full depth of the excavation and there is no caving under or behind the shield.

Workers must enter and leave the shielded area in a protected manner, such as by a ladder or ramp. Workers may not remain in the shielded area while it is being moved.



#### **4.1.4.1.d Shoring**

Timber shoring shall not be used by CDL Electric personnel. Hydraulic shoring is permitted as workers do not have to enter the trench to install it. It is gauge-regulated and ensures even distribution of pressure along the trench line and can be adapted to various trench depths and widths. All shoring shall be installed from the top down and removed from the bottom up. Hydraulic shoring shall be checked at least once per shift for leaking hoses and/or cylinders, broken connections, cracked nipples, bent bases, and any other damaged or defective parts. The top cylinder of hydraulic shoring shall be no more than 18 inches below the top of the excavation. The bottom of the cylinder shall be no higher than four feet from the bottom of the excavation. (Two feet of trench wall may be exposed beneath the bottom of the rail or plywood sheeting, if used.)

Three vertical shores, evenly spaced, must be used to form a system. Wales are installed no more than two feet from the top, no more than four feet from the bottom, and no more than four feet apart, vertically.

#### **4.1.4.2 Temporary Spoil**

Shall be placed no closer than 2 feet from the surface edge of the excavation. The distance is measured from the nearest base of the spoil to the cut. This distance should not be measured from the crown of the spoil deposit. This distance requirement ensures that loose rock or soil from the temporary spoil will not fall on employees in the trench.

The spoil should be placed so that it channels rainwater and other run-off water away from the excavation. Spoil should be placed so that it cannot accidentally run, slide, or fall back into the excavation.



#### **4.1.4.3 Surface Crossing of Trenches**

Surface crossing of trenches should not be made unless absolutely necessary. However, if necessary, they are only permitted under the following conditions:

- Vehicle crossings must be designed by and installed under the supervision of a registered professional engineer.
- Walkways or bridges must have a minimum clear width of 20 inches, be fitted with standard rails, and extend a minimum of 24 inches past the surface edge of the trench.

#### **4.1.4.4 Ingress and Egress**

Trenches 4 feet or more in depth shall be provided with ladders or other fixed means of egress. Spacing must be such that a worker will not have to travel more than 25 feet to the nearest means of egress. Ladders must be secured and extend a minimum of 36 inches above the landing. Metal ladders should be used with caution, particularly when electric utilities are present.

#### **4.1.4.5 Exposure to Vehicles**

Employees exposed to vehicular traffic shall be provided with and required to wear reflective vests or other suitable garments marked with or made of reflectorized or high-visibility materials. Trained flag persons, signs, signals, and barricades shall be used when necessary.

#### **4.1.4.6 Exposure to Falling Loads**

Employees are not allowed in the excavation while heavy equipment is digging. Employees must not work under loads being lifted or moved by heavy equipment used for digging or lifting. Employees are required to stand away from equipment that is being loaded or unloaded to avoid being struck by falling materials or spillage.

#### **4.1.4.7 Hazardous Atmospheres and Confined Spaces**

Testing for Atmospheric Contaminants If there is any possibility that the trench or excavation could contain a hazardous atmosphere, atmospheric testing must be conducted prior to entry. Conditions that might warrant atmospheric testing would be if the excavation was made in a landfill area or if the excavation is adjacent to sources of contamination (e.g. sewage or fuel leaks).

Testing should be conducted before employees enter the trench and should be done regularly to ensure that the trench remains safe. The frequency of testing should be increased if equipment is operating in the trench that could produce airborne contaminants.

Employees required to wear respiratory protection must be trained, fit-tested, and enrolled in the UF respiratory protection program.

**Trenches and excavations with hazardous concentrations of airborne contaminants or oxygen deficient atmospheres qualify as confined spaces. When this occurs, compliance with the Confined Space Program is also required.**

Employees shall not be permitted to work in hazardous and/or toxic atmospheres. These include atmospheres with:

- less than 19.5% oxygen or more than 23.5%
- a combustible gas concentration greater than 20% of the lower flammable limit,
- concentrations of hazardous substance that exceed those specified in the Threshold

Limit Values for airborne contaminants established by the ACGIH.

**Standing Water and Water Accumulation**

Workers must not enter or work in excavations with standing water or in which water is accumulating unless adequate protection is provided.

Protective methods for these circumstances must include:

- Use of special support or shield systems approved by a registered professional engineer.
- Water removal equipment used and monitored by a competent person.

- Safety harnesses and lifelines used in conformance with 29 CFR 1926.104.

During rainstorms employees must exit the trench. The excavation must be carefully inspected by a competent person after each rain and before employees are permitted to re-enter the trench. Protective measures such as diversion ditches and dikes should be used to limit surface runoff water from entering the excavation.

#### **4.1.4.8 Emergencies**

CDL Electric personnel are not trained to perform trench rescues and should not place themselves at risk in order to attempt the rescue of someone trapped due to a cave-in.

In the event of a serious injury or trapped worker requiring specialized rescue, 911 must be called immediately. CDL Electric Chief Operating Officer should be notified after the call to 911.

While waiting for emergency response personnel to arrive, workers at the site should take measures to support the rescue team and to further protect personnel on site.

- If the victim is not visible, try to identify the area where the victim is located
- Hand digging, if the excavation is stable and can be approached safely, can be carried out. No mechanical digging should be done due to the potential for inflicting additional injury to the victim.
- Assemble material that can assist in rescue operations such as shovels, plywood, ladders and buckets.

#### **4.1.4.9 Inspection**

Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard increasing occurrence.

These inspections are required when employee exposure can be reasonably anticipated. (See attached example of a Trench Safety Daily Field Report.)

Hazardous atmospheres -

- a. Testing and controls. In addition to the requirements set forth in subparts D and E of this part (29 CFR 1926.50 - 1926.107) to prevent exposure to harmful levels of atmospheric contaminants and to assure acceptable atmospheric conditions, the following requirements shall apply:
  - i. Where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or excavations in areas where hazardous substances are stored nearby, the atmospheres in the excavation shall be tested before employees enter excavations >4 feet.
  - ii. Adequate precautions shall be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions include providing proper respiratory protection or ventilation.
  - iii. Adequate precaution shall be taken such as providing ventilation, to prevent employee exposure to an atmosphere containing a concentration of a flammable gas >20 % LFL.
  - iv. When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, testing shall be conducted continuously.

Where the competent person finds evidence of a situation that could result in a possible cave in, or shows indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

#### **4.1.5 Definitions**

**Angle of repose** the maximum angle of incline of a stable slope of soil or other granular material. The angle of repose varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

**Benching** a 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, with vertical or near-vertical surfaces between levels.

**Competent Person** an individual who can identify existing and predictable hazards in the work environment that may adversely affect employees and the public, and who has the authority to take prompt corrective measures to eliminate them.

**Protective system** a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support, sloping/benching, shield, and other systems that provide protection.

**Shielding** a structure that can withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Also known as trench boxes or trench shields.

**Shoring** a structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

**Sloping** a method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation to a safe angle of repose. When a sloping system is employed as a protective system, the excavation walls must be sloped at an angle no greater than 34-degrees (1:1.5 slope) from horizontal in all directions.

**Surface encumbrances** any equipment, materials, supplies, buildings, roadways, trees, utility vaults, boulders, etc. that could present a hazard to employees working in the excavation.

## Appendix E – Guide for Daily Inspection of Trenches and Excavations

Project: \_\_\_\_\_

Weather: \_\_\_\_\_ Date: \_\_\_\_\_ Trench Depth: \_\_\_\_\_

Soil Type: \_\_\_\_\_ Width: \_\_\_\_\_ Length: \_\_\_\_\_

Type of Protective System: \_\_\_\_\_

Yes	No	NA	Excavation
			Excavations and Protective Systems inspected by competent person daily, before start of work.
			Competent Person has authority to remove workers from excavation immediately.
			Surface encumbrances supported or removed.
			Employees protected from loose rock or soil.
			Hard hats worn by all employees.
			Spoils, materials, and equipment set back a minimum of 2' from edge of excavation.
			Barriers provided at all remote excavations, wells, pits, shafts, etc.
			Walkways and bridges over excavations 6' or more in depth equipped with guardrails.
			Warning vests, or other highly visible PPE provided and worn by all employees exposed to vehicular traffic.
			Employees prohibited from working or walking under suspended loads.
			Employees prohibited from working on faces or sloped or benched excavations above other employees.
			Warning system established and used when mobile equipment is operating near edge of excavation.
Yes	No	NA	Utilities
			Utility companies contacted and/or utilities located.
			Exact location of utilities marked when near excavation.
			Underground installations protected, supported, or removed when excavation is open.
Yes	No	NA	Wet Conditions
			Precautions taken to protect employees from accumulation of water.
			Water removal equipment monitored by competent person.
			Surface water controlled or diverted.
			Inspection made after each rainstorm.
Yes	No	NA	Hazardous Atmosphere
			Atmosphere tested when there is a possibility of oxygen deficiency or build-up of hazardous gases.
			Oxygen content is between 19.5% and 21%.
			Ventilation provided to prevent flammable gas build-up to 20% of lower explosive limit of the gas.
			Testing conducted to ensure that atmosphere remains safe.
			Emergency Response Equipment readily available where a hazardous atmosphere could or does exist.
			Employees trained in the use of Personal Protective and Emergency Response Equipment.
			Safety harness and lifeline individually attended when employees enter deep confined excavation.

Signature of Competent Person: \_\_\_\_\_ Date: \_\_\_\_\_

Daily Inspection of Trenches and Excavations." *Occupational Safety and Health Administration*, United States Department of Labor,  
[www.osha.gov/SLTC/etools/construction/trenching/excavchech.html](http://www.osha.gov/SLTC/etools/construction/trenching/excavchech.html).

## 5.1 Emergency Action Plan – 29 CFR 1910 – Subpart E

### 5.1.1 Objective

The objective of the CDL Electric Emergency Action Plan is to comply with the Occupational Safety and Health Administration's (OSHA) Emergency Action Plan Standard, 29 CFR 1910.38, and to prepare employees for dealing with emergency situations. This plan is designed to minimize injury and loss of human life and company resources by training employees, procuring and maintaining necessary equipment, and assigning responsibilities. This plan applies to all emergencies that may reasonably be expected to occur at CDL Electric offices and project sites. The plan is available for all employees to review at any time. Please see the Emergency Plan Designate for a copy.

### 5.1.2 Assignment of responsibility

#### 5.1.2.1 Emergency Plan Manager

Emergency Plan Designate shall manage the Emergency Action Plan for CDL Electric. The Emergency Plan Designate shall also maintain all training records pertaining to this plan. The plan manager is responsible for scheduling routine tests of the CDL Electric emergency notification system with the appropriate authorities.

The Emergency Plan Designate shall also coordinate with local public resources, such as fire department and emergency medical personnel, to ensure that they are prepared to respond as detailed in this plan.

#### 5.1.2.2 Emergency Plan Coordinators

Designated Emergency Plan Coordinators are as follows:

Corporate Office	Primary Name and Position	Primary Phone #	Alternate Name and Position	Alternate Phone #
1308 N. Walnut, Pittsburg, KS	Larry Seward, CEO	Office (620) 231-6420 Cell (620) 308-6507	Curt Featherby, Director of Safety	Office (620) 231-6420 Cell (620) 704-9350

The Emergency Plan Designates are responsible for instituting the procedures of this plan in the event of an emergency.

The following individuals shall be responsible for assisting employees who have disabilities or who do not speak English during evacuation:

Corporate Office	Name of Person Providing Assistance	Phone #
1308 N. Walnut, Pittsburg, KS 66762		Office (620) 231-6420

#### 5.1.2.3 Management

CDL Electric will provide adequate controls and equipment that, when used properly, will minimize or eliminate the risk of injury to employees in the event of an emergency. CDL Electric management will ensure proper adherence to this plan through regular review.

#### 5.1.2.4 Supervisors

Supervisors shall, themselves, follow and ensure that their employees are trained in the procedures outlined in this plan.

#### 5.1.2.5 Employees

Employees are responsible for following the procedures described in this plan.

### 5.1.3 Contractors

Contract employees are responsible for complying with this plan and shall be provided the training described herein by the Project Supervisor.

## **5.1.4 Plan Implementation**

### **5.1.4.1 Reporting Fire and Emergency Situations**

#### **Reporting Fire and Emergency Situations**

- a. All fires and emergency situations will be reported as soon as possible to Project Supervisor by one of the following means:
  - i. Verbally as soon as possible during normal work hours
  - ii. By telephone if after normal work hours or on weekends
- b. To eliminate confusion and the possibility of false alarms, only Project Supervisor(s) are authorized to contact the appropriate community emergency response personnel. The telephone numbers and contact information for the emergency response personnel for CDL Electric/Address/Location are:
  - i. Fire: 911
  - ii. Police/Sheriff: 911
  - iii. Ambulance/EMS: 911
- c. Under no circumstances shall an employee attempt to fight a fire that has passed the incipient stage (that which can be put out with a fire extinguisher), nor shall any employee attempt to enter a burning building to conduct search and rescue. These actions shall be left to emergency services professionals who have the necessary training, equipment, and experience (such as the fire department or emergency medical professionals). Untrained individuals may endanger themselves and/or those they are trying to rescue.

### **5.1.4.2 Informing CDL Electric Employees/Visitors of Fires and Emergency Situations**

In the event of a fire or emergency, the Project Supervisor shall ensure that all employees are notified as soon as possible using the building alarm system (which includes both audible and visual alarms 24 hours a day). Project Supervisor shall provide special instructions to all employees via the public-address system.

If a fire or emergency occurs after normal business hours, Project Supervisor(s) shall contact all employees not on shift of future work status, depending on the nature of the situation.

#### **Corporate Notification**

- a. Project Supervisor shall contact the CDL Electric CEO/President, COO, General Counsel as soon as possible if media coverage of the situation is expected.
- b. Project Supervisor shall contact the CDL Electric Corporate Office as soon as possible with information on employee injuries and/or loss of life, property damages, theft, or material losses.

#### **Emergency Contact Information**

Project Supervisor(s) shall maintain a list of all employees' personal emergency contact information and shall keep the list in a designated area for easy access in the event of an emergency.

### **5.1.4.3 Evacuation Routes**

If a fire/emergency alarm is sounded or instructions for evacuation are given, all employees shall immediately exit the building(s) at the nearest exits and shall meet as soon as possible at the Designated Assembly Area (Appendix G). Employees with offices shall close the doors (unlocked) as they exit the area.

Mobility impaired employees and their assigned assistants will gather at the Designated Area within the building to ensure safe evacuation in the pre-determined fashion. This area will be outside the main warehouse to be transported via UTV/automobile to the designated company assembly area.

Guests/Visitors of CDL Electric shall be escorted to the assembly area by a company representative.

### **5.1.4.4 Advanced Medical Care**

Under no circumstances shall an employee provide advanced medical care and treatment.

These situations shall be left to emergency services professionals, or Designated Person(s), who have the necessary training, equipment, and experience. Untrained individuals may endanger themselves and/or those they are trying to assist.

#### **5.1.4.5 Accounting for Employees/Visitors After Evacuation**

Once an evacuation has occurred, Project Supervisor(s) shall account for each employee/visitor assigned to them at the Designated Assembly Area. Each employee is responsible for reporting to the appropriate Project Supervisor(s) so an accurate head count can be made. All employee counts shall then be reported to the Emergency Action Plan Manager as soon as possible.

#### **5.1.4.6 Re-Entry**

Once the building has been evacuated, no one shall re-enter the building for any reason, except for designated and properly trained rescue personnel (such as fire department or emergency medical professionals). Untrained individuals may endanger themselves and/or those they are trying to rescue.

All employees shall remain at the Designated Assembly Area until the fire department or other emergency response agency notifies Project Supervisor that either:

- a. the building is safe for re-entry, in which case personnel shall return to their workstations
- b. the building/assembly area is not safe, in which case personnel shall be instructed by Project Supervisor on how/when to vacate the premises

#### **5.1.4.7 Sheltering in Place**

In the event that chemical, biological, or radiological contaminants are released into the environment in such quantity and/or proximity to CDL Electric, authorities and/or Project Supervisor(s) may determine that it is safer to remain indoors rather than to evacuate employees. The Emergency Action Plan Manager shall announce Shelter in Place status by public address system **or other means of immediate notification available at worksite.**

- a. Project Supervisor(s) shall immediately close the business. If there are customers, clients, or visitors in the building, they shall be advised to stay in the building for their safety.
- b. Unless there is an imminent threat, employees, customers, clients, and visitors shall call their emergency contacts to let them know where they are and that they are safe.
- c. Project Supervisor(s) shall turn on call-forwarding or alternative telephone answering systems or services. The recording for voice mail or automated attendant shall be changed to indicate that the business is closed, and that staff and visitors will be remaining in the building until authorities advise that it is safe to leave.
- d. Project Supervisor(s) shall quickly lock exterior doors. Project Supervisor familiar with the building's mechanical systems shall turn off, seal, or disable all fans, heating and air conditioning systems, especially those systems that automatically provide for exchange of inside air with outside air. If there is a danger of explosion, Project Supervisor shall close the window shades, blinds, or curtains.
- e. All employees, customers, and visitors shall move immediately to the Shelter in Place Location(s) within the building. Project Supervisor(s) shall seal all windows, doors, and vents with plastic sheeting and duct tape.
- f. The Project Supervisor shall write down the names of everyone in the room and call the Designated Emergency Contact outside of the building to report who is in the room, and their affiliations with CDL Electric (employee, visitor, client, customer).
- g. Project Supervisor(s) shall monitor telephone, radio, television and internet reports for further instructions from authorities to determine when it is safe to leave the building.

#### **5.1.4.8 Severe Weather**

The Emergency Action Plan Manager shall announce severe weather alerts (such as tornados) by public address system or other means of immediate notification available at worksite. All employees shall

immediately retreat to the Designated Area (Appendix G), until the threat of severe weather has passed as communicated by the Emergency Action Plan Manager.

### **5.1.5 Fire Safety**

#### **5.1.5.1 Policy**

The general fire safety policy outlines the various components of the policy: Emergency Response Plan, Fire Prevention Measures, Facility Fire Safety, and Code Inspections.

- a. To help reduce or eliminate the potential for fires to occur, as well as to protect the lives of employees and visitors and preserve the property of CDL Electric.
- b. Implement proactive fire safety engineering controls, measures, inspections and rules that can prevent the causes of fires.
- c. The heater policy describes the appropriate location for, and type of heaters allowed in CDL Electric office spaces.
- d. The fire extinguisher policy explains how to properly use a fire extinguisher, and how to place orders to repair or replace fire extinguishers.

#### **5.1.5.2 Fire Prevention Measures**

- a. Smoking in designated areas only. All butts will be placed in provided receptacles.
- b. Open fires are prohibited on CDL Electric Properties.
- c. No halogen lamps or electric heaters allowed. Due to the high risk of fire, they will be removed upon discovery. See Heater Procedure.
- d. No covering light fixtures for decorations/effect/etc.
- e. No tampering with fire safety equipment allowed (smoke detectors, fire extinguishers, sprinklers, fire suppression utility valves, etc.)
- f. Extension cords are for temporary use only and replaced when signs of damage are discovered.
- g. Proper and safe use of surge-protected multiple strip outlets. Do not overload with multiple devices.
- h. Proper storage of flammable materials, especially flammable liquids (proper container and stored in approved flammable storage cabinet/area).
- i. Control of sources of heat/ignition near flammable materials, liquids, and gases.
- j. Hot Work Permit program (welding, etc.)

#### **5.1.5.3 Employee Fire Safety**

- a. Portable fire extinguisher program.
- b. Keep all fire doors closed (unless equipped with magnetic hold-open device or for temporary material handling use) and maintained to help reduce the spread of smoke.
- c. Maintain that stairwells are free of stored items.
- d. Maintenance of fire suppression and fire/smoke alarm detectors, systems, and security measures for fire suppression valves.
- e. Maintenance and inspection of exit lights and egress corridor clearance.
- f. Inspection to help ensure sprinklers have 18" of space beneath the deflector head.
- g. Keeping stored items away from electrical utility panels and fire suppression valves.

#### **5.1.5.4 Code Inspections**

- a. Fire code inspections and corrective action plan implementation from fire marshal's office and insurance company fire engineer.
- b. Electrical equipment used on company properties shall all be UL/FM approved devices.

#### **5.1.5.6 Heater Procedure**

If your area is not adequately heated:

- a. Contact CDL Electric HVAC.
- b. Dress according to your personal comfort level and the winter temperature in your work area.



#### 5.1.5.7 Approved Space Heater Specifications

- a. Low temperature liquid oil-filled space heaters with safety shut-off. Usually available at Walmart or Home Depot. This cost is the responsibility of the employee.
- b. General Specifications Needed
  - i. UL listed
  - ii. 3 prong grounded plug
  - iii. Automatic Safety Shutoff (overheat and tip-over features)



Low Profile Heater



Oil Filled



Heater LW7101

#### 5.1.5.8 Guide for Safe Use of Approved Space Heaters

- a. Keep all flammable materials three feet from heater (garbage, boxes, paper products, etc.)
- b. Do not use an extension cord as it increases the risk of electric hazard/fire and circuit overload.
- c. Shut off the unit when leaving your work area for more than 30 minutes.
- d. Make certain you routinely shut off the unit before leaving work for the evening and weekend.

#### 5.1.5.9 Employee Fire Extinguisher Policy

Fire extinguishers are a good first attempt device to extinguish a small, contained fire. If a fire extinguisher is used properly, it can successfully reduce damage, prevent loss of property, and potentially save lives. Employees are not required or asked to use a fire extinguisher.

Procedure if fire is discovered:

- a. Pull fire alarm box/announce evacuation on PA system (if applicable)
- b. Evacuate the building
- c. Call 911

This plan is intended to comply with provisions of OSHA 1910.157 and NFPA 10 “portable extinguishers.”

#### 5.1.5.10 Written Program

- a. Employees are not required or asked to use a fire extinguisher. Training is available to employees interested in learning how to properly use a fire extinguisher on a voluntary basis. Only employees who have been trained in the proper use of fire extinguishers, safe fire-fighting techniques, and our procedures can (voluntarily) attempt to fight a small fire if there is a safe means of escape.
- b. Fire extinguisher program administration will be performed by the Division Managers.
- c. Monthly safety inspections of extinguishers will be shared by CDL Electric Shipping and Receiving (Warehouse) and the Director of Safety.
- d. Repairs/replacements and installation of fire extinguishers in the proper locations will be coordinated by CDL Electric Shipping and Receiving (Warehouse) and the Director of Safety.
- e. Required annual certification/inspection and required hydrostatic and maintenance testing (six and twelve-year cycles) will be conducted by a third-party fire safety contractor. This service is contracted through CINTAS.
- f. Refresher training of trained fire extinguisher operators shall be conducted annually.

#### **5.1.5.11 Location & Labels**

- a. Fire extinguishers will be located in easy to reach locations, usually located and mounted on walls near the entry/exit doors, at the top of stairwells or along corridor walls. Extinguishers will be clearly visible and marked with standard fire extinguisher labels/stickers or box.
- b. Portable extinguishers will be maintained in a fully charged condition by conducting monthly safety inspections. When extinguishers are removed for charging or maintenance, a fully charged unit will be provided.
- c. Extinguishers should be mounted for easy access and visibility whenever possible. The top of the extinguisher should be about 3 feet off the floor.
- d. Extinguishers should be located so that a minimum amount of time will be needed to travel to the fire location in order to prevent the fire from having a significant opportunity to get out of control.
- e. Most of CDL Electric's fire extinguishers are a combo ABC extinguisher.
- f. Class A, B, C, & D extinguishers should not exceed a distance of 75 feet.
- g. Class B extinguishers for flammable fires should not exceed a distance of 50 feet.

#### **5.1.5.12 Fire Extinguisher Classes**

Class A – Wood, paper, cloth, etc.

Class B – Flammable gases, liquids, grease, gasoline.

Class C – Electrical equipment or fire in an electrical equipment room.

Class D – Combustible metals (magnesium, potassium, sodium, etc.)

#### **5.1.5.13 Safety Inspection Process**

- a. Certification inspections of all fire extinguishers will be conducted on an annual basis. Hydrostatic testing will be conducted according to manufacturers' specifications and/or applicable regulations, typically on a six & twelve-year basis. Both of these inspections/certifications will be conducted by an outside vendor specializing in this service and coordinated by the Director of Safety.
- b. In-House Inspections
  - i. In order to help maintain our fire safety equipment in good working condition, CDL Electric's Shipping and Receiving Department will be involved with a general safety inspection of all fire extinguishers – conducted on a monthly basis.
  - ii. A standard fire extinguisher safety checklist will be used for all general safety inspections.

#### **5.1.5.14 Inventory**

A complete inventory of all fire extinguisher locations will be maintained by CDL Electric's shipping and Receiving Department. Generally, a floor plan will be used to indicate the specific location of all extinguishers within a facility.

#### **5.1.5.15 Fire Safety Tips: Be Prepared**

- a. How fast could you find a pull station if you saw/smelled smoke or fire?
- b. Where are fire extinguishers located in your building?
- c. All employees should review and know the locations of fire alarm pull stations, use of PA system (if applicable), and fire extinguishers to be prepared in the event of an emergency.
- d. Deciding to use a fire extinguisher to attempt to put out or control a small fire is a voluntary activity and is not expected of CDL Electric employees, or visitors.
- e. You may use a fire extinguisher if:
  - i. You have received training in the use of a fire extinguisher.
  - ii. The fire is small and generally contained.
  - iii. You have a clear path out of the building and can fight the fire safely.

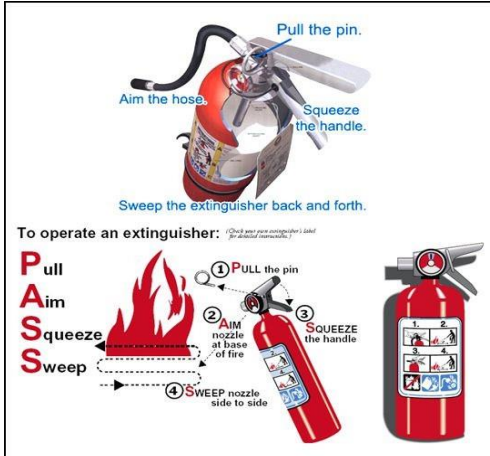
#### **5.1.5.16 Emergency Fire Procedures**

CDL Electric employees who are selected to use a fire extinguisher, must participate in our fire extinguisher training program. Anyone who does not attend this training is not expected to use a fire extinguisher.

- a. General Evacuation Procedure:

- i. All employees are expected to immediately evacuate the building according to the emergency evacuation plan.
- ii. All doors should be pulled closed and unlocked if possible. Do not return for personal items.
- iii. Assist disabled persons.
- iv. Proceed to a safe designated location at least 100 feet away from exits.
- b. If you discover smoke and/or a fire:
  - i. Activate the nearest fire alarm pull station, announce over PA system.
  - ii. Notify another person nearby.
  - iii. Dial 911 to report the fire.
  - iv. Help evacuate the building's occupants.
  - v. If safe to do so, use a fire extinguisher to put out a small, contained fire.

#### 5.1.5.17 Fire Extinguisher Use



#### 5.1.5.18 Fire Extinguisher Responsibilities

Monthly Inspection for CDL Electric Shipping and Receiving Department:

- a. Ensure exit lights/signs are in good condition.
- b. Check pull stations are in good condition.
- c. Maintain that exit doors and corridor fire doors are closed.
- d. Conduct safety inspection once per month.
- e. Coordinate annual inspection with outside source.

#### 5.1.5.19 Fire Extinguisher Replacement

To recharge or replace an existing fire extinguisher unit, notify CDL Electric Shipping and Receiving of the type and location.

#### CAUTION: Use of fire extinguisher and discharging powder

- Many extinguishers contain a dry chemical powder that can be irritating to the eyes, nose, and throat if direct contact is made. Flush eyes with water (eyewash station), wash face, or drink water to help clear remaining powder in throat.
- Fire Extinguisher Powder Clean-up - Notify CDL Electric Shipping and Receiving to conduct a clean-up with a special HEPA filtered vacuum.

#### Charges for Fire Extinguisher Vandalism

- Discharge/vandalism: \$100.00
- Missing/vandalism/theft of extinguisher: \$100.00

## **5.1.6 Training**

### **5.1.6.1 Employee Training**

All employees shall receive instruction on this Emergency Action Plan as part of the New Employee Orientation upon hire.

Additional training shall be provided:

- When there are any changes to the plan and/or facility
- When an employee's responsibilities change
- Annually as refresher training

Items to be reviewed during the training include:

- Proper housekeeping
- Fire prevention practices
- Fire extinguisher locations, usage, and limitations
- Threats, hazards, and protective actions
- Means of reporting fires and other emergencies
- Names of Emergency Action Plan Manager and Coordinators
- Individual responsibilities
- Alarm system
- Escape routes and procedures
- Emergency shut-down procedures
- Procedures for accounting for employees and visitors
- Closing doors
- Sheltering in place
- Severe weather procedures
- Emergency Action Plan availability

### **5.1.6.2 Fire/Evacuation Drills**

Fire/Evacuation drills shall be conducted at least annually and shall be conducted in coordination with local police and fire departments. Additional drills shall be conducted if physical properties of the business change, processes change, or as otherwise deemed necessary.

### **5.1.6.3 Training Records**

The Project Supervisor shall document all training pertaining to this plan and shall maintain records in the Designated Area.

### **5.1.6.4 Additional Information**

Any employee who desires additional information regarding the Emergency Action Plan or the specific duties of an employee under the EAP may contact the Emergency Plan Manager.

## **5.1.7 Plan Evaluation**

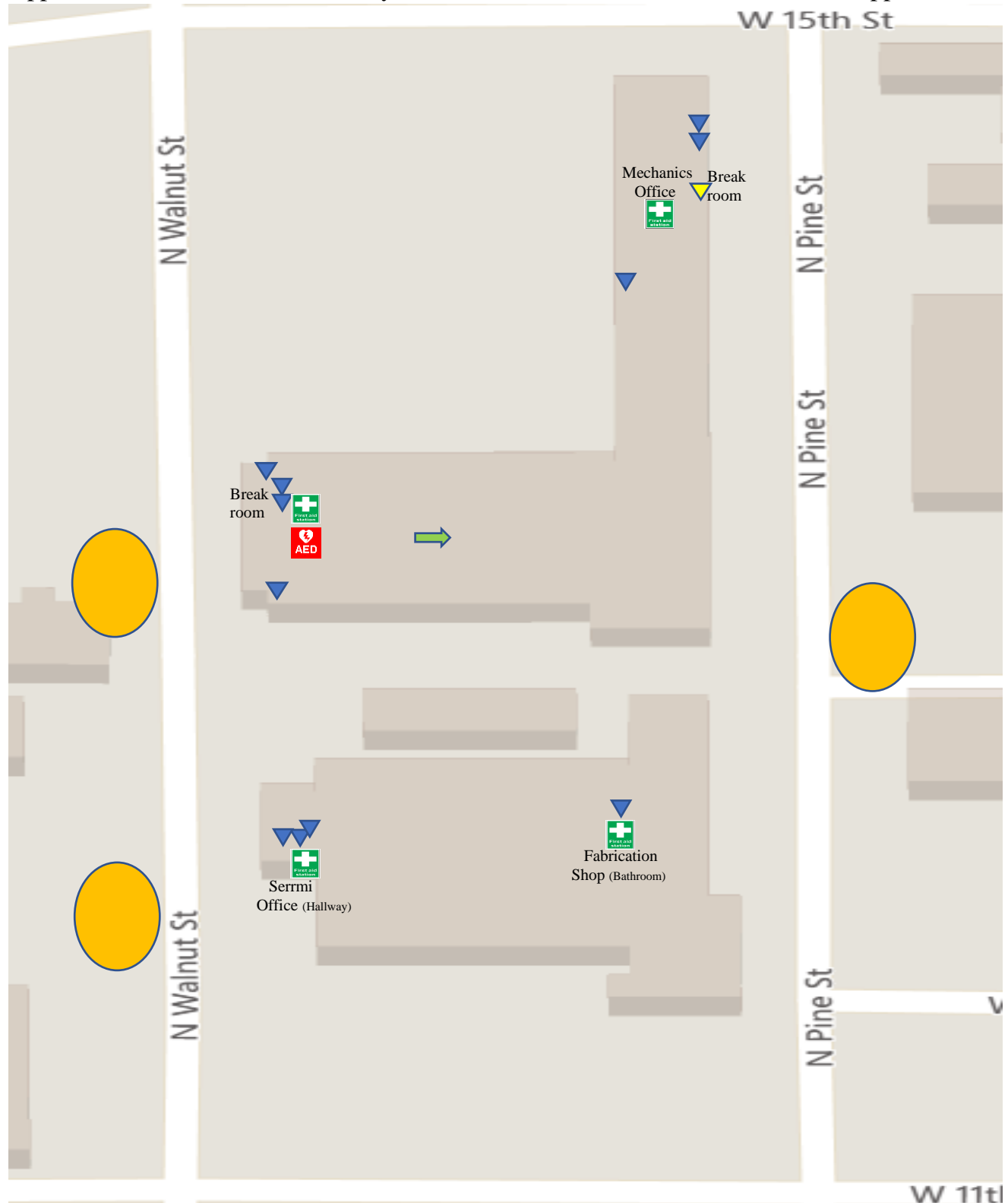
This Emergency Action Plan shall be reviewed annually, or as needed if changes to the worksite are made, by the Project Supervisor. Following each fire drill, Responsible Management and Employee Representatives shall evaluate the drill for effectiveness and weaknesses in the plan and shall implement changes to improve.







## Appendix F – Emergency Action Plan Checklist

General Issues		
<input type="checkbox"/>	Does the plan consider all natural or man-made emergencies that could disrupt your workplace?	Common sources of emergencies identified in emergency action plans include - fires, explosions, floods, hurricanes, tornadoes, toxic material releases, radiological and biological accidents, civil disturbances, and workplace violence.
<input type="checkbox"/>	Does the plan consider all potential internal sources of emergencies that could disrupt your workplace?	Conduct a hazard assessment of the workplace to identify any physical or chemical hazards that may exist and could cause an emergency.
<input type="checkbox"/>	Does the plan consider the impact of these internal and external emergencies on the workplace's operations and is the response tailored to the workplace?	Brainstorm worst-case scenarios asking yourself what you would do and what would be the likely impact on your operation and devise appropriate responses.
<input type="checkbox"/>	Does the plan contain a list of key personnel with contact information as well as contact information for local emergency responders, agencies and contractors?	Keep your list of key contacts current and make provisions for an emergency communications system such as a cellular phone, a portable radio unit, or other means so that contact with local law enforcement, the fire department, and others can be swift.
<input type="checkbox"/>	Does the plan contain the names, titles, departments, and telephone numbers of individuals to contact for additional information or an explanation of duties and responsibilities under the plan?	List names and contact information for individuals responsible for implementation of the plan.
<input type="checkbox"/>	Does the plan address how rescue operations will be performed?	Unless you are a large employer handling hazardous materials and processes or have employees regularly working in hazardous situations, you will probably choose to rely on local public resources, such as the fire department, who are trained, equipped, and certified to conduct rescues. Untrained individuals may endanger themselves and those they are trying to rescue.
<input type="checkbox"/>	Does the plan address how medical assistance will be provided?	Most small employers do not have a formal internal medical program and plan with medical clinics or facilities close by to handle emergencies. If an infirmary, clinic, or hospital is not close to your workplace, ensure that onsite person(s) have adequate training in first aid. The American Red Cross, some insurance providers, local safety councils, fire departments, or other resources may be able to provide this training. Treatment of a serious injury should begin within 3 to 4 minutes of the accident.
<input type="checkbox"/>	Does the plan identify how or where personal information on employees can be obtained in an emergency?	In the event of an emergency, it could be important to have ready access to important personal information about your employees. This includes their home telephone numbers, the names and telephone numbers of their next of kin, and medical information.
Evacuation Policy and Procedure		
<input type="checkbox"/>	Does the plan identify the conditions under which an evacuation would be necessary?	The plan should identify the different types of situations that will require an evacuation of the workplace. This might include a fire, earthquake, or chemical spill. The extent of evacuation may be different for different types of hazards.
<input type="checkbox"/>	Does the plan identify a clear chain of command and designate a person authorized to order an evacuation or shutdown of operations?	It is common practice to select a responsible individual to lead and coordinate your emergency plan and evacuation. It is critical that employees know who the coordinator is and understand that this person has the authority to make decisions during emergencies. The coordinator should be responsible for assessing the situation to determine whether an emergency exists requiring activation of the emergency procedures, overseeing emergency procedures, notifying and coordinating with outside emergency services, and directing shutdown of utilities or plant operations if necessary.
<input type="checkbox"/>	Does the plan address the types of actions expected of different employees for the various types of potential emergencies?	The plan may specify different actions for employees depending on the emergency. For example, employers may want to have employees assemble in one area of the workplace if it is threatened by a tornado or earthquake but evacuate to an exterior location during a fire.
<input type="checkbox"/>	Does the plan designate who, if anyone will stay to shut down critical operations during an evacuation?	You may want to include in your plan locations where utilities (such as electrical and gas utilities) can be shut down for all or part of the facility. All individuals remaining behind to shut down critical systems or utilities must be capable of recognizing when to abandon the operation or task and evacuate themselves.

<input type="checkbox"/>	Does the plan outline specific evacuation routes and exits and are these posted in the workplace where they are easily accessible to all employees?	Most employers create maps from floor diagrams with arrows that designate the exit route assignments. These maps should include locations of exits, assembly points and equipment (such as fire extinguishers, first aid kits, spill kits) that may be needed in an emergency. Exit routes should be clearly marked and well lit, wide enough to accommodate the number of evacuating personnel, unobstructed and clear of debris at all times, and unlikely to expose evacuating personnel to additional hazards.
<input type="checkbox"/>	Does the plan address procedures for assisting people during evacuations, particularly those with disabilities or who do not speak English?	Many employers designate individuals as evacuation wardens to help move employees from danger to safe areas during an emergency. Generally, one warden for every 20 employees should be adequate, and the appropriate number of wardens should be available at all times during working hours. Wardens may be responsible for checking offices and bathrooms before being the last person to exit an area as well as ensuring that fire doors are closed when exiting. Employees designated to assist in emergency evacuation procedures should be trained in the complete workplace layout and various alternative escape routes. Employees designated to assist in emergencies should be made aware of employees with special needs (who may require extra assistance during an evacuation), how to use the buddy system, and any hazardous areas to avoid during an emergency evacuation.
<input type="checkbox"/>	Does the plan identify one or more assembly areas (as necessary for different types of emergencies) where employees will gather and a method for accounting for all employees?	Accounting for all employees following an evacuation is critical. Confusion in the assembly areas can lead to delays in rescuing anyone trapped in the building, or unnecessary and dangerous search-and-rescue operations. To ensure the fastest, most accurate accounting of your employees, consider taking a head count after the evacuation. The names and last known locations of anyone not accounted for should be passed on to the official in charge.
<input type="checkbox"/>	Does the plan address how visitors will be assisted in evacuation and accounted for?	Some employers have all visitors and contractors sign in when entering the workplace. The hosts and/or area wardens, if established, are often tasked with assisting these individuals evacuate safely.
<b>Reporting Emergencies and Alerting Employees in an Emergency</b>		
<input type="checkbox"/>	Does the plan identify a preferred method for reporting fires and other emergencies?	Dialing 911 is a common method for reporting emergencies if external responders are utilized. Internal numbers may be used. Internal numbers are sometimes connected to intercom systems so that coded announcements may be made. In some cases, employees are requested to activate manual pull stations or other alarm systems.
<input type="checkbox"/>	Does the plan describe the method to be used to alert employees, including disabled workers, to evacuate or take other action?	Make sure alarms are distinctive and recognized by all employees as a signal to evacuate the work area or perform other actions identified in your plan. Sequences of horn blows or different types of alarms (bells, horns, etc.) can be used to signal different responses or actions from employees. Consider making available an emergency communications system, such as a public-address system, for broadcasting emergency information to employees. Ideally alarms will be able to be heard, seen, or otherwise perceived by everyone in the workplace including those that may be blind or deaf. Otherwise, floor wardens or others must be tasked with ensuring all employees are notified. You might want to consider providing an auxiliary power supply in the event of an electrical failure.
<b>Employee Training and Drills</b>		
<input type="checkbox"/>	Does the plan identify how and when employees will be trained so that they understand the types of emergencies that may occur, their responsibilities, and actions as outlined in the plan?	<p>Training should be offered to employees when you develop your initial plan and when new employees are hired. Employees should be retrained when your plan changes due to a change in the layout or design of the facility, when new equipment, hazardous materials, or processes are introduced that affect evacuation routes, or when new types of hazards are introduced that require special actions. General training for your employees should address the following:</p> <ul style="list-style-type: none"> <li>• individual roles and responsibilities;</li> <li>• threats, hazards, and protective actions;</li> <li>• notification, warning, and communications procedures;</li> <li>• emergency response procedures;</li> <li>• evacuation, shelter, and accountability procedures;</li> <li>• location and use of common emergency equipment; and</li> <li>• emergency shutdown procedures.</li> </ul> <p>Provide additional training as needed to your employees (i.e. first aid procedures, portable fire extinguisher use, etc.) depending on the responsibilities allocated employees in your plan.</p>
<input type="checkbox"/>	Does the plan address how and when retraining will be conducted?	If training is not reinforced it will be forgotten. Consider retraining employees annually.
<input type="checkbox"/>	Does the plan address if and how often drills will be conducted?	Once you have reviewed your emergency action plan with your employees and everyone has had the proper training, it is a good idea to hold practice drills as often as necessary to keep employees prepared. Include outside resources such as fire and police departments when possible. After each drill, gather management and employees to evaluate the effectiveness of the drill. Identify the strengths and weaknesses of your plan and work to improve it.

# Appendix G – Evacuation Assembly Area / Severe Weather Shelter / First Aid Supplies



-  = Tornado/inclement weather shelter area (men/womens bathrooms), **ground floor only**
-  = Tornado/inclement weather shelter area break room
-  = Designated assmebly area, building evacuation
-  = Designated area for mobility impaired employees to be assembled for evacuation
-  = General location wall mounted first aid kits and blood bourne pathogene clean up kits
-  = AED Location east wall of break room green exit door to bay area

## **5.2 Emergency Action Plan - Inclement Weather (FIELD Personnel)**

Sudden inclement weather can rapidly encroach upon field personnel. Preparedness and caution are the best defenses. Field crew members performing work outdoors should carry clothing appropriate for inclement weather. Personnel are to take heed of the weather forecast for the day and pay attention for signs of changing weather that indicate an impending storm. Signs include towering thunderheads, darkening skies, or a sudden increase in wind. If stormy weather ensues, field personnel should discontinue work and seek shelter until the storm has passed.

### **5.2.1 Objective**

The objective of the CDL Electric Emergency Action Plan (Field) is to prepare employees for dealing with emergency situations when working in field (outside) situations. This plan is designed to minimize injury and loss of human life and company resources by training employees, procuring and maintaining necessary equipment, and assigning responsibilities. This plan applies to all emergencies that may reasonably be expected to occur at CDL Electric project sites.

#### **5.2.1.1 Blizzard Emergency**

Your facility should engage in advance planning and be prepared for 3-5 days of winter subsistence and survival without support or assistance from off-site personnel. This procedure addresses appropriate response when a blizzard emergency is imminent.

Conditions can develop gradually over time and change within an hour or less

- a. Blizzard Underway Response Procedure
  - i. Verify location of family and personnel as appropriate and necessary.
  - ii. Hunker down. Minimize outdoor activity. Maintain indoor temperatures.
  - iii. Monitor air quality in the facilities. Ventilate, if necessary, to optimize health.
  - iv. Monitor chimney and other exhaust ports to ensure free flow of exhaust and no blockage by snow or bird's nests.
  - v. If necessary due to harsh icy conditions or sub-zero temperatures:
    - Keep water running to prevent freezing of water pipes;
    - Start and run motor vehicles critical to operations;
    - Deploy trickle chargers to support critical batteries, or remove batteries and place in a well-ventilated room maintained at above-freezing temperatures;
    - Scrape ice as necessary.
  - vi. In the event of loss of power, avoid downed power lines. Exercise caution in the start-up of back-up power supplies and source switching.
  - vii. Conditions permitting, periodically clear ice and snow from major pathways to vehicles and outbuildings.
  - viii. Call your co-workers and neighbors to check on their welfare.
  - ix. Render First Aid if necessary. Avoid travel unless it is absolutely necessary to preserve life. Call Emergency Response Providers for transport or on-line instructions and assistance.
- b. End of Blizzard/Post Blizzard
  - i. Verify continued operation of life support systems for people and co-workers.
  - ii. Render any aid and/or call for assistance as necessary.
  - iii. Call your neighbors to check on their welfare. Update others on the status of co-workers and property at your place.
  - iv. Clear roads and paths for safe transit on property and to the public road.
    - v. Effect any emergency repairs necessary.
    - vi. Replenish used supplies.
    - vii. Restore life and operations to normal.

#### **5.2.1.2 Fire Emergency**

Fire extinguishers are located at critical fire control points on the premises. Fire extinguishers are identified on the facility maps placed throughout the facilities and on file with local emergency



response coordinators. Proper use of fire extinguishers is part of every employee's training.

a. Fire Extinguisher Ratings:

- “A” rated extinguisher is for paper or wood fires only;
- “B” rated extinguishers are for flammable liquid and grease fires; and,
- “C” rated extinguishers are for electrical fires.
- “A-B-C” rated fire extinguishers are recommended for general use.

b. Responding to a Fire Emergency

- i. Evaluate the situation and determine if you can handle this or if an immediate call for assistance is best.
- ii. Call your local fire department if there is an injury or scale of the fire warrant.
  - Remember: drop and roll
  - Cover a burning victim to extinguish flames
- iii. Avoid breathing toxic smoke or hazardous vapors.
- iv. If appropriate and safe to do so, locate the fire extinguisher, pull the safety pin, point the nozzle at the base of the flame and squeeze the handle. Discharge the extinguisher as required until the fire is out or until the extinguisher is empty (typically less than 10 sec.).
- v. Evacuate people and animals as necessary, following procedures for evacuation, remembering to stay low to avoid toxic smoke and hazardous vapors.
- vi. Before opening a closed door, feel for heat and check for smoke at the top or bottom. If the door is cool, open it slowly. If it is hot or warm, find another means of exit.
- vii. If your primary and most direct route to exit is blocked, exit using an alternative route.

### 5.2.1.3 Wildfires

A wildfire can significantly disrupt railroad operations, both during and after an event. By taking steps before a wildfire, this disruption can be limited and recovering from a major incident may be expedited.

a. Before a Wildfire

- i. Monitor and determine the risk of wildfire in your area.
  - The National Weather Service monitors fire weather and conditions and posts forecasts, current hazards and fire situations.
  - Information is available at <https://www.weather.gov/fire/>
- ii. Practice proper ground management.
  - Ensure brush or debris piles are not near railroad crossing/signal areas.
  - Limit growth and spread of highly volatile plant life, such as cedar trees.
  - Keep ditches near crossings/signals from being overgrown with seasonal weeds, trees, or bushes.
  - If applicable, practice safe seasonal herbicide treatments and/or weed eating that will illuminate brush.
  - Much like your home, create and maintain a defensible space around any crossing/signal structures.
- iii. Alter day-to-day activities.
  - Do not use cad welds/welders during windy and dry conditions, have on hand proper fire extinguishing apparatus.

b. During a Wildfire

- i. Listen to local officials.
  - While efforts can be taken to minimize losses during a fire, the most important step is to listen to local officials for evacuation notices.
  - If an evacuation order is given, leave immediately.

c. After a Wildfire

- i. Account your inventory.
  - Check crossings/signals for damage

- Take photographs of all damage to railroad signal systems, forward photos with locations and materials needed to supervisor for submittal of Signal System Out of Compliance.

#### 5.2.1.3.1 Wildfire Smoke Protection Plan

The purpose of this plan is to protect CDL employees from the hazards of wildfire smoke exposure.

The standards and guidelines of this policy apply whenever an employee performs work activities and the air quality index (where the ambient air concentration for PM<sub>2.5</sub> is at or above 35.5 ug/m<sup>3</sup>) is above 101. It does not apply when an employee performs work activity in:

- Enclosed buildings and structures in which the air is filtered by a mechanical ventilation system and the windows, doors, bays, and other exterior openings are kept closed, except when it is necessary to open doors to enter or exit.
- Enclosed vehicles in which the air is filtered by a cabin air filter and the windows, doors, and other openings are kept closed, except when it is necessary to open doors to enter and exit.

When any other applicable standard addresses other hazards that may be present, both standards shall be followed. Where the requirements of one standard are more restrictive than the other, the more stringent requirements shall be followed.

#### Definitions

**Air Quality Index** – The Air Quality Index (AQI) was developed by the US Environmental Protection Agency as an indicator of overall air quality and is based on the five criteria pollutants regulated under the Clean Air Act: ground-level ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide. For the purposes of this rule, the AQI can be determined by the following means:

- Check the current ambient air concentration for PM<sub>2.5</sub> from the U.S. EPA at [www.AirNow.gov](http://www.AirNow.gov) and entering the zip code of the affected location, or an equivalent source; or
- Obtain the current concentration in ambient air for PM<sub>2.5</sub> directly from the U.S. EPA (via AirNow app), the Interagency Wildland Fire Air Quality Response Program; or
- Directly measure the work location ambient air concentration for PM<sub>2.5</sub> in accordance with the manufacturer's instructions for the testing device used; or
- If all of the previous methods are not practical, use the 5-3-1 Visibility Chart below to estimate the current air quality and corresponding AQI risk category

Distance you can see*	You are:		OR	You have
	<ul style="list-style-type: none"> <li>• An adult</li> <li>• A teenager</li> <li>• An older child</li> </ul>	<ul style="list-style-type: none"> <li>• Age 65 and over</li> <li>• Pregnant</li> <li>• A young child</li> </ul>		<ul style="list-style-type: none"> <li>• Asthma</li> <li>• Respiratory Illness</li> <li>• Lung or heart disease</li> </ul>
5 miles	check visibility	minimize outdoor activity		minimize outdoor activity
3 miles	minimize outdoor activity	stay inside		stay inside
1 mile	stay inside	stay inside		stay inside

**Greater Hazard** – The ability of an employer to demonstrate that compliance with the requirements of the rule would expose an employee to a hazard associated with a substantially more serious injury or illness, thereby providing a narrow exception to the rule to the degree that the greater hazard exists. An example of a greater hazard in relation to the use of non-flame-resistant filtering face piece respirators would include potential facial burns to a qualified employee working within the minimum approach distance (MAD) of an energized high voltage electrical system where flame resistant clothing is required.

**NIOSH** – The National Institute for Occupational Safety and Health of the United States Centers for Disease Control and Prevention. NIOSH tests and approves respirators for use in the workplace.

**PM2.5** – Solid particles and liquid droplets suspended in air, known as fine particulate matter, with an aerodynamic diameter of 2.5 micrometers or smaller and measured in micrograms per cubic meter (ug/m3).

**Sensitive Groups** – People with pre-existing health conditions and those who are sensitive to air pollution who are among those likely to experience health problems from exposure to wildfire smoke. Examples of sensitive groups include: people with lung disease such as asthma or chronic obstructive pulmonary disease (COPD), including bronchitis and emphysema, and those who smoke; people with respiratory infections, such as pneumonia, acute bronchitis, bronchiolitis, cold, flu, or those with or recovering from COVID-19; people with existing heart or circulatory problems, such as irregular heartbeat, congestive heart failure, coronary artery disease, angina, and those who have had a heart attack or stroke; children under 18 years old, and adults over age 65; pregnant women; people with diabetes; and people with other medical or health conditions which can be exacerbated by exposure to wildfire smoke as determined by a physician.

**Wildfire Smoke** – Emissions from unplanned fires in wildlands, which may include adjacent developed and cultivated areas to which the fire spreads or from where it originates.

**Wildlands** – Uncultivated and sparsely populated geographical areas covered primarily by grass, brush, trees, slash, or a combination thereof.

## **Policy**

It is the policy of CDL Electric, LLC to follow and adhere to addressing employee exposure to wildfire smoke. Therefore, CDL implements the following smoke related practices to help prevent employees from suffering from exposure to wildfire smoke while at their work site(s).

## **General Guidelines**

### **Monitoring and Communicating Air Quality**

Supervisors shall monitor air quality and communicate wildfire smoke hazards, in a manner that is readily understandable by all affected employees, when the concentrations in ambient air for PM2.5 is at or above 35.5 ug/m3 (AQI 101), before employees are exposed to it. This means, supervisors shall notify employees:

When work location ambient air concentration for PM2.5 is at or above

- 35.5 ug/m3 (AQI 101);
- 150.5 ug/m3 (AQI 201);
- 500.4 ug/m3 (AQI 501); or
- drops below levels requiring protective measures

Supervisors shall also enable and encourage employees to inform the company HR department if the air quality improves or worsens; and if they experience severe health symptoms that may be the result of wildfire smoke exposure such as asthma attacks, difficulty breathing, and chest pain occur, without fear of reprisal.

The company shall make advanced provisions for prompt medical treatment of employees in the event of serious injury or illness caused by wildfire smoke exposure.

### **Exposure Controls**

Whenever employee exposure to PM<sub>2.5</sub> is at or above 35.5 ug/m<sup>3</sup> (AQI 101), the supervisor must maintain a sufficient number and sizes of NIOSH-approved respirators that effectively protect wearers from PM<sub>2.5</sub> at each work location where employees are exposed. Such respirators shall be provided at no cost and be readily available for voluntary use to all exposed workers at their request.

CDL shall also use engineering or administrative controls to reduce employee PM<sub>2.5</sub> exposure to less than 150.5 ug/m<sup>3</sup> (AQI 201) whenever feasible. Engineering controls include providing work in enclosed buildings, structures, or vehicles where the air is adequately filtered. Administrative controls include relocating work to an outdoor location where the current ambient air concentration of PM<sub>2.5</sub> is less than 150.5 ug/m<sup>3</sup> (AQI 201) or changing work schedules to a time when ambient air concentration of PM<sub>2.5</sub> is less than 150.5 ug/m<sup>3</sup> (AQI 201).

Whenever employee exposure to PM<sub>2.5</sub> is at or above 150.5 ug/m<sup>3</sup> (AQI 201) even after the application of engineering and administrative controls, employees must wear NIOSH-approved respirators.

Whenever employee exposure to PM<sub>2.5</sub> is at or above 500.4 ug/m<sup>3</sup> (AQI 501), even after the application of engineering and administrative controls, employees must wear NIOSH-approved respirators.

KN95s can be substituted for NIOSH-approved filtering face piece respirators for exposures below AQI 499. For exposures at AQI 500 and above, NIOSH-approved filtering face piece respirators must be worn.

### **Training**

All employees, including new employees, supervisory, and non-supervisory employees will be trained in the following topics, before employees begin work that can reasonably be anticipated to expose employees to a workplace ambient air concentration for PM<sub>2.5</sub> at or above 35.5 ug/m<sup>3</sup> (AQI 101).

Training shall include at least the following elements:

- a) Symptoms of wildfire smoke exposure, including:
  - Eyes: burning sensations, redness, and tearing of the eyes caused by irritation and inflammation of the eyes that can temporarily impair one's vision.
  - Respiratory system: runny nose, sore throat, cough, difficulty breathing, sinus irritation, wheezing, shortness of breath;
  - Fatigue, headache, irregular heartbeat, chest pain.
- b) The potential health effects of wildfire smoke, including increased risk of health effects to sensitive groups;
- c) The definition of sensitive groups as defined under section (3);
- d) The employee's right to report health issues related to wildfire smoke exposure and obtain medical treatment for workplace exposure to wildfire smoke without fear of retaliation;
- e) The procedures the supervisor must follow if an employee exhibits severe symptoms of wildfire smoke exposure, including appropriate emergency response procedures;
- f) How employees can obtain the current and forecasted ambient air concentration for PM<sub>2.5</sub> and equivalent AQI level;
- g) How to effectively operate and interpret any air quality monitoring device provided by the employer to comply with these rules, for each employee designated by the employer to operate such devices;
- h) The employer's methods to protect employees from wildfire smoke;
- i) The employer's communication system for wildfire smoke hazards covered under section (5.1); and

- j) The importance, limitations, and benefits of using a filtering face piece respirator when provided by the employer, and how to properly put them on.

#### 5.2.1.3.1 Wildfire Smoke Protection Plan

The purpose of this plan is to protect CDL employees from the hazards of wildfire smoke exposure.

The standards and guidelines of this policy apply whenever an employee performs work activities and the air quality index (where the ambient air concentration for PM<sub>2.5</sub> is at or above 35.5 ug/m<sup>3</sup>) is above 101. It does not apply when an employee performs work activity in:

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wildfire smoke exposure such as asthma attacks, difficulty breathing, and chest pain occur, without fear of reprisal.

The company shall make advanced provisions for prompt medical treatment of employees in the event of serious injury or illness caused by wildfire smoke exposure.

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### **Training**

All employees, including new employees, supervisory, and non-supervisory employees will be trained in the following topics, before employees begin work that can reasonably be anticipated to expose employees to a workplace ambient air concentration for PM<sub>2.5</sub> at or above 35.5 ug/m<sup>3</sup> (AQI 101).

Training shall include at least the following elements:

k) Symptoms of wildfire smoke exposure, including:

Eyes: burning sensations, redness, and tearing of the eyes caused by irritation and inflammation of the eyes that can temporarily impair one's vision.

Respiratory system: runny nose, sore throat, cough, difficulty breathing, sinus irritation, wheezing, shortness of breath;

Fatigue, headache, irregular heartbeat, chest pain.

l) The potential health effects of wildfire smoke, including increased risk of health effects to sensitive groups;

m) The definition of sensitive groups as defined under section (3);

n) The employee's right to report health issues related to wildfire smoke exposure and obtain medical treatment for workplace exposure to wildfire smoke without fear of retaliation;

o) The procedures the supervisor must follow if an employee exhibits severe symptoms of wildfire smoke exposure, including appropriate emergency response procedures;

p) How employees can obtain the current and forecasted ambient air concentration for PM<sub>2.5</sub> and equivalent AQI level;

q) How to effectively operate and interpret any air quality monitoring device provided by the employer to comply with these rules, for each employee designated by the employer to operate such devices;

- r) The employer's methods to protect employees from wildfire smoke;
- s) The employer's communication system for wildfire smoke hazards covered under section (5.1); and
- t) The importance, limitations, and benefits of using a filtering face piece respirator when provided by the employer, and how to properly put them on.

### **Review of Policy and Procedures**

This policy will be reviewed annually or as state and federal regulations are revised and necessitate a change in the policy or procedures.

#### **5.2.1.4 Flood Emergency**

In the event of a flood emergency, all personnel are advised to implement the following procedure:

- a. Remain on the property only if:
  - i. Evacuation is impossible
  - ii. You are volunteering for a sand bagging operation or remained behind for pre-flood management activities.
- b. Gather all life vests and flotation devices and distribute as necessary.
- c. Secure all watercraft at a likely point of use and ensure plenty of fuel.
- d. Secure all fuel tanks using ground straps for tanks and bottles, and high-elevation storage for portable containers (herbicide containers, gas cans)
- e. Remove and relocate motor vehicles to high ground.
- f. Evacuate all non-essential personnel.

#### **5.2.1.5 Heat Wave Emergency**

Prolonged high temperatures and heat wave conditions can lead to heat stress, heat sickness, loss of consciousness and/or death.

- a. Before Excessive Heat Situations
  - i. Stay informed: Monitor for heat advisories in your area at the NOAA National Weather Service <https://www.weather.gov>
  - ii. Listen to local news and weather channels during extreme heat conditions for health and safety updates.
  - iii. Ensure availability of potable water on hand.
- b. Know the terminology
  - i. Excessive Heat Advisory: An excessive heat event is occurring; prolonged exposure or strenuous activity might result in a heat-related illness.
  - ii. Excessive Heat Warning: Life-threatening heat is occurring. Take precautions immediately!
    - Drink plenty of fluids and ensure co-workers do, too. Watch for the signs of heat stress and heat sickness.
    - Avoid direct sun. Seek shade.
    - In the event of emergency, call 911. Cool the victim and provide liquids until help arrives.
- c. Supervisor responsibilities during Excessive Heat:
  - i. Supervisors will be trained in preventing heat related illnesses prior to supervising employees.
    - Physical factors that contribute to heat related illness should be taken into consideration before performing a task. The most common physical factors that can contribute to heat related illness are type of work, level of physical activity and duration, clothing color, weight and breathability.
    - Supervisors must ensure personal factors that contribute to heat related illness are taken into consideration before assigning a task where there is the possibility of a heat-related illness occurring. The most common personal factors that can contribute to heat related illness are age, weight/fitness, drug/alcohol use, prior heat-related illness.
  - ii. Shall maintain contact with their employees throughout the shift ensuring their employees' safe condition.
  - iii. Ensure availability of shade or cool place of retreat from extreme heat conditions.



- iv. Supervisors will be trained in the employer's heat illness emergency response procedures.
  - If an employee is suffering from a heat illness place inside air-conditioned vehicle until symptoms reside.
  - If condition worsens call 911 or take the employee to the nearest medical facility.
- v. Ensure employees have adequate amounts of potable water available.

#### **5.2.1.6 Heat-Related Illnesses**

- a. Heat stroke - Is a life-threatening situation!
  - i. Occurs when the body is unable to regulate its temperature and cool itself.
  - ii. Signs: extremely high body temperature (above 103°F)
    - red, hot, and dry skin (no sweating)
    - rapid, strong pulse
    - throbbing headache
    - dizziness
    - Nausea
    - confusion
    - unconsciousness
  - iii. If you see any of these signs, get medical assistance immediately!
- b. Heat exhaustion
  - i. A milder form of heat-related illness that can develop after several days of exposure to high temperatures and inadequate or unbalanced replacement of fluids.
  - ii. Signs: cool, moist, pale or flushed skin
    - heavy sweating
    - headache
    - nausea
    - dizziness
    - weakness
  - iii. Cool the victim by providing cool, nonalcoholic beverages
    - rest in a cool or air-conditioned environment
    - cool shower, bath, or sponge bath
    - lightweight clothing
  - iv. If the person vomits or begins to lose consciousness, get medical assistance immediately!
- c. Heat cramps
  - i. Muscle pains or spasms (usually in the legs or abdomen) that occur in association with loss of fluids and electrolytes following strenuous activity.
  - ii. Often an early sign that the body is having trouble with heat.
- d. Sunburn
  - i. Damage to the skin that significantly slows the skin's ability to release heat.
  - ii. Usually, minor discomfort that heals in a week.
  - iii. Severe sunburn may require medical attention.
- e. Heat rash
  - i. Skin irritation caused by excessive sweating during hot, humid weather.
  - ii. Red cluster of pimples or small blisters.
  - iii. Most common on the neck, upper chest, or folds of the skin (e.g., elbow creases).

#### **5.2.1.7 Severe Thunderstorms**

The destructive forces of thunderstorms and lightning can be particularly dangerous and costly. High winds can damage railroad crossings and signals, overturn vehicles, uproot or damage trees. Lightning is the leading cause of fires and hail can injure workers. Preparing ahead can help minimize damage and speed your recovery.

- a. Before a Severe Storm
  - i. Check weather reports before planning work activities.

- Have a way of receiving weather information while you work, especially at remote locations.
- Monitor for severe thunderstorms in your area at NOAA's National Weather Service National Storm Prediction Center - <https://www.weather.gov>
- ii. Develop a communication plan with your family and employees or co-workers.
  - Know how to contact each other in the event of severe weather, especially if you are in separate locations.
  - Establish shelter locations.
- iii. Identify potential hazards on your property.
  - Secure structurally unstable materials and loose equipment and materials (e.g., buckets, tools, etc.) which can become dangerous projectiles in high winds.
  - Know how to turn off electrical power, gas and water supplies for buildings on railroad property.
- b. During a Severe Storm
  - i. Stay informed.
    - Listen to the radio or television for situation developments.
  - ii. If there is time, turn off electrical power to crossing and signal cabinets that may become damaged.
  - iii. If a WARNING is issued – Seek shelter immediately!
    - Avoid natural lightning rods
      - tall, isolated tree in an open area
      - hilltops in open fields.
    - If along railroad track seek shelter away from tracks.
      - The lightning current (typically many tens of thousands of amperes) normally flows into the struck rail and then leaks or arcs into the nearby ground through or around the partially conductive railroad ties.
    - In the woods, go to a low area (ravine or valley) under a thick growth of small trees; be alert for flash flooding.
    - If you have no shelter, make yourself the smallest target by squatting low to the ground on the balls of your feet, minimizing contact with the ground, and placing your hands on your knees with your head between them.
    - In a vehicle, stay put. Vehicles often provide better protection than lying exposed in open fields but avoid touching any metal.
- c. After a Severe Storm
  - i. Assess the situation.
    - Survey damage to railroad crossings/signals.
    - Report any downed power lines.
  - ii. Account for all fuels, chemicals, and equipment.
  - iii. Check vehicle and railroad property for damage.
  - iv. Take photographs of all damage to railroad signal systems, forward photos with locations and materials needed to supervisor for submittal of Signal System Out of Compliance (SSOC).
  - v. Report any hazardous materials (e.g., fuels, chemicals) spills or leaks to emergency response personnel.
  - vi. Cleanup safely.
    - Wear sturdy shoes or boots, long sleeves, and gloves to protect your body from injury.
    - Stay away from downed power lines and report them.
    - Be aware of hazards that may cause injury to you or others cleaning up (e.g., chain saws, electrical or chemical hazards).
    - Use caution when clearing broken tree branches; downed or damaged power lines can send electrical current through them.

- Use caution with gas powered equipment - dangerous carbon monoxide can be generated; use in well-ventilated areas.

### 5.2.1.8 Tornadoes

Tornados strike quickly, with little or no warning. High winds can damage buildings, overturn vehicles, uproot or damage trees. Preparing before a tornado can help to preserve life, minimize damage and speed your recovery.

#### a. Before a Tornado

- i. Know the terminology
  - A tornado WATCH is issued when weather conditions favor the formation of tornadoes, for example, during a severe thunderstorm - be prepared to take shelter immediately if conditions worsen.
  - A tornado WARNING is issued when a tornado funnel is sighted or indicated by weather radar - You should take shelter immediately!
- ii. Check weather reports before planning work activities.
  - Have a way of receiving weather information while you work, especially at remote locations. Install a weather app on your phone and enable alerts.
  - Monitor for tornadoes in your area at the National Weather Service Active Watch and Warnings. <http://www.weather.gov>
- iii. Create an emergency plan of action.
  - Know your area's warning signals for tornado watches and warnings. As soon as you hear the signal, take cover.
  - Carry a first aid kit, flashlight, and battery-operated radio.
  - Carry a cellular phone to contact family and co-workers.
- iv. Develop a communication plan with your family and employees or co-workers.
  - Know how to contact each other in the event of severe weather, especially if you are in separate locations.
  - Establish shelter locations you plan to utilize and relay this information to family and co-workers. If they do not hear from you this will establish a start area to search.
- v. Identify potential hazards in your shelter area.
  - Secure structurally unstable materials, and loose equipment and materials (e.g., buckets, tools, etc.) which can become dangerous if airborne.
  - Know how to turn off electrical power, gas and water supplies for buildings.
  - Hazardous substances (e.g., herbicides, fuels, other chemicals).

#### b. During a Tornado

- i. Stay informed. Listen to the radio or television for situation developments.

**If a WARNING is issued – Seek shelter immediately!**

- ii. Never try to outrun a tornado.
  - If driving, attempt to reach the nearest sturdy building and go inside and seek shelter. Do not attempt to drive out.
  - Tornadoes can change direction quickly and can lift up a car or truck and toss it through the air. Never try to out-drive a tornado.
  - Trying to outrun a tornado on foot is never a good idea: The average tornado moves along the ground at about 30 mph, much faster than you can run.
- iii. If possible, get inside a sturdy building.
  - Avoid large rooms with wide-spanning roofs. Seek shelter immediately in a basement or other subsurface protected structure.
  - If a basement or subsurface shelter is not available, seek shelter in a room located in the middle of the building on the lowest floor.

- Do not open windows. Get as far away from windows as possible. Avoid windows or glass doors, which can be broken by strong winds or hail and cause damage or injury.
  - Avoid long span buildings as these are often supported solely by the outside walls and can be dangerous during severe weather situations.
  - If you maintain an office in a mobile structure, exit the building and seek shelter in a stronger building or ditch.
  - For added protection, get under something sturdy, such as a heavy table or workbench.
  - If possible, cover your body with a blanket or sleeping bag; protect your head with anything available, even your hands.
- iv. If no adequate shelter immediately available
- Lie flat in the nearest ditch or other low-lying area.
  - Cover your head and neck with your arms.
  - Stay away from trees.
  - Do not get under any vehicle, no matter what its size.
- c. After a Tornado
- Continue to monitor radio or television for emergency information.
- i. Assess the situation.
- Listen to local radio for updated information and instructions.
  - Render aid to injured or trapped persons. If telephone service is available, call for emergency response assistance. If telephone service is not available, evaluate the situation and determine if any seriously injured people need to be moved to prevent additional injury.
  - Look for fire hazards and check for gas leaks or fuel spills. If safe to do so, stop leaks of fuels and gases and extinguish fires.
  - Avoid downed power lines and puddles of water near downed lines, fuse boxes or circuit panels.
  - Report all fires, gas leaks and similar hazardous conditions to local emergency response responders.
  - Survey damage to railroad buildings and equipment.
  - Identify sharp objects, dangerous materials, downed power lines, damaged gas lines, or other hazards (e.g., chemical spills).
  - Check for power outages.
- ii. Clean up safely
- Wear sturdy shoes or boots, long sleeves, and gloves.
  - Be aware of hazards that may cause injury to you or others cleaning up - these can include chain saw injuries, electrical or chemical hazards.
  - Use caution with gas powered equipment - dangerous carbon monoxide can be generated; use in well-ventilated areas.
- iii. Account for your inventory.
- Account for all fuels, chemicals, and equipment.
  - Check vehicle and railroad property for damage.
  - Take photographs of all damage to railroad signal systems, forward photos with locations and materials needed to supervisor for submittal of Signal System Out of Compliance.
  - Report any hazardous materials (e.g., fuels, chemicals) spills or leaks to emergency response personnel.

### **5.2.1.9 Winter Storms**

The impact of winter storms on railroads can involve a number of issues. Signals can be damaged due to heavy snow or ice accumulation. Power failures can impact railroad operations.

- a. Before a Winter Storm
- i. Stay informed.

Monitor for severe winter weather in your area at the NOAA National Weather Service.

<http://www.weather.gov>

- ii. Know the terminology.
  - Winter Storm WATCH: Severe winter conditions, such as heavy snow and/or ice, are possible for your area in the next 12 to 36 hours. Prepare now!
  - Winter Storm WARNING: Severe winter conditions are expected in the next 12-24 hours; 4-6 inches of snow or sleet, or 1/4 inch or more of ice is expected. Seek shelter immediately!
  - Blizzard WARNING: Snow and strong winds (gusts up to 35 mph or greater) will combine to produce a blinding snow (near zero visibility), deep drifts, and life-threatening wind chill; expected to occur for three hours or longer.
- iii. Be prepared
  - Power outages or conditions may require you to remain at home for several days.
  - Develop an emergency plan for water and food resources.
  - Identify emergency resources for water.
- iv. Stockpile emergency materials.
  - Standby electric generator for emergency power
  - Sandbags, shovel, road salt or ice melt
- b. During a Winter Storm
  - i. Stay informed.

Listen to local news and weather channels for situation developments and road closures.
  - ii. If you are caught outside during a storm
    - Try to find shelter out of the wind.
    - Stay dry and cover all exposed parts of your body.
- c. After a Winter Storm
  - i. Stay safe during cleanup.
    - Wear sturdy shoes or boots, layered clothing, hat and gloves.
    - Avoid overexertion. Strain from the cold and the hard labor could cause a heart attack - a major cause of death in the winter.
    - Pace yourself, work slowly, and rest frequently.
    - Make sure you have good footing when lifting the snow shovel.
    - Take your time and lift small amounts.
    - Lift snow/shovel properly to avoid back injuries.
  - ii. Use caution with gas powered equipment.
    - Dangerous carbon monoxide can be generated by gas-powered equipment as well as alternative heating sources.
    - Use these items only in well-ventilated areas.
  - iii. Account for your inventory.
    - Check buildings for damage (e.g., downed power lines or trees at signals and across railroad tracks, accumulated snow or ice).
    - Check vehicle and railroad property for damage.
    - Take photographs of all damage to railroad crossings and signal systems, forward photos with locations and materials needed to supervisor for submittal of Signal System Out of Compliance (SSOC).

#### **5.2.1.10 Earthquake Emergency**

Earthquakes are uncommon in the Midwest, but not unheard of. On Monday, 28 June 2004 a quake measuring 4.5 magnitude struck Northern Illinois. The quake was felt as far west as parts of Iowa, and as far south as St. Louis, Missouri. Oklahoma and Kansas also experience earthquakes frequently.

- a. Personnel are advised to follow the following procedures during an earthquake:
  - If working under equipment, quickly roll out to a clear area.
  - Make sure other workers are free of equipment on jack stands or under hoists.

- If inside a building and close to an exit, leave the building.
  - If inside a building and not near an exit, find the nearest doorframe and stand in it, bracing yourself against the doorframe.
  - Avoid standing under heavy beams, rafters, and joists. Few buildings in the Midwest use earthquake strapping.
  - Avoid standing near shelving or structures that contain pesticides, fuels or other hazardous materials.
- b. Immediately after the earthquake subsides:
- Render aid.
  - Follow Spill and containment procedures. Stop and contain leaks of gases, liquids and other hazardous materials.
  - Call Emergency Responders if necessary.

### **5.3.1 Assignment of responsibility**

- a. Emergency Plan Manager
  - Emergency Plan Designate shall manage the Emergency Action Plan for CDL Electric.
  - The Emergency Plan Designate shall also maintain all training records pertaining to this plan.
- b. Management
  - CDL Electric will provide adequate controls and equipment that, when used properly, will minimize or eliminate the risk of injury to employees in the event of an emergency.
  - CDL Electric management will ensure proper adherence to this plan through regular review.
- c. Supervisors
  - Supervisors shall, themselves, follow and ensure that their employees are trained in the procedures outlined in this plan.
- d. Employees
  - Employees are responsible for following the procedures described in this plan.
- e. Contractors
  - Contract employees are responsible for complying with this plan and shall be provided the training described herein by the Project Supervisor.

#### **5.3.1.1 Corporate Notification**

- a. Supervisor shall contact the CDL Electric CEO/President, COO, General Counsel, VP Railroad Signals as soon as possible if media coverage of the situation is expected.
- b. Supervisor shall contact the CDL Electric Corporate Office as soon as possible with information on employee injuries and/or loss of life (Director of Safety and Compliance Manager), property damages, theft, or material losses (VP Railroad Signals).

#### **5.3.1.2 Advanced Medical Care**

Under no circumstances shall an employee provide advanced medical care and treatment. These situations shall be left to emergency services professionals, or Designated Person(s), who have the necessary training, equipment, and experience. Untrained individuals may endanger themselves and/or those they are trying to assist.

#### **5.3.1.3 Accounting for Employees After Emergencies**

Supervisor(s) shall account for each employee assigned to them after an emergency listed above. Each employee is responsible for reporting to the appropriate Supervisor(s) so an accurate head count can be made. All employee counts shall then be reported to the Emergency Action Plan Manager as soon as possible.

#### **Emergency Contact Information**

Supervisor(s) shall maintain a list of all employees' personal emergency contact information and shall keep the list in a designated area for easy access in the event of an emergency.

#### **5.3.1.4 Re-turn to Duty**

Once the emergency has resided all field employees will return to duty and assess damage to railroad crossing/signal properties, relaying any found damage to supervisor for SSOC implementation.

#### **5.3.2 Training**

##### **a. Employee Training**

All employees shall receive instruction on this Emergency Action Plan.

##### **i. Additional training shall be provided:**

- When there are any changes to the plan and/or facility
- When an employee's responsibilities change
- Annually as refresher training

##### **ii. Items to be reviewed during the training include:**

- Fire prevention practices
- Threats, hazards, and protective actions
- Means of reporting fires and other emergencies
- Names of Emergency Action Plan Manager and Coordinators
- Individual responsibilities
- Procedures for accounting for employees
- Sheltering in place
- Severe weather procedures
- Emergency Action Plan availability

#### **5.3.2.1 Training Records**

Supervisor(s) shall document all training pertaining to this plan and forward training records to the CDL Safety Office for filing.

#### **5.3.2.2 Additional Information**

Any employee who desires additional information regarding the Emergency Action Plan or the specific duties of an employee under the EAP may contact the Emergency Plan Manager.

#### **5.4.1 Plan Evaluation**

This Emergency Action Plan shall be reviewed annually, or as needed if changes to the worksite are made, by the Supervisor.

### **6.1 Hazard Communication Program 29 CFR 1910.1200 / 1926.59**

#### **6.1.1 Objective**

The purpose of this plan is to establish a program and procedures for the safe use of hazardous chemical substances at CDL Electric Company, LLC

- ##### **a. The Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (HCS) 29 CFR 1910.1200 (General Industry) and 29 CFR 1926.59 (Construction Industry) call for the development of a hazard communication program when employees may be exposed to any chemical in the workplace under normal conditions of use or in a foreseeable emergency. In 2012, OSHA revised the HCS to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). As a result, this program has been revised to comply with the requirements of the OSHA HCS 2012. The written hazard communication program will include and address the following criteria to satisfy the minimum requirements of the OSHA HCS 2012:**
- i. List of all hazardous chemicals presently known in the workplace or individual work area
  - ii. Methods used to ensure that all containers, including pipes and holding tanks, are labeled, tagged or marked properly
  - iii. Methods used to obtain and maintain safety data sheets (SDSs)
  - iv. Methods used to provide employees with information and training on hazardous chemicals in their work areas

- v. Methods used to inform employees of the hazards of non-routine work practices
- vi. Methods used to provide the employees of other employers (e.g., consultants, construction contractors and temporary employees) on-site access to SDSs for each hazardous chemical that the other employer's employees may be exposed to while working in the workplace
- vii. Methods used to inform the employees of other employers of precautionary measures that:
  - Must be taken to protect themselves during the workplace's normal operating times
  - Conditions and in foreseeable emergencies
- viii. Methods used to inform the employees of other employers of the labeling system used in the workplace
- b. The hazard communication program will identify the following:
  - i. Key personnel responsible for the program
  - ii. Location of chemical inventory list and SDSs
  - iii. Workplace labeling system
  - iv. Good work practices and procedures to minimize exposures
  - v. How training will be performed
  - vi. Procedures to maintain the program and update the required information
  - vii. How records will be maintained

### **6.1.2 Responsibilities**

The employer is responsible for developing, implement, and maintain at each workplace a written hazard communication program (labels and other forms of warnings, safety data sheets (SDS), and employee information and training.

- a. The CDL Electric Shipping and Receiving Manager, is responsible for administering the hazard communication program. This person is also responsible for:
  - i. Reviewing the potential hazards and safe use of chemicals
  - ii. Maintaining a list of all hazardous chemicals and a master file of SDS's
  - iii. Ensuring that all containers are labeled, tagged or marked properly
  - iv. Providing new-hire and annual training for employees
  - v. Maintaining training records
  - vi. Monitoring the air concentrations of hazardous chemicals in the work environment
  - vii. Properly selecting and caring for personal protective equipment
  - viii. Directing the cleanup and disposal operations of the spill control team
  - ix. Identifying hazardous chemicals used in non-routine tasks and assessing their risks
  - x. Informing contractors who are performing work on company property about potential hazards
  - xi. Reviewing the effectiveness of the hazard communication program and making sure that the program satisfies the requirements of all applicable federal, state or local hazard communication requirements
- b. The receiving department is responsible for:
  - i. Reviewing incoming hazardous chemicals to verify correct labeling
  - ii. Holding hazardous chemicals in the receiving area until receipt of the SDS for the product
- c. Employees are responsible for the following aspects of the hazard communication program:
  - i. Identifying hazards before starting a job
  - ii. Reading container labels and SDSs
  - iii. Notifying the supervisor of torn, damaged or illegible labels or of unlabeled containers
  - iv. Using controls and/or personal protective equipment provided by the company to minimize exposure
  - v. Following company instructions and warnings pertaining to chemical handling and usage
  - vi. Properly caring for personal protective equipment, including proper use, routine care and cleaning, storage, and replacement
  - vii. Knowing and understanding the consequences associated with not following company policy concerning the safe handling and use of chemicals



viii. Participating in training

### **6.1.3 Chemical Inventory List**










Copies of the chemical inventory list are available in the corporate office.

This list will contain the product identifier that is referenced on the appropriate SDS, the location or work area where the chemical is used, and the personal protective equipment and precautions for each chemical product. This list will be updated annually and whenever a new chemical is introduced to the workplace.

### **6.1.4 Labels and Other Forms of Warning**

- a. Each container of hazardous chemicals received from the chemical manufacturer, importer or distributor will be labeled with the following information:
  - i. Product identifier
  - ii. Signal word
  - iii. Hazard statement(s)
  - iv. Pictogram(s)
  - v. Precautionary statement(s)
  - vi. Name, address and telephone number of the chemical manufacturer, importer or other responsible party
- b. CDL will use the GHS labeling system for secondary containers. When a chemical is transferred from the original container to a portable or secondary container, the container will be labeled, tagged or marked with a GHS label containing the following information:
  - i. Product identifier
  - ii. Signal word
  - iii. Hazard statement(s)
  - iv. Pictogram(s)
  - v. Precautionary statement(s)
- c. Labels shall not be defaced or removed
- d. Portable containers into which hazardous chemicals are transferred from labeled containers and that are intended for the immediate use of the employee who performs the transfer do not require a label. If the portable container will be used by more than one employee or used over the course of more than one shift, the container must be labeled. Food and beverage containers should never be used for chemical storage
- e. Signs, placards, process sheets, batch tickets, operating procedures or other such written materials may be used in lieu of affixing labels to individual, stationary process containers as long as the alternative method identifies the containers to which it is applicable and conveys the information required for workplace labeling
- f. Where an area may have a hazardous chemical in the atmosphere (e.g., where extensive welding occurs), the entire area will be labeled with a warning placard
- g. Pipes that contain hazardous chemicals should be labeled in accordance with ANSI/ ASMEA13.1 and indicate the direction of flow (Please note that this not a requirement of the OSHA HCS but a best practice or requirement of local jurisdiction.)
- h. Workplace labels or other forms of warning will be legible, in English and prominently displayed on the container or readily available in the work area throughout each work shift. If employees speak languages other than English, the information in the other language(s) may be added to the material presented if the information is presented in English as well

## HCS Pictograms and Hazards

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

### 6.1.5 Safety Data Sheets

An SDS will be obtained and maintained for each hazardous chemical in the workplace. SDS's for each hazardous chemical will be readily accessible during each work shift to employees when they are in their work areas.

SDS's will be obtained from the chemical manufacturer, importer or distributor. The name on the SDS will be the same as that listed on the chemical inventory list. SDS's for chemicals or process streams produced by the company will be developed and provided by the Shipping and Receiving Department Manager.

The CDL Electric Shipping and Receiving Department will maintain the master file of all original SDS's. Hard copies of the master file will be in the Corporate Office and will be readily accessible for employee review. These files are located in the R&M/Warehouse.

The SDS for new products or an updated SDS for existing products will be obtained by the purchasing agent and forwarded to the safety coordinator. The CDL Electric Shipping and Receiving Department will then update the master file with the new and/or updated SDS.

If problems arise in obtaining an SDS from the chemical manufacturer, importer or distributor, a phone call will be made to request an SDS and to verify that the SDS has been sent. The phone call will be logged, and a letter will be sent the same day. The company will maintain a written record of all efforts to obtain SDSs. If these efforts fail to produce an SDS, the local OSHA office will be contacted for assistance.

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).

### **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, category).
- 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;
- Initial boiling point and boiling range;
- Partition coefficient: n-octanol/water;
- Flash point;
- Auto-ignition temperature;
- Evaporation rate;
- Viscosity.
- Decomposition temperature; and
- Flammability (solid, gas);

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.
- An 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, referring to the octanol-water partition coefficient (Kow) and the bioconcentration factor (BCF), were 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).
- UN proper shipping name.
- Transport hazard class(es).
- Packing group number, if applicable, based on the degree of hazard<sup>2</sup>.
- 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 73/78 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.

### **6.1.6 Employee Information and Training**

CDL shall provide training for all affected company employees on the hazards posed by the chemicals to which those company employees may be exposed. CDL shall train such affected employees upon their initial assignment and when new chemicals or chemical hazards are introduced into the workplace. Specific chemical hazard information will be made available to affected company employees via labeling and safety data sheets (SDS), a master list will be maintained at the company warehouse. Employees included in the hazard communication program will receive the following information and training prior to exposure to hazardous chemicals and when new chemical hazards are introduced to their work area:

- a. Requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200 (General Industry) or 29 CFR 1926.59 (Construction Industry)
- b. Operations in the work area where hazardous chemicals are present
- c. Location and availability of the hazard communication program, chemical inventory list and SDSs
- d. Methods and observations used to detect the presence or release of a hazardous chemical in the work area, such as monitoring devices, visual appearance or odor of hazardous chemicals when being released
- e. Physical, health, simple asphyxiation, combustible dust and pyrophoric gas hazards, as well as hazards not otherwise classified of the chemicals in the work area
- f. Measures employees can take to protect themselves from hazards, such as appropriate controls, work practices, emergency and spill cleanup procedures, and PPE to be used
- g. Explanation of the labels received on shipped containers
- h. Explanation of the workplace labeling system
- i. Explanation of the SDS, including order of information and how employees can obtain and use the appropriate hazard information

### **6.1.7 Non-Routine Tasks**

The CDL Electric Shipping and Receiving Department and the immediate supervisor of an employee performing a nonroutine task, such as cleaning machinery and other process equipment, is responsible for ensuring that adequate training has been provided to the employee on any hazards associated with the nonroutine task. Employees share in this responsibility by ensuring that their immediate supervisor knows that the non-routine task will be performed.

Special work permits are required for the performance of certain non-routine tasks, such as entry to confined spaces, breaking and opening piping systems, and welding and burning. For some special tasks, employees are required to follow special lockout/tagout procedures to ensure that all machinery motion has stopped, and energy sources are isolated prior to and during the performance of such tasks.

### **6.1.8 Contractors**

Prior to beginning work, CDL Electric Shipping and Receiving will inform contractors with employees working on company property of any hazardous chemicals that the contractors' employees may be exposed to while performing their work. The Shipping and Receiving Department will also inform contractors of engineering or work practice control measures to be employed by the contractor, personal protective equipment to be worn by the contractors' employees, and any other precautionary measures that need to be taken to protect their employees during the workplace's normal operating conditions and in foreseeable emergencies.

Furthermore, the Shipping and Receiving Department will advise contractors that they must comply with all OSHA standards while working on company property. Appropriate controls will be established with the contractor to ensure that company employees are not exposed to safety and health hazards from work being performed by the contractor and that company operations do not expose contractors' employees to hazards.

CDL Electric Shipping and Receiving will inform contractors of the workplace labeling system and the availability and location of SDSs for any chemical to which contractors' employees may be exposed while performing their work.

### **6.1.9 Record Keeping**

Records pertaining to the hazard communication program will be maintained by CDL Electric Shipping and Receiving. Shipping and Receiving will keep the following records:

- a. Chemical inventory list
- b. Hazardous material reviews
- c. Copies of phone call logs and letters requesting SDSs
- d. Employee training records
- e. Warnings issued to employees for not following the hazard communication program

## **6.2 Spill Prevention and Response Plan**

The following are steps and procedures to follow employees for preventing spills and responding to chemical or hazardous substance spills.

### **6.2.1 Hazardous Substance Management**

All hazardous substances, including chemical wastes, are to be managed in a way that prevents release. The following general requirements are to be followed:

- a. Container Management:
  - i. All hazardous substance containers must be labeled pursuant to OSHA hazardous communication guidelines and OSHA Safety Data Sheets (SDS) must be immediately available for review.
  - ii. All hazardous substance containers must be in good condition and compatible with the materials stored within.



- iii. Chemical substances should be stored in proper containers to minimize the potential for a spill. Whenever possible, chemicals shall be kept in closed containers and stored so they are not exposed to storm water.
- iv. All hazardous substance containers must be accessible and spacing between containers must provide sufficient access to perform periodic inspections and respond to releases.
- v. Empty hazardous substance containers (drums) must have all markers and labels removed and the container marked with the word 'empty'.
- vi. Any spills on the exterior of the container must be cleaned immediately.
- vii. Flammable materials stored or dispensed from drums or totes must be grounded to prevent static spark.
- viii. Do not overfill waste drums. 4" of headspace must remain to allow for expansion.
- b. Good Housekeeping:
  - i. All hazardous substances must be stored inside buildings or under cover.
  - ii. Store hazardous substances not used daily in cabinets, or in designated areas.
  - iii. All chemicals that are transferred from larger to smaller containers must be transferred by use of a funnel or spigot.
  - iv. All hazardous substance containers should be closed while not in use.
  - v. Use drip pans or other collection devices to contain drips or leaks from dispensing containers or equipment.
  - vi. Implement preventative maintenance activities to reduce the potential for release from equipment.
  - vii. Immediately clean up and properly manage all small spills or leaks.
  - viii. Periodically inspect equipment and hazardous substance storage areas to ensure leaks or spills are not occurring.
  - ix. Use signage to identify hazardous substance storage or waste collection areas.
  - x. Keep all work areas and hazardous substance storage areas clean and in good general condition.
- c. Secondary containment:
  - i. Store all bulk chemicals ( $\geq 55$  gallons) within appropriate secondary containment, or any sized chemical if there is a potential for release to the environment.
  - ii. Secondary containment should be checked periodically, and any spills identified in secondary containment must be immediately cleaned up and removed.
- d. Marking/labeling:
  - i. Ensure all hazardous substances, including chemical wastes, are properly marked and labeled in accordance with all federal, state and local regulations.
  - ii. Ensure that hazardous substances transferred to small containers are marked with the chemicals name (example - "Isopropyl Alcohol") and hazard (example - "Flammable").

### **6.2.2 Employee Training**

All employees must receive periodic training on the following topics:

- a. Spill prevention practices
- b. Where to locate and how to interpret OSHA SDS and pictograms.
- c. Spill response plan
- d. Emergency response procedures

Training must include a review of this Spill Prevention and Response Plan, and a review of location and use of emergency response equipment. Training can be recorded through safety committee meetings, staff training logs, or other equivalent record keeping.

### **6.2.3 Hazardous Substance Inventory**

An inventory must be maintained for all stored hazardous substances  $< 55$  gallons, and/or list of locations where non-bulk hazardous substances are stored (i.e. flammable lockers - shop floor). Materials

manufactured, stored, used and/or generated as chemical waste in quantities  $\geq 55$  gallons should also be inventoried. Inventories should be maintained similar to the example shown below.

<u>Hazardous Substance</u>	<u>Manufacturer</u>	<u>Quantity/Unit of Issue</u>	<u>Location</u>
(Example) Isopropyl Alcohol	Acme Co.	60 / 1-gl	Fleet Shop

### 6.2.4 Spill Response Equipment

Spill response equipment must be maintained and located in areas where spills are likely to occur. Spill kits should provide adequate response capabilities to manage any anticipated spill or release. The following general requirements are to be followed which include:

- Stock spill clean-up kits that are compatible with hazardous substances stored on site.
- Locate spill kits in areas where spills are likely to occur (loading docks, chemical storage areas, locations where hazardous substance are being transferred).
- Spill kits should be sized to manage an anticipated release (spill equal to the largest container).
- Emergency response equipment should be inspected periodically to ensure that the spill kit is complete.

Spill response and first aid equipment, and fire alarm location(s) should be identified similar to the example shown below.

<u>Locations</u>	<u>Spill Equipment Content/Inventory</u>
(Example) Loading Dock	40gl- Spill Kit including 65-gl over pack drum, universal adsorbent socks, pillows and pads, PPE, non-sparking shovel, disposable bags and ties & Emergency Response Guidebook.

### 6.2.5 Spill Response Plan

In the event of a hazardous substance spill or release, immediately review and follow applicable OSHA SDS guidelines. If doing so does not violate those guidelines, take the following measures to keep the spill from entering sewer or storm drains, spreading off-site, or affecting human health. In all cases caution and common sense must be maintained with the primary goal being to prevent and/or limit personal injury.

- Stop, contain, and clean up the chemical spill if:
  - The spilled chemical and its hazardous properties have been identified.
  - The spill is small and easily contained.
  - Responder is aware of the chemicals' hazardous properties.
- If a spill or release cannot be controlled or injuries have occurred due to the release, the following procedures should be implemented:
  - Call for help or alert others of the release.
  - Evacuate the immediate area and provide care for the injured - Call 911.
  - If potential fire or explosion hazards exist initiate evacuation procedures - Call 911.
  - Respond defensively to any uncontrolled spills:
    - Use appropriate personal protective equipment when responding to any spill.
    - Attempt to shut off the source of the release (if safe to do so).
    - Eliminate sources of ignition (if safe to do so).
    - Protect drains by use of adsorbent, booms or drain covers (if safe to do so).
  - Notify onsite emergency contact(s).
  - Notify other trained staff and assist with the spill response and cleanup activities.  
Coordinate response activities with local emergency personnel (fire department).
  - Be prepared to provide information to fire department, EMT, hospital or physician.
  - Notify appropriate agency if a release has entered the environment.

### **6.2.6 Evacuation Procedures**

In the event of a hazardous substance release that has the potential for fire, explosion or other human health hazards the following procedures will be implemented:

- a. Facility staff will be notified of evacuation by one or more of the following methods: [Verbal, Intercom, Portable Radio, Alarm, Other].
- b. Notification to emergency services will be performed- Call 911.
- c. Facility staff will follow predetermined evacuation routes and assemble at designated areas. Evacuation maps must be displayed throughout the facility.
- d. Individuals responsible for coordinating evacuations must confirm if the business has been completely evacuated.
- e. Facility staff will be made familiar with evacuation procedures during new employee orientation, and annual trainings thereafter.
- f. Designated emergency response contacts will coordinate all activities with outside emergency personnel.

### **6.2.7 Spill Containment and Cleanup**

Only trained employees will contain and/or cleanup spills on CDL property or worksites.

### **6.2.8 Reporting a Release**

- a. Report releases to 911 for proper authority response.
- b. When reporting a release, be prepared to provide the following information (use spill report form):
  - Your name and telephone number from where you are calling;
  - Exact address of the release or threatened release;
  - Date, time, cause and type of incident (fire, air release, spill, etc.)
  - Material and quantity of the release, to the extent known;
  - Information contained on the OSHA safety data sheets;
  - Current condition of the facility;
  - Extent of injuries, if any; and
  - Possible hazards to the public health and/or environment outside of the facility.

### **6.2.9 Evacuation and Assembly Area**

Emergency exits routes and assembly areas located in Appendix G of CDL Electric's Safety Policy.

## **6.3 Compressed Gas Safety Plan**

### **6.3.1 Scope**

This Plan applies to all employees who work with or near compressed gases and compressed gas cylinders and all operations that use or handle such gases. Reference 29 CFR 1910.101.

### **6.3.2 Policy Statement**

It is the policy of CDL Electric that all compressed gas cylinders will be handled, stored, received, and used in a safe manner consistent with the requirements of the Compressed Gas Safety Plan and to ensure that employees handling compressed gases are adequately trained in the inherent hazards of the cylinders and their contents, as well as proper handling, storage, and use according to all federal and state regulations.

### **6.3.3 Plan Administration**

- a. Plan Administrator - Director of Safety  
The Plan Administrator is responsible for developing and maintaining this written Compressed Gas Safety Plan. The Plan Administrator is qualified to administer and oversee the Plan, ensure that the required evaluations are conducted, and ensure that all affected employees receive the appropriate training required in this Plan.
- b. Hazard Assessment Administrator - Director of Fabrication

The Hazard Assessment Administrator is responsible for planning and conducting hazard assessments for all work areas where compressed gas cylinders and equipment are used. The assessment administrator will submit hazard assessments to the Plan Administrator or designated representative.

c. Employee Trainer - Director of Fabrication

The Employee Trainer is responsible for administering the training requirements for compressed gas safety as outlined in this Plan for all employees who work with or around compressed gas cylinders and equipment.

d. Plan Review and Update - Director of Safety

This Plan will be reviewed and updated:

- Annually
- Whenever there is a change in federal or state regulations related to compressed gas
- Whenever there is a change in facility operations related to the use, handling, or storage of compressed gas cylinders or equipment

### 6.3.4 Definitions

**Compressed gas** A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 pounds per square inch (psi) at 70°F (21.1°C); or a gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130°F (54.4°C) regardless of the pressure at 70°F (21.1° C); or a liquid having a vapor pressure exceeding 40 psi at 100°F (37.8°C) as determined by the American Society for Testing and Materials (ASTM) 323-72.

**Compressed gas cylinder** A compressed gas container having a maximum water capacity of 454 kilograms (1,000 pounds).

**Liquefied petroleum gas (LPG or LP-gas)** Liquid petroleum gas; any material that is composed predominantly of any of the following hydrocarbons or mixtures of them: propane, propylene, butanes (normal butane or iso-butane), and butylene's.

**Pressure relief device** Pressure- and/or temperature-activated device used to prevent the pressure from rising above a predetermined maximum.

**PSIA** Pounds per square inch absolute, whereby the pressure is relative to a vacuum rather than the ambient atmospheric pressure.

**PSIG** Pounds per square inch gauge, whereby the pressure is relative to atmospheric pressure.

**Regulator** Mechanical device used to control the discharge pressure of a compressed gas from a container.

**Valve** A type of device used to control the flow of gases and liquids.

**Valve protection cap (valve cap)** Rigid removable cover provided for container valve protection during handling, transportation, and storage.

### 6.3.5 Hazard Assessment

a. The hazards of compressed gases and cylinders fall into one or more of the following general categories:

i. Physical

- High pressure, causing ruptures, explosions, and/or impact injuries from projectiles
- Crush hazards and muscle strains from weight of cylinders

ii. Chemical

- Flammable
- Corrosive
- Toxic
- Oxidizing
- Reactive
- Cryogenic
- Inert/Asphyxiant

- b. A hazard assessment is required for all processes or equipment involving the use of compressed gases and includes:
  - i. All compressed gas cylinders and pressure vessel systems that contain oxidizing, corrosive, toxic, reactive, and/or flammable materials at any pressure;
  - ii. All pressurized equipment (including American Society of Mechanical Engineers (ASME)-coded vessels that have been structurally modified) that operates at gas pressures over 150 PSIG or at liquid pressures over 1,500 PSIG or that contains over 75,000 foot-pounds (ft-lb) of stored energy; and
  - iii. All uses within confined spaces.
- c. Labels on the cylinders and safety data sheet (SDS) will be consulted as part of the overall hazard assessment. Employees will check labels and the SDS for specific hazards and safety precautions before working with any compressed gas.

### **6.3.6 Inspection**

Director of Fabrication, Fabrication Supervisor and Fabrication Lead are qualified to determine that compressed gas cylinders are in a safe condition to the extent that can be determined by visual inspection. Inspections of cylinders will be conducted on arrival from vendor and a minimum of monthly thereafter.

A visual inspection alone, however, may be insufficient to determine the mechanical integrity of a compressed gas cylinder. Therefore, additional inspections will be conducted as prescribed by the following rules and manuals:

Title 49, Parts 171 to 180 of the federal DOT Hazardous Materials Regulations (latest versions)

- C-6 Standards for Visual Inspection of Steel Compressed Gas Cylinders
  - C-8 Standard for Requalification DOT-3HT, CTC-3HT, TC-3HTM Seamless Steel Cylinders
  - P-1 Standard for Safe Handling of Compressed Gases in Containers
  - S-1.1 Pressure Relief Device Standards Part 1- Cylinders for Compressed Gases
  - S-1.2 Pressure Relief Device Standards Part 2 - Cargo and Portable Tanks Compressed Gases
- a. Before using a compressed gas cylinder, employees will inspect it for obvious damage and clear labeling. Any damaged or questionable cylinder will be returned to the supplier for correction or replacement. Employees will also inspect the regulator and cylinder valves to ensure that they have not been compromised with solvents, dirt, or lubricants like grease or oil.
  - b. Hoses and connections shall be inspected regularly for damage. Hoses should be stored in cool areas and protected from damage.

### **6.3.7 Labeling**

- a. Each compressed gas cylinder will be clearly labeled with information about its contents and physical and health hazards. Identification will be stenciled or stamped on the cylinder or a label. Three-part tag systems may be used for identification and inventory.
- b. Cylinders that are unlabeled or mislabeled or that do not legibly identify their contents will not be accepted. If the labeling is unclear, the cylinder will be marked with the words “contents unknown” and returned to the supplier. If labeling becomes worn over time, the supplier will be contacted for replacement labeling, or the correct labeling will be purchased from an approved vendor.
- c. Employees will not rely on the color of the cylinder to identify the gas because cylinder colors vary from supplier to supplier. Employees will also not rely on the label on a valve cap because caps are interchangeable.
- d. Cylinders that are transported between the vendor and the facility will have Department of Transportation (DOT) labels. Labels or markings must never be removed from a cylinder or bulk storage system.
- e. Empty cylinders will be identified with the word “EMPTY” or the letters “MT” and shall be dated.

### 6.3.7.1 Bulk Tanks and Pipes

The National Fire Protection Association (NFPA) has labeling requirements for bulk tanks. The colored diamond-shaped labels indicate the different types of hazards:

- Blue = health hazard
- Yellow = instability hazard (formerly reactivity)
- Red = fire hazard
- White = special hazards (e.g., reactive with water, oxidizer, or asphyxiant gas)

Make sure the tank and all the associated piping are properly labeled. You should be able to look at the pipe anywhere along the system and know what gas it contains. All user points should also be labeled so that the user knows what gas is being hooked up.

### 6.3.8 Safe Work Practices

#### General Use and Handling Practices

Compressed gas cylinders will be handled in accordance with [ANSI Z49.1, CGA P-1- (latest version) Standard for Safe Handling of Compressed Gases in Containers, or other consensus standards].

- a. Employees who work with or around hazardous gas or compressed gas cylinders will comply with the following general safe work practices:
  - i. Do not mix gases in a cylinder.
  - ii. Do not smoke around compressed gas cylinders.
  - iii. Do not use cylinders in unventilated areas.
  - iv. Only accept and use DOT-approved cylinders.
  - v. Never drop a cylinder.
  - vi. Release of gas pressure within a pressurized system will be done before removal of appliances, hoses, or regulators.
  - vii. Protect cylinders from cuts or abrasions that might be caused by banging into equipment or machinery.
  - viii. Never use a cylinder for any purpose other than its intended function of containing a compressed gas. Do not use the cylinder as a roller or some sort of support, such as a sawhorse.
  - ix. Each cylinder bearing a DOT specification marking must be inspected, retested, and marked in conformance with 49 CFR 180 Subpart C, "Qualifications, Maintenance and Use of Cylinders."
  - x. Keep cylinders upright and secure to prevent them from being knocked over.
  - xi. Do not remove the valve cap until the cylinder is secured.
  - xii. When a cylinder cap cannot be removed by hand, cylinder shall be tagged "Do Not Use" and returned to the designated storage area for return to vendor.
  - xiii. Never tamper with cylinder safety devices.
  - xiv. Keep the cylinders away from operations that create sparks, heat, and fire, as well as electrical circuits. When welding nearby, protect the cylinders with heat-resistant blankets or tarps.
  - xv. Don't use oil or grease on the cylinders or handle them with oily hands or gloves.
  - xvi. Once finished using the compressed gas, close the cylinder valve and release all pressure before removing the regulator from the cylinder. Do not completely empty the cylinder; always leave some residual pressure.
  - xvii. Return unused and empty cylinders to the vendor for reuse or refill. Never refill cylinders or change their contents. This can cause a dangerous reaction.
  - xviii. Never mix gases in a cylinder and only professionals should refill cylinders. Empty cylinders must be handled as carefully as full cylinders.
- b. Cylinder valves. When working with cylinder valves:
  - i. Open cylinder valves by hand only. Never use a hammer or wrench to open a valve. If the valve requires a tool, do not use the cylinder. Too much stress on the valve could cause it to break.
  - ii. Open the valve slowly with your hand to the side, not above the valve. Opening the valve quickly might put undue pressure on the regulator or other systems. Serious injury could occur

- if the valve were to fail when your hand is above it. Turn the valve with your hand to the side because the valve handle could become a projectile if the valve were to fail.
- iii. If a toxic or irritating gas is being used, do not open the valve unless it is under a fume hood or similar ventilation device.
  - iv. Never tamper with a cylinder's safety valves.
    - v. Keep the valve caps on when cylinders are not in use.
  - c. Moving a cylinder. When moving a cylinder:
    - i. Always make sure the valve is closed, and the cap is on. This means that the cylinder must be detached from any equipment, and the regulator must be removed.
    - ii. Do not walk a cylinder (i.e., rock it back and forth or roll it along the bottom edge) while holding onto the valve cap. The cap could come loose, causing you to drop the cylinder, and the exposed valve could be knocked off.
    - iii. Never drag or roll a cylinder on its side. Not only could this damage the cylinder, but it also exposes the valve and cap to the hazard of striking a solid object while the cylinder is rolling.
    - iv. Secure the cylinder to a hand truck or cart specifically designed to move cylinders. Do not handle more than one cylinder at a time unless the cart is designed for this purpose.
    - v. Do not drop cylinders or strike them against each other or other surfaces. This could damage the cylinder or valve or cause a chemical reaction.
    - vi. If possible, use a freight elevator to transport a gas cylinder between levels of a building. If there is no freight elevator, use the common or staff elevator. Never allow other people to enter
    - vii. the elevator when moving cylinders.
  - d. Regulators and Gauges. Following are guidelines for using regulators and gauges:
    - i. Never use a cylinder without a regulator.
    - ii. Every regulator and gauge must be rated for the pressure that will be applied from the gas cylinder. Do not use a low-pressure regulator/gauge on a high-pressure gas cylinder.
    - iii. Regulators are gas-specific and are generally not interchangeable. Make sure that the regulator and valve fittings are compatible with the gas before installing them.
    - iv. The thread sealant must be an approved application. The wrong sealant may react with the gas.
    - v. Make sure the threads on the container valve outlet match the threads on the regulator connection or other equipment. Never force valve connections that do not fit properly, and never use adapters to fit valves to cylinders or regulators to valves.
    - vi. Wear eye protection whenever operating a regulator or gauge. Although very rare, the regulator or gauge could fail.
  - e. Leaking Cylinders. Connections to piping, regulators, and other appliances will be tight to prevent leakage. If a leak is suspected, a gas detection fluid, soapy water, or other commercially available solution will be used for leak detection depending on the type of gas being used. If the cylinder is leaking, employees will follow these practices:
    - i. Remove the cylinder to an isolated, well-ventilated area if it is safe to do so.
    - ii. If the cylinder contains a flammable/oxidizing gas, keep it away from possible ignition sources.
    - iii. If the gas is corrosive, direct the stream of leaking gas into an appropriate neutralizing material if safe to do so.
    - iv. If the gas is toxic, the facility may need to be evacuated. Call emergency service personnel if necessary.
    - v. Post a warning about the hazard and tag the leaking cylinder as unserviceable.
    - vi. Contact the manufacturer or supplier for advice about how to handle and return the leaking cylinder. Consult the SDS if necessary.
    - vii. Never try to repair a compressed gas cylinder.
  - f. Cylinder Storage. Following is a list of safe practices for storing compressed gas cylinders that will be followed in all work areas:

- i. The compressed gas cylinder storage area will be cool, dry, well-ventilated, designated and labeled for full or empty cylinders, fire-resistant, and protected from weather such as rain, snow, and direct sunlight. Cylinders will not be exposed to temperatures above 125°F.
- ii. Cylinders will be secured upright by chain, cable, or similar restraint.
- iii. Cylinders will be stored on a level, fireproof floor where they are protected from the ground and dampness to prevent rusting.
- iv. Cylinders will be protected from tampering.
- v. Combustibles such as wood, paper, cardboard, oil, and grease will be kept away from the storage area. Any ignition sources such as machinery or welding areas will be removed. Cylinders will not be stored in areas that would allow them to become part of an electrical current.
- vi. Sparks, open flames, and smoking are not allowed near cylinder storage areas.
- vii. When cylinders are in storage, valves will be closed, and valve protection caps will be screwed down to the last thread.
- viii. Cylinders will not be stored in elevators, staircases, hallways, or other areas where people are often traveling or in areas where heavy moving objects may strike or fall on them. This will increase the risk of knocking over or damaging a cylinder.
- ix. Adequate, portable fire extinguishers that are appropriate for the gases stored will be available for fire emergencies at storage areas.
- x. Cylinders must be separated into hazard classes when in storage. Oxidizing gases must be separated from flammable gases, and empty cylinders must be isolated from filled cylinders.
- xi. Oxygen cylinders will be stored 20 feet away from fuel sources and flammable gases or separated by a 5-foot-tall, 1/2-hour fire wall.
- xii. The storage area will be organized so that users will withdraw the cylinders that have been in there longest. The newest ones received will be placed behind those already in storage.
- xiii. Periodic surveillance of cylinders in storage areas must be done. Deficiencies discovered must be corrected immediately.
- g. Signs. Storage areas for full and empty cylinders must be designated and labeled. Container storage areas will be prominently posted with hazard class, or the name of the gases stored. Storage areas will have “No Smoking” signs along with general “Danger,” “Caution,” or “Warning” signs.
- h. Transporting Cylinders. Employees who transport compressed gas cylinders will comply with the following practices:
  - i. Transport cylinders upright with the valve up in a vertical secured position using a cylinder basket or cart and must not be rolled.
  - ii. Always have the protective cap securely covering the valve when transporting a cylinder.
  - iii. Never lift a cylinder by the valve cap because it is not made to carry the weight of the cylinder and could become damaged.
  - iv. Never transport the cylinder with the regulator in place.
  - v. Never transport compressed gas cylinders in confined areas of vehicles, such as the passenger compartment or trunk.
  - vi. Secure compressed gas cylinders to prevent movement during transport. The vehicle will be adequately equipped with racks or other ways of securing the cylinders to haul them safely.
  - vii. Cylinders containing flammable gas and oxidizing gas will not be transported together or with toxic or corrosive gases. However, oxygen and acetylene cylinders may be transported together if they are transported in the truck bed below the cab level and a roll bar is installed over the truck bed to prevent the cylinders from falling out if the vehicle overturns.
  - viii. When transporting cylinders by hoist or forklift, use appropriate baskets or cradles that secure the cylinder and prevent it from banging around or falling.
  - ix. Never use a sling or an electromagnet to lift or hoist a cylinder. Cylinders could easily fall out of a sling, and electromagnets could fail or otherwise release a cylinder.
  - x. Cylinders shall not be dropped or permitted to strike violently.



- i. Employees who transport or receive or prepare cylinders for shipment will be trained in the DOT hazardous materials requirements.

### **6.3.9 Personal Protective Equipment (PPE)**

The Director of Fabrication has assessed the hazards associated with compressed gases, cylinders, and equipment at CDL Electric, and appropriate measures have been taken to eliminate or reduce their presence with engineering and administrative controls.

Where these controls are not enough for employee protection, the Director of Safety will approve all necessary PPE according to the PPE program. Shatterproof safety goggles will be used whenever any connection is made or broken to a compressed gas cylinder or valve. Fabric or leather work gloves and adequate foot protection will be worn whenever a compressed gas cylinder is moved or transported.

Face shields, insulated gloves, protective clothing, or respirators may be required depending on the hazards of the gas being used.

### **6.3.10 Procedures for Common Gases**

#### **a. Compressed Air**

- i. Employees will wear eye protection and protective clothing when using compressed air, including when using compressed air for sweeping or for operating air tools, to protect from flying fragments and debris.
- ii. The lowest pressure needed for the task will be used. Air wands used for sweeping must have pressure relief valves and be limited to 30 pounds of pressure, have effective chip guarding, and personal protective equipment implemented.
- iii. Air receivers need to be equipped with a readily visible pressure gauge that is equipped with spring-loaded safety valves. The total relieving capacity of these safety valves should prevent the receiver from exceeding the maximum allowable working pressure by more than 10 percent.
- iv. Air hoses will be stored properly. They will not be allowed to lie on the ground where they can be stepped on, run over by carts or forklifts, and damaged. Air hoses will be inspected on a regular basis for cracks or splits.
- v. Regular equipment inspection should be performed according to the manufacturers' recommended methods and frequency.
- vi. Safety valves need to be tested frequently to ensure they are in proper operating condition and that they cannot be made inoperable by any means.
- vii. Compressed air will not be used to dust off clothing. Compressed air and oxygen will never be used interchangeably.
- viii. Proper draining of the receiver should be performed by opening the drain valve frequently to prevent the accumulation of excessive amounts of liquid.

#### **b. Oxygen**

- i. Oxygen containers will be separated from flammable gas cylinders and combustible materials by a minimum distance of 20 ft or by a noncombustible barrier at least 5 ft high having a fire resistance rating of at least 1/2 hour.
- ii. Oil and grease will be kept away from oxygen cylinders, valves, and hoses. Employees will not handle oxygen cylinders with oily or greasy hands or gloves or if their clothes are oily or greasy. Fittings on oxygen cylinders will never be greased or oiled.
- iii. Smoking and open flames are prohibited in areas where oxygen is stored or used.
- iv. Bulk oxygen storage systems will be located aboveground and outdoors or will be installed in a building of noncombustible construction, adequately vented, and used for that purpose only.

#### **c. Acetylene**

- i. In-plant transfer, storage, and utilization of acetylene cylinders will be in accordance with CGA Pamphlet G-1- [latest version], "Acetylene."
- ii. Acetylene tanks will be transported, stored, and utilized only in an upright position.

- iii. Acetylene will not be stored near oxidizers. Acetylene cylinders will not be stored near open flames, areas where electrical sparks are generated, or any other possible sources of ignition. Permanent signs will be posted near areas where acetylene is stored and used that include the phrases “Flammable Gas,” “No Smoking,” and “No Open Flames.”
- iv. Only regulators designed for acetylene gases will be used on acetylene tanks. Copper fittings and tubing will never be used with acetylene cylinders.
  - v. To reduce the risk of explosion, acetylene will not be used at an operating pressure over 15 PSIG. Acetylene cylinder valves will not be opened more than one-half turn of the spindle. Acetylene cylinders will never be used in a confined space.
- d. LPG
  - i. LPG containers will be stored and handled according to the practices described in 29 CFR 1910.110.
  - ii. LPG cylinders will be marked as approved for LPG and labeled with their capacity and design pressure. Never use a container that is not approved for LPG use, that is corroded or damaged, or that is missing an accessory.
  - iii. Storage of LPG within buildings is prohibited. Store cylinders in open-air storage units or cages with a protective roof overhead to minimize exposure to temperature increases, physical damage, and tampering. Cylinders must be kept upright unless specifically designed for horizontal use or storage. Valves must be closed and protected with screw-on caps or collars regardless of whether they are full, partially full, or empty. Storage locations are provided with at least one approved fire extinguisher having a rating of not less than 20-B:C. The fire extinguisher will be located no more than 50 ft from the storage location.
  - iv. Containers awaiting use or resale will be located away from the nearest building, group of buildings, or thoroughfare in accordance with the below table.

<b>Quantity of LP-Gas Stored</b>	<b>Distance (feet)</b>
500 lb. or less	0
501 to 2,500 lb.	0*
2,501 to 6,000 lb.	10
6,001 to 10,000 lb.	20
Over 10,000 lb.	25

\*Containers must be stored at least 10 ft from any building on adjoining property, any sidewalk, or any exposure described in 29 CFR 1910.110(f)(6)(i).

- v. LPG will be used outside or in a very well-ventilated area. Smoking is prohibited when using LPG and within 25 feet of an LPG cylinder.
  - vi. Employees will wear appropriate PPE when working with LPG. It can cause cold burns if it comes in contact with the skin, so gloves will be worn in addition to eye protection and foot protection.
- e. Hydrogen
  - i. Hydrogen containers will comply with the DOT specifications or ASME Boiler and Pressure Vessel Code, Section VIII.
  - ii. Each container will be marked with the name “Hydrogen.”
  - iii. Only spark-proof tools will be used in and around a hydrogen environment.
  - iv. Hydrogen storage areas will be permanently labeled as follows: “HYDROGEN—FLAMMABLE GAS—NO SMOKING—NO OPEN FLAMES” or equivalent. Bottled hydrogen cylinders will be kept within the storage room.
  - v. Hydrogen systems will be located so that they are readily accessible to delivery equipment and to authorized personnel. Systems will be located aboveground, and those near aboveground flammable liquid storage will be located on ground higher than the flammable liquid storage unless dikes, diversion curbs, grading, or separating solid walls are used to prevent buildup of

flammable liquids under the system. Hydrogen systems will not be located beneath electric power lines or close to flammable liquid piping or piping of other flammable gases.

- vi. Manifold systems will not be used with compressed hydrogen.
  - vii. A limited number of hydrogen cylinders may be stored on-site. This should be limited to 15 cylinders (or no more than 3,000 cubic feet (cu ft) of hydrogen). Any exception to this must be approved by the Director of Fabrication.
- f. Other Gases
- i. Inert gases. Inert gases will be used and stored in well-ventilated areas.
  - ii. Corrosive gases. Limit exposure when working with corrosive gases like ammonia and chlorine. Use the gas in a fume hood or other vented closure if possible and avoid contact with skin and eyes. An emergency shower and eyewash station are located within 10 seconds of areas where corrosive gases are used and stored. Employees will wear safety goggles and know how to use the emergency shower and eyewash station.

### **6.3.11 Emergency Procedures**

This facility has adopted an Emergency Action Plan (EAP) for procedures and assignments during an emergency. See 5.1 of this Safety Policy.

### **6.3.12 Training**

- a. All employees who use, handle, store, or transport hazardous gases will be trained in the inherent hazards of the cylinders and their contents, as well as proper handling, storage, and use of compressed gas containers before they begin work with or around such gases.
  - i. The training program will include the following elements:
    - How to recognize a compressed gas and its container.
    - How to safely handle, store, and use compressed gas cylinders.
    - The labeling requirements of compressed gases.
    - The specific hazards of different types of compressed gases.
  - ii. Employees who transport or receive or prepare cylinders for shipment will also be trained in the DOT hazardous materials requirements.
- b. Refresher Training  
Refresher compressed gas training will be provided to employees who work with or near compressed gas whenever there is a change in facility operations that affect the use, handling, storage, or transport of compressed gas. It will also be provided to any employee who demonstrates a deficiency in using, handling, storing, or transporting compressed gas.
- c. Training Records  
Training records will be maintained that show when the training was held, what was covered, who gave the training and the trainer's qualifications, and who attended. Such records will be kept at the Director of Safety office, Pittsburgh Ks.

### **6.3.13 Recordkeeping**

Director of Fabrication will maintain a written log of each compressed gas or pressurized equipment modification, repair, test, calibration, or maintenance service, including the date and nature of work performed, serial number of the item, and the name of the person performing the work. Such records will be kept at fabrication office files in Pittsburgh Ks.

## **7.1 Lockout/Tagout Policy 29 CFR 1910.147 Subpart J**

### **7.1.1 Objective**

This policy applies to all CDL Electric Company, LLC employees who may be exposed to hazardous energy during service or maintenance work. Uncontrolled energy includes potential, kinetic, flammable, chemical, electrical, and thermal sources. This policy is established to protect employees who must do service or maintenance on machines or equipment and who could be injured by an unexpected start-up or release of hazardous energy. Service or maintenance includes erecting, installing, constructing,

repairing, adjusting, inspecting, unjamming, setting up, troubleshooting, testing, cleaning, and dismantling machines, equipment or processes.

This policy will ensure that machinery or equipment is stopped, isolated from all hazardous energy sources, and properly locked or tagged out.

### **7.1.2 Employer/Employee Responsibilities**

- a. CDL Electric Company, LLC is responsible for implementing and enforcing this policy.
- b. The Director of Safety will conduct an annual review of this policy.
- c. All employees must comply with this policy.
- d. Supervisors must enforce the use of lockout and tagout devices when employees do service or maintenance work and may be exposed to hazardous energy.
- e. Employees who do service and maintenance work must follow the lockout/tagout procedures described in this policy.
- f. Employees who work in areas where lockout/tagout procedures are used must understand the purpose of the procedures and are prohibited from attempting to restart machines or equipment that are locked or tagged out.

### **7.1.3 Lockout/Tagout Devices**

Lockout and tagout devices must meet the following criteria to ensure that they are effective and not removed inadvertently. The Company does not use one exclusive type of lockout tagout device.

However, all devices used must adhere to the following:

- a. Lockout devices must work under the environmental conditions in which they are used. Tagout device warnings must remain legible with the identity of the person applying and their contact information, even when they are used in wet, damp, or corrosive conditions. All energy isolating devices that are needed to control the energy to the machine or equipment must be physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s) prior to maintenance being performed.
  - b. Lockout and tagout devices must be designated by color, shape, or size. Tagout devices must have a standardized print and warning format.
  - c. Lockout devices and tagout devices must be strong enough that they cannot be removed inadvertently. Tagout devices must be attached with a single-use, self-locking material such as a nylon cable tie. Devices shall identify the employee who applied the device.
  - d. Any employee who sees a lockout or tagout device must be able to recognize who attached it and its purpose.
  - e. Each lock must have a unique key or combination.
1. Electrical energy sources. Lockout or tagout of electrical energy sources must occur at the circuit disconnect switch. Electrical control circuitry does not effectively isolate hazardous energy.
  2. Alternative methods. Energy-isolating devices are the primary means for protecting CDL Electric Company, LLC employees who service equipment and must be designed to accept a lockout device. Energy isolating devices must clearly identify function.

### **7.1.4 Exposure Survey**

The Director of Electrical Services will conduct a hazardous-energy survey to determine affected machines and equipment, types and magnitude of energy, and necessary service and maintenance tasks. Each task will be evaluated to determine if it must be accomplished with lockout or tagout procedures.

### **7.1.5 Energy Control Procedures**

Authorized employees who lockout or tagout equipment or do service and maintenance must follow specific written energy-control procedures. The procedures must include the following information:

- a. The intended use of the procedure
- b. Steps for shutting down, isolating, blocking, and securing equipment

- c. Steps for placing, removing, and transferring lockout devices
- d. Equipment-testing requirements to verify the effectiveness of the energy-control procedures

When re-energizing equipment is necessary - when power is needed to test or position the equipment, for example - temporary removal of lockout or tagout devices is allowed. This applies only for the time required to perform the task and the procedure must be documented.

#### **7.1.5.1 Employee Responsibilities Before Servicing**

Employees must do the following before they begin service or maintenance work:

- a. Inform all affected employees of equipment shutdown
- b. Shut down equipment
- c. Isolate or block hazardous energy
- d. Remove any potential (stored) energy
- e. Lockout or tagout the energy sources
- f. Verify the equipment is isolated from hazardous energy and de-energized

#### **7.1.5.2 Lockout/Tagout Application**

- a. Lockout/Tagout devices shall be affixed to each energy isolating device by authorized employees.
- b. Lockout devices, where used, shall be affixed in a manner that will hold energy isolating devices in a safe or off position.
- c. Tagout devices, where used, shall be affixed in such a manner that will clearly indicate the operation or movement of energy isolating devices from the safe or off position.
- d. Where Tagout devices are used with energy isolating devices that have the capability of being locked, the tab attachment shall be fastened at the same point at which the lock would have been attached.
- e. Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as possible, in a safe manner, to the device in a position that will be immediately obvious to anyone attempting to operate the device.
- f. Whenever replacement or major repair, renovation or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machine or equipment shall be designed to accept a lockout device.

#### **7.1.5.3 Full employee protection**

- a. When a tagout device is used on an energy isolating device which is capable of being locked out, the tagout device shall be attached at the same location that the lockout device would have been attached, and the employer shall demonstrate that the tagout program will provide a level of safety equivalent to that obtained by using a lockout program.
- b. In demonstrating that a level of safety is achieved in the tagout program which is equivalent to the level of safety obtained by using a lockout program, the employer shall demonstrate full compliance with all tagout-related provisions of this standard together with such additional elements as are necessary to provide the equivalent safety available from the use of a lockout device. Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of additional safety measures such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energization.

#### **7.1.5.4 Employee Responsibilities After Servicing**

Employees must do the following when they remove lockout or tagout devices and re-energize equipment:

- a. Remove tools and replace machine or equipment components
- b. Inform coworkers about energy-control device removal
- c. Ensure all workers are clear of the work area
- d. Verify machine or equipment power controls are off or in a neutral position

- e. Remove the lockout or tagout device
- f. Re-energize equipment
- g. Special lockout/tagout situations

#### **7.1.5.5 Energized Testing**

When an energy-isolating device is locked or tagged and it is necessary to test or position equipment, do the following:

- a. Remove unnecessary tools and materials
- b. Ensure that all other employees are out of the area
- c. Remove locks or tags from energy isolating devices
- d. Proceed with test.
- e. De-energize equipment and lockout or tagout energy-isolating devices
- f. Operate equipment controls to verify that the equipment is de-energized

#### **7.1.5.6 Stored Energy**

All stored or residual energy in rams, flywheels, springs, pneumatic, or hydraulic systems, etc. shall be blocked or dissipated. If there is a possibility of re-accumulation of stored energy verification of isolation must be continued until servicing or maintenance is completed.

#### **7.1.6 Contract Service and Maintenance**

CDL Electric Company, LLC and contractors must be aware of their respective lockout/tagout procedures before the contractor does onsite work. CDL Electric Company, LLC employees must understand and comply with the contractor's energy-control procedures.

#### **7.1.7 Group Lockout/tagout Shift Change/Overtime**

When authorized employees must service equipment that has several energy sources and several energy isolating devices, the employees must follow group lockout procedures. Each authorized employee must place his or her personal lock and/or tag (LOTO) on each group lockout/tagout device prior to commencing any servicing or maintenance operation. The supervisor responsible for the group lockout/tagout is forbidden to remove the group LOTO device until each authorized employee in the group has removed his or her personal device.

The Project Leader who initially applied group locks and tags for his/her same craft authorized employees shall be responsible for ensuring the safe transfer of those locks and tags while maintaining the integrity of the group lockout/tagout.

All oncoming shift/overtime and off-going shift authorized employees from the same craft who have been or will be performing the maintenance or servicing work must be at the location where the work is taking place before the exchange of both personnel and tags can take place.

Before removing his/her group locks, the off-going shift Project Leader shall:

- a. Notify all affected and authorized employees in the immediate area that the exchange of group locks is in progress.
- b. Inspect the work area to ensure that all tools and nonessential items have been removed from the work site.
- c. Ensure that all authorized oncoming shift/overtime and off-going shift employees are on site and accounted for.
- d. With the oncoming shift Project Leader present, verify that all the isolation devices are in the proper positions to both control and/or relieve hazardous energy associated with the equipment being serviced.
- e. Ensure the oncoming shift Project Leader and staff review and verify the LOTO procedure. Only the Project Leader is required to sign the LOTO procedure.

#### **7.1.8 Removal of an Authorized Employee's LOTO**

This procedure, at a minimum, must include:

- Verification by the employer that the authorized employee who applied the device is not on site;
- All reasonable efforts to contact the authorized employee to inform him or her that the lock has been removed (phone call, text, email); and
- The employee is definitely informed of the removal of the lock upon his or her return to work.

### **7.1.9 Long-term Shutdowns**

Employees must follow CDL Electric Company, LLC specific written procedures when it is necessary to continue lockout/tagout during long-term shutdowns. Project Supervisor is responsible for monitoring lockout and tagout devices that control the energy to equipment during long-term shutdowns.

### **7.1.10 Alternative Methods**

When lockout or tagout is *not* used for tasks that are routine, repetitive, and integral to the production process, or prohibits the completion of those tasks, then an alternative method must be used to control hazardous energy.

Selection of an alternative control method must be based on a risk assessment of the machine, equipment, or process. The risk assessment must consider existing safeguards provided with the machine, equipment or process that may need to be removed or modified to perform a given task.

For example, when control circuits are used as part of the safeguarding system, the system must be designed to ensure protection as effective as a mechanical disconnect switch or master shut-off valve. A control-reliable dual channel hardwired circuit of industrially rated components that satisfies the design features as specified in ANSI B11.19, with a safety relay or safety PLC to ensure integrity and performance of the safeguarding system, must be used.

Under all circumstances, the individual must have exclusive personal control over the means to maintain the state of the control circuit in a protective mode.

## **7.2.0 Training**

Employees who may be exposed to hazardous energy will receive training before assignment to ensure that they understand CDL Electric Company, LLC energy-control policy and have skills to apply, use, and remove energy controls. The training will include the requirements of 1910.147 and the following:

- a. Affected employees will be trained in the purpose and use of energy-control procedures. An affected employee uses equipment that is being serviced under lockout or tagout procedures or works in an area where equipment is being serviced.
- b. Authorized employees will be trained to recognize hazardous energy sources, the type and magnitude of energy in the workplace, the methods and means necessary for isolating and controlling energy, and the means to verify that the energy is controlled. An authorized employee locks out or tags out equipment to do service work. An affected employee becomes an authorized employee when that employee's duties include service or maintenance work on equipment.
- c. Employees whose jobs are in areas where energy-control procedures are used will be trained about the procedures and the prohibition against starting machines that are locked or tagged out.
- d. Employees will be retrained annually to ensure they understand energy-control policy and procedures.
- e. Authorized and affected employees will be retrained whenever their job assignments change, energy-control procedures change, equipment or work processes present new hazards, or when they don't follow energy-control procedures.
- f. Current training records will be maintained for each authorized and affected employee including the employee's name and the training date.

### **7.2.1 Inspections of Written Energy Control Procedures**

CDL Electric Company, LLC will perform and document annual inspections of energy-control procedures to ensure that employees understand and use them effectively. Documentation will include the following:

- a. The equipment on which the procedure is used
- b. The date of the inspection
- c. The employees included in the inspection
- d. The inspector

If an inspector finds that employees are not following an energy-control procedure or that the procedure is not protecting them, employees must be retrained, and the procedure's deficiencies corrected.

The inspector must understand the procedure and must be someone other than those following the procedure at the time of the inspection. Each procedure's accuracy, completeness, and effectiveness must be verified.

If the inspection covers a procedure for equipment with an energy-isolating device that can be locked out, the inspector must review the procedure with the employees who use it to service the equipment. The inspector can review the procedure with the employees individually or in a group.

If the inspection covers a procedure for equipment with an energy-isolating device that can only be tagged out, the inspector must review the procedure with the authorized employees who service the equipment and with affected employees who may work in the area when the equipment is serviced. The inspector can review the procedure with the employees individually or in a group.

### **7.2.2 Definitions**

**Affected employee** A person who uses equipment that is being serviced under lockout or tagout procedures, or who works in an area where equipment is being serviced.

**Authorized employee** A person who locks out or tags out equipment to do service or maintenance work. An affected employee becomes an authorized employee when that employee's duties include service or maintenance work on equipment.

**Capable of being locked out** An energy-isolating device that is designed with a hasp or other means of attachment to which, or through which a lock can be affixed, or if it has a locking mechanism built into it. Other energy-isolating devices will also be capable of being locked out, if lock out can be achieved without the need to dismantle, rebuild, or replace the energy-isolating device or permanently alter its energy-control capability.

**Disconnect** A switch that disconnects an electrical circuit or load (motor, transformer, or panel) from the conductors that supply power to it. An open circuit does not allow electrical current to flow. Under a lockout procedure, a disconnect must be capable of being locked in the open position.

**Energized** Connected to an energy source or containing potential energy.

**Energy source** Any source of energy. Examples: electrical, mechanical, hydraulic, pneumatic, chemical, and thermal.

**Energy-isolating device** A mechanical device that physically prevents transmission or release of energy.

**Hazardous energy** Any of the types of energy existing at a level or quantity that could be harmful to workers or cause injury through inadvertent release or start-up of equipment.

**Lockout device** A device that locks an energy-isolating device in the safe position.

**Lockout**: Placing a lockout device on an energy-isolating device, under an established procedure, to ensure the energy-isolating device and the equipment it controls can't be operated until the lockout device is removed. (An energy-isolating device is capable of being locked out if it has a hasp that accepts a lock or if it has a locking mechanism built into it.)

**Procedure** A series of steps taken to isolate energy and shut down equipment.

**Servicing or maintenance** Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining machines or equipment. Also includes lubricating, cleaning, unjamming, and adjusting or tool changes if a worker may be exposed to the unexpected startup of the equipment during such activities.



**Tagout device** A prominent warning sign, such as a tag, that can be securely fastened to an energy isolating device to indicate that the energy-isolating device and the equipment it controls can't be operated until the tagout device is removed.

**Tagout** Placing a tagout device on an energy-isolating device, under an established procedure, to indicate that the energy-isolating device and the equipment it controls can't be operated until the tagout device is removed.

## **8.1 Personal Protective Equipment Policy - 29 CFR 1910.132 Subpart I**

### **8.1.1 Objective**

The purpose of the Personal Protective Equipment Policies is to protect the employees of CDL Electric from exposure to workplace hazards and the risk of injury using personal protective equipment (PPE). PPE is not a substitute for more effective control methods and its use will be considered only when other means of protection against hazards are not adequate or feasible. It will be used in conjunction with other controls unless no other means of hazard control exist.

Personal protective equipment will be provided (Foot Protection meeting ANSI Z41.1-1991 specifications will be the employees responsibility), used, and maintained when it has been determined that its use is required to ensure the safety and health of our employees and that such use will lessen the likelihood of occupational injury and/or illness.

This section addresses general PPE requirements, including eye and face, head, foot and leg, hand and arm, body (torso) protection, and protection from drowning. Separate programs exist for respiratory protection and hearing protection as the need for participation in these programs is established through industrial hygiene monitoring.

### **8.1.2 Responsibilities**

#### **8.1.2.1 Safety Leader/Designated Person**

The Supervisor of the on-site project shall be designated as the Safety Leader for that project.

The Company Director of Safety is responsible for the development, implementation, and administration of CDL Electric's PPE policies. This involves:

- a. Conducting workplace hazard assessments to determine the presence of hazards which necessitate the use of PPE.
- b. Selecting and purchasing PPE through shipping and receiving
- c. Reviewing, updating, and conducting PPE hazard assessments whenever:
  - i. a job changes
  - ii. new equipment is used
  - iii. there has been an accident
  - iv. a supervisor or employee requests it
  - v. or at least every year
- d. Maintaining records on hazard assessments
- e. Maintaining records on PPE assignments and documented training
- f. Providing training, guidance, and assistance to supervisors and employees on the proper use, care, and cleaning of approved PPE
- g. Periodically re-evaluating the suitability of previously selected PPE
- h. Reviewing, updating, and evaluating the overall effectiveness of PPE use, training, and policies

#### **8.1.2.2 Supervisors**

Supervisors (Leads, etc., and/or Designated Persons) have the primary responsibility for implementing and enforcing PPE use and policies in their work area. This involves:

- a. Providing appropriate PPE and making it available to employees (Footwear is the employee's responsibility).

- b. Periodically inspect employee-owned PPE to assure its adequacy, condition for purpose and sanitation.
- c. Ensuring that employees are trained on the proper use, care, and cleaning of PPE.
- d. Ensuring that PPE training certification and evaluation forms are signed and given to the Safety Director responsible for your workplace safety and health program.
- e. Ensuring that employees properly use and maintain their PPE and follow CDL Electric PPE policies and rules.
- f. Notifying CDL Electric management and the Safety Director when new hazards are introduced or when processes are added or changed.
- g. Ensuring that defective or damaged PPE is immediately disposed of and replaced.

### **8.1.2.3 Employees**

The PPE user is responsible for following the requirements of the PPE policies. This involves:

- a. Properly wearing PPE as required
- b. Attending required training sessions
- c. Properly caring for, cleaning, maintaining, and inspecting PPE as required
- d. Following CDL Electric PPE policies and rules
- e. Informing the supervisor of the need to repair or replace PPE

Employees who repeatedly disregard and do not follow PPE policies and rules will be subject to discipline up to and including termination of employment.

## **8.1.3 Procedures**

### **8.1.3.1 Hazard Assessment**

Safety Leader or Designated Person in conjunction with Supervisors, will conduct a walk-through survey of each work area to identify sources of work hazards. Each survey will be documented using the Hazard Assessment Certification Form, which identifies the work area surveyed, the person conducting the survey, findings of potential hazards, and date of the survey. The Safety Leader or Designated Person will keep the forms in the Director of Safety Office.

Safety Leader or Designated Person will conduct, review, and update the hazard assessment for PPE whenever:

- a. a job changes
- b. new equipment or process is installed
- c. there has been an accident
- d. whenever a supervisor or employee requests it
- e. or at least every year

Any new PPE requirements that are developed will be added into CDL Electric's written accident prevention program.

### **8.1.3.2 Selection of PPE**

Once the hazards of a workplace have been identified, (Safety Leader or Designated Person) will determine if the hazards can first be eliminated or reduced by methods other than PPE, i.e., methods that do not rely on employee behavior, such as engineering controls.

If such methods are not adequate or feasible, then (Safety Leader or Designated Person) will determine the suitability of the PPE presently available; and as necessary, will select new or additional equipment which ensures a level of protection greater than the minimum required to protect our employees from the hazards (refer to Appendix H - Selection of PPE). Care will be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards will be recommended for purchase.

All personal protective clothing and equipment will be of safe design and construction for the work to be performed and will be maintained in a sanitary and reliable condition. Only those items of protective

clothing and equipment that meet NIOSH or ANSI (American National Standards Institute) standards will be procured or accepted for use. Newly purchased PPE must conform to the updated ANSI standards which have been incorporated into the PPE regulations, as follows:

- a. Eye and Face Protection ANSI Z87.1-1989
- b. Head Protection ANSI Z89.1-2009
  - Hard hats are supplied in different colors and characteristics. The reasons for different color codes are to identify a person and his/her responsibility. CDL Electric employees will utilize the following colors for its employees:
    - **White** – Managers, engineers, foremen or supervisors
    - **Orange** – Non-management, new employees, or visitors.
  - Types:
    - ANSI/CSA Type I – hard hats meet vertical impact and penetration requirements
    - ANSI/CSA Type II – hard hats meet vertical and lateral impact and penetration requirements and have a foam inner liner made of expanded polystyrene.
  - Classes:
    - Class E (Electrical) provides dielectric protection up to 20,000 volts
    - Class G (General) provides dielectric protection up to 2,200 volts
    - Class C (Conductive) provides no dielectric protection.
- c. Foot Protection ANSI Z41.1-1991
  - Type: Lace up, Leather or Leather like
  - Height: 6" - Boot height 6" or more when measured from the floor to the topmost part
  - Defined heel: The heel must be 1/2" deeper than the rest of the sole when new.
  - Safety Boot: Steel or composite toe
- d. Safety Vest Class 2 or 3 ANSI/ISEA 107 or equivalent Class 2 or Class 3 Shirt/Coat
- e. Hearing Protection ANSI S3.19

Hand Protection (There are no ANSI standards for gloves, however, selection must be based on the performance characteristics of the glove in relation to the tasks to be performed.)

Affected employees whose jobs require the use of PPE will be informed of the PPE selection and will be provided PPE by CDL Electric at no charge. Foot Protection ANSI Z41.1-1991 will be the employee's responsibility for purchase, care, and replacement. Careful consideration will be given to the comfort and proper fit of PPE to ensure that the right size is selected and that it will be used.

### **8.1.3.3 Training**

Any worker required to wear PPE will receive training in the proper use and care of PPE before being allowed to perform work requiring the use of PPE. Periodic retraining will be offered to PPE users as needed. The training will include, but not necessarily be limited to, the following subjects:

- a. When PPE is necessary to be worn
- b. What PPE is necessary
- c. How to properly don, doff, adjust, and wear PPE
- d. The limitations of the PPE
- e. The proper care, maintenance, useful life, and disposal of the PPE

After the training, the employees will demonstrate that they understand how to use PPE properly, or they will be retrained.

### **8.1.3.4 Retraining**

The need for retraining will be indicated when:

- a. An employee's work habits, or knowledge indicates a lack of the necessary understanding, motivation, and skills required to use the PPE (i.e., uses PPE improperly)
- b. New equipment is installed
- c. Changes in the workplace make previous training out-of-date

d. Changes in the types of PPE to be used make previous training out-of-date

#### **8.1.3.5 Cleaning and Maintenance**

It is important that all PPE be kept clean and properly maintained. Cleaning is particularly important for eye and face protection where dirty or fogged lenses could impair vision. Employees must inspect, clean, and maintain their PPE according to the manufacturers' instructions before and after each use. Supervisors are responsible for ensuring that users properly maintain their PPE in good condition.

Personal protective equipment must not be shared between employees until it has been properly cleaned and sanitized. PPE will be distributed for individual use whenever possible.

Protective equipment, including personal protective equipment (PPE) for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition.

If employees provide their own PPE, make sure that it is adequate for the workplace hazards, and that it is maintained in a clean and reliable condition.

Defective or damaged PPE will not be used and will be immediately discarded and replaced.

**Note:** Defective equipment can be worse than no PPE at all. Employees would avoid a hazardous situation if they knew they were not protected; but they would get closer to the hazard if they erroneously believed they were protected, and therefore would be at greater risk.

It is also important to ensure that contaminated PPE, which cannot be decontaminated, is disposed of in a manner that protects employees from exposure to hazards.

#### **8.1.3.6 Safety Disciplinary Policy**

CDL Electric believes that a safety and health Accident Prevention Program is unenforceable without some type of disciplinary policy. Our company believes that to maintain a safe and healthy workplace, the employees must be cognizant and aware of all company, State, and Federal safety and health regulations as they apply to the specific job duties required. The following disciplinary policy is in effect and will be applied to all safety and health violations.

The following steps will be followed unless the seriousness of the violation would dictate going directly to Step 2 or Step 3.

1. A first-time violation will be discussed orally between company supervision and the employee. This will be done as soon as possible.
2. A second-time offense will be followed up in written form and a copy of this written documentation will be entered into the employee's personnel folder.
3. A third-time violation will result in time off or possible termination, depending on the seriousness of the violation.

### **Appendix H – PPE Glossary**

**Fall hazards** Any situation where a person could slip and fall from six feet or higher (Broken ladders, scaffolding without guardrails, open stairways, and unprotected sides of buildings).

**Same-level falls** Conditions that cause people to slip, fall, or injure themselves (Messy workplaces, slippery surfaces, wet or greasy floors).

**Falling objects** Workers are at risk of falling objects when somebody is doing work above them or when materials are not stored properly (Working under scaffolding or a crane, objects too high up).

**Electricity** Electrocution can occur when a person contacts an electrical current (Electrical equipment, electric cables, lightning, batteries).

**Machine hazards** Parts of machines, both slow and fast moving, can cause accidents such as crushing or even amputating parts of the body (Motor parts, drills).

**Moving objects** A person can be hit, run over, or crushed by heavy machinery (Tractors, trucks).

**Fire hazards** Any condition that increases the risk of a fire in the workplace (Poor electrical installation, improper use of heaters, not having fire safety equipment).

**Noise** Loud noises can cause injury to the ears, both immediately and over time (Machines, motors, explosions, loud music).

**Heat** A hot surface can cause a burn; overexposure to the sun or to heat causes dehydration. (Working outside during the summer, stoves, fryers, grills).

**Cold** Exposure or being enclosed in a cold place can cause frostbite, hypothermia, or even death.

**Miscellaneous** Any other object that can cause injury or illness (Radiation, improperly fitting protective equipment).

**Chemicals** Can enter the body through the skin, through cuts and openings in the skin or through the mouth by breathing or swallowing.

**Solids** Chemicals in solid form (Paint can contain lead).

**Liquids** are chemicals that are in liquid form at room temperature (Pesticides, paints, cleaning products).

**Dust** is small particles of solids (Bags of cement, fiberglass, asbestos).

**Vapor** can cause eye, skin irritation, and may damage the brain over time (pesticides/paints/cleaning products).

**Heat stress** Headaches, dizziness, fainting, nausea or vomiting, mood changes such as irritability or confusion. Physical activity and a poor physical condition. High temperatures and humidity. Excessive heat and direct sun. Poor air circulation. Some medications.

**Heat stroke** Dry and hot skin, without sweat. Confusion or loss of consciousness. Convulsions or stroke. Keep an eye on yourself and your colleagues. Block direct sun and other heat sources. Drink a glass of water every 15 minutes while working in hot, humid conditions. Avoid alcohol, caffeinated beverages and heavy foods. Wear light clothing with light colors and that is loose-fitting. Don't drink more than 3 gallons (approx. 10 liters) of liquid in a 24-hour period. Use fans or air conditioning; rest regularly. Call 9-1-1 immediately! While waiting for help: Move the person to a cool and shady place, fan them and take off heavy or tight clothing. Spray them with water and give them water to drink.

**Safety Leader** is defined as the process of interaction between leaders and followers, through which leaders can exert their influence on followers to achieve organizational safety goals (foreman, supervisors).

**Stress on the body** Risk of injury increases when you bend and twist your back picking up materials. Using simple tools and equipment can reduce the strain on the body when carrying heavy materials.

**CONTROLLING WORKSITE HAZARDS REMEMBER! The best way to control a hazard is to eliminate it. If this is not possible, there are other ways.**

- a. ELIMINATION (Remove the hazard)
- b. SUBSTITUTION (Use safer products instead of more dangerous ones)
- c. ENGINEERING CONTROLS (Use designs that are better and safer)
- d. ADMINISTRATIVE CONTROLS (Train workers or change the way a job is done)
- e. PERSONAL PROTECTIVE EQUIPMENT (For example, gloves and face shields)

## **Appendix I – (OSHA 1910 Subpart I)**

This Appendix is intended to provide compliance assistance for employers and employees in implementing requirements for a hazard assessment and the selection of personal protective equipment.

### **1. 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.

### **2. Assessment and selection.**

It is necessary to consider certain general guidelines for assessing the foot, head, eye and face, and hand hazard situations that exist in an occupational or educational operation or process, and to match the protective devices to the hazard. It should be the responsibility of the safety officer to exercise common sense and appropriate expertise to accomplish these tasks.

### **3. Assessment guidelines.**

To assess the need for PPE the following steps should be taken:

- a. Survey. Conduct a walk-through survey of the areas in question. The purpose of the survey is to identify sources of hazards to workers and co-workers. Consideration should be given to the basic hazard categories:
    - i. Impact
    - ii. Penetration
    - iii. Compression (roll-over)
    - iv. Chemical
    - v. Heat
    - vi. Harmful dust
    - vii. Light (optical) radiation
  - b. Sources. During the walk-through survey the safety officer should observe: (a) sources of motion; i.e., machinery or processes where any movement of tools, machine elements or particles could exist, or movement of personnel that could result in collision with stationary objects; (b) sources of high temperatures that could result in burns, eye injury or ignition of protective equipment, etc.; (c) types of chemical exposures; (d) sources of harmful dust; (e) sources of light radiation, i.e., welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc.; (f) sources of falling objects or potential for dropping objects; (g) sources of sharp objects which might pierce the feet or cut the hands; (h) sources of rolling or pinching objects which could crush the feet; (i) layout of workplace and location of co-workers; and (j) any electrical hazards. In addition, injury/accident data should be reviewed to identify problem areas
  - c. Organize data. Following the walk-through survey, it is necessary to organize the data and information for use in the assessment of hazards. The objective is to prepare for an analysis of the hazards in the environment to enable proper selection of protective equipment.
  - d. Analyze data. Having gathered and organized data on a workplace, an estimate of the potential for injuries should be made. Each of the basic hazards (paragraph 3.a.) should be reviewed and a determination made as to the type, level of risk, and seriousness of potential injury from each of the hazards found in the area. The possibility of exposure to several hazards simultaneously should be considered.
4. Selection guidelines.
- After completion of the procedures in paragraph 3, 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; and 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.
5. 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.
6. 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. 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, to prevent a strangulation hazard). Where manufacturer's instructions are available, they should be followed carefully.

7. Reassessment of hazards.

It is the responsibility of the safety officer to reassess the workplace hazard situation as necessary, by identifying and evaluating new equipment and processes, reviewing accident records, and reevaluating the suitability of previously selected PPE.

8. Selection chart guidelines for eye and face protection.

Some occupations (not a complete list) for which eye protection should be routinely considered are: carpenters, electricians, machinists, mechanics and repairers, millwrights, plumbers and pipe fitters, sheet metal workers and tinsmiths, assemblers, sanders, grinding machine operators, lathe and milling machine operators, sawyers, welders, laborers, chemical process operators and handlers, and timber cutting and logging workers. 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.

**Eye and Face Protection Selection Chart**

<b>Source</b>	<b>Assessment of Hazard</b>	<b>Protection</b>
IMPACT -- Chipping, grinding machining, masonry work, woodworking, sawing, drilling, chiseling, powered fastening, riveting, and sanding	Flying fragments, objects, large chips, particles sand, dirt, etc.	Spectacles with side protection, goggles, face shields. See notes (1), (3), (5), (6), (10). For severe exposure, use face shield.
HEAT -- Furnace operations, pouring, casting, hot dipping, and welding	Hot sparks	Face shields, goggles, spectacles with side protection. For severe exposure use face shield. See notes (1), (2), (3).
	Splash from molten metals	Face shields worn over goggles. See notes (1), (2), (3).
	High temperature exposure	Screen face shields, reflective face shields. See notes (1), (2), (3).
CHEMICALS -- Acid and chemicals handling, degreasing plating	Splash	Goggles, eyecup and cover types. For severe exposure, use a face shield. See notes (3), (11).
	Irritating mists	Special-purpose goggles.
DUST -- Woodworking, buffing, general dusty conditions	Nuisance dust	Goggles, eyecup and cover types. See note (8).
LIGHT and/or RADIATION -- Welding: Electric arc	Optical radiation	Welding helmets or welding shields. Typical shades: 10-14. See notes (9), (12)
Welding: Gas	Optical radiation	Welding goggles or welding face shield. Typical shades: gas welding 4-8, cutting 3-6, brazing 3-4. See note (9)
Cutting, Torch brazing, Torch soldering	Optical radiation	Spectacles or welding face-shield. Typical shades, 1.5-3. See notes (3), (9)

Glare

Poor vision

Spectacles with shaded or special-purpose lenses, as suitable. See notes (9), (10).

Notes to Eye and Face Protection Selection Chart:

- a. Care should be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards should be provided. Protective devices do not provide unlimited protection.
- b. Operations involving heat may also involve light radiation. As required by the standard, protection from both hazards must be provided.
- c. Face shields should only be worn over primary eye protection (spectacles or goggles).
- d. As required by the standard, filter lenses must meet the requirements for shade designations in 1910.133(a)(5). Tinted and shaded lenses are not filter lenses unless they are marked or identified as such.
- e. As required by the standard, persons whose vision requires the use of prescription (Rx) lenses must wear either protective devices fitted with prescription (Rx) lenses or protective devices designed to be worn over regular prescription (Rx) eyewear.
- f. Wearers of contact lenses must also wear appropriate eye and face protection devices in a hazardous environment. It should be recognized that dusty and/or chemical environments may represent an additional hazard to contact lens wearers.
- g. Caution should be exercised in the use of metal frame protective devices in electrical hazard areas.
- h. Atmospheric conditions and the restricted ventilation of the protector can cause lenses to fog. Frequent cleansing may be necessary.
- i. Welding helmets or face shields should be used only over primary eye protection (spectacles or goggles).
- j. Non-side shield spectacles are available for frontal protection only but are not acceptable eye protection for the sources and operations listed for "impact."
- k. Ventilation should be adequate, but well protected from splash entry. Eye and face protection should be designed and used so that it provides both adequate ventilation and protects the wearer from splash entry.
- l. Protection from light radiation is directly related to filter lens density. See note (4). Select the darkest shade that allows task performance.

9. Selection guidelines for head protection.

All head protection (helmets) 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.

Some examples of occupations for which head protection should be routinely considered are carpenters, electricians, linemen, mechanics and repairers, plumbers and pipe fitters, assemblers, packers, wrappers, sawyers, welders, laborers, freight handlers, timber cutting and logging, stock handlers, and warehouse laborers.



Beginning with the ANSI Z89.1-1997 standard, ANSI updated the classification system for protective helmets. Prior revisions used type classifications to distinguish between caps and full brimmed hats. Beginning in 1997, Type I designated helmets designed to reduce the force of impact resulting from a blow only to the top of the head, while Type II designated helmets designed to reduce the force of impact resulting from a blow to the top or sides of the head. Accordingly, if a hazard assessment indicates that lateral impact to the head is foreseeable, employers must select Type II helmets for their employees. To improve comprehension and usefulness, the 1997 revision also re-designated the electrical-protective classifications for helmets as follows: "Class G -- General"; helmets designed to reduce the danger of contact with low-voltage conductors; "Class E -- Electrical"; helmets designed to reduce the danger of contact with conductors at higher voltage levels; and "Class C -- Conductive"; helmets that provide no protection against contact with electrical hazards.

10. *Selection guidelines for foot protection.* Safety shoes and boots which meet the ANSI Z41-1991 Standard 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 electrically 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. Electrically conductive shoes would be required as a supplementary form of protection for work activities in which there is a danger of fire or explosion from the discharge of static electricity. Electrical hazard or dielectric footwear would be required as a supplementary form of protection when an employee standing on the ground is exposed to hazardous step or touch potential (the difference in electrical potential between the feet or between the hands and feet) or when primary forms of electrical protective equipment, such as rubber insulating gloves and blankets, do not provide complete protection for an employee standing on the ground.

Some occupations (not a complete list) for which foot protection should be routinely considered are: Shipping and receiving clerks, stock clerks, carpenters, electricians, machinists, mechanics and repairers, plumbers and pipe fitters, structural metal workers, assemblers, drywall installers and lathers, packers, wrappers, craters, punch and stamping press operators, sawyers, welders, laborers, freight handlers, gardeners and grounds-keepers, timber cutting and logging workers, stock handlers and warehouse laborers.

11. *Selection guidelines for hand protection.* Gloves are often relied upon to prevent cuts, abrasions, burns, and skin contact with chemicals that can cause local or systemic effects following dermal exposure. OSHA is unaware of any gloves that provide 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 an 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. These performance characteristics should be assessed by using standard test procedures. Before purchasing gloves, the employer should 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. If 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.

With respect to selection of gloves for protection against chemical hazards:

- i. The toxic properties of the chemical(s) must be determined, the ability of the chemical to cause local effects on the skin and/or to pass through the skin and cause systemic effects.
  - ii. Generally, any "chemical resistant" glove can be used for dry powders.
  - iii. For mixtures and formulated products (unless specific test data are available), a glove should be selected based on the chemical component with the shortest breakthrough time, since it is possible for solvents to carry active ingredients through polymeric materials.
  - iv. Employees must be able to remove the gloves in such a manner as to prevent skin contamination.
12. Cleaning and maintenance. It is important that all PPE be kept clean and properly maintained. Cleaning is particularly important for eye and face protection where dirty or fogged lenses could impair vision.

For the purposes of compliance with 1910.132 (a) and (b), PPE should be inspected, cleaned, and maintained at regular intervals so that the PPE provides the requisite protection.

It is also important to ensure that contaminated PPE, which cannot be decontaminated, is disposed of in a manner that protects employees from exposure to hazards.

## **8.2 Noise and Hearing Conservation Program**

### **8.2.1 Objective**

An effective hearing conservation program can prevent hearing loss, improve employee morale and a general feeling of well-being, increase quality of production, and reduce the incidence of stress-related disease. In order to comply with the federal Occupational Safety and Health Administration Standards (OSHA) all company projects and facilities are included and shall comply with this program.

The Company will administer a continuing, effective hearing conservation program whenever employee noise exposures are at or above an eight-hour time weighted average (TWA) of 85 dB. This is referred to as the action level.

Minimum requirements of a hearing conservation program are included in the following sections:

- Monitoring Program
- Audiometric Testing Program
- Hearing Protection
- Employee Training
- Recordkeeping

### **8.2.2 Assignment of Responsibility**

- a. Company Management is responsible for:
  - i. Overall support and involvement in the program,
  - ii. Making safety and health a core value in company operations,
  - iii. Providing adequate funding for programs, and
  - iv. Leading by example regarding safety and health issues.
- b. The Safety Director is responsible for:
  - i. Providing oversight and technical support;
  - ii. Securing the resources necessary to implement this program;
  - iii. Ensuring that routine safety checks are performed;
  - iv. Conducting an annual review of this program to ensure the effectiveness of the program; and,
  - v. Ensuring that proper reporting and recordkeeping is carried out.
- c. Supervisor/foremen are responsible for:

- i. Compliance with this program at project sites under their supervision.
  - ii. Performing routine safety checks of the work area or jobsite to ensure proper use of hearing protection and to determine if work performed needs to be re-evaluated with regards to hearing protection.
  - iii. Correcting any unsafe practices or conditions immediately;
  - iv. Coordinating employee schedules for training;
  - v. Notifying the Safety Director of potential hazards requiring assessments, or improvements to the program.
- d. Employees are responsible for:
- i. Complying with all aspects of this program;
  - ii. Cooperating in all safety and health matters;
  - iii. Reporting incidents related to hearing protection to your supervisor/foreman immediately;
  - iv. Wearing all required personal protective equipment – there are no exceptions;
  - v. Inspecting the equipment in accordance with manufacturer's guidelines and instructions; and,
  - vi. Reporting hazardous conditions or other health and safety concerns immediately to your supervisor/foreman/project manager.

The program is reviewed at least annually to ensure both the safety of the company employees and compliance with the OSHA Standards, as well as any state and local requirements.

This program applies to all employees who are required to wear hearing protection during normal work operations, as well as during some non-routine or emergency operations.

### **8.2.3 Monitoring**

Monitoring for noise exposure levels will be coordinated by the Director of Safety. Monitoring must be performed in order to determine employee exposures to noise at or above 85 dBA as an eight-hour time weighted average. It is the responsibility of Supervisors to notify the Director of Safety when there is a possible need for monitoring. Monitoring will be performed with the use of sound level meters and personal dosimeters at the discretion of the Director of Safety.

Monitoring will also be conducted within the specific noise environment whenever there is a change in equipment, process or controls that affect the noise levels. This includes the addition or removal of machinery, alteration in building structure, or substitution of new equipment in place of that previously used. Supervisors must inform the Director of Safety when these types of changes are implemented.

### **8.2.4 Audiograms/Hearing Tests**

Employees subject to the Hearing Conservation Program who have time-weighted average (TWA) noise exposures of 85 dB or greater for an eight (8) hour work shift will be required to have both a baseline and annual audiogram. The audiograms will be provided by the Company and coordinated by the Director of Safety with no cost to the employee.

The baseline audiogram will be given to an employee within one (1) month of employment with the Company and before any exposure to high noise levels. Annual audiograms will be performed within one year from the date of the previous audiogram. It is the responsibility of the Director of Safety to schedule the annual audiogram.

Within six months of a company employee's first exposure at or above the action level of 85 dBA as an eight-hour time weighted average (TWA), the company shall establish a valid baseline audiogram against which subsequent audiograms can be compared.

If an annual audiogram shows that an employee has suffered a standard threshold shift, the employee will be retested within thirty (30) days of the annual audiogram. If the retest confirms the occurrence of a standard threshold shift, the employee will be notified in writing within twenty-one (21) days of the confirmation. Employees who do experience a standard threshold shift will be refitted with hearing protection and provided more training on the effects of noise.

Testing to establish a baseline audiogram shall be preceded by at least 14 hours without exposure to workplace noise. Hearing protectors may be used as a substitute for the requirement that baseline audiograms be preceded by 14 hours without exposure to workplace noise.

### **8.2.5 Hearing Protection**

Management, supervisors, and employees shall properly wear the prescribed hearing protection while working or traveling through any area that is designated as a high noise area.

Hearing protection will be provided at no cost to employees who perform tasks designated as having a high noise exposure and replaced as necessary. It is the Supervisor's responsibility to require employees to wear hearing protection when noise levels reach or exceed 85 dBA. Affected employees will have the opportunity to choose from at least two different types of hearing protection.

In the event of a standard threshold shift of an employees' hearing CDL Electric will readdress the hearing protection utilized.

- a) Unless a physician determines that the standard threshold shift is not work related or aggravated by occupational noise exposure, the company shall ensure that the following steps are taken when a standard threshold shift occurs:
  - i. Employees not using hearing protectors shall be fitted with hearing protectors, trained in their use and care, and required to use them.
  - ii. Employees already using hearing protectors shall be refitted and retrained in the use of hearing protectors and provided with hearing protectors offering greater attenuation if necessary.
  - iii. Employees shall be referred for a clinical audiological evaluation or an ontological examination, as appropriate, if additional testing is necessary or if the company suspects that a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors.

Personal stereo headsets, "IPODS", or "Walkman," are not approved for hearing protection and are not permitted in any operating area of Company property or work site.

Signage is required in areas that necessitate hearing protection. It is the responsibility of our supervisors to provide signage to the appropriate areas.

Preformed earplugs and earmuffs should be washed periodically and stored in a clean area. Foam inserts should be discarded after each use. Hands should be washed before handling preformed earplugs and foam inserts to prevent contaminants from being placed in the ear.

### **8.2.6 Employee Training**

Affected employees will be required to attend training concerning the proper usage and wearing of hearing protection. The training will be conducted by the division supervisors, or a designated representative, within a month of hire and annually thereafter.

Training shall consist of the following components:

- a. How noise affects hearing and hearing loss;
- b. Review of the OSHA hearing protection standard;
- c. Explanation of audiometric testing;
- d. Rules and procedures;
- e. Locations within company property where hearing protection is required; and
- f. How to use and care for hearing protection.

### **8.2.7 Recordkeeping**

All records generated by this hearing conservation program are considered medical records and recordkeeping will be conducted in accordance with the Company Recordkeeping Program.

### **8.2.8 Program Review**

The Director of Safety conducts periodic evaluations of the workplace to ensure that the provisions of this program are being implemented. The evaluations include regular consultations with employees who use

hearing protection and their supervisors, site inspections, noise monitoring and a review of records. Identified problems are to be noted and addressed by the Director of Safety.

## **8.3 Medical Surveillance Program**

### **8.3.1 Purpose**

The Medical Surveillance Program is designed to complement the continual efforts to provide a safe and healthy work environment for CDL Electric employees. This program is intended to protect workers from hazards which can be reasonably anticipated but are not specifically covered by federal regulations. The program is also to complement the Occupational Safety and Health Administration's (OSHA) medical surveillance requirements. The medical surveillance program seeks to maintain continuing efforts to provide safe job placement of employees; to satisfactorily maintain employee health; to ascertain the effectiveness of hazard control methods and to assist in identifying any "reasonable accommodation" considerations which may be imposed by the Rehabilitation Act of 1973. The Medical Surveillance Program responsibilities are as follows:

- a. To ensure that employees appointed to specific positions and responsibilities receive appropriate medical examinations and exposure surveillance in a timely manner.
- b. To monitor the employee's medical status in the following situations: prior to employment; during the performance of the duties and responsibilities of their designated position; and at the exit of their employment.
- c. To comply with medical surveillance examinations that are mandated by federal and state laws. Failure or refusal of an employee to undergo required medical testing, as determined by this program, shall constitute a refusal to perform the normal and reasonable duties of the position. In such event, administration has the authority to commence appropriate disciplinary action up to and including termination of employment.

### **8.3.2 Scope**

This procedure is used for the identification of required medical surveillance for new and existing CDL Electric employees. The medical surveillance program provides the methods and the means to detect and counsel employees regarding potential and actual work-related adverse health complications. These physiological changes can include but are not limited to exposures from hazardous levels of physical, chemical, or radioactive stresses that the employee may experience on the job.

- a. The Medical Surveillance program applies to CDL Electric employees that may encounter hazardous materials or chemicals; contact with physical hazards such as noise and radiation, etc.
- b. Medical surveillance shall apply to job classifications that require "fitness-for duty" examinations such as positions or work duties that impact public safety or require safety sensitive duties.
- c. Medical surveillance of employees is also used to measure the effectiveness of engineering and administrative controls.

### **8.3.3 Definitions**

**Action Level** A concentration designated in 29 CFR part 1910 for a specific substance, calculated as an 8-hour time-weighted average, which initiates certain required activities such as exposure surveillance or medical surveillance.

**Animal Allergy** is an allergic response to contact with animals. A condition that can be immediate or develop with prolonged contact. Generally, species specific; it can be prevented by limiting the intensity and time of exposure to animals.

**Audiogram** A chart, graph or table resulting from a hearing test showing an individual's hearing sensitivity as a function of frequency.

**Audiometric Testing** Environmental Health and Safety (EHS) has established a Hearing Conservation Program where audiometric testing is made available to all employees whose noise exposures equal or exceed an 8-hour time-weighted average of 85 decibels on the A-Scale. Employee audiograms will be maintained, on file, with CDL Electric Director of Safety.

**EHS** Environmental Health and Safety

**Employee Medical Record** A record concerning the health status of an employee which is made or maintained by CDL Electric Human Resources.

**Exit Examination** Is a final medical examination provided to medical surveillance participating employees who have worked with OSHA regulated materials and/or carcinogens.

**Exposure Occupational** Accidental, past incidents or “reasonably anticipated” exposures where an employee has been subjected to toxic chemicals, biological agents or harmful physical agents such as noise and radiation, in the course his/her work duties. Exposures can occur through inhalation, ingestion, skin contact or absorption, past exposure.

**Employee Exposure Measurements** For chemical hazards or physical hazards that are measured for the employee that include:

- Air Contaminants exposure measurements are employee breathing zone measurements during an employee’s normal workday and other working conditions as well.
- Audiogram is a hearing test performed on the ears that uses a chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.
- Dosimetry Noise Measurements measure or monitor the actual noise levels in the workplace or noise exposure or "dose" received by employees during the workday.
- Biological measurement, the measurement of tissue levels of toxic contaminants or metabolites.

**Employee Exposure Record** Environmental (workplace) surveillance or measuring of a toxic substance or harmful physical agent to include personal air sample, area air sample, grab, wipe, or other form of sampling.

**Employer Notification of Medical Examination** A medical surveillance examination report is given to the employer after the employee in the medical surveillance program has been examined per the medical surveillance requirements. This report determines if an employee can perform essential job functions and/or wear a respirator. A copy will be forwarded to the immediate supervisor, Human Resources, and Director of Safety.

**Job Hazards** Include air contaminants, chemical, biological, ergonomic or physical hazards that can cause harm or adverse health effects to employees in the workplace.

**Job: Pre-Employment/Post Offer and Fitness for Duty from CDL Electric Human Resources** A pre-placement medical evaluation “requested prior to employment” by the employer to determine if a current employee can perform safety essential job functions. Fitness for Duty exams can be performed for return to work after a medical absence or reasonable suspicion. Post-employment exams are offered at the end of employment.

**Job Task Assessment (JTA) Checklist** A checklist from Environmental Health and Safety which assesses job tasks/hazards that may require special work practices, engineering controls, personal protection and respiratory protection.

**Job Task Assessment “Medical Surveillance-New Hire Requisition”** A checklist that CDL Electric Human Resources to determine if an employee requires medical surveillance.

**Medical Surveillance Executive Committee** An appointed committee comprised of senior level vice presidents, directors, and other senior leadership that provides organizational direction for CDL Electric and the Medical Surveillance program. The committee is responsible for overseeing the implementation and maintenance of all medical surveillance. The committee meets frequently to discuss the management of the medical surveillance program.

**OSHA Medical Surveillance** Occupational Safety and Health Administration (OSHA medical examinations - for regulated chemicals which is outlined in 29 Code of Federal Regulations Part 1910-Subpart Z. Regulating certain hazardous chemicals serves the purpose of detecting adverse health effects, which could possibly be related to workplace exposures. Early detection of disease will result in earlier treatment and will also allow for cessation of additional exposures that could aggravate a potentially serious medical condition.

**Permissible Exposure Limit (PEL)** Occupational Safety and Health Administration Government codes that establishes maximum airborne concentrations levels to certain hazardous agents that a worker can receive in an eight-hour workday, forty-hour workweek.

**Pre-employment Examinations** These examinations are arranged through Human Resources for CDL Electric job positions that have been identified by regulating agencies for safety sensitive jobs.

**Post-employment examination** A final medical examination provided to medical surveillance participating employees who have worked with OSHA regulated materials and/or carcinogens.

**Positive-Pressure Respirator** A respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

**Powered Air-Purifying Respirator (PAPR)** An air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

**Records Retention OSHA 20 CFR 1019.1020 Access to Employee Exposure and Medical Records** "Access" to employee medical records where the employee's right and opportunity to examine and copy medical records and exposure surveillance are provided with written request.

**Special Emergency Examination** The employee may be required to undergo an emergency medical examination due to the actual or potential for exposure to specific substances. Special emergency exams may be the result of a one-time exposure, continual exposure or chronic exposures not previously reported. Special exam exposures may require the employee to be included in the medical surveillance annual exam schedule or to be periodically monitored.

**Toxic substance or harmful physical agent** Any chemical substance, biological agent (bacteria, virus, fungus, etc.), or physical stress, noise, heat, cold, vibration, repetitive motion, ionizing and non-ionizing radiation, hypo - or hyperbaric pressure.

### **8.3.4 Roles and Responsibilities**

- a. Chief Financial Officer - provides the support and resources for the Medical Surveillance Program
- b. Medical Surveillance Committee
  - i. Provides administrative direction and oversight of the medical surveillance program.
  - ii. Executes decisions for CDL Electric policies, human resource directives, and methods for overall CDL Electric medical surveillance program.
  - iii. Advises the medical surveillance management team on directives to assure the implementation and continuation of the medical surveillance program and related activities.
  - iv. Provides periodic communications to the medical surveillance management team and related departments to determine program status and compliance of the program to regulations and CDL Electric policy.
- c. Human Resources  
Oversees the Medical Surveillance program for CDL Electric employees. The Human Resources Senior Director works in conjunction with EH&S to identify hazardous health exposures and place the employee into the appropriate surveillance program. Senior Human Resources Director will oversee the Drug and Alcohol screening program for all CDL Electric employees. They will make all medical decisions within the surveillance program.
- d. Medical Surveillance Management Team
  - i. Executes the procedures and requirements of the program to assure compliance and employee care related to the program.
  - ii. Meets periodically as a collaborative group to review and revise procedures and program directives.
  - iii. Evaluates program for needed changes for improvements, regulatory changes, and CDL Electric policy changes.
  - iv. Periodically communicates with the Administrative Advisory Committee on program elements, program status, support requests or needs for program success.
  - v. Meets and or communicates on a continual basis to assure program implementation and related updates.

- vi. Periodically meets and or communicates with the Executive Committee to provide updates and needs related to the CDL Electric health and safety programs.
- e. Director of Safety (EHS)
  - i. The Director of Safety (EHS), in conjunction with CDL Electric Human Resources, will select the Medical Surveillance Executive Committee. The committee and Director of Safety (EHS) will ensure program implementation to impacted CDL Electric departments.
  - ii. Job positions to be covered by the Medical Surveillance Program will be identified by Director of Safety (EHS) in accordance with state and federal standards.
  - iii. Developing hazard determination strategies
  - iv. Identifying medical surveillance job classifications for human resources.
  - v. Conducting yearly audits
  - vi. Conducts Job Task Risk Assessment surveys for job classifications to determine the extent of hazard and controls or provisions for personal protection equipment.
  - vii. Conducts noise surveillance, to identify employees in areas or operations requiring inclusion in a hearing conservation program.
  - viii. Issues the final employee medical surveillance determinations for program: entry, exiting, removal and job transferal with advice from CDL Electric COO.
  - ix. Provides supporting data to Senior Director Human Resources regarding Job Task Assessments and Exposure Surveillance.
  - x. Provides Senior Director Human Resources with a list of job tasks and associated hazards which qualify participants into medical surveillance.
  - xi. Communicates with Senior Director Human Resources regarding the list of job classifications related to medical surveillance by integrating the Job Task Assessment Checklist into the process.
  - xii. Confers, monthly, with Human Resources to review new hires notice of inclusion into the medical surveillance program.
  - xiii. Reviews the monthly listing with CDL Electric Human Resources of the names of CDL Electric employees that are exiting, transferring or requesting release from the medical surveillance program.
  - xiv. Develops and implements related health safety programs to support the medical surveillance program. Programs may include:
    - Hearing Conservation
    - Hazardous Materials
    - Emergency Response
    - Respiratory Protection, etc.
  - xv. Provides training, as requested or required, to staff (i.e. blood borne pathogen medical surveillance, respiratory protection, etc.)
  - xvi. Requires “Special Emergency Exams for employees as needed”-Special testing may be required due to the potential for exposure to specific substances. Special emergency exams may be the result of a one-time exposure, or a chronic exposure not previously reported. Special exam exposures may require the employee to be included in the annual exam schedule or to be periodically monitored.
  - xvii. Audits the Medical Surveillance Program effectiveness. The Director of Safety (EHS) may require departments to submit the necessary records for such periodic audits. These records will not include confidential employee medical examinations.
  - xviii. Evaluate and revise the Medical Surveillance Program with Medical Surveillance Management Team.
- f. CDL Electric Human Resources
 

Communicate with specified applicants, upon hiring, that medical surveillance by Occupational Medicine is a condition of their employment. Human Resources activities include:

  - i. Employment Services:



- Ensures that job classification codes for medical surveillance are added to the job description by using the “Medical Surveillance – New Hire Requisition”
  - Informs Director of Safety (EHS) when new-hired employees require medical surveillance; within two weeks of hiring notification.
  - Provides the Medical Surveillance-New Hire Requisition to newly hired employee and all transitioning employees and their supervisors.
  - Informs Director of Safety (EHS), weekly, of any new position or change to existing position not already reviewed for medical surveillance applicability upon revising of job classifications.
- ii. Classification and Compensation:
- Ensures that Medical Surveillance categories and Job Task Assessment form remains with each employee’s job classification; until employee leaves CDL Electric. This questionnaire may be made electronically available.
  - Reviews a monthly list of new and retiring or exiting employees, which required medical surveillance to Environmental Health and Safety for processing.
- iii. Employee Relations:
- Provides supervisors with the basic process for progressive discipline should employees refuse to attend medical surveillance scheduled appointments or EHS safety recommendations. (See statement below)
- \*Violation or non-compliance of this standard will be addressed in accordance with established CDL Electric disciplinary policies and procedures. Failure to comply with this or other related standards might result in disciplinary action up to and including termination of one’s employment.\**
- iv. Medical Management
- Processes all reported employee claims relating to occupational injuries and diseases.
  - Informs the Director of Safety (EHS) of all injuries and illnesses.
  - Communicates with the Supervisor, in consultation with Medical Management, if employee’s job-duty needs modified in accordance with medical surveillance processes. Job modifications may include altering the employee’s work practices, limiting work time in certain hazardous areas; or modifying job duties of safety and health concern.
- g. Departmental Administrators
- Vice Presidents/Directors/Supervisors will consult with Director of Safety (EHS), that meet criteria for implementing provisions of the Employee Medical Surveillance Program. Department’s responsibilities include:
- i. Notifies employees for Pre-hiring if medical surveillance is required and notifies employees for post medical exit examination.
  - ii. Provides Director of Safety with an updated list any time there is change in personnel or a change in job duties that may affect health and safety of the employee or human resources representative for job duty alteration during employee’s pre-employment and exiting process.
  - iii. Requires employees to participate in the medical surveillance program as indicated.
  - iv. Communicate with CDL Electric Human Resources on scheduled medical examinations and modified job duties, when applicable.
  - v. Initiates necessary disciplinary action to ensure that employees participate with the medical surveillance program requirements.
  - vi. Requires the Director or Supervisor, in consultation with Human Resources, to make employability decisions based upon such medical determinations.
  - vii. Accommodates Human Resources, in consultation with Medical Management, with the affected employee’s Job-duty accommodation plans.
  - viii. Collaborates with Director of Safety (EHS) to implement suggested engineering and administrative controls and work practices for CDL Electric medical surveillance program.
- h. Supervisors

- i. Verifies that employees are included into the Medical Surveillance program by job description, hiring process and completion of Job Task Assessment forms.
- ii. Registers employees into the medical surveillance program by instance of exposures to harmful chemical or substances during their work.
- iii. Permits the employee to contact Director of Safety (EHS) or CDL Electric Human Resources for any reason if the employee job requirements identify him/her to be in the medical surveillance program or employee suspects or knows that a work-related exposure occurs.
- iv. Documents employee's requests for medical surveillance counseling without retribution.
- v. Permits the employee to obtain the recommended level or types of medical diagnostics and treatment during their medical evaluation with Occupational Medicine or their personal physician. Medical recommendations are at the sole discretion of CDL Electric Human Resources.
- vi. Will accommodate the employee with the help of Human Resources Medical Management to fulfill the conditions of employment if such action is needed.
- vii. Works with Director of Safety (EHS) to implement engineering and administrative controls and work practices as per EHS recommendations.
- i. Employees
  - i. Participates in medical surveillance by attending the scheduled medical examination and accurately completing all required documentation.
  - ii. Informs Director of Safety of situations that may require the employee to immediately submit to a medical examination in response to any incident where the employee may have been injured or exposed to an occupational hazard.
  - iii. Responds to CDL Electric Human Resources regarding appointment scheduling.
  - iv. Contacts the Director of Safety (EHS) for questions and information about medical surveillance.
    - Medical Surveillance participating employees that undergo medical examinations authorized by this program must not assume responsibility for the cost of the diagnostic examinations. Contact Senior Director Human Resources for rectification if the employee is charged via a CDL Electric healthcare plan.
  - v. Discusses medical results with CDL Electric Human Resources upon receipt of the results of an examination, an employee may schedule a meeting with the provider to discuss the pertinent parts of the evaluation.

**Note:** It is the employee's responsibility to attend all scheduled medical- surveillance- related examinations. Failure to comply with scheduled examinations may result in the employee's departmental administration to contact Human Resources for further deliberation. Environmental Health and Safety reserves the right to discuss suspension of any job activities that may subject an employee to a hazardous condition.

### **8.3.5 Training**

Director of Safety (EHS) provides training for employees which are included in medical surveillance. Such training may include asbestos awareness, hearing conservation, bloodborne pathogens, first-aid CPR, general health and safety, and respiratory protection.

### **8.3.6 Procedures**

- a. Hiring Process - When a supervisor initiates the hiring process for a new or existing job description, the supervisor must complete the JTA form and provides EHS and Human Resources with copies.
  - i. For "transferring employees" the supervisor must complete a new Job Task Assessment form and copies EHS and Human Resources.
  - ii. For "exiting employees" the supervisor must contact the Human Resources department regarding employment termination, provide the Job Task Assessment form to EHS - so that the employee can attend a medical exit examination, if required.

- b. Human Resources - Employee is hired, processes the employee using the Job Task Assessment form (JTA form).
- c. Director of Safety reviews the Job Task Assessment forms to determine if any items are checked for medical surveillance for initial, previous participation, new position or transferred and exiting job, employee or supervisor request for medical surveillance removal or retirement.
- d. Medical Surveillance Employee lists are provided to Senior Director Human Resources for submission to Occupational Medicine examination scheduling.
- e. Medical Surveillance Employee lists for medical surveillance removal, employee or supervisor request for removal, exiting or retiring employees are provided to Human Resources where employee's records will be archived.
- f. EHS may recommend immediate referral to Occupational Medicine, within 1 month of employment when: Risk assessment encompasses the elements of a "fitness-for duty" medical surveillance evaluation with emphasis on identification of risks to human health and safety. Such examples of "fitness-for-duty" include hazardous materials responders, and any job description that required previous medical surveillance participation.
- g. EHS performs written risk assessments in areas where the Job Task Assessment forms indicate that employees may be exposed to a hazard for which medical surveillance may be required. EHS may require verification of any carcinogens used in the workplace obtained from: chemical inventories, Safety Data Sheets, Hazardous Materials inventories or previous undocumented exposure information. EHS will provide interim control methods for employee work practices until medical examinations can be scheduled if documented carcinogens exist in the workplace.
- h. EHS may recommend further exposure surveillance as outlined in EHS industrial hygiene surveillance program.  
EHS will communicate with the department/work supervisor to schedule dates for area or personal exposure surveillance for chemical and physical hazards that were identified from risk assessments. All employee exposure and environmental surveillance will be performed in accordance with the applicable Federal and State standards.
- i. Human Resources, in consultation with the department supervisor, schedules employee medical examinations with Occupational Medicine.
- j. EHS may require baseline medical surveillance for employees that participate in high-risk job duties where carcinogens are used, when any court-ordered agreement applies or when previously documented job classifications were identified as medical surveillance job tasks.
- k. Occupational Medicine - issues "Employer Notification of Medical Examination" stating that employee is qualified to perform the job function to Human Resources.
- l. Departments, Supervisors and Employees - follow all requirements as outlined in EHS programs for Respiratory Protection, Hearing Conservation, Asbestos Management and Medical Surveillance.

### 8.3.7 Recordkeeping

a. Employee Exposure records	EHS Office	30 years+
b. Employee Notification	Human Resources	30 years +
c. Supervisors Job Checklist	EHS Office	Until 30+ years upon termination
d. Job Task Risk Assessments	EHS Office	Until 30+ years upon termination
e. Exposure Surveillance Results	Human Resources	Until 30+ years upon termination
f. Employee Medical Records	Human Resources	Until 30+ years upon termination

### 8.3.8 References

OSHA 29CFR 1910:

- a. 134 Respiratory Protection
- b. 95 Occupational Noise
- c. 1020 Access to Employee Exposure and Medical Records
- d. 1200 Hazard Communication Standard
- e. 1030 Blood-borne Pathogen Standard

- f. 1101 Asbestos
- g. 1450 Occupational Exposure to Hazardous Chemical in the Laboratory
  - Lead
  - Hexavalent Chromium Standard

OSHA regulated substances 29 CFR 1910-1001 to 1052

### **8.3.9 Program Review**

- a. The Medical Surveillance Program will be reviewed as directed by the CDL Electric Executive Committee. Director of Safety (EHS), Senior Director Human Resources will accept the responsibility for medical surveillance program auditing.
- b. The program will be updated and changed as needed in response to concerns of management and employees, or changes to code regulations.

### **8.4.0 Program Revisions**

- a. Revisions to the Medical Surveillance program will be made to meet regulatory requirements, reduce CDL Electric employee health risk, and will include an explanation for the change needed and how it will affect the current adopted program. Program revisions will be supplied to the Executive Committee for approval.
- b. Changes to the current Medical Surveillance program will include the changes from the last revision.

## **8.4 Fit for Duty Program**

### **8.4.1 Purpose**

CDL is committed to promoting a safe and healthy environment for its employees. Such an environment is possible only when each employee is able to perform his or her job duties in a safe, secure, and effective manner, and remains able to do so throughout the entire time they are working. Employees who are not fit for duty may present a safety risk to themselves and to others.

### **8.4.2 Policy Summary and Statement**

This policy outlines the responsible parties and necessary actions when an employee's fitness for duty is in question, the steps necessary to assess the employee's physical or mental capabilities, necessary follow-up, and return to work.

This policy covers only those situations in which an employee is:

- a. Having observable difficulty performing his/her duties in an effective manner that is safe for the employee and/or for his or her co-workers, or
- b. Posing a serious safety threat to self or others. The policy prescribes the circumstances under which an employee may be referred to an independent, licensed health care evaluator for a fitness for duty evaluation should either of those situations be present.

### **8.4.3 Requirements**

It is the goal of all CDL to provide a safe workplace for all employees. To accomplish this goal, we have adopted the following fitness for duty policy requirements. Supervisors will work with the Safety Director when they have a concern about an employee's fitness for duty.

- a. **Employees are physically capable of performing their job function.** The project manager or Safety Director may require a candidate to take a pre-employment physical or medical exam or that physical evaluations are required to be included in the hiring process, and also when changing into certain job functions, transfers and different environments or in a post-injury returning to work situation based on the severity of the injury.
- b. **Client Drug and Alcohol Testing Requirements.** Drug and alcohol testing for pre-employment, post-accident or random as prescribed by the host facility shall be implemented. Procedures must

include and be implemented for drug and alcohol testing as prescribed by DOT or the host client facilities.

- c. **Personal Medical Reporting Requirements.** Employees need to report all medications to their supervisor they are taking that could impair their ability to work safely. Over-the-counter medications such as allergy or cold and flu medications could also impair one's ability to perform safely and must also be reported to their supervisor. The reporting must occur before the employee arrives for work or arranges for transportation to a remote site.
- d. **Employee Activity and Behavior Project.** Management will monitor employee activities and behaviors to determine if employees should be removed from the work site based on our drug and alcohol program requirements. Employees' activities and behaviors will be monitored to determine if employee should be removed from the work site if their ability to perform their duties safely is questioned.
- e. **Employee Self-Referrals.** Employees are responsible for notifying their supervisor if they are fatigued to the point of not being able to perform their duties safely. Employees must be responsible for ensuring they are physically and mentally fit to perform their job functions safely. Employees must take responsibility for their own safety as well as not reporting to working in a condition so as to endanger the safety of their fellow workers.

#### 8.4.4 Procedure

- a. When any manager observes an employee, who is not performing his/her job safely, appropriately, and effectively, or an odor of alcohol is present, or whose behavior is inappropriate, that manager is to remove the employee from her/his duty immediately and call the Safety Director to continue the Fitness for Duty procedure. The employee will be referred to a medical provider for a Fitness for Duty exam.
- b. The Fitness for Duty evaluation may include testing for chemical (e.g. alcohol and drug) levels, referral for psychiatric evaluation or any other evaluation or follow-up deemed necessary.
- c. The manager or designee must document the reasons for the fitness for duty request by recording the employee's behavior and noting the names of any witnesses who observed that behavior. Documentation must be submitted to the Safety Director.
- d. The employee is required to cooperate fully with the manager and medical personnel. Refusal to cooperate will be considered insubordination and will be grounds for disciplinary action. The employee should be suspended pending investigation, which could result in termination.
- e. Medical personnel will advise the Safety Director if the employee is fit or not fit for duty. The medical results of the fitness for duty exam will be communicated to the Safety Director.
- f. If medical personnel determine that the employee is **FIT FOR DUTY**, the employee must contact the Safety Director and the project manager, in consultation with the Safety Director, will determine discipline in situations where misconduct may have occurred.
- g. If medical personnel determine that the employee is **NOT FIT FOR DUTY**:
  - i. The manager makes every effort to arrange for safe transportation home for the employee.
  - ii. The employee will need to contact the Safety Director for instructions. The manager, in consultation with the Safety Director, will determine discipline in situations where misconduct has occurred.

## 9.1 Hazard Analysis Policy

### 9.1.1 Objective

The purpose of the Hazard Analysis is to provide a method for a supervisor and his/her crew to inspect an upcoming job, identify potential hazards related to that job, and to arrive at agreement on the development of a Safe Work Plan for completing their assignment.

### **9.1.2 Policy**

Once the client/owner has issued a notice to proceed, it is each employee's responsibility to ensure that the Safe Work Plan for the work he is about to do is properly developed. Prior to commencing work on the first day the crew shall review the permit requirements and perform a thorough Hazard Analysis. The Hazard Analysis process serves as the Safe Work Plan.

In the event conditions change, the Hazard Analysis must be updated. Potential hazards, including those specific to the task and those general to the work area, must be discussed and a plan formulated to eliminate or minimize identified hazards. Each person on the crew must understand his/her role relating to the tasks at hand. When a new worker is assigned to a job in progress, the Hazard Analysis must be reviewed with this person.

### **9.1.3 Procedure**

Once the client/owner notice to proceed has been issued, the assigned crew shall conduct a Hazard Analysis session at the job site, which includes, but is not limited to:

- a. Walking the job and reviewing all elements of the assignment. The supervisor shall identify all equipment that is to be utilized to perform the job.
- b. Identifying existing and/or potential hazards and taking appropriate action to eliminate or minimize identified hazards; reaching agreement on the safest plan to complete the assigned task. Each person on the crew must thoroughly understand their role in the upcoming tasks.
- c. Evaluating PPE requirements including providing additional PPE whenever necessary.
- d. Ensuring that all workers know and are properly trained for their assignment(s).

The project supervisor shall be involved in the Hazard Analysis Session.

## **10.1 Workplace Safety Policy**

### **10.1.1 Objective**

Employee safety is the constant concern of this company. Every precaution has been taken to provide a safe workplace. Project supervisors make regular inspections and holds regular safety meetings. He also meets with management to plan and implement further improvements in our safety program. Common sense and personal interest in safety are still the greatest guarantees of your safety at work, on the road, and at home. We take your safety seriously and any willful or habitual violation of safety rules will be considered a cause for dismissal. CDL Electric is sincerely concerned for the health and well-being of each member of the team.

### **10.1.2 Responsibility**

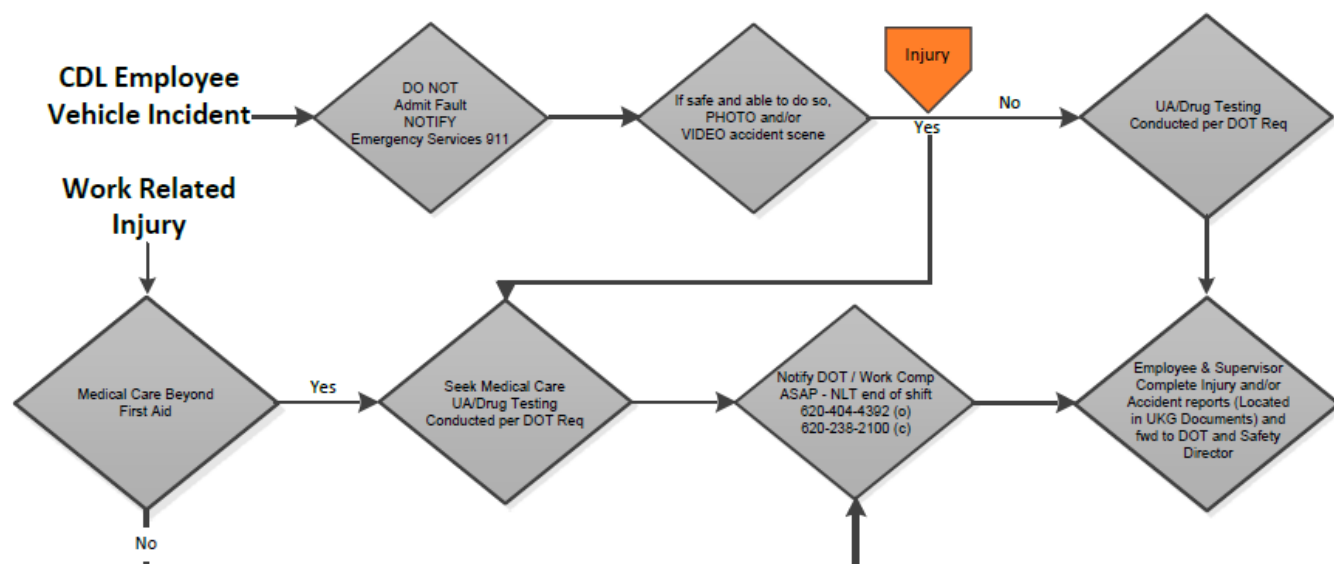
- a. Supervisors – are assigned the responsibility for incident investigations occurring to their team members prior to occurrence of an incident.
- b. Employees - The cooperation of every employee is necessary to make this company a safe place in which to work. Help yourself and others by reporting unsafe conditions or hazards immediately to your supervisor or to a member of the safety committee. Give earnest consideration to the rules of safety presented to you by poster signs, discussions with your supervisor, posted department rules, and regulations published in the safety booklet. Begin right by always thinking of safety as you perform your job, or as you learn a new one.

### **10.1.3 Accident Reporting**

- a. Any work-related injury or suspected injury must be reported immediately to your supervisor, Human Resources (DOT/Work Comp), and the Director of Safety. An Employee's Report of Injury Form (Appendix J) must be completed by the employee and returned no later than the next business day. Failure to promptly report an injury may result in disciplinary action.
- b. Director of Safety:

- i. Report fatalities occurring during employee on duty, via CDL Electric Management, to OSHA within 8 hours by online report system, and to the host facility (if applicable) within 24 hours.
  - ii. Report inpatient hospitalizations, amputation, or eye loss within 24 hrs. by online reporting.
  - iii. Maintain records of fatalities, injuries, and illnesses that is work related and meets the OSHA general recording criteria.
  - iv. Ensure each recordable injury or illness shall be entered on an OSHA 300 Log and 301 Incident Report within seven (7) calendar days of receiving information that a recordable injury or illness has occurred.
  - v. Certify the OSHA 300 Log and when found to be correct will sign the OSHA 300A Summary.
  - vi. Post a copy of the annual summary in each establishment in a conspicuous place or places where notices to employees are customarily posted and will ensure that the posted annual summary is not altered, defaced, or covered by other material.
    - Annual summary must be posted no later than February 1st of the year following the year covered by the records and the posting kept in place through April 30th.
  - vii. The OSHA 300 Log, the privacy case list (if one exists), the annual summary, and the OSHA 301 Incident Report forms must be retained for five (5) years following the end of the calendar year that these records cover.
- c. After each practitioner appointment, the employee must report to his/her supervisor and Human Resources to review his/her progress.
- d. CDL Electric will strive to accommodate light duty work for employees recovering from injury. Employees are required to return to full duty work immediately upon release from restricted/limited/light duty status.
- e. Supervisors: An accident investigation, Supervisor's Accident Investigation Form (Appendix K) and Incident Investigation Report (Appendix L), will be conducted to determine the root cause of the accident. The injured employee will be asked to participate in the investigation.
  - i. Supervisors will be trained in their responsibilities and incident investigation techniques.
  - ii. Proper equipment will be available to assist in investigating (i.e. writing equipment, measurement equipment (tape measure/ruler), and camera (cell phone)).
  - iii. Initial identification of evidence immediately following the incident could include a listing of people, equipment, and materials involved and a recording of environmental factors such as weather, illumination, temperature, noise, ventilation, etc.
  - iv. Collection, preservation, and security of evidence: such as people, positions of equipment, parts, and papers must be preserved, secured and collected through notes, photographs, witness statements, flagging, and impoundment of documents and equipment. All shall be dated.
  - v. Witness interviews and statements must be collected. Locating witnesses, ensuring unbiased testimony, obtaining appropriate interview locations, and use of trained interviewers should be detailed. The need for follow-up interviews should also be addressed. All items shall be dated. The final incident investigation report consists of findings with critical factors, evidence, corrective actions, responsible parties, and timelines for corrective action completion. Results of incident investigations are communicated to employees via the Incident Notice form.
- f. Employees are urged to report hazardous conditions and "near miss" incidents to their supervisors and/or the Director of Safety before injuries result.
- g. Any attempt to defraud CDL Electric with a false workers' compensation claim will result in disciplinary action. The case can also be referred to the district attorney for possible prosecution.

### 10.1.4 Injury / Vehicle Incident Flow Chart





## Appendix J – Employee Report of an Injury Form

This form is designed to streamline the investigation process following an incident. Complete this to identify incident witnesses, location and events leading up to the incident, be as thorough as possible, if needed take photos. This will assist in the root cause of an incident and potential solutions to prevent similar incidents from occurring in the future.

The employee involved in the incident shall complete this form thoroughly and within 2 hours after the event, whenever feasible. After completion forward to your supervisor.

SITE INFORMATION - Where the incident occurred			
Company name:		Point of contact (name and title):	
Street address:	City/ZIP code:	Phone Number:	

EMPLOYEE INFORMATION	
Name (first and last):	Employee job title:
Employee department:	Supervisor name and job title:

Body parts the employee claims were injured (check all that apply):

☐ Arm    ☐ Face    ☐ Torso    ☐ Back    ☐ Feet    ☐ Legs    ☐ Buttock    ☐ Hands    ☐ Thighs  
☐ Chest    ☐ Head    ☐ Other: \_\_\_\_\_    ☐ Other: \_\_\_\_\_    ☐ Other: \_\_\_\_\_

INCIDENT INFORMATION	
Date:	Location of the alleged incident:
Time:	
Employee Signature:	Date incident was reported:
Description of the incident (list any property damage if applicable):	
<hr/> <hr/> <hr/>	

WITNESSES			
Name:	Contact info (phone, email):	Address:	Employee? <input type="checkbox"/> Yes <input type="checkbox"/> No
Name:	Contact info (phone, email):	Address:	Employee? <input type="checkbox"/> Yes <input type="checkbox"/> No
Name:	Contact info (phone, email):	Address:	Employee? <input type="checkbox"/> Yes <input type="checkbox"/> No

## Appendix K – Supervisor Incident Investigation Report

This form is designed to streamline the investigation process following an incident. Complete this to identify incident witnesses, the root cause of an incident and potential solutions to prevent similar incidents from occurring in the future.

The supervisor of the employee involved in the incident shall complete this form thoroughly and within 24 hours after the event whenever feasible (some investigations may take longer).

SITE INFORMATION - Where the incident occurred		
<i>Company name:</i>	<i>Point of contact (name and title):</i>	
<i>Street address:</i>	<i>City/ZIP code:</i>	<i>Phone Number:</i>

EMPLOYEE INFORMATION	
<i>Name (first and last):</i>	<i>Employee job title:</i>
<i>Employee department:</i>	<i>Supervisor name and job title:</i>

*Body parts the employee claims were injured (check all that apply):*

☐ Arm    ☐ Face    ☐ Torso    ☐ Back    ☐ Feet    ☐ Legs    ☐ Buttock    ☐ Hands    ☐ Thighs  
☐ Chest    ☐ Head    ☐ Other: \_\_\_\_\_    ☐ Other: \_\_\_\_\_    ☐ Other: \_\_\_\_\_

INCIDENT INFORMATION	
<i>Date:</i>	<i>Location of the alleged incident:</i>
<i>Time:</i>	
<i>Manager on duty:</i>	<i>Date incident was reported:</i>

*Description of the incident (list any property damage if applicable):*

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**If possible, have the employee recreate the incident.**

WITNESSES			
Name:	Contact info (phone, email):	Address:	Employee? <input type="checkbox"/> Yes <input type="checkbox"/> No
Name:	Contact info (phone, email):	Address:	Employee? <input type="checkbox"/> Yes <input type="checkbox"/> No
Name:	Contact info (phone, email):	Address:	Employee? <input type="checkbox"/> Yes <input type="checkbox"/> No

ROOT CAUSE ANALYSIS (CHECK ALL THAT APPLY)			
Contributing Actions		Contributing Conditions	
<input type="checkbox"/> Use of safety devices	<input type="checkbox"/> Use of PPE	<input type="checkbox"/> Housekeeping	<input type="checkbox"/> Exposure
<input type="checkbox"/> Procedural issue	<input type="checkbox"/> Speed of operation	<input type="checkbox"/> Condition of surface	<input type="checkbox"/> Noise
<input type="checkbox"/> Equipment condition	<input type="checkbox"/> Lifting technique	<input type="checkbox"/> Ergonomic issue	<input type="checkbox"/> Chemicals
<input type="checkbox"/> Operator skill	<input type="checkbox"/> Recapped needle	<input type="checkbox"/> Guards/barriers	<input type="checkbox"/> Fire/explosion hazard
<input type="checkbox"/> Material handling	<input type="checkbox"/> Use of tools	<input type="checkbox"/> Tools/equipment	<input type="checkbox"/> Radiation
<input type="checkbox"/> Warning method	<input type="checkbox"/> Type of clothing	<input type="checkbox"/> Sharp object	<input type="checkbox"/> Lighting/temperature/ventilation
<input type="checkbox"/> Authorization issue	<input type="checkbox"/> Awareness	<input type="checkbox"/> Inclement weather	<input type="checkbox"/> Training
<input type="checkbox"/> Other: _____	<input type="checkbox"/> Other: _____	<input type="checkbox"/> Other: _____	<input type="checkbox"/> Other: _____

THE “WHY” ROOT CAUSE ANALYSIS
<p>Repeatedly asking the question “why” can help you drill down to the root cause of an incident. For instance, if an employee slipped and fell, the line of questioning could go as follows:</p> <ul style="list-style-type: none"> <li>- Why did they slip? Answer: The Floor was wet.</li> <li>- Why was the floor wet? Answer: It was raining, and water pooled in the front of the building.</li> <li>- Why did the water pool? Answer: The tiles are improperly graded, which creates stagnant water.</li> </ul>
<p>The scenario:</p> <hr/> <hr/> <hr/> <hr/> <hr/>
<p>Why 1:</p>
<p>Why 2:</p>
<p>Why 3:</p>
<p>Why 4:</p>
<p>Why 5:</p>

## ROOT CAUSE NARRATIVE

*Based on your analysis, describe what caused the incident:*

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## POSSIBLE CORRECTIVE ACTIONS

- |   |   |   |  |
|---|---|---|--|
| <input type="checkbox"/> Isolate and guard the hazard | <input type="checkbox"/> Implement a procedure change   | <input type="checkbox"/> Provide gloves       | <input type="checkbox"/> Provide hard hats         |
| <input type="checkbox"/> Automate a manual process    | <input type="checkbox"/> Provide safety training        | <input type="checkbox"/> Provide respirators  | <input type="checkbox"/> Provide face shields      |
| <input type="checkbox"/> Remove the hazard (redesign) | <input type="checkbox"/> Add signage and warnings       | <input type="checkbox"/> Use safety glasses   | <input type="checkbox"/> Use cut resistant clothes |
| <input type="checkbox"/> Provide ventilation          | <input type="checkbox"/> Improve housekeeping practices | <input type="checkbox"/> Provide safety shoes | <input type="checkbox"/> Use hearing protection    |
| <input type="checkbox"/> Use new tools or equipment   | <input type="checkbox"/> Provide lab coats              | <input type="checkbox"/> Other: _____         | <input type="checkbox"/> Other: _____              |

Corrective Action (Include at least one corrective action per every identified root cause.)	Responsible Individual	Expected Completion Date	Actual Completion Date

Report Completed By: \_\_\_\_\_ Title: \_\_\_\_\_ Date of Report: \_\_\_\_\_

Reviewed By: \_\_\_\_\_ Title: \_\_\_\_\_ Date of Review: \_\_\_\_\_

#### 10.1.4 Specific Safety Rules and Guidelines

- a. Observe and practice the safety procedures established for the job.
- b. In case of sickness or injury, no matter how slight, report at once to your supervisor. In no case should an employee treat his/her own or someone else's injuries or attempt to remove foreign particles from the eye.
- c. In case of injury resulting in possible fracture to legs, back, or neck, or any accident resulting in an unconscious condition, or a severe head injury, the employee is not to be moved until medical attention has been given by authorized personnel.
- d. Do not wear loose clothing or jewelry around machinery. It may catch on moving equipment and cause a serious injury.
- e. Never distract the attention of another employee, as you might cause him/her to be injured. If necessary, to get the attention of another employee, wait until it can be done safely.
- f. Where required, you must wear protective equipment, such as goggles, safety glasses, masks, gloves, hair nets, etc.
- g. Safety equipment such as restraints, pull backs, and two-hand devices are designed for your protection. Be sure such equipment is adjusted for you.
- h. Pile materials, skids, bins, boxes, or other equipment so as not to block aisles, exits, firefighting equipment, electric lighting or power panel, valves, etc. Fire doors and aisles must be kept clear.
- i. Keep your work area clean.
- j. Use compressed air only for the job for which it is intended. Do not clean your clothes with it and do not fool with it.
- k. Observe smoking regulations.
- l. Running and horseplay are strictly forbidden.
- m. Do not block access to fire extinguishers.
- n. Do not tamper with electric controls or switches.
- o. Do not operate machines or equipment until you have been properly instructed and authorized to do so by your supervisor.
- p. Do not engage in such other practices as may be inconsistent with ordinary and reasonable common-sense safety rules.
- q. Report any UNSAFE condition or acts to your supervisor.
- r. Help to prevent accidents.
- s. Use designated passages when moving from one place to another; never take hazardous shortcuts.
- t. Lift properly - use your legs, not your back. For heavier loads, ask for assistance.
- u. Do not adjust, clean, or oil moving machinery.
- v. Keep machine guards in their intended place.
- w. Do not throw objects.
- x. Clean up spilled liquid, oil, or grease immediately.
- y. Wear hard sole shoes and appropriate clothing. Shorts or mini dresses are not permitted.
- z. Place trash and paper in proper containers and not in cans provided for cigarette butts.

#### 10.1.5 Safety Checklist

It's every employee's responsibility to be on the lookout for possible hazards. If you spot one of the conditions on the following list—or any other possible hazardous situation—report it to your supervisor immediately.

- a. Slippery floors and walkways
- b. Tripping hazards, such as hose links, piping, etc.
- c. Missing (or inoperative) entrance and exit signs and lighting
- d. Poorly lighted stairs
- e. Loose handrails or guard rails
- f. Loose or broken windows
- g. Dangerously piled supplies or equipment

- h. Open or broken windows
- i. Unlocked doors and gates
- j. Electrical equipment left operating • Open doors on electrical panels
- k. Leaks of steam, water, oil, etc.
- l. Blocked aisles
- m. Blocked fire extinguishers, hose sprinkler heads
- n. Blocked fire doors
- o. Evidence of any equipment running hot or overheating
- p. Oily rags
- q. Evidence of smoking in non-smoking areas
- r. Roof leaks
- s. Directional or warning signs not in place
- t. Safety devices not operating properly
- u. Machine, power transmission, or drive guards missing, damaged, loose, or improperly placed

#### **10.1.6 Personal Protective Equipment**

- a. Safety equipment. Your supervisor will see that you receive the protective clothing (coveralls are at employee expense) and equipment required for your job. Use them as instructed and take care of them. You will be charged for loss/destruction of these articles when it occurs through negligence.
- b. Safety shoes. The company will designate which jobs and work areas require safety shoes. Under no circumstances will an employee be permitted to work in sandals or open-toe shoes. Employee will acquire their own footwear meeting ANSI Z41.1-1991 standards where required.
- c. Safety glasses. The wearing of safety glasses where required is mandatory. Strict adherence to this policy can significantly reduce the risk of eye injuries.
- d. Face Shields. The wearing of face shields over primary eye protection (spectacles or goggles) where required is mandatory and will be utilized under the following circumstances:
  - i. IMPACT – Chipping, grinding machining, masonry work, woodworking, sawing, drilling, chiseling, powered fastening, riveting and sanding
  - ii. HEAT – Furnace operations, pouring, casting, hot dipping, and welding
  - iii. CHEMICALS – Acid and chemicals handling, degreasing plating

#### **10.1.7 Lifting and Moving Material**

- a. Each person is responsible for determining their lifting limitations. Obtain additional help or mechanical assist device(s) to lift or handle heavy or awkward objects.
  - i. Supervision must periodically evaluate work areas and employees' work techniques to assess the potential for and prevention of injuries. New operations should be evaluated to engineer out hazards before work processes are implemented.
  - ii. Before manual lifting is performed, a hazard assessment must be completed. The assessment must consider size, bulk, and weight of the object(s), if mechanical lifting equipment is required, if two-man lift is required, whether vision is obscured while carrying and the walking surface and path where the object is to be carried.
  - iii. Musculoskeletal injuries caused by improper lifting must be investigated and documented. Incorporation of investigation findings into work procedures must be accomplished to prevent future injuries.
- b. Observe the following principles of correct and safe lifting:
  - i. Ensure secure footing and a good grip on the materials,
  - ii. Keep the object close to your body,
  - iii. Keep your upper body erect,
  - iv. Lift smoothly - do not use jerky motions,
  - v. Do not lift and twist at the same time.
- c. Training on lifting and moving materials shall include:

- i. General principles of ergonomics,
- ii. Recognition of hazards and injuries,
- iii. Procedures for reporting hazardous conditions, and
- iv. Methods and procedures for early reporting of injuries.
- v. Additionally, job specific training should be given on safe lifting and work practices, hazards, and controls.

#### **10.1.7.1 Steps to Safe Lifting**

Observe the following steps when lifting any items:

- a. Check the load for size, weight, stability, and grip.
- b. Make sure the pathway to be used is clear of obstructions, debris or other conditions which may cause loss of footing.
- c. Inspect the lift areas for a clear place to hold on to, preferably at knuckle height, without reaching.
- d. Choose the right lifting technique (e.g., squat, semi-stoop, or balanced one-hand lift).
- e. Manual lifting equipment such as dollies, hand trucks, lift-assist devices, jacks, carts, hoists must be provided and should be used by employees and such use enforced by supervisors. Other engineering controls such as conveyors, lift tables, and workstation design should be considered.

#### **10.1.7.2 Lifting with Two or More Employees**

Where use of lifting equipment is impractical or not possible, two-man lifts must be used. Conduct a job briefing before beginning a task and define responsibilities and techniques for the type of lift being performed. One individual will give commands for all movements (lifting, walking, lowering, or throwing). Place the individual at one end of the object being lifted. Avoid walking backward.

#### **10.1.7.3 Protection of Body Parts**

Do not place hands, fingers, feet, legs or any part of your body in a position where they might be struck, caught, pinched or crushed.

#### **10.1.7.4 Safety Around Machines and Equipment**

Do not enter areas where you could be caught in the operation of machinery or equipment. When tools, equipment or machinery becomes jammed or obstructed in any manner, it must be stopped and lockout /tagout procedures followed.

### **10.1.8 Driving**

Only those employees specifically authorized and who possess a valid license for the equipment being used shall operate company-owned motor vehicles or personally owned motor vehicles on company business. At no time shall an operator of motor vehicles must not drive while under the influence of drugs or alcohol.

- a. Seat Belts
  - i. All vehicle occupants must use seat belts, where provided. This includes Company vehicles, privately-owned vehicles used on Company business, leased, rented or contract vehicles. Driver must not move a vehicle until all passengers are seated and have their seat belts fastened in proper restraining position.
  - ii. Passengers - Only employees or authorized passengers are permitted to ride in company vehicles.
  - iii. Seat belts will be inspected prior to use. Seat belts will not be removed from vehicles to avoid use. Missing or defective seat belts will be replaced immediately, or the vehicle will be removed from service.
  - iv. Seat belt use is required while operating material handling or utility type vehicles, if so equipped, i.e., forklifts, mobile cranes, mules, utility trucks, etc.
- b. Seating, Transporting
  - i. Passengers must be seated on approved seats. Do not project body parts beyond the sides or rear of the vehicle. Passengers must not be transported in truck beds.

- ii. Getting on or off moving vehicles is prohibited.
- c. Headlights On - Vehicle headlights will be illuminated during inclement weather and during times of low visibility.
- d. Back-Up Moves
  - i. Work must be planned to minimize backing movements.
  - ii. Before driving a vehicle, drivers must walk around the vehicle (except for automobiles) and make sure it is safe to move. When backing up, drivers must look in the direction of movement.
  - iii. When a driver is backing up and rear-ward vision is impaired, a second individual, when available, must be near the rear of the vehicle and guide the vehicle to protect the movement. If the person who is protecting the movement disappears from the driver's view, the driver must immediately stop the movement.
- e. Pre-operation checks - All drivers utilizing a company vehicle must:
  - i. Possess and maintain a current valid driver's license or commercial driver's license (CDL)
  - ii. Notify their supervisor and discontinue operating vehicles at any time their license or permit has expired, been suspended, revoked or restricted.
  - iii. Complete a Fleet Vehicle Checklist daily before use (minimum weekly, if assigned a permanent vehicle) ensuring vehicle is in a safe working order.
  - iv. Notify CDL Electric Company, LLC Maintenance Mechanics immediately of any potentially unsafe vehicle before leaving premises (CDL Electric Company, LLC or worksite). Required repairs must be completed before the vehicle is returned to service.
- f. DOT-Qualified Drivers
  - i. Drivers of company vehicles that meet one or more of the following criteria will be required to pass a knowledge and skills (driving) test to become Department of Transportation (DOT) qualified:
    - . operate a vehicle with gross combination weight of 26,001 pounds or more
    - . operate a vehicle designed to carry 16 or more persons, including the driver
    - . operate a vehicle placarded under the hazardous materials regulations because of its hazardous cargo
  - ii. Drivers must have in their possession:
    - . Commercial Driver's License (CDL)
    - . copy of medical examiners certificate card
  - iii. Drivers of vehicles with gross vehicle weight (GVW) of more than 10,000 pounds must be qualified and familiar with Federal Motor Carriers Safety Regulations, which require that drivers have the following photocopies at company headquarters:
    - . Medical Examiner's Certificate
    - . Road Test Certificate for DOT certified drivers who do not possess a CDL license
    - . Drivers Operator's license
    - . Waiver of Physical Disqualification, if applicable
    - . Driver's Application for Employment, if the application included a prior driving record (If not, a new application must be completed and included in the operator's DOT file)
    - . Annual Review of Driving Record (required every 12 months).
- g. Driver Responsibility
  - i. Know and observe all local, state, and federal laws and regulations governing vehicle operation.
  - ii. Report motor vehicle incidents to CDL DOT Compliance Administrator as soon as possible.
  - iii. Utilize company vehicles for their intended purpose only.
  - iv. Use courtesy, consideration, and common sense to prevent accidents and control situations encountered that cannot be provided for in the law.
  - v. Obey posted speed limits. Regardless of posted speed limits, drivers must not exceed a safe and prudent speed for their vehicle when weather, traffic, road conditions, vehicle load or any other prevailing conditions necessitates operating at a lower speed.



- vi. Ensure that the required emergency equipment and tools are on the vehicle.
- vii. **Use of cell phones is prohibited** while operating a motor vehicle unless hands free device is used. This includes dialing, unless voice activated dialing or speed dialing is available, texting or reading text messages. Cell phones may be used when stopped on other than a roadway.
- viii. **Impaired Driver** - Do not drive when suffering fatigue, illness, lack of sleep or any other physical condition which may affect alertness and ability to operate the vehicle safely.
- h. Tools and Materials
  - i. Good housekeeping must be maintained in the vehicle always.
  - ii. Loose items must not be kept on the dash or on rear window shelf.
  - iii. Tools, equipment, material and freight must be properly secured.
  - iv. Gross Vehicle Weight (GVW) of vehicle must not be exceeded. Do not exceed the load limit of trailers.
- i. Clearing Obstructions
  - i. The driver must know the vehicle and load will clear all obstructions or close clearances.
  - ii. Do not park the vehicle foul of any railroad track.
  - iii. Do not park vehicle foul of the traveled portion of a roadway unless proper warning to approaching traffic is provided
- j. Hazardous Materials

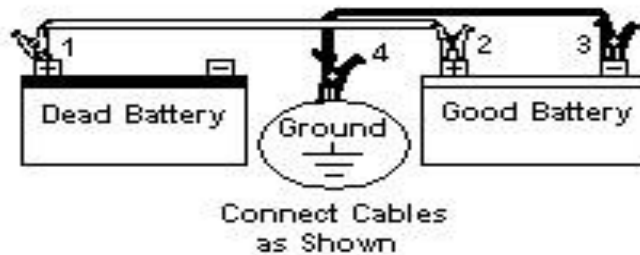
Do not place gasoline or other hazardous materials, including oxygen and fuel gas, in a truck compartment occupied by the driver or other persons.
- k. Parked Vehicle
  - i. If it is necessary to leave the vehicle motor running, the parking brake must be firmly set, and the transmission placed in neutral (manual transmissions) or park (automatic transmissions) to prevent movement.
  - ii. When vehicles are parked and left unattended, standard transmissions must be placed in low gear, automatic transmissions in park, emergency brake set, and the motor stopped.
  - iii. In addition, when vehicles or trailers are parked on a grade, precautions must be taken to ensure they cannot roll unexpectedly.
- l. Trailers

Before towing trailers, drivers must inspect:

  - i. Tires
  - ii. Hitches and safety chains
  - iii. Lights
  - iv. Equipment or material loaded on the trailer.
  - v. Any unusual condition noted must be corrected before towing is undertaken. If a trailer is equipped with brakes, the braking system must be operable. Safety chains, where required, must be used. Trailers must be equipped with a required and operable stop, tail, directional and clearance lights. Electrical connectors on trailers and vehicles must be compatible and must be connected before towing.
- m. Working under Vehicles/Trailers

Sitting or lying underneath vehicles or trailers is prohibited except when making inspection or repairs and then only when the brakes are set, wheels blocked, the engine stopped, and keys removed. Do not position yourself under any raised vehicle or trailer, unless proper support stands are in place.
- n. Batteries
  - i. Battery Inspection - Inspect batteries as required.
  - ii. Charging Batteries - When charging batteries, keep the vent caps in place to avoid electrolyte spray. Maintain vent caps in functioning condition. If necessary to bring the liquid to the correct level, use approved water. Charger must be turned off or unplugged before connecting to or disconnecting from battery. Hook the charger to the positive post first and the negative post last. When removing the charger, disconnect the negative post first then the positive post.

- iii. Tools and other metallic objects must be kept away from the top of uncovered batteries.
- iv. During cold weather, keep storage batteries maintained in a fully charged condition.
- o. Jump Starting
  - When necessary to jump a vehicle battery, the following procedure must be followed:
    - i. Turn off all electrical accessories in both vehicles, including Company radio. Start the engine of the booster vehicle to keep its battery from being discharged
    - ii. Make sure the vehicles are not touching.
    - iii. Shift both vehicles into neutral or park and set the emergency brakes.
    - iv. Check to be sure that both batteries are the same voltage.
    - v. Check to see that the fluid level is correct. If fluid is frozen, do not attempt to start the vehicle.
    - vi. Clamp one jumper cable to the positive terminal of the dead battery (position 1 on diagram). Do not allow positive cable clamps to touch any metal other than battery terminal. Connect the other end of positive (+) cable to positive (+) terminal of good battery (position 2 on diagram).
    - vii. Connect one end of the second cable negative of good battery (position 3 on diagram). Make final connection on engine block of stalled engine (not to negative post) away from battery, carburetor, fuel line, any tubing or moving parts (position 4 on diagram).



- viii. Stand back from both vehicles. Start vehicle with good battery—then start the disabled vehicle. Remove cables in reverse order of connections beginning by first removing cable from engine block or metallic ground.

#### **10.1.8.1 Motor Vehicle Safety and Journey Management**

This Procedure describes CDL's minimum mandatory requirements for assessing and managing the risks associated with motor vehicles and their general use.

This Procedure applies throughout CDL, all its sites and all activities under CDL's control. It applies to all CDL employees including visitors to CDL workplaces.

This procedure applies at all times and is not restricted by work hours or other time or place considerations. The procedure applies to:

- light vehicle operations;
- hire vehicles and drivers of hire vehicles.

This procedure does not apply to powered mobile plant.

The distracted driving section of this procedure applies to employees who are driving on behalf of the organization regardless of whether they are driving 'on site' or not; and to visitors driving at any CDL owned or operated site.

##### **a. Actions**

The hazards and risks associated with motor vehicles and driving shall be identified and managed.

##### **b. Motor Vehicle Use**

The use of CDL owned motor vehicles shall be restricted to workers directly authorized.

The driver of a CDL owned vehicle or hire vehicle shall:

- be licensed to drive that type of vehicle;
- not be impaired by alcohol or other drugs;
- not be fatigued;

- obey all local speed limits and road regulations;
- report and record all motor vehicle related events;
- ensure all occupants wear a seatbelt whenever the vehicle is in motion;
- not smoke in a motor vehicle;
- complete the required site pre-start check; and
- make sure that loads are adequately secured prior to departure.

The driver of the vehicle is responsible for any traffic offences or fines incurred.

All motor vehicles must be driven in accordance with the applicable road rules. This applies to vehicles being operated on CDL sites.

c. Journey Management Planning

Where identified as a control measure via a risk assessment process, a journey management plan shall be developed (not mandatory for all journeys). The risk associated with and expected duration of a journey should be considered when determining the need for a journey management plan.

Journey management plans shall consider as a minimum:

- main route and alternate routes of travel;
- types and coverage of communication devices;
- communication methods and frequency of contact for updates and check-in calls;
- travel time, breaks and higher risk periods (dusk, dawn, night);
- emergency notification and response plans;
- plans weather conditions including rain, fog, high winds;
- driver fitness such as previous work periods and fatigue; and
- the remoteness of the destination.

Motor vehicle travel shall be reviewed and planned to make sure that:

- the risks of the journey are adequately controlled and managed; and
- crisis and emergency management procedures can be implemented where required.

d. Fatigue and Long-Distance Driving

The following controls shall be implemented so far as is reasonably practicable:

- journeys and long-distance travel shall be planned for daylight hours. Driving at night should be kept to a minimum and should be done only when daylight travel is not possible. Consideration shall be given to the adjustment of emergency or crisis preparedness for nighttime driving through the risk assessment process;
- personnel shall avoid driving more than 12-hours in a 24-hour day;
- personnel have had adequate sleep the night before a long journey;
- share driving where possible; and
- personnel take a rest break from driving of at least ten minutes every two hours or more frequently if deemed required.

e. Communications

The level of detail required to be communicated prior to and during a journey will depend on a range of factors including; duration, location, and time of day or night of travel.

When determining an appropriate communication approach the following should be considered;

- A means of mobile communication is established usually via mobile phone devices. Ensure that the driver and passenger mobile phones are charged, and phone numbers are exchanged with relevant personnel.
- A form of communication is agreed between the driver and a contact person. (e.g. supervisor, team member, family member). The agreed approach should include establishing contact at regular scheduled intervals.
- It is confirmed that communication devices, where fitted to the vehicle, are working and their use is understood by all occupants.

f. Distracted Driving

This section relates specifically to the use of distracting devices while driving on business / operating vehicles for the organization.

The following shall not be performed while operating a vehicle:

- Using, in any way (includes reading etc.), a mobile phone or other portable electronic device (it is also preferred that talking on a 'hands free' device is performed while safely pulled over/stationary): and
- programming or adjusting a navigation system

g. Inspection and Maintenance

Motor vehicles shall be inspected and maintained in accordance with the relevant manufacturer's recommendations. A visual inspection of general vehicle condition including tires, wheel nuts, body damage, and seat belts shall be undertaken at the start of a journey.

- Maintenance records for DOT vehicles will be kept in accordance with 49 CFR 396.3.
- All employees will obtain a PO# from shop personnel before any service, or repairs are done to any company vehicle.
- An estimate will be sent to the Transportation department for approval before any repair is done to the vehicle.
- Locally domiciled vehicle maintenance will be provided by in-house mechanics located in Pittsburg or local approved shops.
- Out-of-state vehicle maintenance will be provided by approved shops in the specific area.
- All maintenance records are kept in the corporate office and on R&M online platform.

h. License and Competence Requirements

Employees operating all vehicles shall hold a valid driver's license for the class of vehicle they are required to drive.

Personnel shall immediately notify their relevant manager following any change to their license status.

i. Definitions

Distracting devices - Distracting devices include portable and/or handheld electronic devices including: communication equipment such as a mobile phone, portable audio devices such as an MP3 player, iPod or radio; portable computers such as iPads, laptop computers, tablets etc.

Distracted driving - Distracted driving is the diversion of attention away from activities critical for safe driving toward a competing activity.

Light vehicles - A light vehicle is any land-based vehicle:

- weighing less than 4.5 tones gross
- has no more than 4 wheels
- seats a maximum of 12 Personnel including the driver
- examples of light vehicles that are covered by this Policy include:
  - cars, 4WD's, sports utility vehicles, pick-ups, and utilities.
  - personnel carriers such as the long wheelbase; light trucks with crew cabins and other vehicles designated from time to time as personnel carriers.

### **10.1.9 Mobile Equipment/Machinery**

CDL Electric recognizes the hazards associated with the operation of heavy equipment/mobile equipment. This policy has been developed to establish guidelines to eliminate injuries or fatalities related to this type of equipment.

This policy applies to all free moving mobile equipment that may be propelled by gasoline, propane, diesel or electricity. Only competent personnel may operate heavy equipment / mobile equipment. An individual's competency must be demonstrated by successful completion of the training and evaluation

process specified in this policy. This policy establishes requirements to work in or around all types of mobile equipment.

CDL Electric employees are required to comply with the procedures outlined in this document. Individual departments/agencies who have an existing Heavy Equipment/Mobile Equipment Safety Policy or Program in place may continue to use that program if it provides the same degree of protection.

#### **10.1.9.1 Definitions**

**Competent Person** a person who by possession of a recognized degree in an applicable field or a certificate of professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter.

**Free Moving Mobile Equipment** are operator controlled mobile equipment not constrained by Fixed Rails and can include Industrial Fork Trucks, Aerial Lifts, Sweepers and Backhoes.

**Mobile Equipment** is free moving equipment propelled/powered by gasoline, propane, natural gas, diesel or electricity used to haul, transport, excavate, move, maneuver, or hoist materials, equipment, products or personnel.

**Pre-use Inspection** a required inspection of a piece of mobile equipment completed when the mobile equipment has not operated for each shift.

#### **10.1.9.2 Responsibilities**

- a. Department Heads will:
  - i. Ensure that this policy and all department rules in the equipment training procedure are followed.
  - ii. Ensure a Competent Person is available for heavy equipment/mobile equipment training.
  - iii. Provide a resource for training the operators of heavy equipment/mobile equipment that is needed to operate all equipment safely.
- b. Departmental Manager/Supervisors will:
  - i. Enforce this policy and all departmental rules in the equipment training procedures.
  - ii. Identify and provide the appropriate training for the Competent Person to conduct heavy equipment/mobile equipment training.
  - iii. Ensure that operators of heavy equipment/mobile equipment are trained, evaluated, observed and given skills needed to operate the equipment safely.
  - iv. Document random observations and on the spot corrections or department refresher training.
  - v. Enforce these safety procedures and rules as related to heavy equipment/mobile equipment, such as but not limited to seatbelt use.
- c. CDL Electric R&M (Repair and Maintenance) will:
  - i. Ensure an inventory of the company's machinery/equipment is established and kept current, in the company's secure online platform (Prometheus). When new machinery/equipment is acquired, it must be added to this inventory before issuance for use.
  - ii. A preventative maintenance schedule is established based on manufacturer requirements and industry standards. The Prometheus platform will alert the user and R&M department of upcoming servicing requirements. R&M staff will ensure that the maintenance has been conducted, documented, and retained for the life of the machinery/equipment.
  - iii. Identified defects in machinery/equipment shall be reported to the divisional supervisor and the R&M department and must be repaired or replaced before such machinery/equipment is used again.
- d. Employees will:
  - i. Follow this policy and other safety rules pertaining to the pre-shift inspection of, operation and routine maintenance of heavy equipment/mobile equipment.
  - ii. Perform pre-shift inspections prior to start of work for respective equipment.

- iii. Report any pre-shift inspection deficiencies with equipment to their immediate supervisor for maintenance or further action prior to operation of the equipment.
- iv. Obey traffic signs and signals and audible or visual warning devices.
- e. Competent Person (Equipment Trainer) will:
  - i. Train and evaluate equipment operators in classroom, hands-on training process and refreshers.
  - ii. Be knowledgeable and experienced in the particular equipment operation and how-to train.
  - iii. Document evaluations and training. Documentation shall be forwarded to the Director of Safety for record keeping.
- f. Director of Safety will:
  - i. Aid with compliance with the policy to requesting departments.
  - ii. File training rosters and evaluations.

#### **10.1.9.3 General Operating Requirements**

- a. Only authorized employees shall be allowed to operate mobile equipment. Authorization to operate mobile equipment will be issued to employees qualifying under appropriate training and proficiency testing.
- b. Before starting the engine, the operator shall fasten seat belts and adjust them for a proper fit.
- c. No operator shall operate mobile equipment without the protection of an enclosed cab or approved eye protection.
- d. The location shall determine the vehicle speed limit and post the information.
- e. All incidents involving mobile equipment shall be formally investigated.
- f. Equipment operators are responsible for keeping the equipment under control at all times.
- g. The operator shall not use, or attempt to use, any vehicle in any manner or for any purpose other than for which it is designated.
- h. All equipment operators must obey traffic signs and signals, and audible or visual warning devices. The operator shall make sure the warning signal is operating when the equipment is backed up.
- i. Alteration or modification of equipment is not permitted without prior written consent of the manufacturer and location management.
- j. When parking equipment, the operator must not block fire aisles, access to stairs, stretcher storage, fire equipment, or other emergency response areas or equipment.
- k. Stunt driving and horseplay are strictly forbidden.
- l. All equipment rated capacities shall not be exceeded.
- m. At the beginning of each shift, the operator shall inspect and check the assigned equipment, reporting immediately to his/her supervisor any malfunction of the clutch or of the braking system, steering, lighting, or control system and locking/tagging out the equipment if necessary.
- n. The right of way must be yielded to emergency vehicles.
- o. Unauthorized personnel shall not be permitted to ride on equipment unless it is equipped to accommodate passengers safely.
- p. The operator shall not load the vehicle/equipment beyond its established load limit and shall not move loads which because of the length, width, or height that have not been centered and secured for safe transportation.
- q. Operators must keep both hands free such as not eating, reading and drinking while operating.
- r. The operator of a gasoline or diesel vehicle shall shut off the engine before filling the fuel tank and shall ensure that the nozzle of the filling hose contacts the filling neck of the tank. No one shall be on the vehicle during fueling operations except as specifically required by design. There shall be no smoking or open flames in the immediate area during fueling operation.

#### **10.1.9.4 Specific Mobile Equipment Procedures**

More specific procedures and rules in equipment operator's training for heavy equipment/mobile equipment must be followed, and is located:

- a. 11.1 Lifts (Boom lifts, Scissor Lifts, and Other)

b. 12.1 Forklifts

c. 21.1 Cranes

#### **10.1.9.5 Free Moving Equipment or Vehicles**

- a. If governors are in use and are set to a specific speed, they must not be removed/altered in any way.
- b. Equipment operators must maintain a safe following distance from other equipment or vehicles (three truck lengths or three seconds).
- c. For intersections with obstructed views, the equipment operator is responsible for slowing down, sounding the horn and using fixed convex mirrors, where provided to check for cross-traffic.
- d. Equipment operators must stay within the floor markings and out of the pedestrian lanes.
- e. Seatbelts must be worn at all times.
- f. Load backrest extension will not increase the maximum weight, which can be handled and provides overhead protection for operators and helps prevent parts of the load from falling on employees.
- g. Excess counterweighting is forbidden.
- h. Unstable or unsafely arranged loads shall not be picked up and restacked, banded, taped, or shrink-wrapped.
- i. Transfer loads from broken pallets or containers to sound ones before picking them up and promptly remove these same pallets or containers to void their future use.
- j. The proper attachments must be used for the respective equipment.
- k. Be aware of bystanders and pedestrians that may be in the target zone of an unstable load.
- l. Level the top of the forks and do not lift with only one fork.
- m. Lift from the broadest side of the load and set the forks at the greatest width the pallet allows.
- n. Fork extensions shall be used for deep loads and can cause a pallet behind the load being lifted to move or fall over.
- o. Heavy equipment must be wedged; a spotter used; and controls not run from the floor unless made for that type of operation.
- p. Off-center loads must be strapped if it could become unstable; operate slower; and use controls such as raise and tilt smoothly.
- q. The center of gravity of the load must be as close to the mast as possible. The stability is greater as the center of gravity of the load is brought closer to the front axle.
- r. Tilt the mast gently backward to stabilize the load when the load is elevated.
- s. Loads become less stable when the load is raised, turning, on slopes, tilting the load, and on rough or uneven surfaces.
- t. Traveling surfaces must be able to support the weight of the equipment and the load.
- u. Railroad tracks and similar edges shall be crossed at a 45-degree angle, where possible.
- v. There must be adequate overhead clearance maintained such as from lights, sprinklers and pipes.
- w. Employees are responsible to report and help correct leaning stacks.
- x. Equipment operators must maintain a safe distance from edges such as elevated ramps, platforms and docks.
- y. Transporting an individual in a lift platform is forbidden.
- z. Equipment operators must not pass forks or attachments over anyone, nor shall anyone pass under them whether the equipment is loaded or empty.
- aa. Equipment operators shall not pass other vehicles moving in the same direction at intersections, blind spots or other dangerous locations.
- bb. Equipment operators shall check that wheels are blocked; brakes are set; and use dock locks before loading a trailer.
- cc. Dock boards or bridge plates must be substantial to hold the equipment and the load; secured; and equipment operators travel slowly on them.
- dd. The condition of the floorboards must be satisfactory and enough overhead clearance prior to boarding a trailer.

- ee. Equipment operators need to look back over both shoulders before changing direction or moving in reverse.
- ff. Equipment operators shall travel with the load as close to the floor as possible (one or two inches at the heel of the forks and four to six inches at the tips, with the load resting against the mast).
- gg. Equipment operators must follow rules for refueling.
- hh. When traveling loaded on ramps greater than 10%, equipment operators shall always have the load upgrade.
- ii. When traveling unloaded on ramps, forks shall be down ramp and mast tilted back.
- jj. When leaving free moving equipment or industrial trucks unattended (greater than 25 feet away is abandoned), the operator shall place the forks on the floor; put the truck in neutral; set the brakes; shut-off the truck; and block the wheels if on a ramp.
- kk. Equipment operators shall keep their bodies within the dimensions of the truck and not between the mast uprights.
- ll. When parking near railroad tracks, equipment operators must park no closer than 25 feet from the center of the railroad tracks.
- mm. Equipment operators shall travel with the load trailing if it obstructs their view.
- nn. Equipment operators must avoid running over loose materials, uneven or soft surfaces and slippery areas including oils slicks. The equipment operator must report and help correct these situations.
- oo. Equipment operators shall slow down for the conditions including wet or slippery floors and weather factors.
- pp. Equipment operators shall avoid running on ice and snow, where possible.
- qq. All free moving mobile equipment shall have back-up alarms.
- rr. Back-up alarms and lighting must be inspected during the pre-shift inspections and any deficiencies corrected.
- ss. Flatbed truck operators shall avoid steering wheels all the way in either direction.
- tt. The load must clear the floor for a flatbed truck before engaging the reverse speed.
- uu. Flatbed truck operators shall pre-examine loads to ensure they do not overload the truck.
- vv. Flatbed truck operators shall not use the reverse direction power for braking.
- ww. Flatbed truck operators shall allow sufficient clearance for lowering loads into storage spaces.

#### **10.1.9.6 Maintenance**

- a. CDL Electric R&M (Repair and Maintenance) shall follow the manufacturer's recommendations in their equipment preventative maintenance program.
- b. Only designated maintenance personnel shall be authorized to perform service on equipment.
- c. CDL Electric R&M shall conduct a pre-release inspection of equipment prior to return to service. Inspections should be reviewed periodically and retained for three (3) months.

#### **10.1.9.6.1 Automotive Lifts**

The Automotive Lift Institute (ALI) recommends this simple vehicle lift safety precautions to help your shop operate incident-free:

- a. Inspect your lift daily and make any repairs with original equipment (OE) parts.
- b. Don't block open or override controls.
- c. Never load your lift beyond the manufacturer's rated capacity.
- d. Positioning of the vehicle and operation of the lift should be done only by trained and authorized personnel.
- e. Never raise a vehicle with anyone inside it. Customers or bystanders should not be in the lift area during operation.
- f. Always keep the lift area free of debris.
- g. Do not hit or run over lift arms, adapters or axle supports.



- h. Position lift supports to contact the vehicle manufacturer's recommended lifting points and raise the lift until supports contact the vehicle. If you are working under the vehicle, the lift should be raised high enough for the locking device to be engaged.
- i. Note that with some vehicles, the removal or installation of components may cause a critical shift in the vehicle's center of gravity. Use high-reach, supplementary stands to prevent instability.
- j. Before lowering the lift, be sure materials are removed from under vehicle.

#### 10.1.9.6.1.1 Training:

This training provides guidance on lift requirements, operator qualifications, operator responsibilities, inspection requirements, inspection procedures, inspection procedures, maintenance requirements and lifting procedures.

##### Lift Requirements

1. Manufacture provided instructions and warning labels and safety tips in place.
2. Rated load capacity posted.
3. Operators' manual.
4. Lift name plate in place.
5. Lockout/Tagout Procedures.
6. All manufacture installed safety features and locks in place and functional.
7. Lifts/Lift accessories may not be modified from original manufacture specifications without written consent from the lift manufacturer.
8. A copy of the ANSI Automotive Lift Institute Standard for Automotive Lifts.
9. Automotive Lift Institute's Publications
  - a. Quick Reference Guide-Vehicle Lifting Points for Frame Engaging Lifts
  - b. Lifting it Right
  - c. Safety Tips



##### Operator Qualifications

An automotive lift operator shall have the following qualifications:

1. High School Diploma or certificate of equivalency, aptitude test or job experience.
2. Ability to understand automotive lift principals as demonstrated by one o, or a combination of, aptitude test, training program, technical/vocational school, school of higher learning or job experience.
3. Ability to physically demonstrate lift operations performed in a safe manner.

##### Operator Responsibilities

1. Operator may operate automotive lifts only after completing CDL General Automotive Lift Training and have documentation acknowledging they have read and understand the operator's manual and the ANSI Automotive Lift Institute Standard for Automotive Lifts.
2. Operator must use all applicable safety features provided on the automotive lift.
3. Operator must operate the automotive lift in accordance with the manufacturer supplied instructions.

4. Operators must maintain the cleanliness and orderliness of the lift and its surroundings to ensure the lift can be safely operated.
5. Operators must be familiar with Lockout/Tagout procedures for the lift.
6. Operator will conduct daily/pre-shift written inspections of the lift.
7. Operators are responsible for reporting any deficiencies in lift or lift operation found in daily inspections, during operation or after use.
8. Operator must be familiar with the Automotive Lift Institute's Publications:
  - a. Quick Reference Guide-Vehicle Lifting Points for Frame Engaging Lifts
  - b. Lifting it Right
  - c. Safety Tips

### **Lift Inspection Requirements**

1. Lifts will be inspected daily/pre-shift by operators and documentation retained for 6 months.
2. Lifts will be inspected monthly by supervisor or member of management and documentation retained for 6 months.
3. Lifts will be inspected annually by an outside certified lift inspector and documentation retained for 36 months.

### **Lift Inspection Procedures**

#### ***Daily/Pre-Shift Written Inspections***

1. Verify Operating Manuals are available.
2. Verify all Safety/Operating Placards are in place and legible including Capacity Posting.
3. Verify proper operation of all lift controls. Including all safety features, lock mechanisms and restraints.
4. Verify no damage, wear or deformation on any of the lift's structural components.
5. Verify no damage, wear or deformation on any of the lift's hoses and electrical components.
6. Inspect lift arms and restraints. (Lift arms should withstand 150lbs of side pressure when in locked position)
7. Inspect lift adapters for condition and operation. (Including rubber pads)
8. Verify there are no leaks in the lift's operating system.
9. Inspect anchor points for tightness and damage or cracks to the foundation to which anchored.
10. Operate lift to verify no unusual noise or erratic operation. (Operate one full cycle to ensure the upper limit switch is in proper working order)

#### ***Monthly Supervisor Written Inspections***

1. Examine all structural components including welds and fasteners.
2. Examine all piping, valves, seals, and hydraulic components.
3. Inspect anchor points for tightness and/or damage. (Floor)
4. Inspect and lubricate all moving parts and pivot points as needed.
5. Inspect fluid levels. (If applicable)
6. Operate lift through full cycle and insure stop and end of both upper and lower travel.
7. Verify operation of any overhead shut off switches.
8. Verify operation of all safety locking mechanisms.
9. Inspect lifting arms and their restraints.
10. Inspect lift adapters for condition and operation including rubber pads.
11. Inspect electrical components and wiring.
12. Verify all "Safety Placards" are legible and in place including "Load Capacity".
13. Verify "Operating Manuals" are available.
14. Verify "Daily Inspection Form" is completed and filed.

### **Maintenance Requirements**

#### ***Planned/Scheduled Maintenance Procedures***

1. The owner or employer shall establish a periodic planned maintenance program in accordance with recommendations of the lift manufacturer in order to ensure reliability and allow for continued safe operation of the lift.
2. Planned maintenance will be conducted on all CDL lifts following the manufacturer specifications and schedules.
3. Planned maintenance should be performed by qualified personnel only.
4. Planned maintenance documentation will be retained verifying specific checks made, parts replaced, adjustments made, results of measurements taken, and any recommendations made for 36 months.
5. Lockout/tagout procedures for lifts will be followed during any planned maintenance.
6. Only original manufacturer approved replacement parts or parts meeting original manufacturer specifications will be used in planned maintenance.

### ***Repair Maintenance***

1. The owner or employer will conduct repair maintenance anytime they are aware of lift deficiencies or made aware of lift deficiencies by the lift operator, inspection records or qualified outside vendors performing inspections or planned maintenance. Repair maintenance will be performed immediately.
2. Repair maintenance will be performed in accordance with the manufacture's specifications and recommendations in order to ensure reliability and allow for continued safe operation of the lift.
3. Repair maintenance must be performed by an outside certified lift repair company.
4. Repair maintenance documentation will be retained verifying specific checks made, parts replaced, adjustments made, results of measurements taken, and any recommendations made for 36 months.
5. Lockout/tagout procedures for lifts will be followed during any repair maintenance.
6. Only original manufacturer approved replacement parts or parts meeting original manufacturer specifications will be used in repair maintenance.

### **Lifting Procedures**

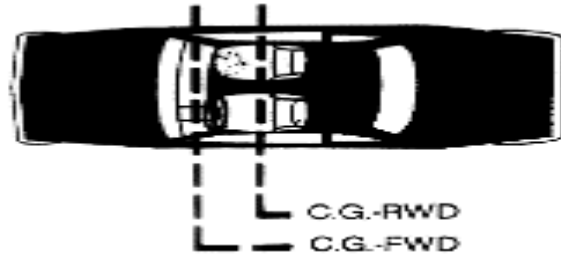
#### ***Before Lifting Vehicle***

1. Check to ensure the lift area is free of tools, cords, hoses, trash and other debris.
2. Check to ensure the lift is fully lowered.
3. Check to ensure all lift adaptors and supports are out of the way of the vehicle and equipment.
4. Set wheel stands in place for the vehicle to be supported by while lift arms are positioned.

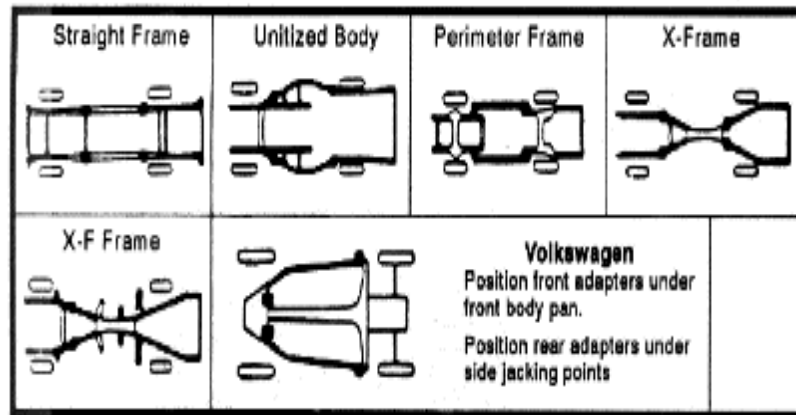


5. Check to ensure any personnel in the area is aware a vehicle is going to be lifted and that they are a safe distance from the lifting operation.
6. Check to ensure the lift capacity will support the vehicle.
7. Determine vehicle's center of gravity.
  - a. Each vehicle has a different center of gravity due to weight distribution, wheelbase length, location of drive train, and other factors including damage due to collision.

- b. In most cases, the vehicles center of gravity on rear-wheel-drive passenger vehicles is below the driver's seat. While on front wheel drive passenger vehicles it is slightly in front of the driver's seat.



8. Position the center of gravity in accordance with the lift manufacturers spotting devices
9. Set lift arms so that vehicle weight will be equally distributed between supports.
  - a. Lift arm placement will be affected by wheelbase length, location of drive train, and other factors including damage due to collision and frame style

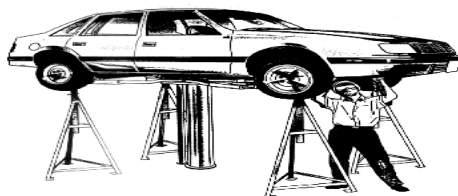


### ***Lifting Vehicle***

1. Once the vehicle is spotted correctly, raise the lift arms until the lift supports contact the vehicle.
2. Check to ensure lifts supports are making secure contact with the vehicle's lifting points.
3. Raise vehicle approximately one foot. Check to ensure vehicle is securely positioned on the lift supports by gently pushing the front or rear bumper.  
If vehicle is unstable or secure contact is not being made between the lift supports and vehicle lift points, lower the vehicle and reposition the lift supports and repeat lifting procedures.
4. Raise the vehicle to desired working height.
5. Never override the lift automatic stop features. Always be at the lift controls while the lift is in motion.

### ***Maintaining Load Stability***

1. Vehicles must have four points of contact while in a lifted position. If four points of contact cannot be made with lift supports, jack stands will be required to stabilize the car while in lifted position.



2. Keep in mind that vehicle center of gravity and stability can change while on the lift due to removing vehicle components, impact tool usage and release of stored energy from vehicle components such as vehicle suspension.
  - a. The use of jack stands is recommended to aid in vehicle stabilization while disassembling.
  - b. Component support stands are recommended to aid in load stabilization while disassembling.



### ***Lowering Vehicle***

1. Check to ensure the lift area is free of tools, cords, hoses, trash and other debris.
2. Set wheel stands in place for the vehicle to be supported by while lift arms are positioned.
3. Check to ensure any personnel in the area is aware a vehicle is going to be lowered and that they are a safe distance from the lifting operation.
4. Check to ensure the lift is fully lowered and lift adapters and supports are out of the way of the vehicle and equipment.
5. Never override the lift automatic stop features. Always be at the lift controls while the lift is in motion.

At NO TIME will CDL automotive lifts be operated in any condition other than meeting original manufacture specifications and operating conditions.

Any automotive lift not meeting these conditions will be LOCKED/TAGGED OUT and TAKEN OUT OF SERVICE IMMEDIATELY.

DISCIPLINARY ACTION and POSSIBLE TERMINATION will occur if CDL floor lift procedures or floor lift compliances are not followed.

# Appendix – Daily Automotive Lift Inspection



## DAILY AUTO LIFT INSPECTION FORM

LIFT # \_\_\_\_\_ MAKE \_\_\_\_\_ MODEL \_\_\_\_\_ SERIAL # \_\_\_\_\_

INSPECTION / SERVICE ITEM	MON	TUES	WED	THR	FRI	S/S
Verify "Operating Manuals" are available						
Verify all Safety Placards/Operating Placards are in place& legible Incl Capacity						
Verify proper operation of all lift controls. Incl all safety features, lock mechanisms and restraints						
Verify no damage, wear or deformation on any of the lifts structural components						
Verify no damage , wear, or deformation on any of the lifts hoses and electrical components						
Inspect lift arms and restraints, (lift arms should withstand 150lbs of side pressure when locked into position)						
Inspect lift adapters for condition and operation (including rubber pads)						
Verify there are no leaks in the lift's operating system						
Inspect anchor points for tightness and damage or cracks to the foundation to wich anchored.						
Operate lift to verify no unusual noise or erratic operation. (Operate one full cycle to ensure the upper limit switch is in proper working order)						
<b>REPORT ANY AND ALL DEFECIENCIES IMMEDIATELY TO SUPERVISOR / CHIEF MECHANIC &amp; DO NOT USE</b>						

Inspected by: \_\_\_\_\_ Date: \_\_\_\_\_

**Retain Completed FORM - File Shall be Retained until Monthly is completed and Submitted to Safety Office**

# Appendix – Monthly Automotive Lift Inspection



## MONTHLY AUTO LIFT INSPECTION FORM

LIFT # \_\_\_\_\_ MAKE \_\_\_\_\_ MODEL \_\_\_\_\_ SERIAL # \_\_\_\_\_

INSPECTION / SERVICE ITEM	OK	REPAIR	N/A	COMMENTS
15 minute leak test (veh elevated)				
<b>HYDRAULIC SYSTEM</b>				
CAPACITY LBS				
Test Function:				
Oil Level & Inspect for Leaks:				
Valves and Hoses:				
Clean Cylinders, seals remove oil/dust:				
<b>CABLES AND CHAINS</b>				
Check for Excess Play:				
Amount of Wear:				
Cables Lubricated (mfr approved):				
Pulleys Lubricated (mfr approved):				
<b>PULLEYS, PINS, &amp; ROLLERS</b>				
Condition (corrosion/lubrication)				
<b>COLUMNS &amp; POSTS</b>				
Condition - Rust / Damage / Wear:				
Alignment / Level:				
Guide Blocks / Rollers (wear/lubricant):				
<b>ROLLING BRIDGE, WHEEL FREE</b>				
CAPACITY LBS				
Leak Test:				
Locks:				
Rollers or Slides (wear/lubricant):				
<b>GENERAL</b>				
Decking & Covers Secured:				
Anchor Bolts (visual check for tightness):				
Swing Arm Restraints, Telescoping Stops:				
Wheel Chocks:				
Runaway Stops:				
Drive-up Ramps:				
Test Lift Locks:				
Inspect/Test Other Safety Features:				
<b>ELECTRICAL</b>				
Function of Switches (worn/sticking):				
Limit Switch:				
Condition of Terminals:				
<b>REPORT ANY AND ALL DEFECIENCIES IMMEDIATELY TO SUPERVISOR / CHIEF MECHANIC &amp; DO NOT USE</b>				

Inspected by: \_\_\_\_\_ Date: \_\_\_\_\_

Forward Completed FORM to Safety Department for files - File Shall be Retained for 5 Years



## **10.20 In Plant Rail Safety**

### **10.20.1 Purpose**

This policy covers safe work practices when working around our customers In Plant Rail Systems. This policy does not cover any work on Railroad tracks that are considered public, commercial or industrial rail line.

### **10.20.2 Scope**

Working around and on railroad tracks is high-risk and countermeasures need to be taken to prevent rail-related accidents. In-plant railroads are typically under OSHA's general industry regulations. However, there are minimal references to rail activity in the regulations, and as such, most rail safety violations are addressed under the General Duty "catchall" clause of the OSHA standard. The Federal Railroad Administration (FRA) has established extensive safety requirements under 49 CFR; however, in-plant railroads do not come under FRA jurisdiction.

### **10.20.3 Definitions**

**In Plant Rail Safety** Any railroad tracks used and maintained by our customer which lies within their protected boundaries of ownership.

### **10.20.4 Responsibilities**

- a. Director of Safety is responsible for:  
Issuing and administering this program and ensuring that it satisfies all applicable federal, state and local requirements.
- b. Project Managers, Superintendents, and Foremen are responsible for:  
Implementing this program when work involving in-plant rail lines is scheduled
- c. Employees
  - Read & Understand the elements of this policy
  - Read and follow this program when working in and around in-plant railroad lines.

### **10.20.5 General**

Most rail-related injuries to construction workers fall into two categories: crushing injuries between and under cars and struck-by injuries. The following list is representative of the important items that CDL Electric wants their employees to be aware of:

- a. Parking & Walking Around Tracks
- b. Crossing Railroad Tracks
- c. Head-End Protection
- d. Work on or Near Tracks

### **10.20.6 Methods of Compliance**

- a. Personal Protective Equipment
  - i. Approved Hardhats ANSI Z89
  - ii. Protective footwear steel toe/composite toe ANSI Z41 and must have leather/leather like uppers 6" high with a 90-degree heel
  - iii. Safety glasses ANSI Z87 with permanently attached side shields shall be worn in designated areas.
- b. Parking & Walking Around Tracks
  - i. In all cases pedestrians/employees shall cross at existing designated pedestrian rail crossings where provided. Additionally, vehicle crossings are not intended as pedestrian crossings unless they are so identified and/or located, and no other pedestrian crossings exist in the area.
  - ii. No vehicle or equipment should be parked within 8 feet of the center of the tracks. This assures that moving rail equipment will not strike other equipment.
  - iii. Pedestrians should never walk inside the rails, but rather walk at least 6 feet from the outside of the rail.
- c. Crossing Railroad Tracks



- i. If a designated crossing is not available. Do not cross within 50 feet of the end of a parked rail car, do not cross between uncoupled cars, stop, look, and listen prior to proceeding across the tracks, and never step on rails, as they may be slippery.
  - ii. Never attempt to crawl under rail equipment, climb over moving rail equipment, or attempt to cross in front of moving equipment.
  - iii. Never position any part of the body in a potential pinch point. Always expect rail equipment to move in either direction at any time.
- d. Head-End Protection
  - i. Simply put, this refers to positioning a worker at the front end of the train to watch for pedestrians or other equipment that may be in the direction of travel. This can be the locomotive operator if he/she has a clear view of the rails ahead. It may also be a brakeman or switchman who is in radio contact with the locomotive operator. If the locomotive is operated by a radio-controlled remote, then the remote operator must be at the front of the train, watching in the direction of travel.
- e. Work On or Near Tracks
  - i. Prior to performing work within six (6) feet of any railroad track, permission must be obtained from railroad Supervisor/Designated person to take the track out of service.
  - ii. When any type of maintenance or repair is being performed on or near railroad tracks, CDL Electric shall utilize positive track protection.
    - Railroad car wheel chocks shall be placed to prevent movement of the locomotive
    - Derails shall be placed blocking access from either direction into the work area
    - A switch that has been diverted and locked out (utilizing a personal lock)
    - A combination of a derail and switch diversion
  - iii. A blue flag or light shall be placed in front of the work area to serve as a warning device
  - iv. The positive protection and warning devices may need to be placed on both sides of the work area if rail equipment can travel both ways.

### **10.20.7 Recordkeeping**

- Appropriate forms showing listing the positive track protection used.
- Written permission from railroad Supervisor/Designated person.

### **10.20.8 Training**

Appropriate training based on the complexity of the job and potential hazards related to in plant rail shall be provided and documented to all applicable employees. Assessments shall be used to determine whether the personnel have the knowledge and have demonstrated skills to safely perform their work assignments.

Retraining and testing shall be required for unsatisfactory/ unsafe performance of job assignments.

### **10.21 Housekeeping**

Effective housekeeping can help control or eliminate workplace hazards and is an ongoing operation. Poor housekeeping practices frequently contribute to incidents.

Housekeeping is not just cleanliness. It includes keeping work areas neat and orderly, maintaining halls and floors free of slip and trip hazards, and removing of waste materials (e.g., paper, cardboard) and other fire hazards from work areas. It also requires paying attention to important details such as the layout of the whole workplace, aisle marking, the adequacy of storage facilities, and maintenance. Good housekeeping is also a basic part of incident and fire prevention.

#### **10.21.1 Purpose**

Poor housekeeping can be a cause of incidents, such as:

- tripping over loose objects on floors, stairs and platforms
- being hit by falling objects
- slipping on greasy, wet or dirty surfaces

- striking against projecting, poorly stacked items or misplaced material
- cutting, puncturing, or tearing the skin of hands or other parts of the body on projecting nails, wire or steel strapping

To avoid these hazards, a workplace must "maintain" order throughout the workday.

a. Maintenance

- The maintenance of buildings and equipment may be the most important element of good housekeeping. Maintenance involves keeping buildings, equipment and machinery in safe, efficient working order and in good repair.
- A good maintenance program provides for the inspection, maintenance, upkeep and repair of tools, equipment, machines and processes.

b. Dust and Dirt Removal

- Enclosures and exhaust ventilation systems may fail to collect dust, dirt and chips adequately. Vacuum cleaners are suitable for removing light dust and dirt that is not otherwise hazardous.
- Dampening (wetting) floors or using sweeping compounds before sweeping reduces the amount of airborne dust. The dust and grime that collect in places like shelves, piping, conduits, light fixtures, reflectors, windows, cupboards and lockers may require manual cleaning.
- Compressed air shall not be used for removing dust, dirt or chips from equipment or work surfaces.

c. Employee Facilities

Employee facilities shall be adequate, clean and well maintained. Washroom facilities require cleaning once or more each shift. They also need to have a good supply of soap, towels plus disinfectants, if needed.

d. Surfaces

- Floors: Poor floor conditions are a leading cause of incidents. Employees shall clean up spilled oil and other liquids immediately.
- Walls: Light-colored walls reflect light while dirty or dark-colored walls absorb light. Contrasting colors warn of physical hazards and mark obstructions such as pillars. Paint can highlight railings, guards and other safety equipment, but should never be used as a substitute for guarding.

e. Maintain Light Fixtures

Dirty light fixtures reduce essential light levels. Clean light fixtures can improve lighting efficiency significantly.

f. Aisles and Stairways

- Aisles shall be wide enough to accommodate people and vehicles comfortably and safely. Aisle space allows for the movement of people, products and materials.
- Warning signs and mirrors can improve sightlines in blind corners. Arranging aisles properly encourages people to use them so that they do not take shortcuts through hazardous areas.
- Aisles and stairways shall be kept clear. They shall not be used for temporary "overflow" or "bottleneck" storage.
- Stairways and aisles also require adequate lighting.

g. Spill Control

- The best way to control spills is to stop them before they happen.
- Regularly clean and maintain machines and equipment.
- Use drip pans and guards where possible spills might occur.
- Used absorbents must be disposed of properly and safely.

h. Tools and Equipment

- Tools require suitable fixtures with marked locations to provide an orderly arrangement.
- Return tools promptly after reducing the chance of it being misplaced or lost.
- Workers shall regularly inspect, clean and repair (if authorized) all tools.
- Tools that are damaged or worn shall be tagged "DO NOT USE" and removed from service.

- i. Waste Disposal
  - i. Regular collection, grading and sorting of scrap contribute to good housekeeping practices.
  - ii. Place scrap containers near where the waste is produced.
  - iii. All waste receptacles should be clearly labelled (e.g., plastic, scrap metal, etc.).
- j. Storage
  - i. Good organization of stored materials is essential for overcoming material storage problems whether on a temporary or permanent basis. There will also be fewer strain injuries if the amount of handling is reduced, especially if less manual material handling is required. The location of the stockpiles should not interfere with work, but they should still be readily available when required. Stored materials should allow at least three feet of clear space under sprinkler heads.
  - ii. Stacking cartons and drums on a firm foundation and cross tying them, where necessary, reduces the chance of their movement. Stored materials should not obstruct aisles, stairs, exits, fire equipment, emergency eyewash fountains, emergency showers, or first aid stations. All storage areas should be clearly marked.
  - iii. Flammable, combustible, toxic and other hazardous materials should be stored in approved containers in designated areas that are appropriate for the different hazards that they pose. Storage of materials should meet all requirements specified in the fire codes and the regulations of environmental and occupational health and safety agencies in your jurisdiction.

## Appendix M – Fleet Vehicle Checklist



### FLEET VEHICLE CHECK LIST

VEHICLE # \_\_\_\_\_

MILEAGE \_\_\_\_\_

TRAILER \_Y\_\_\_N\_\_\_#\_\_\_\_\_

\_\_\_\_\_ Headlights (high and low beams)

\_\_\_\_\_ Taillights  
(running/brake/turn)

\_\_\_\_\_ Brakes

\_\_\_\_\_ Tires (front/rear/spare)

\_\_\_\_\_ Jack and Equipment

\_\_\_\_\_ Windshield Wipers

\_\_\_\_\_ Windshield Washers

\_\_\_\_\_ Defrosters

\_\_\_\_\_ Seatbelts (in place and operable)

\_\_\_\_\_ Heater

\_\_\_\_\_ 1<sup>st</sup> Aid Kit (adequately stocked)

\_\_\_\_\_ Windows (operable)

\_\_\_\_\_ Doors (secure)

\_\_\_\_\_ Cleanliness  
(interior/exterior)

\_\_\_\_\_ Crankcase Oil

\_\_\_\_\_ Transmission Fluid

\_\_\_\_\_ Power Steering/Brake

\_\_\_\_\_ Radiator/Anti-freeze

\_\_\_\_\_ Dome Light

\_\_\_\_\_ Test Drive

\_\_\_\_\_ Body damage

\_\_\_\_\_ Fire Extinguisher (charged)

Checked by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Signature \_\_\_\_\_

## Appendix N – Incident Report



### Incident Reporting Form

#### Reporting Type:

- |   |                                      |
|---|--------------------------------------|
| <input type="checkbox"/> Lost Time/Injury | <input type="checkbox"/> Observation |
| <input type="checkbox"/> First Aid        | <input type="checkbox"/> Incident    |
| <input type="checkbox"/> Close Call       | <input type="checkbox"/> Other       |

#### Details :

Person Completing Form: \_\_\_\_\_ Date: \_\_\_\_\_

Person(s) Involved: \_\_\_\_\_

Equipment or Truck ID: \_\_\_\_\_

#### Event Details:

Date of Event: \_\_\_\_\_ Location of Event: \_\_\_\_\_

Time of Event: \_\_\_\_\_ Witnesses: \_\_\_\_\_

#### Description of Event:

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#### Was event caused by an unsafe act or condition? Please explain:

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TO BE COMPLETED ONLY IF LOST TIME/INJURY OR FIRST AID WAS REQUIRED	
Type of injury sustained:	
Cause of lost time/injury or first aid:	
Was medical treatment necessary?	YES      NO If yes, name of hospital or physician _____

Signature of Employee: \_\_\_\_\_ Date: \_\_\_\_\_

Signature of Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

## Appendix O – Driver PTI Checklist

DATE -

TRUCK #

TRAILER #

Done	Description	TRUCK (POWER)	TRAILER	DRIVER
	CURRENT CDL			X
	CURRENT MEDICAL CARD			X
	LOGBOOK CURRENT TO MOST RECENT DUTY STATUS CHANGE			X
	CURRENT ANNUAL INSPECTION PAPERWORK			X
	VEHICLE REGISTRATION & LICENSE PLATE			X
	CURRENT INSURANCE CARD			X
	CURRENT YEAR IFTA PERMIT (IF APPLICABLE)			X
	IFTA STICKERS ON BOTH SIDES OF VEHICLE (IF APPLICABLE)	X		
	FUSES	X		
	CDL COMPANY SIGNS ON BOTH SIDE OF VEHICLE	X		
	HEADLIGHTS - HI BEAM/LOW BEAM	X		
	TURN SIGNALS (CHK TURN SIGNAL, BRAKE & 4 WAYS INDIVIDUALLY)	X	X	
	BRAKE LIGHTS	X	X	
	4 WAYS TRUCK AND TRAILER	X	X	
	CLEARANCE LIGHTS TRUCK AND TRAILER	X	X	
	CARGO LIGHT	X		
	REVERSE LIGHTS	X	X	
	LICENSE PLATE LAMP	X	X	
	WINDSHIELD WIPERS & FLUID MUST HAVE 2 UNLESS 1 WILL CLEAN THE DRIVER'S VIEW	X		
	HORN MUST HAVE FUNCTIONING CITY OR AIR HORN	X		
	TIRES (TREAD DEPTH, CORDS SHOWING & CONDITION)	X	X	
	WHEELS (CRACKS)	X	X	
	WHEEL HUB CHECK FOR OIL LEAK (IF APPLICABLE)	X	X	
	CARGO SECUREMENT - CHAINS AND BINDERS SECURE, NO LARGE CLUMPS OF DIRT ON TRAILER	X (IF APPLICABLE)	X	
	EXTERNAL ABS MALFUNCTION LAMP (IF APPLICABLE)		X	
	CHECK UNDERCARRIAGE FOR OIL LEAKS	X		
	CHECK FOR AIR LEAKS WHILE HOOKED TO TRAILER (IF APPLICABLE)		X	

DRIVER SIGNATURE\_\_\_\_\_

## Appendix P – FRA Hours of Service Ruling



**CDL Electric Co., Inc.**

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Public Law No: 110-432, also known as the Rail Safety and Improvement Act of 2008, provides that, as of July 16, 2009, railroad signal workers subject to Hours-of-Service regulations issued by the Federal Railroad Administration (FRA) are no longer subject to hours-of-service rules promulgated by any other federal agency, including regulations issued by the Federal Motor Carrier Safety Administration (395.2(r)).

(r) *Railroad signal employees.* The provisions of this part shall not apply to a signal employee, as defined in §395.2, who operates a commercial motor vehicle, is engaged in installing, repairing, or maintaining signal systems, is employed by a railroad carrier or a contractor to a railroad carrier, while regulated by the Federal Railroad Administration.

Section 108 (c) of Public Law No: 110-432 states:

Exclusivity – The hours of service, duty hours and rest periods of signal employees shall be governed exclusively by this chapter. Signal employees operating motor vehicles shall not be subject to any hours-of-service rules, duty hours or rest periods rules promulgated by any Federal authority, including the Federal Motor Carrier Safety Administration, other than the Federal Railroad Administration.

The driver presenting this document to you for your review is a railroad signal worker covered by FRA hours of service regulations enforced by the FRA. Hours of Service documentation for this employee is maintained at a central location where the information is subject to audit by FRA inspectors. The FRA does not require hours of service records to be kept in motor vehicles.

## **10.2 Behavior Based Safety Management**

### **10.2.1 Policy**

The Behavior Based Safety Management Program is a proactive element of CDL Electric Company, LLC Inc (CDL). CDL believes the key to eliminating workplace incidents, injuries, and illnesses, is to modify employee behavior - reducing unsafe acts and conditions and increasing safe work practices and habits. CDL's objective is to pursue this goal by observing employees as they work and talk with them to encourage safe work practices and eliminate at-risk behaviors.

- a. Training - All users of the program shall be trained in CDL's Behavior Based Safety Management Program. Training will include the following components:
  - How to properly conduct a behavior-based safety observation
  - How to complete the observation form
  - What different behaviors indicate
  - How to conduct feedback sessions
  - Employees should be informed that they may be observed at any time during their shift.
- b. Feedback - Information developed from analysis of observations shall be shared with employees to help improve safe work behaviors and eliminate at-risk behaviors.
- c. Progressive Discipline - Safety observations and employee interactions shall be kept separate from CDL's Progressive Disciplinary Policy.

### **10.2.2 Responsibilities**

- a. Management - CDL Management is responsible for the following:
  - Ensure that the HSE Management System includes a Behavior Based Safety Management (BBSM) Program and that the program is reviewed and revised as necessary.
  - Provide BBSM Training for all users of the program.
  - Provide leadership and support for employees in communicating their responsibility to stop the work when observing unsafe behaviors or unsafe conditions.
  - Provide resources to implement and maintain a BBSM program.
- b. Supervision - CDL Supervision are responsible for the following:
  - Understand and enforce the BBSM Program and Policy.
  - Participate in performing behavior-based safety observations - 2 observations per week.
  - Evaluate and provide feedback to other participants.
  - Develop corrective action plan to prevent recurrence of unsafe behaviors.
  - Inform employees that they may be observed at any time during a shift.
- c. Employees - CDL Employees are responsible for the following:
  - Stop unsafe behaviors and act to prevent recurrence.
  - Participate in observations by providing meaningful feedback to observers when questioned about work procedures, behaviors, and job site conditions.

### **10.2.3 Reporting and Recordkeeping**

- a. Custodian - Director of Safety or designee shall be custodian of all BBSM records.
- b. Control - Records associated with this program shall be handled in the following manner.
  - Information will be collected weekly by site/division supervisors and forwarded Safety Dept.
  - Retention - Records shall be retained until data is entered into the Safety Department database.

### **10.2.4 Corrective Action**

- a. Trend Analysis - Data obtained from observations will be trended monthly to provide a basis for the Corrective Action Plan.
- b. Corrective Action Plan - A plan will be implemented to reduce reoccurrences of unsafe acts and revise safety training efforts.



## **10.3 Environmental Construction Compliance**

### **10.3.1 Requirements & Responsibilities**

CDL Electric team members are solely responsible for cleaning up and properly disposing of all spilled pollutants brought to the site as part of their work, including oil, paint, fuels, antifreeze, solvents, etc. in accordance with applicable laws and regulations. CDL team members must keep accurate records (such as receipts, copies of analytical results, etc.) indicating proper disposal of spilled materials in accordance with applicable laws and regulations. Furthermore, CDL is responsible for ensuring that all discharges from the site follow all applicable laws and regulations.

No substance may be dumped or leaked onto the ground or allowed to run-off of a construction site that might cause pollution. CDL Electric is responsible for preventing pollutant contaminated run-off and proper disposal of all waste materials generated as a result of CDL's activities.

### **10.3.2 Common Activities:**

#### **a. Equipment Cleaning**

Equipment must be cleaned in a manner that does not create any discharge of cleaning agents, paints, oil or other pollutants to a storm sewer or waterway. Soaps and detergents must never be discharged to the ground or off-site. Cement handling equipment must be rinsed in a contained concrete washout area installed in an area of minimal slope and there must be no drainage off-site.

#### **b. Waste Disposal**

Any trash or debris must be contained on site and disposed of in a recycling bin or waste receptacle in accordance with applicable laws and regulations to prevent wind or rain from carrying it off-site into a storm drain or waterway. Petroleum wastes, such as waste oil and used oil filters, must be containerized for recycling or disposal. Non-hazardous solid wastes, such as general construction debris may be recycled or disposed of in the trash container. Never dispose of liquid wastes of any kind in dumpsters.

#### **c. Packing Lamps**

Used fluorescent high intensity discharge (HID) and UV germicidal lamps must be collected in containers that protect the lamps during storage and transportation. The original shipping container is the preferred package for spent lamps. Remove extra cardboard end pieces to assure that lamps fit in the box. Remove any plastic lamp sleeves and tape from spent lamps when packing for waste collection.

An open top metal drum or poly drum shall be used for other types of lamps such as small lamps, mercury vapor lamps, and other odd shaped fluorescent tubes. In the case of smaller bulbs, additional packing materials must be added to prevent breakage.

#### **d. Broken Fluorescent Lamps**

When fluorescent lamps and HIDs are broken, mercury is released to the environment, but some mercury still remains on the surfaces of the glass, phosphor, and metal or plastic. If a fluorescent, HID, or UV germicidal lamp is broken, all the broken parts must be collected as a hazardous material. A dedicated metal drum labeled with the words "broken fluorescent lamps" shall be utilized to collect the broken pieces, and for disposal when the drum is full. The drum must be sealed when it is not actively receiving broken bulbs.

#### **e. Sediment**

Proper erosion and sedimentation controls must be in place prior to any construction activity to prevent sediment or silt run-off. Sediment (including cement) should never be rinsed off the site; instead, it must be cleaned up using dry cleanup methods or in a manner that does not allow any material to reach a storm drain or waterway. Equipment should be cleaned before leaving the site, if necessary, to avoid tracking sediment into the roadway or off the site. All erosion and sediment controls are to be maintained throughout the duration of the construction and maintained until all areas are stabilized.

All vehicles must leave the site through a stabilized entrance.

f. Petroleum

Spills of hydraulic fluid, oil and other petroleum products must always be immediately cleaned up to prevent discharge of these fluids with stormwater run-off. Petroleum contaminated soil must be cleaned up and disposed of properly in accordance with applicable laws and regulations. Storage containers must be kept closed, clean and free of oily residue. Containers stored outside with any of the above fluids must be stored in secondary containment or on appropriately sized spill pallets.

g. Separators or Traps

Before removing oil/water separators or traps connected to storm sewers, the materials in them must have been tested (by Toxicity Characteristic Leachate Procedure or TCLP) within the last two years before they are cleaned out. Be aware that this test may take three weeks to complete if a recent test has not been completed. Documentation of the test results must be submitted to the site owner/general contractor for review and approval before emptying or removing the trap.

### **10.3.3 Spill Prevention, Clean-Up and Disposal**

Be prepared to contain spills to prevent spreading. Small areas are easier to clean than large ones. Spill kits are recommended to be kept on hand by anyone working on exterior projects. Spill cleanup materials recommended to be kept on hand may include; sorbent materials such as clay (kitty litter), polypropylene booms and pads, rags and sawdust to contain spills immediately.

a. Clean-Up

Sorbent materials can be used to effectively clean-up various materials spilled on pavement, water and soil. Soil or other media which has been contaminated with petroleum or other pollutants must be excavated or remediated in accordance with applicable laws and regulations to prevent contaminated discharges to a storm drain or waterway. Excavated contaminated materials must be stored in containers or on plastic and covered so as to ensure that the contamination is not flushed back onto the ground during a rainstorm.

b. Contaminated Material Disposal

Proper disposal of waste materials depends partly on the type of contaminant. Hazardous wastes (such as flammable petroleum products and solvents, thinners) and materials contaminated with hazardous wastes are considered regulated wastes and should be containerized for transport and disposal by a permitted company in accordance with applicable laws and regulations. Disposal also depends on the amount of contaminant.

### **10.3.4 Notification Requirements and Procedures**

Site owners/General Contractor shall be notified immediately in the event of:

Any spill that threatens to enter a storm sewer or watercourse.

Any asbestos containing material are discovered on site

All petroleum spills e.g. hydraulic fluid, transmission fluid, diesel, gasoline, etc.

Any hazardous or unknown material spill, e.g. many solvents, cleaners, etc.

Any discharge from the site which you suspect may be in violation of city code, state regulations, or other applicable laws and regulations, e.g. discharges which are cloudy, foul smelling, colored, contain chemicals or heavy sediment loads.

## **11.1 Lifts (Boom/Scissor/Other) Policy**

### **11.1.1 Objective**

The object of this Program is to ensure that CDL Electric employees' who operate aerial or scissor lifts have the knowledge and tools to work safely. This program applies to all owned or rented aerial platforms and scissor lifts designed to elevate personnel on a platform that is propelled by a powered lifting device, with the controls located on the platform itself.

### 11.1.2 Roles and Responsibilities

Each department is responsible for maintaining the equipment, performing routine annual maintenance, and correcting any deficiencies noted with the lifts they own or rent.

Departments will:

- a. Appoint an individual as a designated Department Safety Contact who will be the point of contact concerning lift safety
- b. Ensure the operating and maintenance manuals are made available to each operator
- c. Conduct model specific training
- d. Inform all users of any personal protective equipment requirements when working on the lift
- e. Notify management of any changes, additions, replacements, or removal of lifts to ensure an accurate inventory for their area
- f. Resolve any safety issues that arise, during inspections or audits
- g. Perform annual, or as frequently as recommended by the manufacturer, inspection of all lifts by authorized service personnel at the expense of the department that owns or rents the lift

Departments may institute more stringent standards. When safety-related concerns have been discovered the concern shall be corrected or the lift shall be locked out of service until the item(s) have been repaired.

- a. Division manager is responsible for enforcing all policies and practices and will:
  - i. Model best practices and educate employees to promote a culture of safety.
  - ii. Halt lift operations any time unsafe operations or conditions exist.
  - iii. Ensure that operators receive model-specific training from competent operators/trainers.
  - iv. Understand hazards specific to aerial or scissor lift type.
    - v. Ensure modifications are not made to aerial lifts without manufacturer's prior approval.
  - vi. Ensure that employees attend and complete all required training.
  - vii. Retain completed aerial lift inspections reports for a minimum of one year.
- b. Employees are responsible for complying with all applicable rules and regulations, wearing all required PPE, and completing any department-required training.
  - i. Maintain any PPE required to work safely while on the lift
  - ii. Inspect the lift prior to use
  - iii. Complete general lift training, at a minimum of once every three years
  - iv. Follow all lift model-specific training, in addition to general lift training
    - v. Adhere to manufacturer specifications for the safe operation of all equipment
  - vi. Report any problems to their supervisor
  - vii. Understand hazards specific to the lift type
  - viii. Ensure signs, caution tape, barriers/fences and other means of diverting pedestrian traffic are in place prior to operating the lift
  - ix. Immediately report worn personal fall arrest system components to the supervisor
    - x. Report all accidents, regardless of fault and severity, to their supervisor
  - xi. Shall not wear any loose clothing or any accessory that can catch in moving parts
  - xii. Never override hydraulic, mechanical, or electric safety devices
- c. Lift Occupant. In some cases, lifts may be used to raise an employee or contractor. This person does not operate the lift but needs to abide by the following rules:
  - i. Understand all warning signals and sounds
  - ii. Follow all instructions of the lift operator
  - iii. Not create a hazard to people working or walking below the lift

### 11.1.3 Lift Procedures

- a. Pre-Use Inspection  
Before the lift is started, the operator must walk completely around the machine to ensure everyone, and everything is clear of the machine. Prior to the operation of any lift the Pre-Use Inspection

form, found in Appendix S, must be completed. This applies at the beginning of every work period. Any safety defects (such as hydraulic fluid leaks; defective brakes, steering, lights, or horn, lights, cracked weld, structural damage, or excessive wear, seat belt, or back-up alarm, etc.) must be reported for immediate repair. If the aerial/scissor lift becomes disabled, a “Out of Service” tag or equivalent shall be attached to the controls inside the platform in a conspicuous location and the key will be given to the supervisor.

**Note:** Pre-Use Inspection forms should be kept for at least one year. The completed forms should be submitted to the supervisor or Director of Safety.

b. Survey of Surface Area

Prior to operation of any lift a survey of the work area must be conducted first. The lift operator should ensure that there are no drop offs, uneven surface, holes, floor/ground obstructions, or debris that may create an unsafe condition. Overhead obstructions must also be investigated. The lift operator must ensure that the lift will stay the appropriate distance away from all energized power lines, see Appendix U, and other overhead obstructions. Operations of lifts must not create a hazard for pedestrians or vehicular traffic. Other employees may be used as flaggers, barricades may be erected, or other devices may be implemented to ensure that lift operations do not pose risks.

#### **11.1.4 Lift Safety Rules**

All employees must abide by the Safety Rules found in Appendix Q. Only authorized employees of CDL Electric may operate company owned lifts.

- a. Safe Work Practices After Operation. Safe shutdown shall be achieved by utilizing a suitable parking area, placing the platform in the stowed position, placing controls in neutral, idling engine for gradual cooling, turning off electrical power, wheels chocked, and taking the necessary steps to prevent unauthorized use. Lifts shall be shut off prior to fueling. Fueling must be completed in well-ventilated areas free of flames, sparks or other hazards which may cause fires or explosions.
- b. Employees charging and changing batteries shall be authorized to do the work, trained in the proper handling, and required to wear protective clothing, this may include face shields, long sleeves, rubber boots, aprons, and gloves.
- c. Lift load limits shall not be exceeded.
- d. Employees must remain on the floor of the lift. Climbing on toprails or midrails of the lift are not authorized.
- e. The lift must have a working alarm when backing and/or a spotter must be utilized.
- f. Maintenance. Any lift not in safe operating condition must be removed from service. Authorized personnel must make all repairs. It is recommended that repairs be documented with the date, what repair was made, and who performed the repair. In addition, the following precautions should be observed:
  - i. Repairs to the fuel and ignition systems of aerial lifts that involve fire hazards must be conducted only in locations designated for such repairs.
  - ii. Lifts in need of repairs to the electrical system must have the battery disconnected before such repairs.
  - iii. Only use replacement parts that are currently approved by the manufacturer.

#### **11.1.5 Fall Protection**

According to the American National Safety Institute (ANSI), guardrails are considered an acceptable form of fall protection; however, guardrails do not completely eliminate the possibility of a fall from a scissor lift. Most scissor lifts meet the height requirement for guardrails as the only form of protection required (42 inches, +/- 3 inches), but there still exists the possibility a worker could fall through the space below the mid rails or over the top rail. It shall be the Policy of CDL Electric Company, LLC that additional fall protection in the form of a safety harness and lanyard will be required.

If lift riders and/or operators are required to leave the safety of the lift or perform a task that may make the passive fall protection of the lift inadequate, they must be connected to a tie off point at all times.

This may require both a fall restraint device and fall arrest device, with at least one being connected to an appropriate anchor point any time there is the potential of a fall.

#### **11.1.6 Training**

Departments using aerial or scissor lifts must ensure that operators comply with all aspects of this program. All employees must successfully complete a two-part training program and receive passing marks prior to the operation of any lift.

a. General Lift Training

CDL Electric will offer general training on how to work safely on lifts. This training is required at a minimum of every three years. In the event of an accident, near miss, or an employee has shown that they cannot operate the lift safely retraining must occur before they can operate a lift again.

b. Model and Manufacturer-Specific Training

Model specific training is also required. Model specific training must be offered by departments that own or rent lifts, the training form can be found in Appendix T. Personnel will show the trainer competency for all lifts that they may operate, understand all warning alarms and signals, show an understanding of inspection of both the lift and area prior to lift operations, and understand how to properly protect pedestrians and vehicular traffic.

c. Training Records

Departments may choose to adhere to more stringent training requirements. Model or department specific training must be tracked by each department. Training records must be kept for a minimum of three years. Each department must maintain a record of all individual training, including:

- i. Training topics covered
- ii. Date of training
- iii. Models covered during training
- iv. Name of individual trained
- v. Name of trainer

d. Annual Refresher

e. Departments shall review the following elements at least annually with all departmental lift operators:

- i. Review Lift Safety Rules
- ii. Review of the Lift Pre-Use Inspection Form
- iii. Review Maintenance & Repair Record if department performs work on lifts

#### **11.1.7 Program Evaluation**

The Director of Safety will conduct a program review and evaluation at least every two years and may make revisions and updates that will promote continuous improvement.

#### **11.1.8 Resources**

- a. OSHA Standard 29CFR 1910.68 (Powered Platforms, Man-lifts, Vehicle-Mounted Work Platform)
- b. OSHA Standard 29CFR 1926.453 (Aerial Lifts)
- c. ANSI/SIA A92.6 – 2006 (Self-Propelled Elevated Work Platforms)

## **Appendix Q – Lift Safety Rules**

### **Weather Conditions**

CDL Electric Company, LLC Inc prohibits use of vertical aerial platform and scissor lifts outdoors when wind speeds reach 20 mph or more, or when there is a weather warning in effect for winds more than 20 mph or other hazardous weather conditions. Departments must use real-time weather data.

### **Fall Protection**

- a. CDL Electric Company, LLC requires the use of fall protection on aerial lifts or scissor lifts with lanyards. When leaving the lift, tie off to a secure anchor point that is not part of the lift itself, when feasible.
- b. Ensure guardrails and access gates are installed and in place prior to raising the lift.  
**Note:** Employees shall not sit or climb on the guardrails of the aerial lift.

### **Work Area**

- a. Do not create a hazard for those working below the lift or for pedestrian traffic. All equipment must be secured inside of the aerial lift.
- b. Check the work area to ensure that the ground is stable and suitable for the lift and will not create a hazard for the operator during travel or operation of the lift.
- c. Always treat power lines, wires, or other conductors as energized, even if they appear to be insulated.

### **Training**

If at any time, employees feel unsafe in lifts, they may come down and cease with the activity.

### **Operation & Maintenance**

- a. Extend and adjust the outriggers, stabilizers, extendible axles or stability devices, if provided.
- b. Have a copy of the operation manual for all lifts that is accessible to all properly trained lift operators.
- c. If manufacturer guidelines are more stringent than the CDL Electric guidelines, follow the manufacturer's guidelines.
- d. Modifications and additions that may affect the capacity or safe operation of an aerial/scissor lift are strictly prohibited without the manufacturer's written approval.
- e. Before moving an aerial lift for travel, the boom(s) shall be inspected to see that it is properly cradled, and outriggers are in stowed position if applicable.
- f. Aerial lifts shall not be operated from trucks, scaffolds, or similar equipment.
- g. Planks, ladders, or other devices shall not be used on the work platform.
- h. Never move the lift with employees in an elevated platform, unless this is permitted by the manufacturer. Whenever possible, the lift/occupant should be lowered to the lowest point before traveling.
- i. Lift shall remain a minimum clearance distance of 10 feet from overhead energized lines.
- j. Lift shall not be placed against another object to steady the elevated platform.
- k. Lift shall not be used as a crane or other lifting device for which it was not intended.
- l. Stunt driving and horseplay shall not be permitted.
- m. Operators are to call for assistance if the platform or any part of the machine becomes entangled.
- n. Employees should not position themselves between overhead hazards, such as joists and beams, and the rails of the basket. It could crush the lift occupants.
- o. Set the brakes and use wheel chocks when on an incline.

## Appendix R – Types of Lifts

### Scissor Lifts

Scissor lifts raise personnel vertically, but not horizontally. There are several different manufacturers and models of scissor lifts used.



### Boom Lifts

A boom lift is named for the arm-like mechanism used to raise or lower the working platform. Boom lifts are also referred to a bucket lift or cherry picker.

There are two types of boom lifts:

- a. Articulating Boom Lifts: An aerial device with two or more hinged boom sections. They are designed to reach up and over obstacles.
- b. Telescoping Boom Lift: An aerial device with two or more boom sections that extend from the main boom, which is usually mounted to a vehicle or trailer. They extend outward from each proceeding section of boom. The base of the boom may be manipulated both vertically and horizontally.



### Other

Aerial Work Platform: An aerial device that only raises the work platform vertically using a mast system.



## Appendix S – Pre-Use Inspection Form

Operator: \_\_\_\_\_

Date: \_\_\_\_\_

Lift Type:      Scissor Lift      Boom Lift      Other

Safety Precautions		Pass	Fail	N/A
1	Wind speeds are less than 20 miles per hour.			
2	Fall protection is present.			
3	Pedestrian/Vehicular traffic barriers, tape, signs			
4	Working surface level			
5	Power lines or electrical source			
6	Load limits not exceeded			
7	Outriggers operational			
8	Other			
Vehicle Inspections		Pass	Fail	N/A
9	Oil level			
10	Fuel level			
11	Walk around lift check for leaks			
12	Coolant level ok			
13	Tire pressure and condition of wheels in good condition			
14	Battery charged			
15	Ground Control Switches			
16	Cracks in welds or structural components			
17	Dents or damage to machine			
18	Other			
Check Operations		Pass	Fail	N/A
19	Horn working			
20	Gauges working			
21	Brakes working			
22	Lights working			
23	Steering working			
24	Attachments or Accessories working			
25	Backup Alarm or Warning Buzzer working			
26	Warning Lights			
27	Other			
Platform Lift Inspection		Pass	Fail	N/A
28	Placards, Decals, and Controls legible			
29	Handrails, Guardrails, and Safety Chains in place			
30	Platform Deck and Toeboards in good order			
31	Test all controls for proper operation			
32	Other			

**If the lift fails any part of this inspection, remove the key, and report the problem to your supervisor. Do not attempt to make repairs unless you are trained and authorized to do so.**



## Appendix T – Department Hands-On Training Form

Name: \_\_\_\_\_ Department Supervisor: \_\_\_\_\_

Department: \_\_\_\_\_ Date \_\_\_\_\_

CDL Electric Company, LLC Inc requires documentation that all employees that use aerial lifts receive model specific safety training. Training is provided by your department supervisor or their designee.

This checklist is to assist the company in providing training as described in the Lift Safety Plan. It is the department's responsibility to ensure all employees are trained. This training must be provided initially and:

- Whenever there is a near miss, accident, or they do not operate the lift safely.
- Whenever a new lift is received that requires additional training.
- In addition, recommend periodic refresher training every three years.

### General

Y N N/A Lift Safety Rules have been discussed and understood

Y N N/A Demonstrate how to conduct a pre-use inspection using the inspection form

Y N N/A Inspect all safety devices prior to start of lift operation (anchor points, access gate, guardrails)

Y N N/A Perform work area inspection

Y N N/A Discussion of weather/wind monitoring prior to and during lift operation

Y N N/A Review manufacturer's safety recommendations using the operations manual

### Personal Protective Equipment

Y N N/A Fall protection requirements; manufacturer's manual for harness

Y N N/A Hard hat requirements

Y N N/A Inspection of guardrail systems

### Operation and Maintenance

Y N N/A Discuss load capacity

Y N N/A Extend and adjust outriggers, stabilizers, extendible axles or stability devices

Y N N/A Verify all warning labels and placards are clear and visible

Y N N/A Discuss use of barricades, caution tape, barriers, etc.

Y N N/A Drive lift at varying speeds

### Emergency Procedures

Y N N/A Demonstrate understanding of warning signals

Y N N/A Demonstrate how to respond to a malfunction

Y N N/A Demonstrate how to stop the lift and/or retrieve workers from the lift platform in an emergency

Y N N/A Discuss who to call if the lift should become entangled

### CERTIFICATION

In accordance with the CDL Electric Company, LLC Inc Lift Safety Plan, the individuals listed below have successfully completed model specific training session covering the topics in this checklist.

A separate form must be completed for each lift type.

I certify that the topics indicated on this training checklist were covered (as applicable).

Type of Lift: ☐ Scissor ☐ Boom ☐ Other

## Appendix U – Safe Distances for overhead Energized Lines

Voltage (nominal, kV, alternating current)	Minimum Clearance Distance (feet)
Up to 50	10
Over 50 to 200	15
Over 200 to 350	20
Over 350 to 500	25
Over 500 to 750	35
Over 750 to 1000	45
Over 1000	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution)

**Note:** The value that follows “to” is up to and includes that value. For example, over 50 to 200 means up to and including 200kV.

## 12.1 Forklift Policy

### 12.1.1 Objective

CDL Electric Company, LLC is committed to providing a safe and healthy work environment and to protecting our employees from injury or death caused by uncontrolled hazards in the workplace. The Forklift Safety Program has been established to reduce the risk of physical injury or property damage in areas where powered forklifts and other powered material handling equipment is in operation.

The Forklift Safety Program applies to all employees (permanent, temporary and contractors) who operate forklifts and other powered material handling equipment at our facilities.

### 12.1.2 Roles and Responsibilities

1. Management is responsible for providing safe equipment and the resources necessary to implement this program, and for ensuring that this program is being followed by the Program Administrator.
2. Program Administrator is responsible for developing and implementing our Forklift Safety Program, including:
  - a. Annually reviewing and updating this written plan
  - b. Providing appropriate training on the safe operation of all powered forklift equipment used within the facilities
  - c. Documenting all training and evaluations
  - d. Observing forklift operations and reporting unsafe practices to the appropriate supervisor
  - e. Reviewing copies of inspection checklists
3. Supervisors are responsible for:
  - a. Ensuring that employees who are found to have insufficient skills or understanding of safe forklift operations receive retraining before continuing to operate any forklift
  - b. Ensuring employees comply with all safe work practices described in this program
  - c. Observing forklift operations in their department and correcting any unsafe practices
  - d. Providing feedback of this program to the Program Administrator
4. Forklift Operators are responsible for the following:
  - a. Only operating the forklifts for which they have been specifically certified, trained, and authorized
  - b. Operating all forklifts in a safe manner, consistent with the forklift safe work practices
  - c. Conducting forklift inspections at the beginning of each work shift and documenting the inspection on the appropriate inspection forms
  - d. Reporting all equipment malfunctions and/or maintenance needs to their supervisors immediately
  - e. Wearing a seatbelt at all times while operating a forklift

- f. Notifying their supervisors if they begin taking a medication that affects their ability to operate a forklift

### **12.1.3 Prequalification**

All forklift operator candidates must meet the following basic requirements prior to starting initial or refresher training:

- a. No uncorrectable vision problems that would impair the safe operation of the forklifts.
- b. No uncorrectable hearing loss that would impair the safe operation of the forklifts.
- c. No physical limitations that would impair the safe operation of the forklifts.
- d. No neurological disorders that affect balance or consciousness.
- e. No use of medication that affects perception, vision or balance

### **12.1.4 Initial Employee Training**

Operator training occurs before an employee is permitted to operate any forklift or other powered material handling equipment in our facilities. All operational training will be conducted under close supervision. Training will consist of a combination of formal instruction (e.g., lecture, discussion, DVD), practical training (demonstrations performed by the trainer and exercises performed by the trainee), and an evaluation of the operator's performance in the workplace.

Only knowledgeable and experienced qualified forklift operators that are authorized by CDL Electric Company, LLC are permitted to conduct training and evaluations.

All training and evaluations are documented and will include the name of the trainee, name of the trainer and the date of training. All training will be recorded using the form in Appendix X.

### **12.1.5 Training Program Content**

Training for forklift operators is extensive, and covers both general forklift topics and workplace-specific topics, including:

- a. General forklift topics:
  - i. Operating instructions, warnings and precautions for the types of forklifts the operator will be authorized to operate
  - ii. Forklift controls and instrumentation
  - iii. Engine or motor operation
  - iv. Steering and maneuvering
  - v. Visibility (including restrictions due to loading)
  - vi. Fork and attachment adaptation, operation and use limitations
  - vii. Vehicle capacity and stability
  - viii. Vehicle inspection and maintenance
  - ix. Refueling and/or charging of batteries
  - x. Seatbelt use
- b. Workplace specific topics:
  - i. Surface conditions where the vehicle will be operated
  - ii. Load stability, manipulation, stacking and unstacking
  - iii. Pedestrian traffic areas
  - iv. Narrow aisles and other restricted places
  - v. Hazardous locations where the vehicle will be operated
  - vi. Ramps and other sloped surfaces that could affect the vehicle's stability
  - vii. Closed environments and other areas where a buildup of carbon monoxide or diesel exhaust could exist
  - viii. Any other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation

### **12.1.6 Refresher Training**

Refresher training will be conducted to ensure that all operators have the knowledge and skills needed to operate forklifts safely. Refresher training will be conducted for individual operators when:

- a. The operator has received an evaluation that reveals he/she is not operating the forklift safely.
- b. The operator has been observed operating the vehicle in an unsafe manner.
- c. The operator has been involved in an accident or near-miss incident.
- d. The operator is assigned to drive a different type of forklift.
- e. A condition in the workplace has changed which could affect the safe operation of the forklift.

Refresher training will be evaluated by the Program Administrator to gauge the effectiveness of the training.

### **12.1.7 Operator Evaluation**

Each forklift operator's performance is evaluated every three years. This evaluation includes a discussion with the operator regarding his/her experience with the forklift, an observation of the employee operating the forklift, and written documentation that the evaluation was performed. All evaluations will be documented on the form located in Appendix Y. Individuals that do not pass the evaluation will be immediately removed from forklift operations until they successfully pass refresher training.

### **12.1.8 Forklift Safe Work Practices**

- a. Equipment Inspection
  - i. Each shift the forklift operator will inspect their forklift before operation. If any inspection item is determined to be damaged, broken or inoperable, the operator will notify their supervisor and authorized mechanic. If possible, the forklift will be immediately repaired. If immediate repair is not possible, a determination will be made as to whether the forklift can be used safely until repairs can be made.
  - ii. Employees may not operate an unsafe forklift at any time.
  - iii. Forklifts will be kept in clean condition, free of dirt, excess oil and grease.
- b. Repairs and Maintenance
  - i. Only an authorized mechanic will perform repairs and maintenance on forklifts and other powered material handling equipment.
  - ii. The authorized mechanic will complete a maintenance log that identifies repair needs and corrective actions taken for each forklift. This log is kept at the maintenance office.
  - iii. If a forklift cannot be safely operated, it must be taken out of service until the repairs have been made. Forklifts that have been taken out of service will be visually marked with an out of service sign and the ignition keys will be secured in the maintenance office.
  - iv. After repairs have been completed, the forklift must be given a performance test before being returned to service to ensure that the equipment is safe to operate.
- c. Changing and Charging Batteries
  - i. Forklift batteries will only be changed and charged in the designated area located in the vehicle maintenance building.
  - ii. Equipment is provided at battery-charging areas to safely flush and neutralize spilled battery acid and electrolytes.
  - iii. Smoking is prohibited in all battery-charging areas.
  - iv. Eyewash equipment is available and maintained in all charging areas.
  - v. Precautions will be taken to prevent open flames, sparks and electric arcs in charging areas.
  - vi. Employees who change and service batteries and handle corrosive liquids must wear PPE including:
    - Long sleeve shirt and full-length pants
    - Face shield
    - Safety glasses or goggles

- Chemical apron
- Chemical gloves
- vii. The following steps must be taken when charging forklift batteries:
  - Set emergency brake
  - Remove the battery cover
  - Check for plugged vent caps
  - Turn off battery charger then connect it to the battery
  - Avoid touching battery terminals with any metal object as this could cause a spark
  - Once batteries are charged turn off the battery charger
  - Disconnect the battery charger from the battery and replace the battery cover
- d. LP Gas Cylinder Changing
  - i. Forklift LP cylinders will only be changed in the designated areas.
  - ii. All full and empty cylinders will be kept in the appropriately labeled cylinder cage when not on a forklift.
  - iii. Smoking is prohibited in all cylinder changing areas.
  - iv. Eyewash equipment is available and maintained in all changing areas.
  - v. Precautions are taken to prevent open flames, sparks and electric arcs in changing areas.
  - vi. Employees who change cylinders must wear appropriate PPE including:
    - Long sleeve shirt and full-length pants
    - Face shield
    - Safety glasses or goggles
    - Gloves
  - vii. The following steps must be taken when changing all forklift LP cylinders.
    - Set emergency brake and leave engine running.
    - Close tank valve and use up remaining fuel in the fuel lines.
    - Turn off the ignition.
    - Disconnect the hose from the tank and remove the tank.
    - Inspect new tank for leaks and damage (Do not use if there is a leak or dents in the tank).
    - Install the new tank and connect the hose.
    - Open the tank valve and restart the engine.
- e. General Safe Work Practices
  - i. Only authorized, trained personnel are permitted to operate forklifts.
  - ii. Horseplay is prohibited.
  - iii. Operators must drive with both hands on the steering wheel. Do not drive with wet or greasy hands.
  - iv. No person is permitted to ride as a passenger on a forklift or on the load being carried.
  - v. A forklift may not be used to elevate a platform or pallet with persons on it, except work platforms specifically designed for this purpose. Work platforms must have standard guardrails and must be securely fastened to the forks.
  - vi. No person is allowed to stand or walk under elevated forks.
  - vii. Operators should avoid making jerky starts, quick turns or sudden stops.
  - viii. Operators may not use reverse as a brake.
  - ix. Operators must slow down on wet and slippery surfaces and at cross aisles or locations where vision is obstructed.
  - x. Operators entering a building or nearing a blind corner must make their approach at a reduced speed, sound their horn and proceed carefully.
  - xi. Operators must give pedestrians the right-of-way at all times.
  - xii. Operators may not drive toward any person who is in front of a fixed object or wall.
  - xiii. Operators may not overtake and pass another forklift traveling in the same direction.
  - xiv. Operators must not put their fingers, arms or legs between the uprights of the mast, or beyond the contour of the forklift.

- xv. Forks should always be placed under the load as far as possible.
  - xvi. No load should be moved unless it is absolutely safe and secure.
  - xvii. Spotters must be used when handling long lengths of bar stock, pipe or other materials.
  - xviii. Compressed gas cylinders may be moved only on special pallets designed for this purpose.
  - xix. When unloading trucks and trailers, the brakes must be set and the wheels chocked.
  - xx. Forklifts must be safely parked when not in use. The controls must be neutralized, power shut off, brakes set, key removed, and the forks must be in a down position, flat on the surface, and not obstructing any walkways or aisles.
  - xxi. A forklift will not be left on an incline unless it is safely parked, and the wheels chocked.
  - xxii. Only stable and safely arranged loads may be handled.
  - xxiii. Only loads within the rated capacity of the forklift may be lifted or moved.
- f. Traveling
- i. Facility speed limits must be observed at all times.
  - ii. Three forklift lengths (or two seconds) must be maintained between forklifts in operation.
  - iii. The forklift must be kept under control at all times.
  - iv. When vision is obscured, the operator must slow down and sound the horn.
  - v. If the load blocks the operator's view, the forklift must be driven in the direction that provides the best visibility.
  - vi. Forklifts must cross railroad tracks at a diagonal.
  - vii. Forklifts must be parked 8 feet or further from the center line of railroad tracks.
  - viii. The forklift must be driven with the load upgrade when driving on ascending or descending grades greater than 10%.
  - ix. Dock boards and bridge plates must be properly secured before they are driven over.
  - x. When the forklift is not carrying a load, the operator must travel with the forks as low as possible (maximum of 3 inches on paved surfaces). When carrying a load, it should be carried as low as possible (consistent with safe operation, 2 to 6 inches above the surface.)
  - xi. The forks may not be operated while the forklift is traveling.

## Appendix V – Gas/LP/Diesel Forklift Inspection Report

Date		Operator		Fuel	
Truck#		Model#		Engine Oil	
Department		Serial#		Radiator Coolant	
Shift		Hour Meter		Hydraulic Oil	

### SAFETY AND OPERATIONAL CHECKS (PRIOR TO EACH SHIFT)

Have a **qualified** mechanic correct all problems.

Engine Off Checks	OK	Maintenance
Leaks – Fuel, Hydraulic Oil, Engine Oil or Radiator Coolant		
Tires – Condition and Pressure		
Forks, Top Clip Retaining Pin and Heel – Check Condition		
Load Backrest – Securely Attached		
Hydraulic Hoses, Mast Chains, Cables and Stops – Check Visually		
Overhead Guard – Attached		
Finger Guards – Attached		
Propane Tank (LP Gas Truck) – Rust Corrosion, Damage		
Safety Warnings – Attached (Refer to Parts Manual for Location)		
Battery – Check Water/Electrolyte Level and Charge		
All Engine Belts – Check Visually		
Hydraulic Fluid Level – Check Level		
Engine Oil Level – Dipstick		
Transmission Fluid Level – Dipstick		
Engine Air Cleaner – Squeeze Rubber Dirt Trap or Check the Restriction Alarm (if equipped)		
Fuel Sedimenter (Diesel)		
Radiator Coolant – Check Level		
Operator's Manual – In Container		
Nameplate – Attached and Information Matches Model, Serial Number and Attachments		
Seat Belt – Functioning Smoothly		
Hood Latch – Adjusted and Securely Fastened		
Brake Fluid – Check Level		
<b>Engine on Checks – Unusual Noises Must Be Investigated Immediately</b>	OK	Maintenance
Accelerator or Direction Control Pedal – Functioning Smoothly		
Service Brake – Functioning Smoothly		
Parking Brake – Functioning Smoothly		
Steering Operation – Functioning Smoothly		
Drive Control – Forward/Reverse – Functioning Smoothly		
Tilt Control – Forward and Back – Functioning Smoothly		
Hoist and Lowering Control – Functioning Smoothly		
Attachment Control – Operation		
Horn and Lights – Functioning		
Cab (if equipped) – Heater, Defroster, Wipers – Functioning		
Gauges: Ammeter, Engine Oil Pressure, Hour Meter, Fuel Level, Temperature, Instrument Monitors – Functioning		

**ALL OPERATORS MUST BE TRAINED AND EVALUATED ON THE TYPES OF INDUSTRIAL TRUCKS AND ATTACHMENTS THEY WILL BE OPERATING.**

## Appendix W – Electric Forklift Inspection Report

Date		Operator		Battery Water	
Truck#		Model#		Hydraulic Oil	
Department		Serial#			
Shift		Drive Hour Meter Reading		Hoist Hour Meter Reading	

### SAFETY AND OPERATIONAL CHECKS (PRIOR TO EACH SHIFT)

Have a **qualified** mechanic correct all problems.

Motor Off Checks	OK	Maintenance
Leaks – Hydraulic Oil, Battery		
Tires – Condition and Pressure		
Forks, Top Clip Retaining Pin and Heel -- Condition		
Load Backrest Extension – Attached		
Hydraulic Hoses, Mast Chains, Cables & Stops – Check Visually		
Finger Guards – Attached		
Overhead Guard – Attached		
Safety Warnings – Attached (Refer to Parts Manual for Location)		
Battery – Water/Electrolyte Level and Charge		
Hydraulic Fluid Level – Dipstick		
Transmission Fluid Level – Dipstick		
Operator's Manual in Container		
Capacity Plate Attached – Information Matches Model, Serial Number and Attachments		
Battery Restraint System – Adjust and Fasten		
Operator Protection Sit-down Truck - Seat Belt – Functioning Smoothly Man-up Truck – Fall protection/Restraining means - Functioning		
Brake Fluid – Check level		
<b>Motor on Checks (Unusual Noises Must Be Investigated Immediately)</b>	OK	Maintenance
Accelerator Linkage – Functioning Smoothly		
Parking Brake – Functioning Smoothly		
Service Brake – Functioning Smoothly		
Steering Operation – Functioning Smoothly		
Drive Control – Forward/Reverse – Functioning Smoothly		
Tilt Control – Forward and Back – Functioning Smoothly		
Hoist and Lowering Control – Functioning Smoothly		
Attachment Control – Operation		
Horn – Functioning		
Lights & Alarms (where present) – Functioning		
Hour Meter – Functioning		
Battery Discharge Indicator – Functioning		
Instrument Monitors – Functioning		

**ALL OPERATORS MUST BE TRAINED AND EVALUATED ON THE TYPES OF INDUSTRIAL TRUCKS AND ATTACHMENTS THEY WILL BE OPERATING.**



## Appendix X – Forklift Operator Training Record

The following individuals received training on CDL Electric Company, LLC Inc's Forklift Safety Program for:

Print Name	Sign Name

The undersigned conducted training in accordance with CDL Electric Company, LLC Inc's Forklift Safety Program.

Print Instructor's Name	
Instructor's Signature	
Instructor's Title	
Date of Training	
Equipment Type	

## Appendix Y – Forklift Operator Evaluation

Forklift Operator's Name \_\_\_\_\_ Forklift Model/# \_\_\_\_\_

Location \_\_\_\_\_ Date \_\_\_\_\_

Evaluator's Name \_\_\_\_\_

<b>Pre-Starting</b>	<b>Acceptable</b>	<b>Not Acceptable</b>
Conducts pre-shift inspections per operating manual and uses form/checklist		
Looks for damage and reports problems		
<b>Elevators</b>	<b>Acceptable</b>	<b>Not Acceptable</b>
Does not exceed elevator capacity - centers forklift - drives in load first - allows no other passengers.		
<b>Elevating Personnel</b>	<b>Acceptable</b>	<b>Not Acceptable</b>
Only elevates personnel using approved work platform		
Properly secures work platform to forklift		
Does not travel with personnel in platform - Checks raising and lowering of mast and platform before raising personnel		
Ensures that forklift has twice the capacity of the platform weight and load (Including personnel)		
Barricades area		
Stays at forklift controls while personnel are elevated		
<b>Traveling</b>	<b>Acceptable</b>	<b>Not Acceptable</b>
Wears safety belt or harness and required PPE		
Keeps body within operator compartment		
Operates forklift in accordance with operating manual instructions		
Looks in direction of travel before and while moving		
Uses forklift lighting in dark areas		
Carries forks/load 3" to 6" above ground		
Smooth starts, stops and direction changes		
Sounds horn at blind corners - slows or stops as necessary		
Turns wide to see down travel path		
Travels right of center allowing room for step out		
Uses extreme caution when meeting pedestrians		
Leaves three or more lengths for stopping when behind another vehicle		
Stays well away from drop-offs		

<b>Load Handling</b>	<b>Acceptable</b>	<b>Not Acceptable</b>
Never handles loads more than forklift capacity or load tiers above LBR height		
Uses attachments according to manufacturer's instructions		
Approaches load properly		
Does not raise or lower forks while traveling		
Does not turn with forks elevated		
Keeps mast vertical (load level) when high stacking		
Enters and exits pallets properly (forks level and properly spaced)		
Travels in reverse when load partially obstructs visibility		
Travels with loads 6" - 12" above the ground and tilted back to stabilize the load (if the load represents a hazard of sliding off the forks during forward braking, e.g., metal on metal, then additional back tilt may be necessary)		
Handles long loads with forks spread wide and uses spotters		
Aligns loads properly in racks or stacks		
<b>Pedestrian Issues</b>	<b>Acceptable</b>	<b>Not Acceptable</b>
Slows, honks and yields to pedestrians at corners and step outs		
Allows no pedestrians near operating forklift particularly in trailers or railcars		
Watches for pedestrians in tail swing area		
Honks before passing pedestrians		
Allows no pedestrians beneath load or to ride on forklift, forks or pallet		
<b>Trailer and Railcar Loading</b>	<b>Acceptable</b>	<b>Not Acceptable</b>
Trailer/railcar properly chocked - Jack stand used when needed		
Slides axles to rear		
Inspects floor		
Checks dock board capacity - installs correctly		
Takes steps to prevent tractor-trailer pull-away		
Uses lighting aids		
Considers trailer/railcar before entering with EACH load		
<b>Ramps/Inclines</b>	<b>Acceptable</b>	<b>Not Acceptable</b>
Travels with load upgrade and takes precautions for visibility		
Travels empty with counterweight upgrade		

NEVER turns on ramps or inclines		
<b>Parking</b>	<b>Acceptable</b>	<b>Not Acceptable</b>
Lowers forks, sets brake, neutralizes transmission controls, chocks wheels on slope and shuts off LPG when parking for extended periods of time		
Parks in location not blocking firefighting equipment, electrical panels, doorways, stairways, ladders, emergency exits or railroad tracks		
Shuts off engine if moving more than 25 feet from forklift or moving out of sight of forklift		
<b>LPG/CNG</b>	<b>Acceptable</b>	<b>Not Acceptable</b>
Turns off forklift		
Allows no open flames or ignition sources in refueling area		
Wears required PPE		
LPG: Removes tank and stands bottle vertically to refuel		
If authorized, fills in accordance with regulations		
Uses outage valve to determine fill level and does not overfill		
Seeks assistance replacing bottle on forklift and uses locator pin and hole to properly index bottle		
Cleans up spills		
<b>Battery Charging</b>	<b>Acceptable</b>	<b>Not Acceptable</b>
Turns off forklift		
Allows no open flames or ignition sources in refueling area		
Wears required PPE		
Opens battery lid - does not remove caps		
Does not plug running charger to battery		
<b>Battery Changing</b>	<b>Acceptable</b>	<b>Not Acceptable</b>
Turns off forklift		
Allows no open flames or ignition sources in refueling area		
Wears required PPE		
Locates forklift properly, uses changing device in accordance with manufacturer's instructions, and securely reinstalls battery and retention device		
<b>Additional Observations and Comments</b>		

## Appendix Z – Annual Evaluation Report

Date of Evaluation:	Evaluated By (list all present):
Written Program Reviewed: Yes No	
Comments on Written Program:	
The following specific procedures have been reviewed:	
The following specific procedures were modified:	
The following specific procedures were added:	
A review of the accident reports and injury and illness reports were made:      Yes      No	
The following additional expense(s) resulted from failure to properly operate a forklift or other powered material handling equipment:	
Comments:	

## 13.1 Intentionally Left Blank

### 14.1 Temporary Traffic Control (TTC) Elements

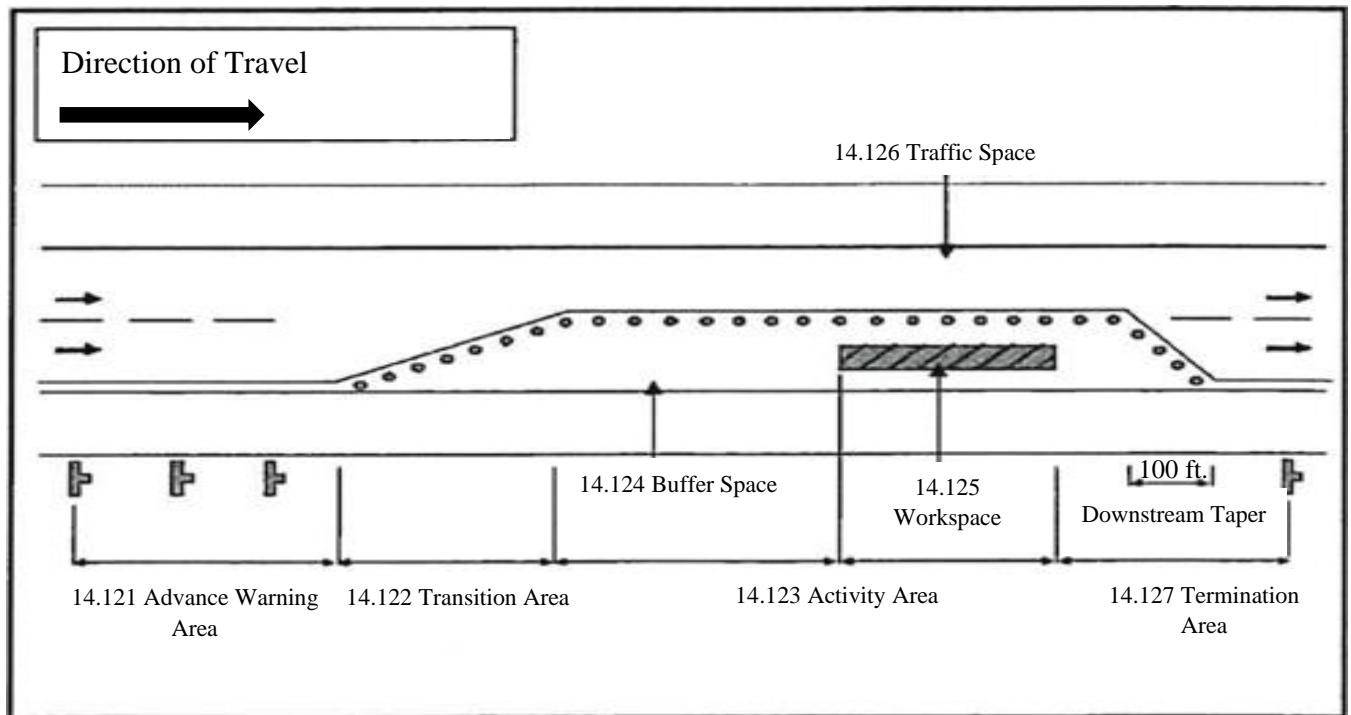
#### 14.1.1 Purpose

The primary function of temporary traffic control is to provide for the safe and efficient movement of vehicles, bicyclists, and pedestrians (including persons with disabilities in accordance with the Americans with Disabilities Act) through or around temporary traffic control zones while reasonably protecting workers and equipment.

Part 6 of the Manual of Uniform Traffic Control Devices (MUTCD) is the national standard for all traffic control devices used during construction, maintenance, and utility activities plus incident management. It is directed to municipalities, utilities, and contractors providing maintenance or construction on a public roadway. It contains basic principles, a description of the standard traffic control devices used in work areas, guidelines for the application of the devices, and typical application diagrams.

#### 14.1.2 Temporary Traffic Control Zones

Are divided into four areas: Advance Warning Area, Transition Area, Activity Area, and Termination Area.



- Advance Warning Area** is the section of highway where Advance Warning signs are strategically placed to inform the drivers of what to expect ahead.  
The advance warning area may vary from a single sign or high intensity, rotating, flashing, oscillating, or strobe lights on a vehicle to a series of signs in advance of the TTC Zone. Typical distances for placement of advance warning signs on expressways and freeways should be longer, because drivers are conditioned to uninterrupted flow. Therefore, the advance warning sign placement should extend on these facilities as far as 1/2 mi or 2640 feet (800m) or more.
- Transition Area** is the section of highway where road users are redirected out of their normal path to a new path via the use of a taper.

Speed Limit (mph)	Lane Width (Feet)			Maximum Spacing of Devices (Feet)
	10	11	12	
25	105	115	125	25
35	205	225	245	35
45	450	495	540	45
55	550	605	660	55
65	650	715	780	65

\*Following are the formulas used to calculate taper length: 40 mph or under use  $L = WS^2/60$ , 45 mph or over use  $L = WS$

- c. **Activity Area** is the section of the roadway where the work activity takes place. It is comprised of the workspace, the traffic space, and an optional buffer space.
- d. **Buffer Space** is an optional lateral and/or longitudinal area that separates traffic from the work space or an unsafe area and might provide some recovery space for an errant vehicle. The length of the longitudinal buffer, if used, is typically determined by taking the stopping sight distance for the roadway speed and subtracting one half of the taper length.
- e. **Workspace** is the portion of the roadway closed to traffic and set aside for workers, equipment, material, and, if used, an upstream shadow vehicle. The workspace may be stationary or may move as work progresses. Workspaces are usually delineated by channelizing devices. Temporary barriers are used to exclude vehicles and pedestrians from the workspace and will provide a positive barrier to protect workers.
- f. **Traffic Space** is the portion of the road in which the traffic is routed through the activity area.
- g. **Termination Area** is used to return traffic to its normal path (lane) and may contain an optional taper. The downstream taper transitions traffic back to normal traveling conditions.
- h. Typical distances for placement of advance warning signs on freeways and expressways should be longer because drivers are conditioned to uninterrupted flow.

Suggested Advance Warning Sign Spacing			
Road Type	Distance Between Signs**		
	A	B	C
Urban (low speed) •	100	100	100
Urban (high speed) •	350	350	350
Rural	500	500	500
Expressway / Freeway	1,000	1,500	2,640

•Speed category to be determined by highway agency.  
 \*\*Distances are shown in feet. The A dimension is the distance from the transition or the point of restriction to the first sign. The B dimension is the distance between the first and the second signs. The C dimension is the distance between the second and third signs. (The third sign is the first one in a three-sign series encountered by a driver approaching a TTC zone).

### 14.1.3 Flaggers

A flagger shall be a person who provides temporary traffic control. A flagger should be able to demonstrate the following abilities:

- a. Ability to receive and communicate specific instructions.
- b. Ability to move and maneuver quickly.

- c. Ability to control signaling devices.
- d. Ability to understand and apply safe traffic control practices.
- e. Ability to recognize dangerous situations and warn coworkers.

#### **14.1.3.1 Flagger Use**

When a one-lane, two-way temporary traffic control zone is short enough to allow a flagger to see from one end of the zone to the other, traffic may be controlled by either a single flagger or by a flagger at each end of the section.

When a single flagger is used, the flagger should be stationed on the shoulder opposite the constriction or workspace, or in a position where good visibility and traffic control can be maintained at all times.

#### **14.1.3.2 Communication**

When two flaggers are used, they can communicate verbally or visually if they are close enough and visible to each other. One of the flaggers should be designated as the coordinator. Where the end of a one-lane section is not visible from the other end, the flaggers may maintain control using:

- a. Radio or field telephone
- b. Flag transfer method where the driver of the last vehicle proceeding into the one-lane section is given a red flag (or another token) and instructed to deliver it to the flagger at the other end
- c. An official car that follows the last road user proceeding through the section
- d. A pilot car to guide a queue of vehicles through the temporary traffic control zone or detour. The flag transfer or official car method should only be used for a maximum length of about one mile. The pilot car shall have a sign mounted on the rear of the vehicle.

#### **14.1.3.3 High Visibility Clothing**

For daytime and nighttime activity, flagger shall wear safety apparel meeting requirements of ISEA (International Safety Equipment Association) and labelled as meeting ANSI (American National Standards Institute) 107-2004 standard performance for Class 2 or 3 risk exposure.

The apparel background color shall either fluorescent orange-red or fluorescent yellow green. The reflective material shall be either orange, yellow, white, silver, yellow-green, or fluorescent versions of these colors, and shall be visible at a minimum distance of 1,000 feet. The retroreflective clothing shall be designed to clearly identify the wearer as a person. For nighttime activity, consider using Class 3. When uniformed law enforcement officers are used, high-visibility safety apparel should be worn.

#### **14.1.3.4 Hand-Signaling Devices**

The sign paddle bearing the message STOP or SLOW provides road users with more positive guidance than flags and should be the primary hand-signaling device.

The STOP/SLOW paddle shall have an octagonal shape on a rigid handle. STOP/SLOW paddles shall be at least 18 inches wide with letters at least 6 inches high and should be fabricated from light semi-rigid material. The background of the STOP face shall be red with white letters and border. The background of the SLOW face shall be orange with black letters and border. When used at night, the STOP/SLOW paddle shall be retro reflectorized.

Flags, when used, shall be a minimum of 24 inches square, made of a good grade of red material, and securely fastened to a staff that is approximately 36 inches in length.

The free edge of a flag should be weighted so the flag will hang vertically, even in heavy winds. When used at nighttime, flags shall be retro reflectorized red.

#### **14.1.3.5 Flagger Stations and Procedures**

Flagger stations shall be located far enough in advance of the workspace so that approaching road users will have sufficient distance to stop before entering the workspace.



Guidelines for determining the distance of the flagger station in advance of the workspace are shown in the table on page 17. The distances shown may be increased for downgrades and other conditions that affect stopping distance.

Except in emergency, flagger stations shall be preceded by proper advance warning signs. At night, flagger stations shall be illuminated, except in an emergency.

The flagger should stand either on the shoulder adjacent to the road user being controlled or in the closed lane prior to stopping road users. A flagger should only stand in the lane being used by moving road users after road users have stopped. The flagger should be clearly visible to the first approaching road user at all times. The flagger also should be visible to other road users. The flagger should be stationed sufficiently in advance of the workers to warn them (for example, with audible warning devices such as horns, whistles, etc.) of approaching danger by out-of-control vehicles. The flagger should stand alone, never permitting a group of workers to congregate around the flagger station.

At a spot constriction, the flagger may have to take a position on the shoulder opposite the closed section in order to operate effectively. The table on page 17 may be used to determine the visibility distance for road users approaching the flagger.

The following procedures of signaling with paddles shall be used:

- a. To stop road users, the flagger shall face road users and aim the STOP paddle face toward road users in a stationary position with the arm extended horizontally away from the body. The free arm shall be held with the palm of the hand above shoulder level toward approaching traffic. 18 inches MIN.
- b. To direct stopped road users to proceed, the flagger shall face road users with the SLOW paddle face aimed toward road users in a stationary position with the arm extended horizontally away from the body. The flagger shall motion with the free hand for road users to proceed.
- c. To alert or slow traffic, the flagger shall face road users with the SLOW paddle face aimed toward road users in a stationary position with the arm extended horizontally away from the body. To further alert or slow traffic, the flagger holding the SLOW paddle may motion up and down with the free hand, palm down.

## **15.1 Ladders**

### **15.11 Policy and Procedure**

The following sections provide instruction regarding selecting the proper type of ladder, inspection and maintenance procedures, and safe ladder work practices.

### **15.12 Ladder Selection**

Select proper type and ensure ladder reaches proper working height (rule of thumb – step ladder size plus three feet = recommended working height)

- a. Use only approved non-conductive type ladders near communication, signal, and electrical wires meeting OSHA 1926.1050 and ANSI ASC A14.-2007, ANSI ASC A14.7-2011.
- b. Ensure use of properly rated ladder - your weight plus materials/tools do not exceed rating
- c. Ensure rating & warning labels remain clear and legible:
  - i. Type 1A      300 lbs.      industrial
  - ii. Type I      250 lbs.      heavy duty
  - iii. Type II      225 lbs.      medium duty
  - iv. Type III           household use only

### **15.13 Inspection and Maintenance**

- a. Documented ladder inspections will be conducted by the division/department possessing the ladder on an annual basis.
- b. When conducting ladder inspections ensure that:

- i. Examine each ladder for signs of damage, deterioration and other indications of excessive wear prior to each use.
- ii. All side rails are free of dents or bends
- iii. All step-to-side rail connections are intact
- iv. All rivets are in good condition
- v. All hardware connections are intact
- vi. The stepping surfaces are free of oil, grease or other slippery substances

Note: A ladder must be inspected immediately whenever tipped over or after an occurrence that affects its safe use

- c. Maintain in good, clean condition (clean off slipping hazards on rungs).
- d. Maintain all moving parts – lubricate shoe joints/extension locks.
- e. Replace safety shoes (non-skid rubber) when worn down or broken.
- f. Pull damaged ladders out of service and tag “Do Not Use”.
- g. Secure ladders to vehicle when not in use.
- h. Training and Records
  - i. Ladder Safety training offered through HSI Vivid Learning Systems
  - ii. CDL Electric Human Resources Department will maintain training records
  - iii. CDL Electric Safety Department will maintain the documented annual inspection records

#### **15.14 Safe Ladder Practices**

- a. Set ladder on a stable surface and at an angle of 1 ft from structure for every 4 ft of ladder height.
- b. Ensure use of non-skid pads or legs.
- c. Make sure spreader is locked open on step ladders, never stand on top two steps.
- d. Keep belt buckle within the ladder rails (Use caution not to overextend your reach).
- e. Face ladder at all times when climbing and ascending.
- f. Use three points of contact.
- g. Use hand lines when climbing or descending a ladder with tools or materials. Do not carry items in your hands.
- h. Never climb a ladder on which someone else is standing.
- i. Climb no higher than the 3rd rung from the top of a straight ladder or the 2nd step from the top of a stepladder.
- j. Use a stepladder for purposes intended, not as a straight or extension ladder.
- k. Ladders shall only be used for the purposes for which they were designed
- l. Extend ladder at least three feet beyond top plane.
- m. Position tools or materials on a scaffold or walkway where they will not fall or be knocked off.
- n. Take precautions to prevent tools from falling when people/vehicles may be underneath.

#### **15.15 Climbing and Descending Ladders**

- a. Tie down or secure in-place extension ladder at top and bottom when feasible and conditions warrant (if there is a slide-out or sideways slide risk).
- b. Avoid use of ladders in high winds.
- c. Do not use a ladder in front of a door unless the door is locked or a guard is posted. Warning cones should be used around ladders in high traffic areas to divert foot traffic.

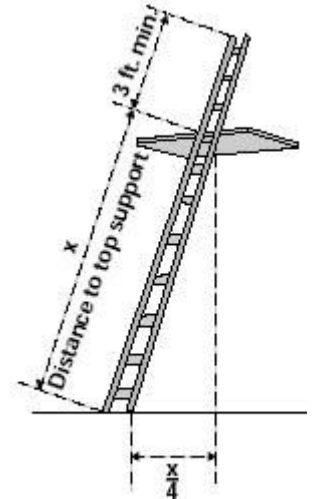
#### **15.16 Extension Ladder Set-up Procedure:**

- a. Lay ladder on ground with base resting against wall and extension side down or have a coworker “foot” the base of the ladder in position.
- b. Start at the top of the ladder, lift end over your head and slowly walk under ladder moving hands rung to rung until ladder is vertical and touching top of wall.
- c. Use 4:1 ratio rule, pull out the base one foot from the wall for every four feet height of where the ladder rests on wall and set the flexible ladder shoes correctly, pull the extension rope and make sure the locking mechanism locks in place.

- d. Reverse the process to take down ladder – remember to move base back to the edge of wall and then carefully walk backwards, rung to rung – use two-man process for heavy ladders.

### 15.17 Fixed Ladders

**Fall protection must be provided for employees climbing or working on fixed ladders above 24 feet.** 29 CFR 1926.1053(a) (19) states that fall protection must be provided whenever the length of climb on a fixed ladder equals or exceeds 24 feet. A fixed ladder is "a ladder that cannot be readily moved or carried because it is an integral part of a building or structure" (§1926.1050(b)). Also, even if the length of climb is less than 24 feet, under §1926.1053(a) (18), ladder safety devices or self-retracting lifelines must be provided where the top of the fixed ladder is greater than 24 feet.



## 16.1 Hand and Power Tools

### 16.11 Purpose

CDL Electric's policy is to ensure the safety of employees working with hand and portable powered tools and other hand-held equipment.

This policy applies to all CDL Electric employees who may use hand and portable powered tools and equipment during the course of work. Employees must be able to use hand and portable powered tools and equipment safely and shall comply with manufacturer guidelines.

### 16.12 Responsibility

- a. Director of Safety is responsible for:
  - i. Ensuring that hand and portable powered tool safety measures are in place according to this program and the applicable OSHA standards;
  - ii. Maintaining training records; and
  - iii. Periodically evaluating program implementation.
- b. Supervisors are responsible for:
  - i. Ensuring that all hand and portable powered tools and other hand-held equipment used by CDL Electric's employees are free from defects and are working and maintained properly;
  - ii. Ensure that all power tools follow the Assured Equipment Grounding Program/GFCI;
  - iii. Ensuring that tools are used in accordance with manufacturer recommendations;
  - iv. Ensuring that all affected employees have been trained;
  - v. Ensuring that all affected employees comply with this program;
  - vi. Taking damaged tools out of service immediately if they are defective; and
  - vii. Conducting periodic inspections of work areas.
- c. Employees are responsible for:
  - i. Attending required training programs;
  - ii. Inspecting hand and portable powered tools and equipment for defects or possible hazards prior to use;

- iii. Tagging any defective tools as out of service immediately; and
- iv. Reporting any defects to their supervisor immediately.

### **16.13 Training and Record Keeping**

All employees shall be trained in the proper use of tools prior to using hand and power tools and other hand-held equipment. Employees shall be trained in the following:

- a. Recognition of the hazards associated with different types of tools and the safety precautions necessary for use;
- b. The PPE required during use; and
- c. The proper use of hand and power tools and other hand-held equipment.

Employees shall be retrained as necessary to maintain their understanding and knowledge of the safe use of hand and power tools and other hand-held equipment.

### **16.14 General Safety Requirements**

#### **16.141 Condition of Tools**

All hand tool and portable power tools and similar equipment, whether furnished by the employer or the employee, will be maintained in a safe condition. Tools will be stored in appropriate storage areas when not in use. Tools that have been identified as unsafe must be tagged/locked or rendered inoperable and physically removed (if applicable) from the place of operation.

- a. Keep all tools in good condition with regular maintenance;
- b. Use the right tool for the job;
- c. Inspect each tool for damage before use;
- d. Never use damaged tools - take damaged tools out of service immediately;
- e. Operate tools according to the manufacturers' instructions; and
- f. Use the proper personal protective equipment (PPE).

#### **16.142 Guards**

The exposed moving parts of power tools shall be guarded. All hand and portable power tools that are designed to accommodate guards must be equipped with those guards when in use. Employees shall not manipulate guards in a manner that will compromise the integrity or the protection for which the guard is intended. Belts, gears, shafts, pulleys, sprockets, spindles, drums, flywheels, chains, or other reciprocating, rotating, or moving parts of equipment must be guarded.

Machine guards must be provided to protect the operator and others from the following:

- a. Point of operation;
- b. In-running nip points;
- c. Rotating parts; and
- d. Flying chips and sparks.

#### **16.15 PPE**

Employees using hand and power tools exposed to the hazard of falling, flying, abrasive and splashing objects, or exposed to flying dusts, fumes or mists, vapors or gases will be fitted with the particular PPE necessary to protect them from the specific hazard. Safety eyewear, hard hats, gloves, and appropriate safety shoes are required on all construction sites.

The following considerations should be evaluated at a minimum in the selection and use of PPE when using hand and portable powered tools:

- a. Safety glasses or goggles must be worn at all times when using hand and powered tools;
- b. A face-shield may be used in addition to safety glasses or goggles to protect the face and neck;
- c. Composite-toe leather shoes should be worn while working with power tools to prevent injury from dropped tools; and
- d. Hearing Protection If it is determined that any employees are exposed to noise from portable power tools at or in excess of an action level of 85 decibels (dB) for an 8-hour day, then the Administrator or designee will implement a hearing conservation program for exposed employees.

Before working with hand and power tools consult the hazard evaluation for the job you will be conducting to determine if additional PPE will be needed. Refer to CDL Electric's PPE Policy 8.1.

### **16.16 Hand Tools**

Hand tools are tools that are powered manually. Some examples of hand tools include anvils, axes, chisels, files, hammers, hand boring tools, planes, pliers, punches, saws, scissors, screw drivers, tin snips, and wrenches. Hazards associated with hand tools result from misuse and improper maintenance. To prevent injury, follow the guidelines listed below:

- a. Hand tools shall be used for their intended purpose. For example, if a screwdriver is used as a chisel, the tip of the screwdriver may break and fly off, hitting the user or other employees;
- b. Inspect tools for damage prior to use;
- c. Hand tools shall be maintained in good condition free of damage. For example, wooden handles on tools, such as a hammer or an axe, shall be tight and free from splinters or cracks;
- d. Bent screwdrivers or screwdrivers with chipped edges shall be replaced;
- e. Always direct tools such as knives, saw blades, etc. away from aisle areas and away from other employees working in close proximity;
- f. Knives and scissors must be sharp; dull tools can cause more hazards than sharp ones;
- g. Cracked saw blades must be removed from service;
- h. Wrenches must not be used when jaws are sprung to the point that slippage occurs;
- i. Impact tools such as drift pins, wedges, and chisels must be kept free of mushroomed heads;
- j. Iron or steel hand tools may produce sparks that can be an ignition source around a flammable substance. Spark-resistant tools made of non-ferrous materials should be used where flammable gases, highly volatile liquids, and other explosive substances are stored or used;
- k. Keep the work area and tools clean. Dirty, greasy tools and floor may cause accidents;
- l. Tools shall be stored in a dry secure location;
- m. Carry and store tools properly. All sharp tools shall be carried and stored with the sharp edge down. Do not carry sharp tools in a pocket; and
- n. Wear the proper personal protective equipment (PPE).

### **16.17 Power Tools**

Power tools must be equipped with guards and safety switches. They can be hazardous when used improperly. Types of power tools are determined by their power source: electric, pneumatic, liquid fuel, hydraulic, and powder actuated.

To prevent hazards associated with the use of power tools, workers should observe the following general precautions:

- a. Read the owner's manual to understand the tool's proper applications, limitations, operation, and hazards;
- b. Inspect power tools and cords daily before use;
- c. Never carry a tool by the cord or hose;
- d. Never yank the cord or the hose to disconnect it from the receptacle;
- e. Keep cords and hoses away from heat, oil, and sharp edges;
- f. Ensure tools are properly grounded; use Ground Fault Circuit Interrupter (GFCI) for corded tools;
- g. Disconnect tools when not using them, before servicing and cleaning, and when changing accessories such as blades, bits, and cutters;
- h. Keep all people not involved with the work at a safe distance from the work area;
- i. Secure work with clamps or a vise, freeing both hands to operate the tool;
- j. Avoid accidental starting. Do not hold fingers on the switch button while carrying a plugged-in tool;
- k. Maintain tools sharp and clean;

- l. Be sure to keep good footing and maintain good balance when operating power tools;
- m. Wear proper apparel for the task. Loose clothing, ties, or jewelry can become caught in moving parts; and
- n. Inspect tools for damage before each use. Remove all damaged portable electric tools from use and tag them: "Do Not Use."

### **16.17.1 Electric Tools**

Electric tools may cause electrical burns and shocks. To prevent the user from electrocution, electric tools shall have a three-wire cord with a ground and be plugged into a grounded receptacle, be double insulated, or be powered by a low voltage isolation transformer to protect from burns and shocks. Three-wire cords contain two current carrying conductors and a grounding conductor. When an adapter is used to accommodate a two-hole receptacle, the adapter wire must be attached to a known ground. The third prong must never be removed from the plug.

Double-insulated tools are available that provide protection against electrical shock without third-wire grounding. On double insulated tools, an internal layer of protective insulation completely isolates the external housing of the tool.

The following general practices should be followed when using electric tools:

- a. Operate electric tools within their design limitations;
- b. Use gloves and appropriate safety footwear when using electric tools;
- c. Store electric tools in a dry place when not in use;
- d. Do not use electric tools in damp or wet locations unless they are approved for that purpose;
- e. Keep work areas well lighted when operating electric tools;
- f. Ensure that cords from electric tools do not present a tripping hazard.

### **16.1.7.2 Pneumatic Tools**

Pneumatic tools are powered by compressed air and include chippers, drills, hammers, and sanders. Some hazards associated with pneumatic tools include noise, vibration, fatigue, and strains. Additional hazards are described below:

- a. The greatest hazard is being hit by one of the tool's attachments or by a fastener used with the tool. Eye protection must be worn for employees working with pneumatic tools;
- b. Pneumatic tools must be checked to ensure that they are fastened securely to the air hose to prevent them from becoming disconnected. A short wire or positive locking device attaching the air hose to the tool must also be used and will serve as an added safeguard;
- c. If an air hose is more than 1/2-inch in diameter, a safety excess flow valve must be installed at the source of the air supply to shut off the air automatically in case the hose breaks;
- d. When using pneumatic tools, a safety clip or retainer must be installed to prevent attachments such as chisels on a chipping hammer from being ejected during tool operation;
- e. Pneumatic tools that shoot nails, rivets, staples, or similar fasteners and operate at pressures more than 100 pounds per square inch, must be equipped with a special device to keep fasteners from being ejected, unless the muzzle is pressed against the work surface;
- f. Airless spray guns that atomize paints and fluids at pressures of 1,000 pounds or more per square inch must be equipped with automatic or visible manual safety devices that will prevent pulling the trigger until the safety device is manually released;
- g. Screens must be set up to protect nearby workers from being struck by flying fragments around chippers, riveting guns, staplers, or air drills; and
- h. Compressed air guns should never be pointed toward anyone. Workers should never "dead-end" them against themselves or anyone else.

### **16.1.7.3 Liquid Fuel Powered Tools**

Fuel-powered tools are usually operated with gasoline. The most serious hazard associated with the use of fuel-powered tools is from fuel vapors that can burn or explode and also give off dangerous exhaust fumes. Fuel must be handled, transported, and stored only in approved flammable liquid containers, according to proper procedures for flammable liquids. Before refilling a fuel-powered tool tank, shut down the engine and allow it to cool to prevent accidental ignition of hazardous vapors. When a fuel-powered tool is used inside a closed area, effective ventilation and/or proper respirators such as atmosphere-supplying respirators must be utilized to avoid breathing carbon monoxide. Fire extinguishers must also be available in the area.

### **16.1.7.4 Hydraulic Power Tools**

The fluid used in hydraulic power tools must be an approved fire-resistant fluid and must retain its operating characteristics at the most extreme temperatures to which it will be exposed. The exception to fire-resistant fluid involves all hydraulic fluids used for the insulated sections of derrick trucks, aerial lifts, and hydraulic tools that are used on or around energized lines. This hydraulic fluid shall be of the insulating type.

The manufacturer's recommended safe operating pressure for hoses, valves, pipes, filters, and other fittings must not be exceeded.

### **16.1.7.5 Operating Controls and Switches**

- a. The following hand-held power tools must be equipped with a constant pressure switch or control that shuts off the power when pressure is released:
  - i. Drills;
  - ii. Tappers;
  - iii. Fastener drivers;
  - iv. Horizontal, vertical, and angle grinders with wheels more than 2 inches in diameter;
  - v. Disc sanders with discs greater than 2 inches;
  - vi. Belt sanders;
  - vii. Reciprocating saws;
  - viii. Saber saws, scroll saws, and jigsaws with blade shanks greater than 1/4-inch wide; and
  - ix. Other similar tools.

These tools also may be equipped with a "lock-on" control, if it allows the worker to also shut off the control in a single motion using the same finger or fingers.

- b. The following hand-held power tools must be equipped with a positive "on-off" control switch, a constant pressure switch, or a "lock-on" control:
  - i. Disc sanders with discs 2 inches or less in diameter;
  - ii. Grinders with wheels 2 inches or less in diameter;
  - iii. Platen sanders, routers, planers, laminate trimmers, nibblers, shears, and scroll saws; and
  - iv. Jigsaws, saber, and scroll saws with blade shanks a nominal 1/4-inch or less in diameter.
- c. The constant-pressure control switch should be regarded as the preferred device. Other hand-held power tools such as circular saws having a blade diameter greater than 2 inches, chain saws, and percussion tools with no means of holding accessories securely must be equipped with a constant-pressure switch.

### **16.1.7.6 Powder-Actuated Tools**

Powder-actuated tools require special training and shall not be used at CDL Electric without prior approval from CDL Electric Safety Office.

## **17.1 Bloodborne Pathogens Exposure Control Plan (ECP)**

### **17.1.1 Purpose**

The purpose of this ECP is to:

- a. Eliminate or minimize employee occupational exposure employees can reasonably be exposed to in the workplace to include, but is not limited to blood, mucus, and saliva.
- b. Comply with the OSHA Bloodborne Pathogens Standard, 29 CFR 1910.1030.

This plan is available to all employees on the jobsite and can be readily accessed within CDL Electric's safety policy.

### **17.1.2 Exposure Determination**

OSHA requires employers to perform an exposure determination concerning which employees may incur occupational exposure to blood or other potentially infectious materials. The exposure determination is made without regard to the use of personal protective equipment (i.e. employees are considered to be exposed even if they wear personal protective equipment). This exposure determination is required to list all job classifications in which all employees may be expected to incur such occupational exposure, regardless of frequency.

At this Company the following job classifications are in this category:

- a. No one in this Company is expected to incur a bloodborne pathogen exposure, since we do not handle nor anticipate handling of any infectious material, sharps, etc. The only exposure to bloodborne pathogens may occur from a serious on-site injury where an employee responds to an accident to provide first aid.
- b. Our Company does not designate any individuals as first aid responders. Our employees have available to them adequate first aid kits, which include bloodborne pathogen kits. (All employees are instructed in the use of such kits.)

All serious injuries require the response of emergency personnel, such as paramedics. Any clean-up resulting from a serious accident will be contracted to a qualified party.

In addition, OSHA requires a listing of job classifications in which some employees may have occupational exposure. Since not all the employees in these categories would be expected to incur exposure to blood or other potentially infectious materials, tasks or procedures that would cause these employees to have occupational exposure are also required to be listed in order to clearly understand which employees in these categories are considered to have occupational exposure.

The job classifications and associated tasks for these categories are as follows:

Job Classification Task/Procedure

No Company employees have an occupational exposure

### **17.1.3 Implementation Schedule and Methodology**

OSHA also requires that this plan include a schedule and method of implementation for the various requirements of the standard.

The following complies with this requirement:

#### **17.1.3.1 Compliance Methods**

Universal precautions will be observed at this Company in order to prevent contact with blood or other potentially infectious materials. All blood or other potentially infectious material will be considered infectious regardless of the perceived status of the source individual.

Engineering and work practice controls will be utilized to eliminate or minimize exposure to employees at this Company. Where occupational exposure remains after institution of these controls, personal protective equipment shall also be utilized.

At this Company the following engineering controls will be utilized:



- a. Employees will use the provided bloodborne pathogen kits (PPE) if they choose to respond to any serious injuries.
- b. Hand washing facilities are also available to the employees who incur exposure to blood or other potentially infectious materials.  
OSHA requires that these facilities be readily accessible after incurring exposure. Hand washing facilities are not normally available to employees, since our employees work on construction sites. Since these facilities are not normally available, we provide antiseptic cleaner for the washing of hands, along with clean paper towels and antiseptic towelettes.
- c. Employees are also instructed to wash their hands with soap and running water as soon as feasible.
- d. Supervisors shall ensure that after the removal of personal protective gloves, employees shall wash their hands and any other potentially contaminated skin area immediately or as soon as feasible with soap and water.
- e. Supervisors shall ensure that if employees incur exposure to their skin or mucous membranes then those areas shall be washed or flushed with water as soon as feasible following contact.

#### **17.1.4 Needles**

We do not anticipate any exposure to needles or sharps, such as encountered in medical facilities.

#### **17.1.5 Containers for Sharps**

We do not handle or use any biohazard cabinets or disposal devices.

#### **17.1.6 Work Area Restrictions**

In work areas where there is a reasonable likelihood of exposure to blood or other potentially infectious materials, employees are not to eat, drink, apply cosmetics or lip balm, smoke, or handle contact lenses. Food and beverages are not to be kept in refrigerators, freezers, shelves, cabinets, or on countertops or benchtops where blood or other potentially infectious materials are present.

#### **17.1.7 Contaminated Equipment**

Our Safety Director is responsible for ensuring that equipment and/or working surfaces which have become contaminated with blood or other potentially infectious materials shall be decontaminated as necessary unless the decontamination of the equipment is not feasible.

#### **17.1.8 Personal Protective Equipment (PPE) Provision**

All personal protective equipment used at this Company will be provided without cost to employees. (Bloodborne Pathogen Kits). Personal protective equipment will be chosen based on the anticipated exposure to blood or other potentially infectious materials. The protective equipment will be considered appropriate only if it does not permit blood or other potentially infectious materials to pass through or reach.

##### **17.1.8.1 PPE Use**

Our Safety Director shall ensure that appropriate PPE in the appropriate sizes is readily accessible at the work site or is issued without cost to employees. Hypoallergenic gloves, glove liners, powderless gloves, or other similar alternatives shall be readily accessible to those employees who are allergic to the gloves normally provided.

##### **17.1.8.2 PPE Cleaning, Laundering and Disposal**

All personal protective equipment will be disposed of by the employer at no cost to the employees. All repairs and replacements will be made by the employer at no cost to employees. All garments which are penetrated by blood shall be removed immediately or as soon as feasible. All PPE will be removed prior to leaving the work area. When PPE is removed, it shall be placed in an appropriately designated area or container for disposal.

### **17.1.8.3 Gloves**

Gloves shall be worn where it is reasonably anticipated that employees will have hand contact with blood, other potentially infectious materials, nonintact skin and mucous membranes. Disposable gloves used at this Company are not to be washed or decontaminated for re-use and are to be replaced as soon as practical when they become contaminated or as soon as feasible if they are torn, punctured or when their ability to function as a barrier is compromised.

### **17.1.8.4 Eye and Face Protection**

Masks in combination with eye protection devices, such as goggles or glasses with solid side shield or chin length face shields, are not required to be worn. All contaminated work surfaces will be decontaminated after an injury, and immediately or as soon as feasible after any spill of blood or other potentially infectious materials, as well as the end of the work shift if the surface may have become contaminated since the last cleaning. An outside service will be utilized for all decontamination processes.

### **17.1.9 Hepatitis B Vaccine and Post Exposure Evaluation and Follow-up**

Our Company does not designate any employees as first aid responders. If a first aid trained employee has an exposure while rendering aid, the Hepatitis B Vaccine will be made available at no cost to the employee. Medical records will be stored in personnel files for the duration of employment plus 30 years.

### **17.1.10 Training**

Training on bloodborne pathogens and exposure prevention will be provided to all employees on an annual basis. This training will be documented and stored in the safety files for a minimum of 3 years.

## **18.1 Welding (Cutting, Welding, or Heating)**

This Policy, if applicable, applies to both oxygen and fuel gas operations as well as electric welding.

### **18.1.1 Authorized Employees**

Only authorized employees are permitted to use welding equipment. Welding, cutting and heating will be done only by or under the direct supervision of a qualified employee and comply with manufacturer's instructions. Welders/cutters shall receive hot work training.

### **18.1.2 Protective Equipment**

#### **18.1.2.1 Eye Precautions / Shade Requirements**

All persons performing or observing cutting, welding or heating operations must wear proper eye protection and other personal protective equipment. They must not look at electric arc or oxyfuel flame unless properly protected and must warn others against looking at the arc or flames.

Cracked filter glasses (lens shade) must be replaced immediately. Shade numbers of filter plates are not cumulative. For example, a Number 6 and Number 8 filter do not have the same effective density as a Number 14 filter.

Refer to the following chart for minimum shade requirements of eye protection while cutting or welding.

Welding Operation	Shade No.
Shielded Metal - Arc Welding - Electrodes up to and including 5/32" diameter	10
Gas Tungsten - Arc Welding (non-ferrous) and Gas Shielded Arc Welding (non-ferrous) - Electrodes up to and including 5/32" diameter	11
Gas Tungsten - Arc Welding (ferrous) and Gas-shielded Arc Welding (ferrous) - Electrodes up to and including 5/32" diameter	12
Shielded Metal - Arc Welding: Electrodes	12
3/16" through 1/4" diameter	14
5/16" through 3/8" diameter	

Carbon - Arc Gouging - For most applications	12
Large diameter carbon electrodes	14
Soldering	2
Performing oxygen - fuel gas brazing - cutting - heating	5
Light Cutting up to 1"	4
Medium Cutting, 1" to 6"	5
Heavy Cutting, 6 inches and over	5 or 6
Gas Welding (light) up to 1/8"	5
Gas Welding (medium) 1/8" to 1/2"	5 or 6
Gas Welding (heavy) 1/2" and over	6 or 8

#### **18.1.2.2 Fire Protection / Shielding**

- a. Before welding, heating, or cutting on or near equipment with fuel tanks, ensure appropriate fire prevention measures have been implemented.
- b. Before conducting welding operations all combustible materials shall be removed from the area or shielded (if unable to be removed from the area).
- c. Fire extinguishers, fire hoses, or other suitable fire extinguishing equipment must be on hand during welding, cutting, and other open flame torch operations.
- d. Use shields or other protective devices to:
  - Prevent setting fire to or damaging bridges, structures, or other material.
  - Shield the welding arc from the view of others whenever possible.
- e. Before leaving the work site, the employee in charge must comply with their departmental fire prevention plan and ensure no fire or fire hazard exists.

#### **18.1.2.3 Fire Watch**

- a. Fire watchers shall be trained and required whenever welding or cutting is performed in locations where other than a minor fire might develop, or any of the following conditions exist:
  - i. Appreciable combustible material, in building construction or contents, closer than 35 feet (10.7 m) to the point of operation.
  - ii. Appreciable combustibles are more than 35 feet (10.7 m) away but are easily ignited by sparks.
  - iii. Wall or floor openings within a 35-foot (10.7 m) radius expose combustible material in adjacent areas including concealed spaces in walls or floors.
  - iv. Combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings, or roofs and are likely to be ignited by conduction or radiation.
- b. Fire watchers shall have fire extinguishing equipment readily available and be trained in its use. They shall be familiar with facilities for sounding an alarm in the event of a fire. They shall watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm. A fire watch shall be maintained for at least a half hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires.

#### **18.1.2.4 Hot Work Permit**

A hot work permit must be completed prior to work commencement: Appendix AC of this policy.

#### **18.1.2.5 Proper Clothing**

- a. Always wear approved flame-resistant clothing that:
  - Protects the skin from infrared and ultraviolet radiation and covers the arms
  - Reduces the possibility of catching fire
  - Has all buttons and snaps fastened
  - Has sleeves and pockets secured against sparks or slag
  - Is free of oil or grease
  - Is without cuffs

- b. For overhead welding and other applications where clothing or body may be exposed to sparks or slag, wear a full leather welding jacket and additional approved leather protective outerwear:
  - Spats or sleeves
  - Aprons
  - Leggings
  - Welding helmet designed for overhead welding
- c. Kevlar jackets with or without leather sleeves are not intended for overhead welding.

### **18.1.3 Cleaning Work Area**

#### **Cleaning Work Area**

Do not use your hands, gloved or not, to remove slag or metal from material being welded or cut.

### **18.1.4 Welding Equipment Repairs or Alterations**

- a. Do not make repairs or alterations to:
  - Cylinders;
  - Valves;
  - Torches; or
  - Regulators
- b. Hoses must be replaced when showing:
  - Leaks;
  - Burns;
  - Excessive wear;
  - Damage from flashback; or
  - Any other defects found

Defective regulators, torches or other equipment must not be used and must be tagged and returned for repair.

### **18.1.5 Torch Test**

- a. Torch test must be conducted:
  - Prior to each use
  - When combination torches have been changed
  - When the torch equipment has been dropped or is suspected of being damaged
  - When a flashback has occurred
  - When new torch equipment is installed
- b. Torch test must be conducted in a well-ventilated area with no ignition sources present.

### **18.1.6 Ventilation and Respiratory Protection**

Exposure to lead, zinc or other welding fumes requires use of an approved respirator. Spray or dust respirators are not suitable and must not be used.

Ensure work areas have adequate ventilation. Use additional forced air ventilation when necessary.

### **18.1.7 Confined Spaces and Areas**

When working in a building or in a confined space, place fuel-driven welding machines where exhaust fumes can be safely dissipated. Make certain exhaust fumes are not directed toward or into air intake parts on ventilation systems or air supplying equipment (e.g., compressors).

#### **18.1.7.1 Confined Space Entry Safety Precautions**

Follow confined space entry procedures located in CDL Electric Safety Policy, 2.1 Confined Space Policy when working in tanks, vats, boilers, sewers, etc., and:

- Provide general mechanical or local exhaust ventilation before and during welding operations.
- Use respiratory protection/ventilation.
- Test the welding equipment for leaks before entering a confined space.
- Keep oxygen/fuel-gas cylinders outside the confined space.

Remove oxygen/fuel gas equipment, or inert gas used for electrical welding, from confined space when not in use.

### **18.1.8 Hot Work on Containers**

Do not perform hot work on any containers such as drums, barrels, or tanks until the following conditions have been met:

- a. Determine what the container last held. Thoroughly steam and wash out any container that held volatile or flammable materials.
- b. Prior to performing hot work on any new or used container, trained personnel must test the container. The Lower Explosive Limit (LEL) must be <10% prior to and during any hot work activity.
- c. After cleaning, further safeguard the container by filling it with water, if possible.
- d. If the container last held a gas or liquid which may not readily dissolve in water, an inert gas must be used to evacuate any flammable gas or vapors from the container.
- e. Ensure container has a vent or opening to allow heated air to escape.

### **18.1.9 Oil and Grease**

Do not allow oil and grease to come in contact with oxygen and:

- Keep hands, gloves, clothes, and welding equipment free of oil and grease to prevent fires.
- Do not allow oil and grease to touch regulators, valves, or connections.

### **18.1.10 Metal Cutting Precautions**

- a. Take precautions when cutting by using barrier or spark guard to prevent sparks, hot metal, or severed sections from contacting:
  - Cylinders;
  - Hoses;
  - Cables; or
  - Other flammable materials
- b. Do not lay object or material to be heated, cut, or welded across a cylinder or on concrete.
- c. Hot work shall not be conducted if it is unsafe to do so. Follow Hot Work Permit (Appendix AC) before hot work commencement.

#### **18.1.10.1 Cutting Under Tension**

Take precautions to prevent personnel from being struck by severed sections when cutting damaged steel sections.

### **18.1.11 Cylinders**

- a. Storing Cylinders. OSHA considers a cylinder to be in storage when it is reasonably anticipated that gas will not be drawn from the cylinder within 24 hours (overnight hours included). At that point the storage requirements must be met, including the removal of regulators.

When fuel gas and oxygen cylinders are stored:

- i. Handle with extreme caution to avoid dropping and damaging valves.
- ii. Separate oxygen cylinders from fuel gas cylinders.
  - Maintain a minimum distance of 20 feet; or
  - Place a barrier of noncombustible material that is at least 5 feet high and has a fire resistance rating of at least 1/2 hour between the oxygen and fuel gas cylinders.
- iii. Keep in upright positions on approved racks and properly secured with valve ends up when stored or transported.
- iv. Keep in cool, well-ventilated buildings away from elevators, stairs and passageways and place near exits when possible for easy removal in case of fire.
- v. Do not smoke or use open flame in buildings where cylinders are stored. Keep cylinders away from combustible materials (e.g., oils, paints, shavings, and other flammable materials).

- vi. “NO SMOKING” and “KEEP OPEN FLAMES AWAY” signs must be posted on all visible sides. All valves must be kept closed with valve caps in place when not in use, including empty cylinders.
- vii. Connections and appliances must be free from oil and grease.
- viii. Do not handle cylinders with oily hands or gloves.  
**Note:** When possible, store cylinders in the open, provided cylinders can be protected against freezing or direct sunlight.
- b. Working With or Near Cylinders
  - i. Keep fuel gas and oxygen cylinders in an upright position and do not:
    - Place where they may become part of an electrical circuit, near wires and electrical welding circuits.
    - Strike an arc on or tap an electrode against a cylinder.
    - Throw, drop or roughly handle cylinders.
  - ii. Compressed gas cylinders must be secured in an upright position at all times except while being hoisted or carried.
  - iii. Cylinders may be lifted by a crane, derrick, or hoist only when a company-approved lifting device is used, and employees have been instructed on its use. Do not use an electric magnet to lift cylinders.
  - iv. When working near cylinders, do not allow cylinders to be exposed to:
    - Sparks;
    - Hot slag; or
    - Open flame and other sources of excessive heat
- c. Transporting Cylinders
  - i. Remove gauges and regulators and apply caps before transporting oxygen or fuel gas cylinders, unless valves are covered by a DOT approved safety cap or device designed for that purpose. When completing a single series of welding operations, caps are not required.
  - ii. When transporting cylinders in enclosed compartments, ensure ventilation is provided.
  - iii. Cylinders must be properly secured before transporting.
- d. Empty Cylinders  
When cylinders are empty:
  - i. Close the valve before disconnecting the hose. Valves must remain closed when not in use.
  - ii. Cap empty cylinders.
  - iii. Remove the bottom half of the tag when provided.
  - iv. Separate empty cylinders from full cylinders.
  - v. Promptly exchange empty cylinders at the supply point.
- e. Leaking Cylinder  
When a leaking cylinder is discovered:
  - i. Move it to an open area away from possible ignition sources until the cylinder becomes empty.
  - ii. Mark the cylinder, to indicate the leak for the supplier to take necessary action.
- f. Changing Cylinders
  - i. Before a regulator is removed, the cylinder valve must be closed, and the gas released from the regulator.
  - ii. Remove any possible gas mixture by draining both hoses, oxygen hose first.

### **18.1.12 Regulators**

- a. Proper Regulator
  - i. Do not use a regulator with a gas not intended for that regulator.
  - ii. Each oxygen/fuel gas station must:
    - Have a shut off valve;
    - Be controlled with a pressure reducing regulator; and
    - Have regulators with operable gauges to obtain the recommended test pressures.

- iii. Regulators without gauges must not be used.
- b. Connections and Adapters
  - i. Do not force connections. If the thread does not run easily, usually the wrong sized regulator is being applied.
  - ii. Use a standard adapter between the cylinder and the regulator if required. "T" or "Y" type connectors are not allowed.
- c. Connecting Regulators
  - i. To remove foreign matter, before connecting regulators to cylinders, the valve must be opened approximately one-quarter turn and closed immediately.
  - ii. Do not open valve near other welding work or near sparks, flame or other possible sources of ignition.
  - iii. Pressure adjusting screws must be fully released before attaching regulator to cylinder.
- d. Protecting Regulators
  - i. Protect regulators when not in use by:
    - Closing cylinder valves; and
    - Draining hose at the torch
  - ii. Prevent a gas mixture from accumulating in the hose when either is being relieved of pressure by closing the valve of the other hose. This will prevent flashback which could damage the torch, hose or pressure regulator.
  - iii. Releasing pressure on the diaphragm.

### **18.1.13 Valves**

- a. Opening Cylinder Valves

When opening cylinder valves:

  - i. Stand to one side, away from gauge faces and front of the regulator.
  - ii. Slowly open cylinder valve until the high-pressure gauge indicates full pressure. Then fully open the valve.
  - iii. When a "T" wrench is used on an acetylene cylinder valve do not open the valve more than 1 ½ turns. Leave the "T" wrench on the valve stem in case of emergency.
  - iv. Tools that could damage the regulator connections must not be used.
    - Do not use hammer or wrench to open a valve. Return cylinder to vendor if valve cannot be opened by hand.
    - Do not use the recessed top of a cylinder as a receptacle for tools or other articles.
- b. Closing Valves

When not in use, work is stopped, or the operator leaves the equipment, close the valves and relieve pressure on regulators and hoses.
- c. Clogged Valves

If acetylene cylinder valves become clogged by ice or snow, use warm water to thaw them. Do not use boiling water or any type of flame to thaw acetylene cylinder valves.

### **18.1.14 Hoses**

Use only oxygen-fuel equipment designed for the particular fuel gas. When not in use, hoses must be properly stored to prevent damage.

- a. Hoses and Color Codes
  - i. Hoses must be inspected prior to each use. Repair or replace hoses with leaks, excessive wear or other defects.
  - ii. Use long lengths of hose only when necessary. Check connections for leaks and protect hose from being stepped on, run over, kinked or tangled.
  - iii. When parallel hoses are taped together to prevent tangling, not more than 4" out of 12" may be covered by tape.

- iv. Use T-Grade welding hose for welding. Where possible, 3/8" hose will be used to reduce pressure drop.
- v. Color codes for hose are:
  - Red - Combustible gases
  - Green - Oxygen
- vi. Hoses must be used only with the gases for which intended. Do not use hose for other purposes.
- b. Hose Connections
  - i. Purge a new hose with gas for which the hose will be used to remove talc.
  - ii. When making hose connections use only:
    - Crimp ferrules;
    - Approved reverse flow devices; or
    - Approved positive locking quick disconnects designed for oxygen-fuel
  - iii. Use no more than two splices for any length hose. Do not use tape or wire to splice or repair hose.

### **18.1.15 Torches**

- a. Torches must be maintained in good condition and:
  - i. Handled carefully.
  - ii. Used with tips designed for fuel gas.
  - iii. When lit must not be:
    - Laid down;
    - Passed from one person to another; or
    - Kept in your hand when climbing
  - iv. When not in use, valves must be closed, and torch stored in a safe place.
  - v. Do not use a torch as a hammer.
- b. Torch Precautions: When working with torches:
  - i. Ensure gas stream is not directed toward yourself or others.
  - ii. Keep flame and sparks directed away from personnel, flammables, or equipment.
  - iii. The torch must be purged prior to lighting to ensure flow of oxygen and fuel gas.
- c. Torch Valves

Ensure torch valves are open when changing or adjusting pressure on regulators. Do not exceed pressure authorized for welding or cutting.
- d. Lighters

Use only a standard friction lighter to ignite all fuel gas equipment.

#### **18.1.15.1 Flashback Arrestors**

Ensure that an approved torch mounted flashback arrestor is installed at the torch handle.

If a flashback occurs:

- Immediately shut off the oxygen valve on the torch handle if welding, or the cutting attachment if cutting.
- Determine the cause and correct, in addition to replacing the flashback arrestors or sinter filter before resuming operations. Built-in flashback arrestors have a replaceable sinter filter.

Flashback arrestors must be replaced if they become clogged and severely restrict gas flow.

#### **18.1.16 Use of Natural Gas**

When equipped with heads designed for use with natural gas, a standard torch may be used for cutting and heating.

Do not use natural gas for welding.



## **18.2.1 Electrical Welding**

### **18.2.1.1 Maintenance and Repair**

Only a qualified person may make repairs or adjustments to electrical welding equipment.

Exception: Welders may make routine operating adjustments.

### **18.2.1.2 Cable Precautions**

Make sure electrode and ground cables are insulated throughout the entire length.

Do not allow welding cable or electrode holder to contact water.

### **18.2.1.3 Cables**

Use only approved cable connections. Cables must be in continuous lengths without splices or taps.

To prevent possible electrical shock or fire hazard, ensure ground and electrode cable size is correct.

Comply with Lockout/Tagout Procedures when repairing cables or cable ends.

### **18.2.1.4 Portable Welding Machines**

Portable welding machines must be properly grounded.

Set disconnect switch to the OFF position before plugging or unplugging welding machines.

### **18.2.1.5 Grounding Electrical Arc Welding**

Fixed electrical welding equipment must be permanently grounded on the service side to the ground system.

When performing electrical arc welding on machinery or equipment of any kind, apply the ground cable to the particular part or piece of machinery or equipment being welded and as near as possible to the point being welded.

Do not permanently bond welding ground lead to any:

- Rail;
- Building steel; or
- Other structure.

**Note:** Ground cable clamps must provide good mechanical and electrical contacts with enough carrying capacity to handle welding current without undue heating.

### **18.2.1.6 Protect from Electrical Shock and Moisture**

The electrode and work (or ground) circuits are energized when the welder is on. To protect yourself from possible electrical shock:

- a. Do not permit contact between energized parts of the circuits and exposed skin or wet clothing.
- b. Wear approved welding gloves that are dry and free of defects.
- c. Insulate yourself from the work and ground by using dry insulation when wet conditions are present.
- d. Maintain electrode holder, work clamp, welding cable and welding machine in good, safe operating condition.
- e. Do not loop or coil electrode cables around the body.
- f. During inclement weather, electrical welding equipment must be properly protected from moisture.

When using the welding machine as a power source for mechanized welding, the above precautions also apply for the welding wire, wire reel, welding head or nozzle.

### **18.2.1.7 Electrodes/Electrode Holder**

Electrode safety:

- a. When not welding, ensure no part of the electrode circuit contacts the work or ground.  
Accidental contact can result in electrical shock or cause over-heating and result in fire.
- b. Electrodes must be removed from the holder when not in use.
- c. Electrode holders and wire feeder guns shall be placed or protected so they cannot make

- electrical contact with employees or conducting objects.
- d. If electrode holder is overheating, it is usually due to:
- Improper amperage rating;
  - Loose connections; or
  - Dirty contacts with electrode.

Electrodes and welding wire must be stored where they can be kept free of moisture.

#### **18.2.1.8 Polarity Switch**

Do not adjust the polarity switch while the welder is in operation. Doing so could result in arcing and damage to the switch.

#### **18.3.1 Thermite Welding**

Only authorized employees are permitted to perform thermite welding. During the thermite welding process:

- a. Do not use wet crucible molds or thermite oxide charge to make a weld.
- b. Do not make thermite welds during rain, snow, or with heavy mist in the air.
- c. Wear safety glasses or goggles with a face shield while making the pour and during the ignition of the welding process.
- d. Employees within 15 feet of the pour must wear a face shield with safety glasses at all times.
- e. Dust goggles or face shield with safety glasses must be worn when removing the mold and cleaning the weld.
- f. Protect yourself from hot metal fragments and sand.
- g. Do not dump hot slag on wet soil, snow or throw in water.
- h. Do not dump hot slag where it could be stepped on or could start vegetation on fire.
- i. Waste slag must be properly disposed of by burying.

## Appendix AC - Hot Work Permit

### Before initiating hot work, can this job be avoided? Is there a safer way?

This Hot Work permit is required for any temporary operation involving open flames or producing heat and/or sparks. This includes, but is not limited to: Brazing, Grinding, Soldering, Thawing Pipe, Torch Applied Roofing and Welding.

#### Instructions:

1. Verify precautions listed below or do not proceed with work.
2. Complete this permit and issue to the person(s) performing the work.
3. Retain this copy in the project file.

Permit #:	Date:	Shift:	Work Order #:
Location of Work:			
Equipment Number:			
Purpose of work:			
Name of person(s) doing the work:			
Name of fire watch person:			

I verify the above location has been examined, the precautions checked on the Precautions Checklist below to minimize the chance of fire.

Supervisor's Name:	Signature:	
Duration (hrs.):	Start Time:	Stop Time:

### Hot Work Permits may not be authorized for more than one shift!

Yes	No	N/A	Item
			Are water hoses or fire extinguishers available and in good repair?
			Is hot work equipment in good repair?
			Have flammable liquids, dust, lint and oily deposits within 35 ft. been removed?
			Have explosive atmosphere been eliminated? Test results:
			Has the work surface area been cleaned of grease, paint, etc.?
			Have combustible floors been wet down, covered with damp sand or covered with fire resistant sheets?
			Have surface areas below work area been protected?
			Have access ways below work area been barricaded?
			Are UV shields in place?
			Has enclosed equipment been cleansed of all combustibles?
			Have all containers been purged of flammable liquids and vapors?
			Will fire watch be provided during and for 60 minutes after work, including coffee and/or lunch breaks?
			Has fire watch been provided with suitable fire extinguishing devices?
			Has the fire watch person been trained in use of fire extinguishing devices and in sounding alarm(s) or other emergency communications?
			Has additional fire watch been assigned to adjoining areas, above and below?
			Hot work area will be monitored for 4 hours after completion of work?
			Other:

## **19.1 NFPA 70E**

### **19.1.1 Purpose**

The purpose of this program is to set forth procedures for the safe use of electrical equipment, tools, and to comply with NFPA 70E requirements.

### **19.1.2 Scope**

This program applies to all CDL Electric Company, LLC Inc employees, temporary employees, and contractors. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers CDL Electric employees and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

CDL Electric shall advise the host employer of:

- a. Any unique hazards presented by the contract employer's work,
- b. Any unanticipated hazards found during work by CDL Electric that the host employer did not mention, and
- c. The measures CDL Electric took to correct any hazards reported by the host employer to prevent such hazards from recurring in the future.

### **19.1.3 Responsibilities**

#### **19.1.3.1 Managers/Supervisor**

- a. The Director of Electrical Services will develop electrical safety programs and procedures in accordance with OSHA requirements and/or as indicated by events and circumstances.
- b. Operations Managers and Supervisors are responsible for ensuring that only qualified employees and or qualified contractors perform electrical repairs or installations. Unqualified persons shall not be permitted to enter spaces that are required to be accessible to qualified employees only, unless the electric conductors and equipment involved are in an electrically safe work condition.
- c. Operations Managers and Supervisors shall ensure a documented job briefing is held before starting each job and will include all employees involved. The briefing will cover hazards associated with the job, work procedures involved, special precautions, energy source controls and PPE requirements.
- d. Operations Managers are also responsible for ensuring all applicable electrical safety programs are implemented and maintained at their locations.
- e. Operations Managers must perform an audit every year to ensure the requirements in the written program are being performed by the employees. The written program must be updated if auditing determines that employees are not following it or if another issue is identified with potential hazardous exposure.

#### **19.1.3.2 Employees**

- a. Employees are responsible to use electrical equipment, tools, and appliances according to this program, for attending required training sessions when directed to do so and to report unsafe conditions to their supervisor immediately.
- b. Only qualified employees may test, troubleshoot, and measure voltages on electric circuit parts or equipment that has not been de-energized and is equal or greater than 50 volts. Such employees shall be made familiar with the use of special precautionary techniques, PPE, insulating and shielding materials and insulated tools.
- c. Must be trained to understand the specific hazards with electrical energy.

### **19.1.4 Safe Work Practices**

Prior to any work being done within the Limited Approach Boundary a hazard risk analysis shall be performed. The analysis shall contain event severity, frequency, anticipating unexpected events, electrical arc flash hazard analysis, and probability and avoidance to determine the level of safe practices employed.

#### **19.1.4.1 Safe Work Practices for Working within the Limited Approach Boundary**

The limited approach boundary is the distance from an exposed live part within which a shock hazard exists.

- a. The restricted approach boundary is the closest distance to exposed live parts a qualified person can approach with without proper PPE and tools. Inside this boundary, accidental movement can put a part of the body or conductive tools in contact with live parts or inside the prohibited approach boundary. To cross the restricted approach boundary, the qualified person must:
  - i. Have an energized work permit that is approved by the supervisor or manager responsible for the safety plan.
  - ii. Use PPE suitable for working near exposed live parts and rated for the voltage and energy level involved.
  - iii. Be certain that no part of the body enters the prohibited space.
  - iv. Minimize the risk from unintended movement by keeping as much of the body as possible out of the restricted space; body parts in the restricted space should be protected.
- b. The prohibited approach boundary is the minimum approach distance to exposed live parts to prevent flashover or arcing. Approaching any closer is comparable to making direct contact with a live part. To cross the prohibited approach boundary, the qualified person must:
  - i. Have specified training to work on exposed live parts.
  - ii. Have a permit with proper written work procedures and justifying the need to work that close.
  - iii. Do a risk analysis.
  - iv. Have (2) and (3) approved by the appropriate supervisor.
  - v. Use PPE appropriate for working near exposed live parts and rated for the voltage and energy level involved.
- c. The Flash Protection Boundary is the approach limit at a distance from exposed live parts within which a person could receive a second degree burn if an electrical arc flash were to occur.
  - i. Use PPE appropriate for working near exposed live parts and rated for the voltage and energy level involved.
  - ii. For systems of 600 volts and less, the flash protection boundary is 4 feet, based on an available bolted fault current of 50 kA and a clearing time of 6 cycles for the circuit breaker to act, or any combination of fault currents and clearing times not exceeding 300 kA cycles.
  - iii. When working on de-energized parts and inside the flash protection boundary for nearby live exposed parts - If the parts cannot be de-energized, use barriers such as insulated blankets to protect against accidental contact or wear proper PPE.

Assessments must be documented, and the equipment field marked with a label.

These assessments must be reviewed at least every five years if the incident energy analysis method is used in the assessment.

#### **19.1.5 Arc Flash Hazard Analysis**

- a. An arc flash hazard analysis includes the following:
  - i. Collect data on the facility's power distribution system.
    - Arrangement of components on a one-line drawing with nameplate specifications of every device.
    - Lengths and cross-section area of all cables.
  - ii. Contact the electric utility for information including the minimum and maximum fault currents that can be expected at the entrance to the facility.
  - iii. Conduct a short circuit analysis followed by a coordination study is performed.
  - iv. Feed the resultant data into the NFPA 70E equations.
    - These equations produce the necessary flash protection boundary distances and incident energy to determine the minimum PPE requirement.

- The flash protection boundary is the distance at which PPE is needed to prevent incurable burns (2nd degree or worse) if an arc flash occurs. (It is still possible to suffer 1st or 2nd degree burns.)
- v. For systems of 600 volts and less, the flash protection boundary is 4 feet, based on an available bolted fault current of 50 kA (kiloamps) and a clearing time of 6 cycles (0.1 seconds) for the circuit breaker to act, or any combination of fault currents and clearing times not exceeding 300 kA cycles (5000 ampere seconds).
- b. When working on de-energized parts, but still inside the flash protection boundary for nearby live exposed parts:
  - i. If the parts cannot be de-energized, barriers such as insulated blankets must be used to protect against accidental contact or PPE must be worn.
  - ii. Employees shall not reach blindly into areas that might contain exposed live parts.
  - iii. Employees shall not enter spaces containing live parts unless illumination is provided that allows the work to be performed safely.
  - iv. Conductive articles of jewelry and clothing (such as watchbands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, metal headgear, or metal frame glasses) shall not be worn where they present an electrical contact hazard with exposed live parts.
  - v. Conductive materials, tools, and equipment that are in contact with any part of an employee's body shall be handled in a manner that prevents accidental contact with live parts. Such materials and equipment include but are not limited to long conductive objects such as ducts, pipes, tubes, conductive hose and rope, metal-lined rules and scales, steel tapes, pulling lines, metal scaffold parts, structural members, and chains.
  - vi. When an employee works in a confined space or enclosed spaces (such as a manhole or vault) that contains exposed live parts, the employee shall use protective shields, barriers or insulating materials as necessary to avoid contact with these parts. Doors, hinged panels, and the like shall be secured to prevent them from swinging into employees. Refer to the confined space entry program.

### **19.1.6 Inspections**

- a. Electrical equipment, tools, and appliances must be inspected prior to each use.
- b. The use of a hard fixed GFCI or a portable GFCI adapter shall be used with all portable hand tools, electric extension cords, drop lights and all 110-volt equipment.
- c. Faulty equipment, tools, or appliances shall be removed from service immediately and tagged "Out of Service", dated and signed by the employee applying the tag.

### **19.1.7 Equipment**

Test instruments, equipment, and their accessories shall meet the requirements of ANSI/ISA-61010-1-Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use Part 1 General Requirements, for rating and design requirements for voltage measurement and test instruments intended for use on electrical systems 1000 Volts and below.

When test instruments are used for the testing for the absence of voltage on conductors or circuit parts operating at 50 volts or more, the operation of the test instrument shall be verified before and after an absence of voltage test is performed.

### **19.1.8 Personal Protective Equipment**

All insulating tools, PPE, and other equipment must be inspected before each day's use and immediately following any incident that can reasonably be suspected of having caused damage. Insulating gloves shall be given an air test, along with the inspection.

Maximum test intervals for rubber insulating personal protective equipment shall include:

- a. Blankets-before first issue/every 12 months thereafter

- b. Gloves-before first issue and every 6 months
- c. Sleeveless before first issue and every 12 months
- d. Covers and line hose shall be tested if insulating value is suspect.

All PPE used must meet requirements found in applicable laws and regulations. These PPE requirements apply to many different kinds of PPE: arc rated apparel, insulating aprons, general eye and face protection, arc rated face protection, fall protection, testing methods and specifications for footwear, glove and sleeve testing and care, hard hats, arc rated rainwear, visual inspections of rubber protective products and sleeves.

### **19.1.9 Energized Electrical Work Permit**

Work on energized electrical conductors or circuit parts that are not placed in an electrically safe working condition shall be considered energized electrical work and shall be performed by written permit only.

### **19.1.10 Lighting**

Employees shall not enter spaces containing electrical hazards unless illumination is provided that enables the employees to perform the work safely. Where lack of illumination or an obstruction precludes observation of the work to be performed employees shall not perform any task within the Limited Approach Boundary of energized electrical conductors or circuit parts operating at 50 volts or more or where an electrical hazard exists.

### **19.1.11 Extension Cords**

- a. Use only three-wire, grounded, extension cords and cables that conform to a hard service rating of 14 amperes or higher, and grounding of the tools or equipment being supplied.
- b. Only commercial or industrial rated-grounded extension cords may be used in shops and outdoors.
- c. Cords for use other than indoor appliances must have a rating of at least 14 amps.
- d. Cords must have suitable strain relief provisions at the plug and receptacle ends.
- e. Work lamps (drop light) used to power electrical tools must have a 3 wire, grounded outlet, unless powering insulated tools.
- f. Adapters that allow three wire, grounded prongs, connected to two wire non-grounded outlets are strictly prohibited.
- g. Cords must have a service rating for hard or extra-hard service and have S, AJ, ST, SO, SJO, SJT, STO, or SJTO printed on the cord.
- h. Cords may not be run through doorways, under mats or carpets, across walkways or aisles, concealed behind walls, ceilings or floors, or run through holes in walls, or anywhere where they can become a tripping hazard.
- i. High current equipment or appliances should be plugged directly into a wall outlet whenever possible.
- j. All extension cords shall be plugged into one of the following:
  - i. A GFCI outlet;
  - ii. A GFCI built into the cord;
  - iii. A GFCI adapter used between the wall outlet and cord plug.
- k. All extension cords and or electrical cords shall be inspected daily or before each use, for breaks, plug condition and ground lugs, possible internal breaks, and any other damage. If damage is found, the extension cord or electrical cord shall be removed from service and repaired or replaced.
- l. Extension cords shall not be used on compressor skid to operate heat tapes or any other type of equipment on a temporary basis. Heat tapes or other equipment shall be hard wired per applicable electrical codes.

### **19.1.12 Outlets**

Outlets connected to circuits with different voltages must use a design such that the attachment plugs on the circuits are not interchangeable.

### **19.1.13 Multiple Outlet Boxes**

- a. Multiple outlet boxes must be plugged into a wall receptacle.
- b. Multiple outlet boxes must not be used to provide power to microwave ovens, toasters, space heaters, hot plates, coffeepots, or other high-current loads.

### **19.1.14 Double Insulated Tools**

- a. Double insulated tools must have the factory label intact indicating the tool has been approved to be used without a three-wire grounded supply cord connection.
- b. Double insulated tools must not be altered in any way, which would negate the factory rating.

### **19.1.15 Switches, circuit breakers, and disconnects**

- a. All electrical equipment and tools must have an on and off switch and may not be turned on or off by plugging or unplugging the supply cord at the power outlet.
- b. Circuit breaker panel boxes and disconnects must be labelled with the voltage rating.
- c. Each breaker within a breaker panel must be labelled for the service it provides.
- d. Disconnect switches providing power for individual equipment must be labelled accordingly.

### **19.1.16 Ladders**

- a. Only approved, non-conductive ladders may be used when working near or with electrical equipment, which includes changing light bulbs.
- b. Ladders must be either constructed of wood, fiberglass, or have non-conductive side rails.
- c. Wood ladders should not be painted, which can hide defects, except with clear lacquer.
- d. When using ladders, they shall be free from any moisture, oils, and greases.

### **19.1.17 Energized and Overhead High Voltage Power Lines & Equipment**

- a. A minimum clearance of 10 feet from high voltage lines must be maintained when operating vehicular and mechanical equipment such as forklifts, cranes, winch trucks, and other similar equipment.
- b. When possible, power lines shall be de-energized and grounded or other protective measures shall be provided before work is started.
- c. The minimum approach distance to energized high power voltage lines for unqualified employees is 10 feet.
- d. Minimum approach distance for qualified employees shall be followed per 29 CFR 1910.333(c)(3)(i) Qualified – Table S5 Selection and Use of Work Practices - Approach Distances for Qualified Employees – Alternating Current).

### **19.1.18 Confined or Enclosed Workspaces**

- a. When an employee works in a confined or enclosed space that contains exposed energized parts, the employee shall isolate the energy source and turn off the source and lock and tag out the energy source (Only qualified electricians can work on an exposed energy source).
- b. Protective shields, protective barriers or insulating materials as necessary shall be provided.

### **19.1.19 Enclosures, Breaker Panels, and Distribution Rooms**

- a. A clear working space must be maintained in the front, back and on each side of all electrical enclosures and around electrical equipment for safe operation and to permit access for maintenance and alteration.
- b. A minimum two-foot working floor space in front of panels and enclosures shall be painted yellow.
- c. Employees may not enter spaces containing exposed energized parts unless illumination is provided that enables the employees to work safely.
- d. Housekeeping in distribution rooms must be valued highly to provide a safe working and walking area in front of panels and to keep combustible materials to the minimum required to perform maintenance operations.



- e. All enclosures and distribution rooms must have “Danger: High Voltage – Authorized Personnel Only” posted on the front panel and on entrance doors.
- f. Flammable materials are strictly prohibited inside distribution rooms (i.e. boxes, rags, cleaning fluids)

#### **19.1.20 Lock Out/Tag Out**

- a. No work shall be performed on (or near enough to them for employees to be exposed due to the dangers of tools or other equipment coming into contact with the live parts) live parts and the hazards they present.
- b. If any employee is exposed to contact with parts of fixed electric equipment or circuits which have been deenergized, the circuits energizing the parts shall be locked out or tagged or both.
- c. Conductors and parts of electrical equipment that have been de-energized but have not been locked or tagged out shall be treated as live parts.
- d. Per CDL Electric policy all electrical will be outsourced and performed only by qualified and licensed electrical contractors who are familiar with the use of special precautionary techniques, PPE, insulating and shielding materials and insulated tools. Any equipment being made ready for maintenance will be locked out using CDL Electric Control of Hazardous Energy – Lock Out/Tag Out Program. Lockouts are performed by the HSE Manager, Shop Foreman or Branch Manager. Designated employees in some branches may be trained by local management to lock out equipment. If live sources are to be worked, it will only be performed with the knowledge of local management. Only certified electricians may work on electric circuit parts or equipment.
- e. Only authorized personnel may perform lock out/tag out work on electrical equipment and will follow CDL Electric Control of Hazardous Energy – Lock out/Tag Out Program.
- f. Authorized personnel will be trained in lock out/tag out procedures.
- g. Affected personnel will be notified when lock out/tag out activities are being performed in their work area.

#### **19.1.21 Contractors**

- a. Only approved, certified, electrical contractors may perform construction and service work on CDL Electric or client property.
- b. It is the Manager/Supervisors responsibility to verify the contractor’s certification.

#### **19.1.22 Fire Extinguishers**

- a. Approved fire extinguishers must be provided near electrical breaker panels and distribution centers.
- b. Water type extinguishers shall not be located closer than 50 feet from electrical equipment.

#### **19.1.23 Electric Shock-CPR:**

- a. If someone is discovered that has received an electric shock and is unconscious, first check to see if their body is in contact with an electrical circuit. Do not touch a person until you are sure there is no contact with an electrical circuit.
- b. When it is safe to contact the victim, begin CPR if the person’s heart has stopped or they are not breathing.
- c. Call for help immediately.

#### **19.1.24 Electric Welders**

- a. A disconnecting means shall be provided in the supply circuit for each motor-generator arc welder, and for each AC transformer and DC rectifier arc welder which is not equipped with a disconnect mounted as an integral part of the welder.
- b. A switch or circuit breaker shall be provided by which each resistance welder and its control equipment can be isolated from the supply circuit. The ampere rating of this disconnecting means may not be less than the supply conductor ampacity.

### 19.1.25 Equipment Grounding

- a. All gas compressors, air compressors, separators, vessels, etc. shall be grounded by means of using a lug and ground strap, nominal in size to a ½” bolt or larger, attached to a ground rod six feet or longer.
- b. Equipment bonding jumpers shall be of copper or another corrosion-resistance material.
- c. The transfer of hazardous or flammable material from a metal or plastic container with a flash point of 100° F or less shall have a ground strap from the container attached to the skid or a ground rod placed in the ground.

### 19.1.26 Training

- a. Employees are trained to understand the specific hazards associated with electrical energy.
- b. Employees shall be trained in safety-related work practices and procedural requirements as necessary to provide protection from the electrical hazards associated with their respective jobs.
- c. Employees shall be trained to identify and understand the relationship between electrical hazards and possible injury.
- d. Employees shall be trained in the skills and techniques to distinguish exposed energized electrical conductors and circuit parts from other parts of electrical equipment, to determine the nominal voltage of exposed energized electrical conductors and circuit parts, the approach distances (specified below), and the decision-making process necessary to determine the degree and extent of the hazard and the personal protective equipment and job planning necessary to perform the task safely.

Limited Approach Boundary				
Nominal system voltage range, phase to phase	Exposed movable conductor	Exposed fixed-circuit part	Restricted approach boundary (allowing for accidental movement)	Prohibited approach boundary
0 to 50 volts	Not specified	Not specified	Not specified	Not specified
51 to 300 volts	10 ft. 0 in.	3 ft. 6 in.	Avoid contact	Avoid contact
301 to 750 volts	10 ft. 0 in.	3 ft. 6 in.	1 ft. 0 in.	0 ft. 1 in.
751 to 15 KV	10 ft. 0 in.	5 ft. 0 in.	2 ft. 2 in.	0 ft. 7 in.
15.1 kV to 36 KV	10 ft. 0 in.	6 ft. 0 in.	2 ft. 7 in.	0 ft. 10 in.
36.1 KV to 46 kV	10 ft. 0 in.	8 ft. 0 in.	2 ft 9 in.	1 ft. 5 in.
46.1 KV to 72.5 KV	10 ft. 0 in.	8 ft. 0 in.	3 ft 2 in.	2 ft. 1 in.
72.6 KV to 121 KV	10 ft. 8 in.	8 ft. 0 in.	3 ft. 3 in.	2 ft. 8 in.
138 to 145	11 ft 0 in	10 ft. 0 in.	3 ft. 7 in	3 ft. 1 in.
161 KV to 169 KV	11 ft 8 in.	11 ft. 8 in.	4 ft. 0 in.	3 ft. 6 in.
230 KV to 242 KV	13 ft. 0 in.	13 ft. 0 in.	5 ft. 3 in.	4 ft. 9 in.
345 KV to 262 KV	15 ft. 4 in	15 ft. 4 in.	8ft. 6 in.	8 ft. 0 in.

- e. Employees shall be trained in safety related work practices that pertain to their respective job assignments.

Safe work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts when work is performed near or on equipment or circuits which are or may be energized.

Training and retraining (as required) shall be documented and maintained for the duration of the employee's employment. Documentation shall be made when the employee demonstrates proficiency, be maintained for the duration of the employee's employment, and contain each employee's name and date of training.

### **19.1.27 Retraining**

An employee shall receive additional training (or retraining) under any of the following conditions:

- a. If the supervision or annual inspections indicate that the employee is not complying with the safety-related work practices;
- b. If new technology, new types of equipment, or changes in procedures necessitate the use of safety-related work practices that are different from those that the employee would normally use; or
- c. If he/she must employ safety-related work practices that are not normally used during his/her regular job duties.
- d. Conducted every three years.

In addition to the above conditions employees shall receive retraining at a minimum every three (3) years.

## **20.1 Hazard Identification and Risk Assessment**

### **20.1.1 Purpose**

- To provide guidelines for identifying, assessing and controlling workplace hazards; and
- To ensure the potential hazards of new processes and materials are identified before they are introduced into the workplace; and
- To identify the jobs/tasks which require risk assessment.

### **20.1.2 Key Responsibilities**

As specified within this program.

CDL Electric must assess a work site and identify existing or potential hazards before work begins at the work site or prior to the construction of a new work site.

### **20.1.3 Hazard and Risk Identification**

The hazard identification process is used for routine and non-routine activities as well as new processes, changes in operation, products or services as applicable.

The Division Manager shall conduct a baseline worksite hazard assessment which is a formal process in place to identify the various tasks that are to be performed and the identified potential hazards. The results are included in a report of the results of the hazard assessment and the methods used to control or eliminate the hazards identified. The hazard assessment report must be signed and have the date on it.

- a. Inputs into the baseline hazard identification include, but are not limited to:
  - i. Scope of work;
  - ii. Legal and other requirements;
  - iii. Previous incidents and non-conformances;
  - iv. Sources of energy, contaminants and other environmental conditions that can cause injury;
  - v. Walk through of work environment;
- b. Hazards identifications (as examples) are to include:
  - i. Working Alone
  - ii. Thermal Exposure
  - iii. Isolation of Energy
  - iv. Hearing Protection
  - v. Musculoskeletal Disorders
  - vi. Bloodborne Pathogens
  - vii. Confined Spaces
  - viii. Driving
  - ix. General Safety Precautions
  - x. And any other established policy or procedure by CDL Electric
  - xi. Any other site-specific work scope

CDL Electric has a formal process for identifying potential hazards. Processes are in place to identify potential hazards using JSA's, JHA's, facility wide or area specific analysis/inspections.

All identified hazards are assessed for risk and risk controls are assigned within the worksite hazard assessment for that specific hazard.

Employees and/or sub-contractors are actively involved in the hazard identification process. CDL Electric's program provides processes to ensure employees and/or sub-contractors are actively involved in the hazard identification process and hazards are reviewed with all employees concerned.

Employees are trained in the hazard identification process. Employees will be trained in the hazard identification process including the use and care of proper PPE.

Unsafe hazards must be reported immediately and addressed by the supervisor. The supervisor discusses the worksite hazard assessment with employees at the respective work location during the employee's documented orientation.

#### 20.1.4 Review of Hazard Assessment

Existing worksite hazard identifications are formally reviewed annually or repeated at reasonably practicable intervals to prevent the development of unsafe and unhealthy working conditions and specifically updated when new tasks are to be performed that have not been risk assessed, when a work process or operation changes, before the construction of a new site or when significant additions or alterations to a job site are made.

The respective supervisor or project manager advises the Safety Director when additional hazards are introduced into the workplace to revise planning and assessment needs.

#### 20.1.5 Risk Assessment

Hazards are classified and ranked based on severity. The program identifies hazards are classified/prioritized and addressed based on the risk associated with the task. (See the risk analysis matrix outlining severity and probability).

CONSEQUENCE					PROBABILITY				
Severity	People	Assets	Environment	Reputation	A	B	C	D	E
					Not Done	Rarely	Once a week	Several Times in a Week	Multiple Times in a Day
0	No health effect	No damage	No effect	No impact					
1	Slight health effect	Slight damage	Slight effect	Slight impact					
2	Minor health effect	Minor damage	Minor effect	Limited impact					
3	Major health effect	Localized damage	Localized effect	Considerable impact					
4	Single fatality	Major damage	Major effect	National impact					
5	Multiple fatalities	Extensive damage	Massive effect	Global impact					

#### 20.1.6 Risk Controls/Methods to Ensure Identified Hazards Are Addressed and Mitigated

The following describes how identified hazards are addressed and mitigated:

- Risk assessed hazards are compiled with and addressed and mitigated through dedicated assignment, appropriate documentation of completion, and implemented controls methods including engineering or administrative controls and PPE required into the worksite hazard assessment of the site specific HSE plan. No work will begin before the worksite assessment is completed. Additionally, no risk assessed as High (Intolerable) shall be performed.

- b. If an existing or potential hazard to workers is identified during a hazard assessment CDL Electric must take measures to eliminate the hazard, or if elimination is not reasonably practicable, control the hazard. If reasonably practicable, CDL Electric must eliminate or control a hazard using engineering controls. If a hazard cannot be adequately controlled using engineering controls, CDL Electric must use administrative controls that control the hazard to a level as low as reasonably achievable. If the hazard cannot be adequately controlled using engineering and/or administrative controls, CDL Electric must ensure that the appropriate personal protective equipment (PPE) is used by workers affected by the hazard. CDL Electric may use a combination of engineering controls, administrative controls, and personal protective equipment if there is a greater level of worker safety because a combination is used.

#### **20.1.7 Emergency Control of Hazards**

Only those employees competent in correcting emergency controls of hazards may be exposed to the hazard and only the minimum number of competent employees may be exposed during hazard emergency control. An example is a gas leak in a building. Only those personnel with training on fire safety, gas supply shut off and other related controls will attempt to resolve the emergency control of a hazard. CDL Electric will make every possible effort to control the hazard while the condition is being corrected or under the supervision of client emergency response personnel in every emergency.

#### **20.1.8 Certification of Hazard Assessment**

The Division Manager completes and signs the certification of hazard assessment for the worksite hazard assessment (also see PPE Program) and includes it within the site specific HSE plan. Hazard assessments are reviewed annually and updated when new tasks are to be performed that have not been risk assessed.

#### **20.1.9 Job Safety Analysis (JSA)**

For those jobs with the highest injury or illness rates, jobs that are new to our operation, jobs that have undergone major changes in processes and procedures or jobs complex enough to require written instructions will have a Job Safety Analysis performed. Completed JSAs are available from the Safety Manager.

#### **20.1.10 Site Specific HSE Plan (SSSP)**

Each work location has a site specific HSE plan. Each employee reporting to a location shall receive a documented orientation from a CDL Electric supervisor that includes the SSSP for that site. The SSSP contains the CDL Electric Health and Safety Policy, site specific safety requirements as well as a PPE matrix and a signed site-specific worksite hazard assessment for that location.

#### **20.1.11 Review Process**

The hazard assessment program will be reviewed to ensure no new hazards derived from the corrective measures. The review shall include a management of change consideration as well.

The safety committee shall be involved in the review process as well.

## Appendix AD - Worksite Hazard Assessment Form

CERTIFICATE OF HAZARD ASSESSMENT STATEMENT FOR \_\_\_\_\_ SITE

I certify a worksite hazard assessment was performed for this facility on date by \_\_\_\_\_

Task: Indicate Task Group (Additional Tasks shall be listed in each site specific HSE plan)

TASKS	RISK LEVEL	HAZARDS	ENGINEERING OR ADMINISTRATIVE CONTROLS	PPE (Refer to PPE Matrix)
List individual task	Use Risk Matrix	Identify hazards associated with task	<ul style="list-style-type: none"> <li>List procedures that apply</li> <li>List appropriate engineering controls</li> <li>List procedures or other administrative controls</li> </ul>	List appropriate PPE
Example: Washing Parts	MED	Chemical Exposure (Skin, Eyes, Body)	<ul style="list-style-type: none"> <li>CDL Electric PPE Procedure</li> <li>No smoking;</li> </ul>	Chemical gloves, splash proof goggles chemical apron

## Appendix AE - Job Safety Analysis Form

Location / Dept:		Date:	New? <input type="checkbox"/>	Revision <input type="checkbox"/>	JSA NO:				
Task			Supervisor:						
			Analysis By:						
Team Member			Reviewed By:						
s			Approved By:						
Specific rules and procedures to be followed (Safe Work Practice Number ____):									
Sequence of Basic Job Steps		Potential Injury or Hazards	Recommendations to Eliminate or Reduce Potential Hazards.						
CHECK ITEMS REQUIRED TO DO THIS JOB:									
Safety Glasses	<input type="checkbox"/>	Leather Gloves	<input type="checkbox"/>	Face Shield	<input type="checkbox"/>	Fire Extinguisher	<input type="checkbox"/>	Atmospheric Testing	<input type="checkbox"/>
Hard Hats	<input type="checkbox"/>	Work Vest	<input type="checkbox"/>	Goggles (type?)	<input type="checkbox"/>	Lockout/Tagout	<input type="checkbox"/>	Traffic Control	<input type="checkbox"/>
Safety Shoes	<input type="checkbox"/>	Fall Harness	<input type="checkbox"/>	Flame Resistant Clothing	<input type="checkbox"/>	Warning signs	<input type="checkbox"/>	Other	<input type="checkbox"/>

## INSTRUCTIONS FOR COMPLETING THE JOB SAFETY ANALYSIS FORM

Select an employee to help you with the JSA: someone who is experienced in the job, willing to help and a good communicator. The employees play an important role in helping you identify job steps and hazards. In summary, to complete this form you should consider the purpose of the job, the activities it involves, and the hazards it presents. In addition, observing an employee performing the job, or “walking through” the operation step by step may give additional insight into potential hazards. Here’s how to do each of the three parts of a Job Safety Analysis:

### SEQUENCE OF BASIC JOB STEPS

Examining a specific job by breaking it down into a series of steps or tasks, will enable you to discover potential hazards employees may encounter. Each job or operation will consist of a set of steps or tasks. For example, the job might be to move a box from a conveyor in the receiving area to a shelf in the storage area. To determine where a step begins or ends, look for a change of activity, change in direction or movement. Picking up the box from the conveyor and placing it on a hand truck is one step. The next step might be to push the loaded hand truck to the storage area (a change in activity). Moving the boxes from the truck and placing them on the shelf is another step. The final step might be returning the hand truck to the receiving area. Be sure to list all the steps needed to perform the job. Some steps may not be performed each time; an example could be checking the casters on the hand truck. However, if that step is generally part of the job, it should be listed.

### POTENTIAL HAZARDS

A hazard is a potential danger. The purpose of the Job Safety Analysis is to identify ALL hazards – both those produced by the environment or conditions and those connected with the job procedure. To identify hazards, ask yourself these questions about each step:  
Is there a danger of the employee striking against, being struck by, or otherwise making injurious contact with an object?  
Can the employee be caught in, by or between objects? Is there a potential for slipping, tripping, or falling?  
Could the employee suffer strains from pushing, pulling, lifting, bending, or twisting?  
Is the environment hazardous to safety and/or health (toxic gas, vapour, mist, fumes, dust, heat, or radiation)?  
Close observation and knowledge of the job is important. Examine each step carefully to find and identify hazards – the actions, conditions, and possibilities that could lead to an accident. Compiling an accurate and complete list of potential hazards will allow you to develop the recommended safe job procedures needed to prevent accidents.

### RECOMMENDED ACTION OR PROCEDURE

Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the hazards that could lead to an accident, injury or occupational illness. Begin by trying to: (1) engineer the hazard out; (2) provide guards, safety devices, etc.; (3) provide personal protective equipment; (4) provide job instruction training; (5) maintain good housekeeping; (6) ensure good ergonomics (positioning the person in relation to the machine or other elements). List the required or recommended personal protective equipment necessary to perform each step of the job. Give a recommended action or procedure for each hazard. Serious hazards should be corrected immediately. The JSA should then be changed to reflect the new conditions. Finally, review your input on all three columns for accuracy and completeness with affected employees. Determine if the recommended actions or procedures have been put in place. Re-evaluate the job safety analysis as necessary.

## 21.1 Cranes

### 21.1.1 Purpose

The purpose of this Mobile Crane Safety policy is to define the work practices and the inspection procedures to help ensure that the operators of the overhead cranes at CDL Electric are protected from potential hazards associated with the movement of equipment and material.

This Mobile Crane Safety policy is part of CDL Electric’s compliance with regulation by the Occupational Safety and Health Administration (OSHA) 29CFR 1910.179, 1910.180, and 1926.1400. American National Standards Institute (ANSI) guidelines are also applicable to the operation and maintenance of overhead cranes (ANSI B30.2, ANSI B30.0, ANSI B30.9C).

### 21.1.2 Policy

It is the policy of CDL Electric to provide its employees with a safe and healthy working environment. This is accomplished by this Mobile Crane Safety policy and its inspection procedures.

### 21.1.3 Safe Operating Requirements

All workers who use any CDL Electric crane or hoist shall have a certified operator's license. The company issues licenses for authorized employees who have been specifically trained in crane and hoist operations and equipment safety.

CDL Electric will not conduct critical or engineered lifts. Some criteria that could qualify a lift to be deemed critical are:

- Gross load is equal to or greater than 50 tons
- Gross load is equal to or greater than 75 percent of the crane manufacturer’s load chart rating at the working radius.
- Two or more pieces of equipment are required to lift a load to its final position
- The load is lifted over or near operating equipment or electrical power lines
- The lift involved the transport or personnel in a suspended personnel basket
- Rigging attachment points are located below the center of gravity of the lifted load
- Lifting equipment is used for operations on the deck of a barge or other floating structure

- Center of gravity can be altered during the lift whether it is fluid or other variable deposits
- Lifted load is irreplaceable or a long lead time item
- Load is being lifted over or near critical infrastructure
- Explosive hazards nearby

#### **21.1.3.1 Crane and Hoist Operators**

To be qualified as a Crane and Hoist Operator, the candidate shall have received hands-on training from a licensed, qualified crane and hoist operator designated by the employee's supervisor. Upon successful completion of training, the licensed crane and hoist operator and the employee's supervisor will fill out and sign the Qualification Request Form and Crane Safety Checklist and send them to the Safety Office for approval. The employee will be issued a license upon approval by the Safety Manager. Crane and Hoist Operators must renew their license every five years by satisfying the requirements described above. Operators must follow manufacturer instructions/procedures.

#### **21.1.4 Responsibilities**

1. Director of Safety shall:
  - a. Review the Mobile Crane Safety policy on an annual basis and revise it as necessary.
  - b. Provide technical assistance regarding the regulatory requirements of cranes, chains, slings, and hoists.
  - c. Provide or arrange training for licensure for the operation of mobile and overhead cranes.
  - d. Periodically verifying monthly test and inspection reports.
  - e. Interpreting crane and hoist safety rules and standards.
2. Repair and Maintenance (R&M) department shall:
  - a. Provide fiscal and administrative support towards implementing the Mobile Crane Safety Policy.
  - b. Coordinate annual maintenance and inspection of all CDL Electric cranes and hoists that are not covered by a program with maintenance responsibility.
  - c. A competent person conducts monthly inspections of cranes and hoists.
  - d. Conduct and maintain written records of inspections and tests.
  - e. Inspect and load test cranes and hoists following modification or extensive repairs (e.g., a replaced cable or hook, or structural modification.)
  - f. Scheduling a non-destructive test and inspection for crane and hoist hooks at the time of the load test and testing and inspecting before use new replacement hooks and other hooks suspected of having been overloaded. The evaluation, inspection, and testing may include, but are not limited to visual, dye penetrant, and magnetic particle techniques referenced in ASME B30.10 (Hooks, Inspection and Testing.)
  - g. Maintaining all manuals for cranes and hoists in a central file for reference.
3. Supervisors of employees who may be required to comply with the Crane Safety Program shall:
  - a. Ensuring that employees under their supervision receive the required training and are certified and licensed to operate the cranes and hoists in their areas.
  - b. Ensuring that hoisting equipment is inspected and tested monthly by a certified individual and that rigging equipment is inspected annually.
  - c. Assure that the requirements of the program are observed, with respect to daily, monthly and annual inspections. Establish and maintain an inspection checklist record keeping system. Ensure the fitness for duty of crane operators.
4. Crane operator/rigger shall:
  - a. Attend training on the requirements of this Mobile Crane Safety policy and the appropriate inspection procedures for chains, slings and hoists.
  - b. Conduct the appropriate inspections prior to each use and complete the required documentation. Notify the Vehicle and Equipment Director R&M of any deficiencies identified during inspections. The inspection checklist shall include the date of inspection, the signature of the person who performed the inspection, and an identifier (e.g., serial number, vehicle number) for the equipment or component being inspected.



- c. Ensures all safety devices are in proper working order.
- d. Will inspect all rigging before use.
- e. Ensures that the cranes manuals are in the cab of the crane prior to operating.
- f. Operating hoisting equipment safely.
- g. Conducting functional tests prior to using the equipment.
- h. Selecting and using rigging equipment appropriately.
- i. Having a valid operator's license on their person while operating cranes or hoists.
- j. Participating in the medical certification program, as required.

### **21.1.5 Fitness for Duty**

The operator of overhead cranes (cranes and hoists that are two tons or larger) must be a physically fit and thoroughly trained, competent individual, and not using any drug that could impair physical, visual, or mental reactions or capabilities, and must understand all the regulations regarding crane safety.

### **21.1.6 Crane and Hoist Safety Design Requirements**

Following are the design requirements for cranes and hoists and their components:

- a. The design of all commercial cranes and hoists shall comply with the requirements of ASME/ANSI B30 standards and Crane Manufacturer's Association of America standards (CMAA-70 and CMAA-74). [COMPANY]-fabricated lifting equipment shall comply with the requirements in Chapter 2.2 (Lifting Equipment) of Mechanical Engineering *Design Safety Standard* (latest edition).
- b. All crane and hoist hooks shall have safety latches.
- c. Hooks shall not be painted, or repainted if the paint previously applied by the manufacturer is worn.
- d. Crane pendants shall have an electrical disconnect switch/button to open the main-line control circuit.
- e. Cranes and hoists shall have a main electrical disconnect switch. This switch shall be in a separate box that is labeled with lockout capability.
- f. Crane bridges and hoist monorails shall be labeled on both sides with the maximum capacity.
- g. Each hoist-hook block shall be labeled with the maximum hook capacity.
- h. Directional signs indicating N-W-S-E shall be displayed on the bridge underside, and a corresponding directional label shall be placed on the pendant.
- i. A device such as an upper-limit switch or slip clutch shall be installed on all building cranes and hoists. A lower-limit switch may be required when there is insufficient hoist rope on the drum to reach the lowest point.
- j. All cab and remotely operated bridge cranes shall have a motion alarm to signal bridge movement.
- k. All newly installed cranes and hoists, or those that have been extensively repaired or rebuilt structurally, shall be load tested at 125% capacity prior to being placed into service.
- l. If an overload device is installed, a load test to the adjusted setting is required.
- m. Personnel baskets and platforms suspended from any crane shall be designed in accordance with the specifications in 29 CFR 1926.550(g).

### **21.1.7 General Safety Rules**

Operators shall comply with the following rules while operating the cranes and hoists:

- a. Proper PPE shall be utilized by crane operators:
  - i. Mobile crane operators and all personnel on a construction site shall wear ANSI Z87 safety glasses, ANSI Z41 steel toe/composite toe leather/leather like uppers 6" high with a 90-degree heel safety boots, and ANSI Z89 hard hats. In addition to the listed PPE requirement those on railroad property or working alongside roadways shall wear a minimum Class II safety vest/shirt/coat.
  - ii. Overhead crane operators shall wear ANSI Z87 safety glasses, ANSI Z41 steel toe/composite toe leather/leather like uppers 6" high with a 90-degree heel safety boots, and ANSI Z89 hard hats. All other personnel not operating the overhead crane but are within 25' of the operation must wear the same PPE as the operator.

- b. Do not engage in any practice that will divert your attention while operating the crane.
- c. When view is obstructed respond to signals only from the person who is directing the lift, or any appointed signal person. Obey a stop signal at all times, no matter who gives it.
- d. Crane must be positioned on stable ground before use.
- e. Do not move a load over people. People shall not be placed in jeopardy by being under a suspended load. Also, do not work under a suspended load unless the load is supported by blocks, jacks, or a solid footing that will safely support the entire weight. Have a crane or hoist operator remain at the controls or lock open and tag the main electrical disconnect switch.
- f. Crane operator can STOP lift operation at any time it is deemed unsafe.
- g. Ensure that the rated load capacity of a crane's bridge, individual hoist, or any sling or fitting is not exceeded. Know the weight of the object being lifted or use a dynamometer or load cell to determine the weight.
- h. Check that all controls are in the OFF position before closing the main line disconnect switch.
- i. If spring-loaded reels are provided to lift pendants clear off the work area, ease the pendant up into the stop to prevent damaging the wire.
- j. Avoid side pulls. These can cause the hoist rope to slip out of the drum groove, damaging the rope or destabilizing the crane or hoist.
- k. To prevent shock loading, avoid sudden stops or starts. Shock loading can occur when a suspended load is accelerated or decelerated and can overload the crane or hoist. When completing an upward or downward motion, ease the load slowly to a stop.
- l. If, during operation of the mechanical equipment, the equipment could become energized, the operation shall comply with at least one of the following (Sec. 1910.269(p)(4)(ii)):
  - i. The energized lines exposed to contact shall be covered with insulating protective material that will withstand the type of contact that might be made during the operation.
  - ii. The equipment shall be positioned so that its uninsulated portions do not approach the lines or equipment any closer than 10 feet. If setting and removing poles, equipment shall be grounded, isolated or barricaded (See Section 6.3. (d)e.).
  - iii. Each employee shall be protected from hazards that might arise from equipment contact with the energized lines. The measures used shall ensure that employees will not be exposed to hazardous differences in potential. Unless the employer can demonstrate that the methods in use protect each employee from the hazards that might arise if the equipment contacts the energized line, the measures used shall include all the following techniques:
    - Using the best available ground to minimize the time the lines remain energized
    - Bonding equipment together to minimize potential differences
    - Providing ground mats to extend areas of equipotential
    - Employing insulating protective equipment or barricades to guard against any remaining hazardous potential differences
- m. Determine if any part of the equipment, load line or load (including rigging and lifting accessories), if operated up to the equipment's maximum working radius in the work zone, could get closer than 20 feet to a power line. If so, the employer must meet the requirements below:
  - i. Deenergize and ground. Confirm from the utility owner/operator that the power line has been deenergized and visibly grounded at the worksite.
  - ii. 20-foot clearance. Ensure that no part of the equipment, load line, or load (including rigging and lifting accessories), gets closer than 20 feet to the power line by implementing the measures specified in paragraph (b) of this section.
    - a. Erect and maintain an elevated warning line, barricade, or line of signs, in view of the operator, equipped with flags or similar high-visibility markings, at 20 feet from the power line or at the minimum approach distance under Table A.
    - b. If the operator is unable to see the elevated warning line, a dedicated spotter who is in continuous contact with the operator must be used in addition to implementing one of the following measures:

- A proximity alarm is set to give the operator sufficient warning to prevent encroachment.
- A device that automatically warns the operator when to stop movement, such as a range control warning device. Such a device must be set to give the operator sufficient warning to prevent encroachment.
- A device that automatically limits range of movement, set to prevent encroachment.
- An insulating link/device installed at a point between the end of the load line (or below) and the load.

iii. Table A Minimum Clearance Distances.

Voltage (nominal, kV, alternating current)	Minimum clearance distance (feet)
up to 50	10
over 50 to 200	15
over 200 to 350	20
over 350 to 500	25
over 500 to 750	35
over 750 to 1,000	45
over 1,000	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).

**Note:** The value that follows "to" is up to and includes that value. For example, over 50 to 200 means up to and including 200kV.

### 21.1.8 Inspections

Overhead crane inspections are divided into two general classifications: Frequent Inspections and Periodic Inspections. Inspection checklists are completed as part of the inspection process. Inspection checklists shall be available for inspection.

#### 21.1.8.1 Frequent Inspection

Rope slings, hooks and other lifting equipment shall be visually inspected prior to each day's use. All parts including chains, cables, ropes, hooks, etc., on overhead and gantry cranes shall be visually inspected daily for deformation, cracks, excessive wear, twists, stretch, or other signs of deterioration that may pose a hazard during use.

Hooks and chains shall be visually inspected daily, and monthly with a certification record which documents the date of inspection, the signature of the person who performed the inspection, and serial number or other identifier from the equipment. Hooks that have cracks or have more than 15% in excess of normal throat opening or more than 10% twist from the plane of the unbent hook should be replaced.

Running ropes shall be inspected monthly. A certification record which includes the date of the inspection and signature of the person who performed the inspection should be prepared. Any deterioration which results in appreciable loss of strength shall be inspected and a determination made as to whether further use of the rope constitutes a safety hazard.

The monthly inspection will consist of noting the following disqualifying conditions:

- a. Reduction of rope diameter below a nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.
- b. Three broken wires in one strand in one lay length or six broken wires in any one lay length.
- c. Worn outside wires.
- d. Corroded or broken wires at connections.
- e. Corroded, cracked, bent, worn or improperly applied end connections on the equipment name plate.
- f. Severe kinking, crushing, cutting or un-stranding.

#### 21.1.8.2 Periodic Inspections

Periodic inspections shall be conducted by a factory trained employee or a contract certified inspection service.

A complete inspection of the crane shall be performed at least every 12 months. The inspection should include the following:

- a. Noting any cracked, corroded, worn or loose members or parts.
- b. Noting and replacing loose bolts and tightening those bolts.
- c. Testing the limit indicators (wind, load, etc.), power plant and electrical apparatus.
- d. Load testing must be performed at no more than 125 percent of the rated load, unless it is otherwise recommended by the equipment manufacturer.
- e. Examining the electrical apparatus for any signs of pitting, or any deterioration of controller contractors, limit switches and push button stations.
- f. Travel distance steering.
- g. Testing the braking system for excessive wear on the lining, pawls and ratchets.
- h. Hooks and cables.

If any adjustments have to be made to the unit, the crane will not be operated until all the guards have been installed, all safety devices reactivated, and all maintenance equipment moved. If any defect is found, the crane will not be operated until the repair, or the adjustment is made.

#### **21.1.9 Working at Heights on Cranes or Hoists**

Anyone conducting maintenance or repair on cranes or hoists at heights greater than 1.8 m (6 ft) shall use fall protection. Fall protection should also be considered for heights less than 1.8 m. Fall protection includes safety harnesses that are fitted with a lifeline and securely attached to a structural member of the crane or building or properly secured safety nets.

Use of a crane as a work platform should only be considered when conventional means of reaching an elevated worksite are hazardous or not possible. Workers shall not ride a moving bridge crane without an approval from the Safety Office, which shall specify the following as a minimum:

- a. Personnel shall not board any bridge crane unless the main disconnect switch is locked and tagged open.
- b. Personnel shall not use bridge cranes without a permanent platform (catwalk) as work platforms. Bridge catwalks shall have permanent ladder access.
- c. Personnel shall ride seated on the floor of a permanent platform with approved safety handrails, wear safety harnesses attached to designated anchors, and be in clear view of the crane operator at all times.
- d. Operators shall lock and tag open the main (or power) disconnect switch on the bridge catwalk when the crane is parked.

#### **21.1.10 Rated Load Marking**

The rated load of the crane shall be plainly marked on each side of the crane. If the crane has more than one hoisting unit, each hoist and each hoist attachment should have the rated load clearly marked. The marking shall be clearly legible from the ground or the floor. The load shall not exceed the rated load of the crane or hoist.

A common misconception is that the safety factor is built in, and that the operator may exceed the rated load up to the safety factor. A load is defined as the total superimposed weight on the load block or hook and includes any lifting devices such as magnets, spreader bars, chains and slings.

Every load that is lifted by a crane shall be well secured and properly balanced in a sling or other lifting device. If the crane operator is not sure of how to appropriately rig a load, CDL Electric R&M should be contacted.

#### **21.1.11 Crane Operation**

Operators shall not leave their position at the controls while the load is suspended or pass under a suspended load on the hook. Other employees shall not walk under a suspended load.

Accessible areas within the swing radius of the rear of the rotating superstructure of the crane, either permanently or temporarily mounted, shall be barricaded/marked in such a manner as to prevent an employee from being struck or crushed by the crane.

#### **21.1.1.1 Pre-operational Test**

At the start of each work shift, operators shall do the following steps before making lifts with any crane or hoist:

- a. Test the upper-limit switch. Slowly raise the unloaded hook block until the limit switch trips.
- b. Visually inspect the hook, load lines, trolley, and bridge as much as possible from the operator's station; in most instances, this will be the floor of the building.
- c. If provided, test the lower-limit switch.
- d. Test all direction and speed controls for both bridge and trolley travel.
- e. Test all bridge and trolley limit switches, where provided, if operation will bring the equipment in close proximity to the limit switches.
- f. Test the pendant emergency stop.
- g. Test the hoist brake to verify there is no drift without a load.
- h. If provided, test the bridge movement alarm.
- i. Lock out and tag for repair any crane or hoist that fails any of the above tests.

#### **21.1.1.2 Attaching the Load**

The operator must be familiar with the appropriate rigging and hoisting techniques to safely move the load. Additionally, the following items should be used to attach the load:

- a. The hoist chain or hoist rope should be free of kinks or twists and shall not be wrapped around the load.
- b. The load should be attached to the load block hook by means of slings or other approved devices. The sling should clear all obstacles.

#### **21.1.1.3 Moving the Load**

- a. The load should be well secured and properly balanced in the sling or lifting device before it is lifted more than a few inches.
- b. Before starting the hoist, the hoist rope should not be kinked, and the multiple part lines should not be twisted around each other.
- c. The hook should be brought over the load in such a manner as to prevent swinging.
- d. There should be no sudden acceleration or deceleration of the moving load.
- e. The load should not contact any obstructions.
- f. Center the hook over the load to keep the cables from slipping out of the drum grooves and overlapping, and to prevent the load from swinging when it is lifted.
- g. Inspect the drum to verify that the cable is in the grooves.
- h. While any employee is on the load or hook, there will be no hoisting, lowering or traveling.
- i. The operator will avoid carrying loads over people.
- j. The operator will test the brakes each time a load approaching the rated load is handled. The brakes will be tested by raising the load a few inches and applying the brakes.
- k. The load will not be lowered below the point where less than 3 full wraps remain on the hoisting drum.
- l. Use a tag line when loads must traverse long distances or must otherwise be controlled. Manila rope may be used for tag lines.
  - i. Plan and check the travel path to avoid personnel and obstructions.
  - ii. Lift the load only high enough to clear the tallest obstruction in the travel path.
  - iii. Start and stop slowly.
  - iv. Land the load when the move is finished. Choose a safe landing.
  - v. The operator will not leave his/her position while the load is suspended. The operator needs to be aware of the appropriate chains, hoist, and sling requirements.

- vi. *Never* leave suspended loads unattended. In an emergency where the crane or hoist has become inoperative, if a load must be left suspended, barricade and post signs in the surrounding area, under the load, and on all four sides. Lock open and tag the crane or hoist's main electrical disconnect switch.

#### **21.1.1.4 Parking a Crane or Hoist**

- a. Remove all slings and accessories from the hook. Return the rigging device to the designated storage racks.
- b. Raise the hook at least 2.1 m (7 ft) above the ground or in the designated storage position on a mobile crane.
- c. Store the pendant away from aisles and work areas or raise it at least 2.1 m (7 ft) above the floor.
- d. Place the emergency stop switch (or push button) in the OFF position.

#### **21.1.12 Rigging**

Only select rigging equipment that is in good condition. All rigging equipment shall be inspected by a certified employee annually; defective equipment is to be removed from service and destroyed to prevent inadvertent reuse. The load capacity limits shall be stamped or affixed to all rigging components and shall not be exceeded.

Slings shall not be shortened with knots, belts or other makeshift devices. Sling legs shall not be kinked. Slings shall not be loaded in excess of their rated capacities. They shall be securely attached to their loads.

Slings should be padded or protected from the sharp edges of their loads.

Suspended loads shall be kept clear of all obstructions. All employees shall be kept clear of suspended loads and about to be lifted loads.

Hands or fingers shall not be placed between the sling and its load while the sling is being tightened around the load.

A sling should not be pulled from under a load when the load is resting on the sling.

Rigging equipment shall be removed from the work area when not in use.

#### **21.1.2.1 Personal Protective Equipment**

All employees who handle the wire slings and the hoist cables shall wear leather gloves to prevent any hand injury.

#### **21.1.2.2 The following types of slings shall be rejected or destroyed:**

##### **a. Alloy Steel Chain Slings**

All steel chain slings shall have a permanently affixed durable identification stating size, grade, rated capacity and reach, and inspection date.

- i. Worn or damaged alloy steel chain slings or attachments should not be used until it is repaired.
- ii. All steel chain slings with cracked or deformed master links, coupling links or other components should be removed from service.
- iii. Alloy steel chain slings shall be permanently removed from service if they are heated above 1,000°F.

##### **b. Wire Rope Slings**

Fiber core wire rope slings of all grades should be removed from service if they are exposed to temperatures in excess of 200°F.

Wire rope slings should be removed from service if any of the following is present:

- i. Six randomly distributed broken wires in one rope lay or three broken wires in one strand in one rope lay.
- ii. Three broken wires in one strand of rope.
- iii. Wear or scraping of one-third the original diameter of outside individual wires.

- iv. Kinking, crushing, bird caging, or any other damage is noted.
  - v. Corrosion of the rope or end attachments.
  - vi. There is evidence of heat damage.
  - vii. End attachments are cracked, deformed or worn.
  - viii. It is determined that hooks have been opened more than 15 percent of the normal throat opening measured at the narrowest point or twisted more than 10 degrees from the plane of the unbent hook.
- c. Metal Mesh Slings
- i. Each metal mesh sling shall have permanently affixed to it a durable marking that states the rated capacity for a vertical basket and choker hitch loadings.
  - ii. If handles are used on metal mesh slings, the rated capacity must be at least equal to the metal fabric and exhibit no deformations after load testing. If handles are attached to fabric, they should be joined so that the rated capacity of the sling is not reduced, the load is evenly distributed across the width of the fabric, and the sharp edges will not damage the fabric.
  - iii. Metal mesh slings shall not be used to lift loads in excess of their rated capacities. Metal mesh slings which are not impregnated with elastomers may be used in a temperature range of 20°F to 550°F without decreasing the working load limit. If the sling is impregnated with other materials, then the sling manufacturer's recommendations must be followed.
  - iv. If metal mesh slings are repaired, they should not be used unless they are repaired by a metal mesh sling manufacturer. Once they are repaired, records must be maintained to indicate the date and the nature of repairs and the person or organization who performed the repairs.
  - v. Metal mesh slings must be immediately removed from service, if any of the following conditions are present:
    - a. A broken weld or brazed joint along the sling edge.
    - b. A reduction in wire diameter of 25% due to abrasion or 15% due to corrosion.
    - c. Lack of flexibility due to distortion of the fabric.
    - d. 15% reduction of original cross-sectional area of metal at any point around the handle eye.
    - e. Distortion of the female handle so that the depth of the slot is increased more than 10%.
    - f. Distortion of either handle so that the width of the eye is decreased more than 10%.
- d. Natural and Synthetic Fiber Rope Slings
- Natural and synthetic fiber rope slings, except for wet frozen slings, may be used in a temperature range from -20°F to 180°F without decreasing the working load limit. For operations outside of this range, the manufacturer's recommendations should be followed. Fiber rope slings should not be spliced in any manner.
- Natural and synthetic fiber rope slings shall be immediately removed from service if there is:
- i. Abnormal wear.
  - ii. Powdered fiber between strands.
  - iii. Variations in the size or roundness of strands.
  - iv. Discoloration or rotting.
  - v. Distortion of hardware in the sling.
- Only fiber rope slings made from new rope shall be used. Use of repaired or reconditioned fiber rope slings is prohibited.
- Each sling should be marked or coded to show the rated capacities for each type of hitch and type of synthetic web material.
- e. Nylon web slings should not be used where there are fumes, vapors, sprays, mists, or liquids of acids or phenolic present.
- Nylon slings shall be immediately removed from service if there is:
- i. Abnormal wear.
  - ii. Torn stitching.
  - iii. Broken or cut fibers.
  - iv. Discoloration or deterioration.

- f. Polyester and polypropylene web slings shall not be used where there are fumes, vapors, sprays, mists or caustics present.
- g. Web slings with aluminum fittings shall not be used where fumes, vapors, sprays, mists, or liquid caustics are present.
- h. Synthetic polyester web slings should not be used with temperatures in excess of 180°F. Polypropylene web slings should not be used at temperatures in excess of 200°F. Synthetic web slings shall be immediately removed and destroyed if there are:
  - i. Acid or caustic burns.
  - ii. Melting or charring of any part of the sling surface.
  - iii. Snags, punctures, tears or cuts.
  - iv. Broken or worn stitches.
  - v. Distortion of fittings.

### **21.1.13 Mobile Cranes**

The employing department shall comply with the manufacturer's specifications and limitations applicable to the operation of any or all cranes or derricks. The attachments that are used with a crane shall not exceed the capacity, rating or scope recommended by the manufacturer. The rated load capacities recommended operating speeds, and special hazard warnings or instruction shall be conspicuously posted on all equipment.

The requirements are:

- a. A designated competent person will inspect all machinery and equipment prior to each use and during use, to make sure that it is in safe operating condition. The competent person will direct the assembly/disassembly of the equipment. If a defective part is found, all parts should be repaired or replaced.
- b. A thorough annual inspection of the hoisting machinery shall be made by a qualified person. The dates and the result of the inspections for each hoisting machine and piece of equipment will be maintained by CDL Electric R&M department. The department will prepare a certification record which will include the date the crane items were inspected and serial number or another identifier for the crane that was inspected. The most recent certification will be retained on file until a new one is prepared.
- c. Cranes shall be assembled/disassembled per manufacturers specifications/instructions.
- d. A pre-operational hazard assessment shall be conducted identifying all accessible areas within the swing radius of the rear of the rotating superstructure of the crane. These areas shall be barricaded in such a manner as to prevent an employee from being struck or crushed by the crane.
- e. Cranes can be modified and load capacity rerated if written approval from the manufacturer (or a Professional Engineer) is obtained before modifying equipment if the changes may impact safe operation.
- f. All exhaust pipes shall be guarded or insulated in areas where contact by employees is possible in the performance of normal duties.
- g. All windows in cabs shall be safety glass, or equivalent. There should be no visible distortion that will interfere with the safe operation of the machine.
- h. Guard rails, handholds, and steps shall be provided on cranes for easy access to the car and the cab.
- i. Platforms and walkways shall have anti-skid surfaces.
- j. An accessible fire extinguisher of 5BC rating or higher shall be available at all operator stations or cabs of equipment.
- k. If the equipment or machinery must be operated next to electrical lines, then the following procedures must be followed:
  - i. For electrical lines that are rated 50 KV or below, the minimum clearance between the lines and any part of the crane or load shall be 10 feet.



- ii. For lines rated over 50 KV, the minimum clearance between the lines and any part of the crane or load shall be 10 feet plus 0.4 inch for each 1 KV over 50 KV, or twice the length of the line insulator, but never less than 10 feet.
- iii. If the equipment is in transit with no load and boom lowered, the equipment clearance shall be a minimum of 4 feet for voltages less than 50 KV and 10 feet for voltages over 50 KV, up to and including 345KV, and 16 feet for voltages up to and including 750 KV.
- iv. A safety observer shall be designated to observe clearance of the equipment and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means.
- v. Any overhead wire shall be considered to be an energized line unless documentation is available to determine that the electrical lines are de-energized.

#### **21.1.14 Personnel Platforms**

##### **21.1.14.1 Standards**

If personnel platforms are used for the hoisting of employees, then the following standards must be followed.

**Note:** The use of a crane to hoist employees on a personnel platform is prohibited, except where the erection, use, or dismantling of a worksite prohibit the use of conventional means of reaching a worksite (such as a personnel hoist, ladder, stairway, aerial lift, elevating work platform or scaffold) would be more hazardous or is not possible because of structural design or worksite conditions.

The hoisting of a personnel platform shall be performed in a slow, controlled, cautious manner with no sudden movements of crane or the platform.

The load lines shall be capable of supporting, without failure, at least seven times the maximum intended load, except that where rotation resistant rope is used, the lines shall be capable of supporting, without failure, at least 10X the maximum intended load.

The load and boom hoist drum brakes, swing brakes, and locking devices (such as pawls or dogs) shall be engaged when the occupied personnel platform is a stationary working position.

The crane shall be uniformly level within one percent of level grade and located on firm footing. Cranes with equipped outriggers shall have them fully deployed following manufacturer's specifications, in so far as applicable, when hoisting employees. The minimum requirements when operating an All-Terrain or Mobile Crane with its outriggers extended on firm, stable soil is to utilize the manufacturers outrigger floats. Proactive safety management standards require that All Terrain and Mobile Cranes shall utilize secondary crane pads on every set-up.

The total weight of the loaded personnel platform and related riggings shall not exceed 50% of the rated capacity for the radius and the configuration of the crane.

Cranes with variable angle booms shall be equipped with a boom angle indicator that is readily visible to the operator.

Cranes with telescoping booms shall be equipped with a device to indicate clearly to the operator at all times the boom's extended length. An accurate determination of the load radius to be used during the lift shall be made prior to hoisting personnel.

A positive acting device (anti-two-blocking device) or other system shall be used which deactivates the hoisting action before damage occurs in the event of a two-blocking situation.

The load line hoist drums shall have a system or device on the power train, other than the load hoist brake, which regulates the lowering rate of speed of the hoist mechanism. Free fall is prohibited.

Personal fall arrest systems, including the attachment point (anchorage) must meet the requirements in 1926.502. These systems shall be used at all times while on the platform.

#### **21.1.14.2 Design criteria**

The personnel platform and suspension system shall be designed by a qualified engineer or qualified person competent in structural design.

The suspension system shall be designed to minimize tipping of the platform due to movement of employees occupying the platform.

The personnel platform itself, except the guardrail system and body belt harness anchorages, shall be capable of supporting, without failure, its own weight and at least 5 times the maximum intended load.

#### **21.1.14.3 Platform Specifications**

Each personnel platform shall be equipped with a guard rail system, and the guard rail system shall be enclosed at least from the toe-board to the mid-rail, with either solid construction or expanded metal that does not have any openings that are greater than ½ inch.

A grab rail shall be installed inside the entire perimeter of the personnel platform.

Access gates, if they are installed, shall not swing outward during the hoisting. The access gates, including sliding or folding gates, shall be equipped with a restraining device to prevent accidental opening.

Headroom shall be provided which allows employees to stand upright on the platform. In addition to the use of hard hats, employees shall be protected by overhead protection on the personnel platform when employees are exposed to falling objects.

All rough edges exposed to contact by employees shall be surfaced or smoothed in order to prevent injury to employees from punctures or lacerations.

All welding of the personnel platform and its components shall be performed by a qualified welder that is familiar with the weld grade types and materials specified in the platform design.

The personnel platform shall be conspicuously posted with a plate or other permanent marking which indicates the weight of the platform and its rated load capacity or maximum intended load.

#### **21.1.14.4 Personnel Platform Loading**

Personnel platforms shall be used only for employees, their tools, and the materials necessary to do their work, and shall not be used to hoist only materials or tools when not hoisting personnel.

- a. Materials and tools for use during a personnel lift shall be secured to prevent displacement.
- b. Materials and tools for use during a personnel lift shall be evenly distributed within the confines of the platform while the platform is suspended.

#### **21.1.14.5 Rigging of Personnel Platforms**

When wire rope is used to connect to a personnel platform the following shall be done:

- a. Each bridle leg shall be connected to a master link or shackle in such a manner to ensure that the load is evenly divided among the bridle legs.
- b. Hooks on the overhaul ball assemblies, lower load blocks, or other attachment assemblies shall be of a type that can be closed and locked to eliminate the hook throat opening.
- c. Wire rope, shackles, rings, master links, and other rigging hardware must be capable of supporting, without failure, at least five times the maximum intended load applied or transmitted to that component. Where rotation resistant rope is used, the slings shall be capable of supporting, without failure, at least ten times the maximum intended load.
- d. All eyes in the wire rope sling shall be fabricated with thimbles.
- e. Bridles and associated rigging for attaching the personnel platform to the hoist line shall be used only for the platform and the necessary employees, their tools and the materials necessary to do their work and shall not be used for any other purposes when not hoisting personnel.

- f. A trial lift shall be repeated prior to hoisting employees whenever the crane or derrick is moved and set up in a new location or returned to a previously used location. Employees shall not be hoisted unless the following conditions are determined to exist:
  - i. Hoist ropes shall be free of kinks.
  - ii. Multiple part lines shall not be twisted around each other.
  - iii. The primary attachment shall be centered over the platform.
  - iv. The hoisting system shall be inspected if the load rope is slacked to ensure all ropes are properly stated on drums and in sheaves.
  - v. A visual inspection of the crane, derrick, or rigging, personnel platform and the crane or derrick base support or ground shall be conducted by a competent person immediately after the trial lift to determine whether the testing has exposed any defect or produced any adverse effect on the component or structure.
- g. Any defects found during the inspections which create a safety hazard shall be corrected before hoisting personnel.
- h. At each job site, prior to hoisting employees on the personnel platform and after any repair or modification, the platform and rigging shall be proof tested to 125 percent of the platform's rated capacity by holding it in a suspended position for 5 minutes with the test load evenly distributed on the platform. After proof testing, a competent person shall inspect the platform and rigging. Any deficiencies found shall be corrected and another proof test shall be conducted. Personnel hoisting shall not be conducted until the proof testing requirements are satisfied.

#### **21.1.14.6 Trial Lift, Inspections, and Proof Testing**

A trial lift with the unoccupied personnel platform loaded at least to the anticipated lift weight shall be made from the ground level or any other location where employees will enter the platform to each location at which the personnel platform is to be hoisted and positioned. The trial lift shall be performed immediately prior to placing personnel on the platform. The operator shall determine that all systems, controls, and safety devices are activated and functioning properly, and that no interferences exist. The operator will also ensure that all configurations are necessary to reach those work locations and will allow the operator to remain under the 50X limit of the hoist's rated capacity.

The trial lift shall be repeated prior to hoisting employees whenever the crane or derrick is moved and set in a new location or returned to a previously used location. The trial lift shall be repeated when the lift route is changed.

After the trial lift and just prior to hoisting personnel, the platform shall be hoisted a few inches and inspected to ensure that it is secure and properly balanced.

Employees shall not be hoisted unless the following conditions are determined to exist:

- a. Hoist ropes shall be free of kinks.
- b. Multiple part lines shall not be twisted around each other.
- c. The primary attachment shall be centered over the platform.
- d. The hoisting system shall be inspected to ensure that all ropes are properly stated on drums and in sheaves if the load rope is slack.

A visual inspection of the crane shall be conducted by a competent person immediately after the trial lift to determine whether the testing has exposed any defect or produced any adverse effect upon any component or structure.

Any defects found during inspections which create a safety hazard shall be corrected before hoisting personnel.

#### **21.1.14.7 Work Practices**

- a. Employees shall keep all parts of the body inside the platform during raising, lowering, and positioning. This provision does not apply to an occupant of the platform performing the duties of a signal person.

- b. Before employees exit or enter a hoisted personnel platform that is not landed, the platform shall be secured to the structure where the work is to be performed, unless the securing to the structure creates an unsafe condition.
- c. Tag lines shall be used unless their use creates an unsafe condition.
- d. The crane operator shall remain at the controls at all times when the crane engine is running, and the platform is occupied.
- e. The hoisting of employees shall be promptly discontinued upon the indication of any dangerous weather or any other dangers.
- f. Employees being hoisted shall remain in continuous sight of and in direct communication with the operator and signal person.
- g. The employees occupying the personnel platform shall use a body belt/harness system with a lanyard appropriately attached to the lower lead block or to a structural member within the personnel platform capable of supporting a fall impact for employees using anchorage.

#### **21.1.14.8 Pre-Lift Meeting**

Before the lift occurs, a pre-lift meeting must be held involving the operator, signal person, and employees to be lifted. The meeting should be held prior to the trial lift at each new work location and shall be repeated for any employees newly assigned to the operation.

Employees shall keep all parts of the body inside the platform during raising, lowering, and positioning. Before employees exit or enter a hoisted personnel platform that is not landed, the platform shall be secured to the structure where the work is to be performed, unless securing to the structure creates an unsafe condition.

The crane or derrick operator shall remain at the controls at all times when the crane engine is running, and the platform is occupied. Hoisting of employees shall be discontinued upon indication of any dangerous weather condition or other impending danger.

Employees being hoisted shall remain in continuous sight of, and in direct communication with, the operator or signal person.

Hoisting of employees while the crane is traveling is prohibited.

#### **21.1.15 Rigging a Load**

Do the following when rigging a load:

- a. Determine the weight of the load. Do not guess.
- b. Determine the proper size for slings and components.
- c. Do not use manila rope for rigging.
- d. Make sure that shackle pins and shouldered eye bolts are installed in accordance with the manufacturer's recommendations.
- e. Make sure that ordinary (shoulder less) eye bolts are threaded in at least 1.5 times the bolt diameter.
- f. Use safety hoist rings (swivel eyes) as a preferred substitute for eye bolts wherever possible.
- g. Pad sharp edges to protect slings. Remember that machinery foundations or angle-iron edges may not feel sharp to the touch but could cut into rigging when under several tons of load. Wood, tire rubber, or other pliable materials may be suitable for padding.
- h. Do not use slings, eye bolts, shackles, or hooks that have been cut, welded, or brazed.
- i. Install wire-rope clips with the base only on the live end and the U-bolt only on the dead end. Follow the manufacturer's recommendations for the spacing for each specific wire size.
- j. Determine the center of gravity and balance the load before moving it.
- k. Initially lift the load only a few inches to test the rigging and balance.

#### **21.1.16 Crane Overloading**

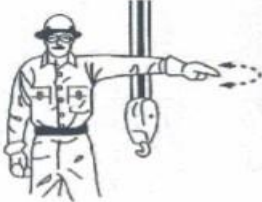







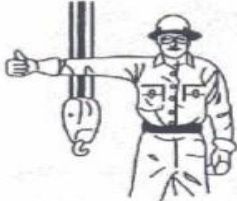
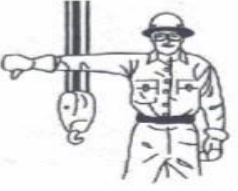
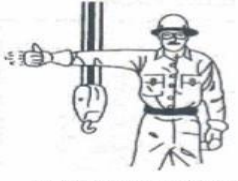
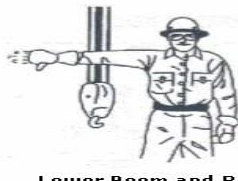
Cranes or hoists shall not be loaded beyond their rated capacity for normal operations. Any crane or hoist suspected of having been overloaded shall be removed from service by locking open and tagging

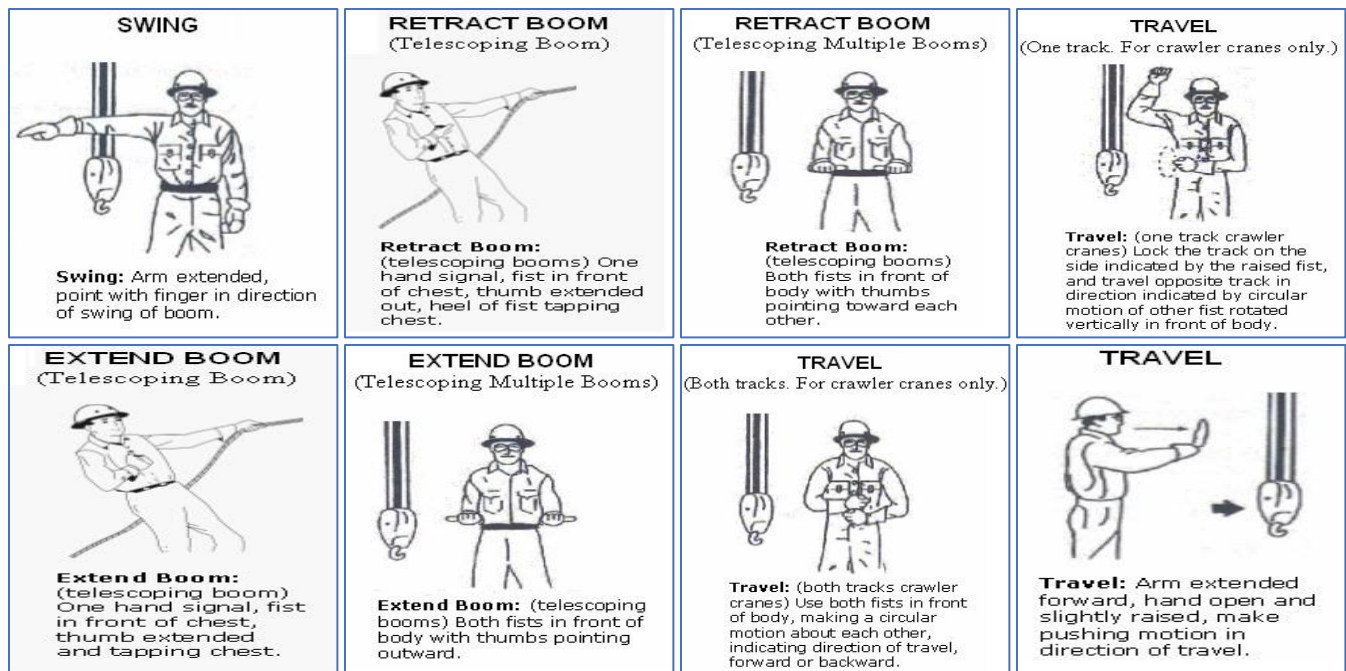
the main disconnect switch. Additionally, overloaded cranes shall be inspected, repaired, load tested, and approved for use before being returned to service.

### 21.1.17 Hand Signals

Signals to the operator shall be in accordance with the standard hand signals unless voice communications equipment (telephone, radio, or equivalent) is used.

Signals shall be discernible or audible at all times. Some special operations may require addition to or modification of the basic signals. For all such cases, these special signals shall be agreed upon and thoroughly understood by both the person giving the signals and the operator and shall not be in conflict with the standard signals.

<p><b>STOP</b></p>  <p><b>Stop:</b> Arm extend, palm down, move arm back and forth horizontally.</p>	<p><b>EMERGENCY STOP</b></p>  <p><b>Emergency Stop:</b> Both arms extend, palm down, move arms back and forth horizontally.</p>	<p><b>DOG EVERYTHING</b></p>  <p><b>Dog Everything:</b> Clasp hands in front of body.</p>	<p><b>MOVE SLOWLY</b></p>  <p><b>Move Slowly:</b> Use one hand to give motion signal and place other hand motionless in front of hand giving the motion signal.</p>
<p><b>HOIST</b></p>  <p><b>Hoist:</b> With forearm vertical, forefinger pointing up, move hand in small horizontal circle.</p>	<p><b>LOWER</b></p>  <p><b>Lower:</b> With arm extended downward, forefinger pointing down, move hand in a small horizontal circle.</p>	<p><b>USE MAIN HOIST</b></p>  <p><b>Use Main Hoist:</b> Tap fist on head, then use regular signals.</p>	<p><b>USE WHIP LINE</b></p>  <p><b>Use Whip line:</b> (auxiliary Hoist) tap elbow with one hand, then use regular signals.</p>
<p><b>RAISE BOOM</b></p>  <p><b>Raise Boom:</b> Arm extended, fingers closed, thumb pointing upward.</p>	<p><b>LOWER BOOM</b></p>  <p><b>Lower Boom:</b> Arm extended, fingers closed, thumb pointing downward.</p>	<p><b>RAISE THE BOOM AND LOWER THE LOAD</b></p>  <p><b>Raise Boom and Lower the Load:</b> With arm extended, thumb pointing up, flex fingers in and out as long as load movement is desired.</p>	<p><b>LOWER THE BOOM AND RAISE THE LOAD</b></p>  <p><b>Lower Boom and Raise the Load:</b> With arm extended, thumb pointing down, flex fingers in and out as long as load movement is desired.</p>



### 21.1.18 Inspection, Maintenance, and Testing

All tests and inspections shall be conducted in accordance with the manufacturer's recommendations.

#### 21.1.18.1 Monthly Tests and Inspections

- All in-service cranes and hoists shall be inspected monthly, and the results documented on Attachments AG, AH, and AF of this policy and kept in R&M files and/or fabrication shop.
- Defective cranes and hoists shall be locked and tagged "out of service" until all defects are corrected. The inspector shall initiate corrective action by notifying the facility manager or building coordinator.

#### 21.1.18.2 Annual Inspections

CDL Electric's R&M Division will schedule and supervise (or perform) annual preventive maintenance (PM) and annual inspections of all cranes and hoists. The annual PM and inspection shall cover

- Hoisting and lowering mechanisms.
- Trolley travel or monorail travel.
- Bridge travel.
- Limit switches and locking and safety devices.
- Structural members.
- Bolts or rivets.
- Sheaves and drums.
- Parts such as pins, bearings, shafts, gears, rollers, locking devices, and clamping devices.
- Brake system parts, linings, pawls, and ratchets.
- Load, wind, and other indicators over their full range.
- Gasoline, diesel, electric, or other power plants.
- Chain-drive sprockets.
- Crane and hoist hooks.
- Electrical apparatus such as controller contractors, limit switches, and push button stations.
- Wire rope.
- Hoist chains.

#### 21.1.18.3 Load Testing

- Newly installed cranes and hoists shall be load tested at 125% of the rated capacity by designated personnel.

- b. Slings shall have appropriate test data when purchased. It is the responsibility of the purchaser to ensure that the appropriate test data are obtained and maintained.
- c. Re-rated cranes and hoists shall be load tested to 125% of the new capacity if the new rating is greater than the previous rated capacity.
- d. Fixed cranes or hoists that have had major modifications or repair shall be load tested to 125% of the rated capacity.
- e. Cranes and hoists that have been overloaded shall be inspected prior to being returned to service.
- f. Personnel platforms, baskets, and rigging suspended from a crane or hoist hook shall be load tested initially, then re-tested annually thereafter or at each new job site.
- g. All cranes and hoists with a capacity greater than 2722 kg (3 tons) should be load tested every four years to 125% of the rated capacity. Cranes and hoists with a lesser capacity should be load tested every eight years to 125% of the rated capacity.
- h. All mobile hoists shall be load tested at intervals to be determined by the R&M Division.

#### **21.1.18.4 Records**

CDL Electric R&M shall maintain records for all cranes, hoist and rigging equipment.

## Appendix AF - Mobile Crane Daily/Monthly Inspection Form

This form is used to document the pre-use inspection required for all mobile cranes at the beginning of each shift. The operator completes inspection before beginning work, keeps the form on the crane during work, and submits to the manager of equipment and transit once work is completed. The manager of equipment and transit maintains the completed forms for a minimum of 3 months. Equipment found unsafe must be removed from service. Report any deficiencies immediately to the manager of equipment and transit.

Operator	
Crane number	NCCO Lic #

### Visual Inspection Pass Fail N/A

Engine fluid level correct (check dip stick or sight glass)			
Hydraulic fluid level correct (check dip stick or sight glass)			
Hydraulic system exhibits no apparent weeping or leaks			
Air system exhibits no audible leaks			
Tire pressure acceptable and tire not damaged			
Telescoping boom exhibits no damage to structure, wear pads, boom stops, or cylinder			
Wire rope free of dirt, excess lube, kinks, and wires and spooled correctly			
Reeving correct			
Wedge sockets and wire rope clips not distorted, cracked, or missing			
Block not damaged			
Ball and hook are free to swivel and rotate			
Guards are in place			
Outrigger float(s) secured with pad pin			

### Cab

Handrails in place and not damaged			
Operator's manual in vehicle			
Load chart legible and visible to operator			
Hand signal chart visible to workers			
Charged fire extinguisher in place			
Cab glass not cracked, and wipers are functional			

Signature	
Model	Date

### Gauges and Indicators Pass Fail N/A

Load moment indicator operational			
Drum rotation indicator functioning			
Boom length indicator functioning			
Boom angle indicator functioning			
Engine: hydraulic, air, electrical, oil pressure, temperature, and fuel			

### Operational Inspection

Correct counterweight for the load			
Main hoist control functioning			
Auxiliary hoist control functioning			
Anti-two block in place and functioning			
Swing brake			
Lights and horns functional			



## Appendix AG - Inspection Checklist - Overhead Crane

Inspect Monthly and Annually

Date: \_\_\_\_\_ Inspected By: \_\_\_\_\_

Location: \_\_\_\_\_ Crane Make: \_\_\_\_\_ Model: \_\_\_\_\_

Lifting Capacity: \_\_\_\_\_ Serial Number: \_\_\_\_\_

Equipment	OK	N/A	Faulty
-----------	----	-----	--------

1. **Bridge**

a. Motor	_____	_____	_____
b. Brake	_____	_____	_____
c. Shaft Couplings	_____	_____	_____
d. Shaft Bearings	_____	_____	_____
e. Gears	_____	_____	_____
f. Wheels	_____	_____	_____
g. Girders and Connections	_____	_____	_____
h. Guards and Covers	_____	_____	_____
i. Bumpers	_____	_____	_____
j. Bumper Bolts	_____	_____	_____

2. **Master Switches**

a. Pushbutton	_____	_____	_____
b. Wiring	_____	_____	_____

3. **Main Hoist**

a. Motor	_____	_____	_____
b. Brake	_____	_____	_____
c. Couplings	_____	_____	_____
d. Gears, Shaft and Bearings	_____	_____	_____
e. Upper Block	_____	_____	_____
f. Lower Block	_____	_____	_____
g. Hook, Magnetic Particle	_____	_____	_____
h. Hook & Throat Opening Measurement	_____	_____	_____
i. Hook	_____	_____	_____
j. Hoist Cable	_____	_____	_____
k. Rope Drum	_____	_____	_____
l. Guards	_____	_____	_____
m. Limit Switch	_____	_____	_____
n. Cable attachment to drum	_____	_____	_____

4. **Trolley**

a. Motor	_____	_____	_____
b. Brake	_____	_____	_____
c. Couplings	_____	_____	_____
d. Gears, Shaft and Bearings	_____	_____	_____
e. Frame	_____	_____	_____
f. Wheels	_____	_____	_____
g. Bumpers	_____	_____	_____
h. Guards	_____	_____	_____

- i. Rails \_\_\_\_\_
- j. Conductors \_\_\_\_\_
- k. Collectors \_\_\_\_\_

5.       **Runways**

- a. Rails Including Span \_\_\_\_\_
- b. Rail Joints \_\_\_\_\_
- c. Main Conductors \_\_\_\_\_
- d. Main Collectors \_\_\_\_\_
- e. Inspection Copy and Date \_\_\_\_\_

6.       **Other**

- a. Authorized User Sign \_\_\_\_\_
- b. Lubrication \_\_\_\_\_
- c. Capacity Signs \_\_\_\_\_
- d. Warning Signs \_\_\_\_\_
- e. Lockout Mechanism \_\_\_\_\_

Comments:

## Appendix AH - Inspection Checklist - Ratchet Chain Hoists

Inspect Monthly

Date: \_\_\_\_\_ Inspected By: \_\_\_\_\_

Location: \_\_\_\_\_ Crane Make: \_\_\_\_\_ Model: \_\_\_\_\_

Lifting Capacity: \_\_\_\_\_ Serial Number: \_\_\_\_\_

Equipment

OK    N/A    Faulty

### 1. Load Chain

- |  |       |       |       |
|--|-------|-------|-------|
| a. Remove any foreign material from the chain.                                 | _____ | _____ | _____ |
| b. Inspect both load and lift chain for wear using a gauge.                    | _____ | _____ | _____ |
| c. Inspect for gouges, nicks, arc burns, twisted, bent and worn/damaged links. | _____ | _____ | _____ |
| d. Lower hook and throat opening measurement                                   | _____ | _____ | _____ |
| e. Upper hook and throat opening measurement                                   | _____ | _____ | _____ |
| f. Safety Latch  | _____ | _____ | _____ |
| g. Hook Swivel   | _____ | _____ | _____ |
| h. Hook Pin  | _____ | _____ | _____ |
| i. Self-Energizing Brake   | _____ | _____ | _____ |
| j. Ratchet Mechanism   | _____ | _____ | _____ |
| k. Inspect sheaves for wear and freedom of movement.                           | _____ | _____ | _____ |
| l. Inspect dead end pins   | _____ | _____ | _____ |
| m. Attachment of the Chain to Hoist  | _____ | _____ | _____ |

**Note:** After the inspection, lubricate the chain with a light coat of penetrating oil and graphite.

Comments:

## Appendix AI - Inspection Checklist - Electric Chain Hoist

Inspect Monthly

Date: \_\_\_\_\_ Inspected By: \_\_\_\_\_

Location: \_\_\_\_\_ Crane Make: \_\_\_\_\_ Model: \_\_\_\_\_

Lifting Capacity: \_\_\_\_\_ Serial Number: \_\_\_\_\_

Warning: Disconnect power (and discharge the capacitor on single phase units) before inspecting hoists.  
Equipment

OK    N/A    Faulty

### 1. Structural Support System

- |  |       |       |       |
|--|-------|-------|-------|
| a. Mounting Base   | _____ | _____ | _____ |
| b. Vertical Support Column   | _____ | _____ | _____ |
| c. Horizontal Support Column   | _____ | _____ | _____ |
| d. Support and Beam - Maximum rated capacity<br>stenciled on the beam. | _____ | _____ | _____ |

### 2. Main Hoist

- |   |       |       |       |
|---|-------|-------|-------|
| a. Clean the chain by removing any foreign material such as dirt and<br>grease and inspect the chain for wear using a gauge.                      | _____ | _____ | _____ |
| b. Slack the chain and observe if wear exists at interlink bearing<br>surface between the links, arc burns, twisted, bent, worn or damaged links. | _____ | _____ | _____ |
| c. Inspect the loose end-link, loose end screw and dead-end block and clevis<br>pin on the double reeved units.                                   | _____ | _____ | _____ |
| d. Inspect the sheave wheel for freedom of movement.  | _____ | _____ | _____ |
| e. Mechanical load spring brake   | _____ | _____ | _____ |
| f. Electric brake   | _____ | _____ | _____ |

### 3. Equipment

- |  |       |       |       |
|--|-------|-------|-------|
| a. Lower hook and throat opening measurement | _____ | _____ | _____ |
| b. Upper Hook                                | _____ | _____ | _____ |
| c. Hook Swivel                               | _____ | _____ | _____ |
| d. Hook Pin                                  | _____ | _____ | _____ |
| e. Chain Drum                                | _____ | _____ | _____ |
| f. Guards                                    | _____ | _____ | _____ |
| g. Limit Switches                            | _____ | _____ | _____ |

### 4. Operational

- |  |       |       |       |
|--|-------|-------|-------|
| a. Inspect that all connections are made, and screw terminals are tight.   | _____ | _____ | _____ |
| b. Check the ground screws to see that the ground wires of the pendant<br>push button cable and power cord are secure. | _____ | _____ | _____ |
| c. Master Switch   | _____ | _____ | _____ |
| d. Other   | _____ | _____ | _____ |

**Note:** After the inspection, lubricate the chain with a light coat of penetrating oil and graphite.

Comments:

## 22.1 Electrical Safety Awareness

As part of CDL Electric's overall safety and health program, an electrical safety program has been established. The program is designed to assist in compliance with Occupational Safety and Health Administration's (OSHA) Electrical Training, Selection and Use of Work Practices, Use of equipment, and Safeguards for personnel protection standards, 29 CFR 1910.332 – 1910.335.

### 22.1.1 Objective

To establish minimum requirements to prevent injury to personnel working on or near exposed energized parts of electrical equipment and to achieve compliance with OSHA final rule 1910 Subpart S. Our intention is to comply with the final rule and raise the awareness level of electrical hazards in the workplace or home, for all organization employees.

- Teaches supervisors and employees how to perform job tasks correctly
- Helps determine cause of an accident after one has occurred
- Improves production efficiency by identifying incorrect procedures
- Increases employee involvement
- Enhances communication between management and employees regarding safety concerns
- Reduces employee injuries and lost workdays
- Lowers workers' compensation loss costs

### 22.1.2 Scope

This program applies to employees engaged in maintenance and repair of electric utilization systems, including electric equipment and installations used to provide electric power and light for employee workplaces. It also applies to employees who may be exposed to unguarded electrical installations. It does not apply to OSHA's 29 CFR 1910.269 - Electric Power Generation, Transmission, and Distribution.

### 22.1.3 Definitions

Qualified Person – One who has skills and knowledge related to the construction and operation of electrical equipment and installations and has received safety training on the hazards involved. Examples of safety training include, but are not limited to, training in the use of special precautionary techniques, personal protective equipment, including arc flash, insulating and shielding materials, and insulated tools and test equipment. A person can be considered qualified with respect to certain equipment and methods but still be unqualified for others.

Unqualified Person – Those with little or no training working on, near, or with electrical wiring or optical fiber cable (where such installations are made along with electrical conductors).

### 22.1.4 General Requirements

This procedure, including the training requirements, applies to both qualified and unqualified persons who work on, near, or with exposed energized parts. This procedure applies only when energized parts are exposed (i.e., not reduced to a safe level by the electrical installation requirements of 1910.303 through 1910.308) and only to exposed energized parts operating at 50 volts or more.

Work excluded from the provisions of this procedure for qualified persons includes:

- Generation, transmission and distribution installations
- Communications installations
- Installations in vehicles
- Railway installations

Only persons who have the skills, knowledge, and required training (including task specific training) are considered "qualified" and may work on or near any circuit parts or equipment that have not been de-energized.

These qualified persons must:

- a. Be capable of working safely on energized circuits
- b. Be familiar with the proper use of special precautionary techniques
- c. Know how to select, use and inspect appropriate personal protective equipment
- d. Know how to use insulating and shielding materials
- e. Understand the proper selection and use of insulated tools

### 22.1.5 Training

Training is required for both qualified and unqualified persons who face a risk of electric shock that is not reduced to a safe level by the electrical installation requirements of 1910.303 through 1910.308. Training shall be in a classroom setting and/or on the job. The degree of training provided shall be determined by the risk to the employee. Training must be documented.

- a. Training of qualified persons must include at the minimum the following:
  - i. The safety-related work practices required by 1910.331 through 1910.335 that pertain to their respective job assignments
  - ii. The ability to distinguish live parts from other parts of electrical equipment
  - iii. The ability to determine the nominal voltage of live parts
  - iv. The knowledge of clearance and/or approach distances when working on or near exposed energized parts, as described in 1910.333 (c)
- b. When a qualified person is working in the vicinity of overhead lines, whether in an elevated position or on the ground, the person may not approach or take any conductive object without an approved insulating handle closer to exposed energized parts than shown in Table S5.

TABLE S5

Voltage range (phase to phase)	Minimum approach distance
300V and less .....	Avoid Contact
Over 300V, not over 750V .....	1 ft. 0 in. (30.5 cm).
Over 750V, not over 2kV .....	1 ft. 6 in. (46 cm).
Over 2kV, not over 15kV .....	2 ft. 0 in. (61 cm).
Over 15kV, not over 37kV .....	3 ft. 0 in. (91 cm).
Over 37kV, not over 87.5kV .....	3 ft. 6 in. (107 cm).
Over 87.5kV, not over 121kV ....	4 ft. 0 in. (122 cm).
Over 121kV, not over 140kV .....	4 ft. 6 in. (137 cm).

- c. Training of unqualified persons must include at the minimum the following:
  - i. The safety-related work practices required by 1910.331 through 1910.335 that pertain to their respective job assignments
  - ii. The inherent hazards of electricity, such as high voltage, electric current, arcing, grounding and lack of guarding
  - iii. Any electrically related safety practices not specifically addressed by 1910.331 through 1910.335 that pertain to their respective job assignments
  - iv. It is recommended that all employees receive unqualified person training during the new hire orientation process

### 22.1.6 Selection and Use of Work Practices

Safe work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts when work is performed near or on equipment or circuits which are or may be energized.

- a. Live electrical parts are to be put into an electrically safe work condition before a potentially exposed employee works on them unless:
  - i. The employer can demonstrate that de-energizing introduces additional or increased hazards. Examples include:

- Interruption of life-support equipment
  - Deactivation of emergency alarms systems
  - Shutdown of hazardous-location ventilation equipment
  - Removal of illumination for an area
- ii. The employer can demonstrate that de-energizing is infeasible due to equipment design or operational limitations.  
Examples of work that may be performed because of infeasibility include:
- Testing of electric circuits that can only be performed with the circuit energized (troubleshooting)
  - Work on circuits that form an integral part of a continual industrial process
- b. De-energized parts require lockout/tagout accordance with 1910.333 and 1910.147 as well as the lockout/tagout program, unless otherwise exempted.
- c. An electrically safe work condition will be achieved when utilizing the energy control procedure and verified by the following process:
- i. Determine all possible sources of electrical supply to the specific equipment. Check applicable up-to-date drawings, diagrams and identification tags.
  - ii. After properly interrupting the load current, open the disconnecting device(s) for each source.
  - iii. Wherever 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.
  - iv. Apply lockout/tagout devices in accordance with local lockout procedure. While any employee is exposed to contact with parts of fixed electric equipment or circuits which have been deenergized, the circuits energizing the parts shall be locked out or tagged or both.
  - v. Employees must treat conductors and parts of electric equipment that have been deenergized but have not been locked out or tagged as energized parts.
  - vi. Use an adequately rated voltage detector to test each phase conductor or circuit part to verify they are de-energized. Test each phase conductor or circuit part both phase-to-phase and phase-to-ground. Before the test, determine that the voltage detector is operating properly. When used on 600v and above the voltage detector must be tested before and immediately after each test.
  - vii. Where the possibility of induced voltages or stored electrical energy exists, ground the phase conductors or circuit parts before touching them. Where it could be reasonably anticipated that the conductors or circuit parts being de-energized could contact other exposed energized conductors or circuit parts, apply ground connecting devices rated for the available fault duty.
- d. If live electrical parts are not placed in an electrically safe work condition (i.e., for the reasons of increased or additional hazards or infeasibility), then work being performed shall be considered energized electrical work and shall be performed by written permit only. Conductors and parts of electrical equipment that have been de-energized but have not been locked or tagged out shall be treated as live parts.
- e. Work performed on or near live parts by qualified persons related to tasks, such as testing, troubleshooting and voltage measuring, shall be permitted to be performed without an energized work permit, provided appropriate safety work practices and proper personal protective equipment is utilized.
- f. Only qualified persons shall be allowed to work on energized parts or equipment.
- g. If work is to be performed near overhead lines (inside or outside of a building), the lines and ground must be de-energized or other protective measures must be taken, such as guarding, isolation or insulation. Minimum distances for qualified and unqualified persons and vehicles are described in 1910.333 (c) (3). Under no circumstances may an unqualified person come within 10 feet of overhead lines (and greater in some instances). Any unqualified employee, vehicle, or mechanical equipment capable of having parts of its structure elevated near energized overhead lines shall be operated so that a clearance of 10 ft. (305 cm) is maintained. If the voltage is higher than 50kV, the clearance shall be increased 4 in. (10 cm) for every 10kV over that voltage.

- h. Appropriate illumination must be provided for employees who work on exposed energized parts. At a minimum 300 lux / 30-foot candles should be maintained in the task work area. However, additional lighting may be required for more detailed tasks. This can be obtained by a combination of general lighting plus specialized supplementary lighting.
- i. Conductive materials and equipment that are in contact with any part of an employee's body shall be handled in a manner that will prevent them from contacting exposed energized parts (conduit, piping, jewelry, cloth with conductive thread, metal headgear, etc.).
- j. Portable ladders (metal) may not have conductive side rails where the employee or the ladder could contact exposed energized parts.
- k. Cleaning and the use of electrically conductive cleaning materials (steel wool, metalized cloth, conductive liquids, etc.), may not be used in proximity to energized parts unless procedures are followed which will prevent electrical contact.
- l. Only a qualified person may defeat an electrical interlock, and then only temporarily and when following the requirements under 1910.333 (c).  
**Note:** Defeating interlocks is only allowed by a qualified person and only for calibrating or troubleshooting equipment.

### **22.1.7 Use of Equipment**

- a. Cord and plug-connected equipment, including extension cords:
  - i. Shall be handled in a manner which will not cause damage, such as raising and lowering by the flexible cord, or fastening extension cords with staples
  - ii. Shall be visually inspected before each use, and if damaged, removed from service
  - iii. Shall be approved for high-conductive (wet, etc.) work locations where required. Employees' hands may not be wet when plugging and unplugging equipment
  - iv. A ground fault circuit interrupter must be used when (1) using an electric powered hand tool with an extension cord; (2) in a wet location
- b. Load rated switches, circuit breakers, or the equivalent (load-break type) shall be designed for opening, closing, and reversing circuits under load conditions.
- c. When a circuit is de-energized by a circuit protection device, the circuit may not be manually re-energized until it has been determined it can be done so safely (unless the design allows it to be determined an overload condition rather than a fault condition).
- d. Overcurrent protection of circuits and conductors may not be modified, even on a temporary basis.
- e. Only qualified persons may perform testing work on electrical circuits or equipment. Test instruments shall be visually inspected before use (over 600v the equipment must be checked before and immediately after the test) and shall be rated and designed for their use.

### **22.1.8 Safeguards for Personal Protection**

- a. Electrical protective equipment shall be provided and used when necessary such as non-conductive headgear, eye or face protection where electric arcs or flashes or flying objects may be present, insulated tools and handling equipment, protective barriers, and insulating materials, etc.
  - Protective equipment shall be maintained in a safe, reliable condition and shall be periodically inspected or tested as required by 1910.137.
  - Safety signs, tags, barricades and attendants shall be used as necessary to warn and protect employees from electrical hazards.
- b. Employees shall wear flame-resistant (FR) clothing wherever there is possible exposure to an electric arc flash above the threshold incident-energy level for a second-degree burn 5 J/cm<sup>2</sup> (1.2 cal/cm<sup>2</sup>). Conductive items of jewelry or clothing shall not be worn unless they are rendered non-conductive by covering, wrapping or other insulating means.
- c. Protective shields, protective barriers or insulating materials as necessary shall be provided.



- d. To determine which level of personal protection is necessary, employees should refer to the electrical equipment on which they will be working. The label on the equipment or the applicable tables in NFPA 70 E will specify the level of PPE required. The requirements follow below:

**NFPA 70E – 2015**

**CAUTION:** “The Table provides the minimum Personal Protective Equipment guidance. Be aware that other factors may influence selection and NFPA 70E should always be consulted before selection is finalized.”

**Table 130.7(C)(16) Personal Protective Equipment (PPE)**

PPE Category	PPE
1	<b>Arc-Rated Clothing, Minimum Arc Rating of 4 cal/cm2 (see Note 1)</b>
	Arc-rated long-sleeve shirt and pants or arc-rated coverall
	Arc-rated face shield (see Note 2) or arc flash suit hood
	Arc-rated jacket, parka, rainwear, or hard hat liner (AN)
	<b>Protective Equipment</b>
	Hard hat
	Safety glasses or safety goggles (SR)
	Hearing protection (ear canal inserts)
	Heavy duty leather gloves (see Note 3)
	Leather footwear (AN)
2	<b>Arc-Rated Clothing, Minimum Arc Rating of 8 cal/cm2 (see Note 1)</b>
	Arc-rated long-sleeve shirt and pants or arc-rated coverall
	Arc-rated flash suit hood or arc-rated face shield (see Note 2) and arc-rated balaclava
	Arc-rated jacket, parka, rainwear, or hard hat liner (AN)
	<b>Protective Equipment</b>
	Hard hat
	Safety glasses or safety goggles (SR)

	Hearing protection (ear canal inserts)
	Heavy duty leather gloves (see Note 3)
	Leather footwear
3	<b>Arc-Rated Clothing Selected So That the System Arc Rating Meets the Required</b>
	Arc-rated long-sleeve shirt (AR)
	Arc-rated pants (AR)
	Arc-rated coverall (AR)
	Arc-rated arc flash suit jacket (AR)
	Arc-rated arc flash suit pants (AR)
	Arc-rated arc flash suit hood
	Arc-rated gloves (see Note 3)
	Arc-rated jacket, parka, rainwear, or hard hat liner (AN)
	<b>Protective Equipment</b>
	Hard hat
	Safety glasses or safety goggles (SR)
	Hearing protection (ear canal inserts)
	Leather footwear
4	<b>Arc-Rated Clothing Selected So That the System Arc Rating Meets the Required</b>
	Arc-rated long-sleeve shirt (AR)
	Arc-rated pants (AR)
	Arc-rated coverall (AR)
	Arc-rated arc flash suit jacket (AR)
	Arc-rated arc flash suit pants (AR)

	Arc-rated arc flash suit hood
	Arc-rated gloves (see Note 3)
	Arc-rated jacket, parka, rainwear, or hard hat liner (AN)
	<b>Protective Equipment</b>
	Hard hat
	Safety glasses or safety goggles (SR)
	Hearing protection (ear canal inserts)
	Leather footwear
	AN: as needed (optional). AR: as required. SR: selection required.

**Notes:**

- (1) Arc rating is defined in Article 100.
  - (2) Face shields are to have wrap-around guarding to protect not only the face but also the forehead, ears, and neck, or, alternatively, an arc-rated arc flash suit hood is required to be worn.
  - (3) If rubber insulating gloves with leather protectors are used, additional leather or arc-rated gloves are not required. The combination of rubber insulating gloves with leather protectors satisfies the arc flash protection requirement.
- e. It is critical when selecting the appropriate PPE that at a minimum all required elements of the level are worn. In addition, it is necessary to add the arc thermal protective value (ATPV) rating for each layer of clothing to ensure that it exceeds the arc flash rating on the equipment.
  - f. Voltage-rated gloves shall be worn whenever the prohibited approach boundary will be crossed. They shall be rated adequately for the task and be provided with leather over protection.
  - g. It is recommended that signs reading “WARNING: Arc Flash and Shock Hazard Appropriate PPE Required” be posted on all individual machine panels, power distribution panels, and unit substations, distribution panels, and plant switch gears that are likely to require examination, adjustment, servicing or maintenance while energized to warn qualified persons of the potential electric arc flash hazards.

### 22.1.9 Limits of Approach and Arc Flash Hazard Analysis

Observing a safe approach distance from exposed energized electrical conductors or circuit parts is an effective means of maintaining electrical safety. As the distance between a person and the exposed energized conductors or circuit parts decreases, the potential for electrical accident increases.

### 22.1.10 Limits of Approach Definitions

- a. Flash Protection Boundary (FPB) - A boundary to be crossed only with appropriate personal protective equipment to protect against electrical arc flash. The boundary is nominally located at a distance from the energized parts where the incident energy from an anticipated arc is reduced to 1.2 cal / cm<sup>2</sup>. For systems less than 600V, the boundary is 4 feet unless a flash hazard analysis has been performed.

**Note:** Persons not considered electrically qualified (unqualified), as defined in this document, may enter the FPB but shall not be allowed to perform tasks within the FPB. Unqualified persons must not cross the FPB unless they are wearing appropriate personal protective clothing and are under the close supervision of a qualified person.

- b. **Limited Approach Boundary (LAB)** - An unqualified person may cross the limited approach boundary only when continuously escorted by a qualified person and wearing proper PPE. Again, an unqualified person may not perform any tasks within the LAB.
- c. **Restricted Approach Boundary (RAB)** - A shock protection boundary to be crossed by only electrically qualified persons (at a distance from an energized part see table 1-1.) which, due to its proximity to a shock hazard, require the use of shock protection techniques and equipment. Qualified employees crossing the restricted approach boundary must have an Energized Work Permit, use appropriate PPE, and keep the body out of the prohibited space and maintain proper body position.

**Note:** Under no circumstance may an unqualified person cross into the RAB.

- d. **Prohibited Approach Boundary** - A shock protection boundary to be crossed by only electrically qualified persons which, when crossed by a body part or object, requires the same protection as if direct contact is made with a live part. Require the use of proper equipment, PPE and an Energized Work Permit.

Table 1-1 Limits of Approach				
Voltage Phase to Phase	Limited Approach Boundary Exposed Fixed Part	Limited Approach Boundary Exposed Movable Part	Restricted Approach Boundary	Prohibited Approach Boundary
0 to 50	Not specified	Not specified	Not specified	Not specified
51 to 300	3 feet 6 inches	10 feet	Avoid contact	Avoid contact
301 to 750	3 feet 6 inches	10 feet	1 foot	1 inch
751 to 15 kV	5 feet	10 feet	2 feet 2 inches	7 inches
138 kV to 145 kV	10 feet	11 feet	3 feet 7 inches	3 feet 1 inch
230 kV to 242 kV	13 feet	13 feet	5 feet 3 inches	4 feet 9 inches

An arc flash hazard analysis shall be done in order to protect personnel from the possibility of being injured by an arc flash. The analysis shall determine the Flash Protection Boundary and the personal protective equipment that people within the FPB will use. Arc flash hazard analysis should be done before a person approaches any exposed electrical conductor or circuit part that has not been placed in an electrically safe working condition.

The recommended arc flash analysis method will be IEEE Std. 1584.

### 22.1.11 High Voltage

High voltage is any voltage greater than 600 volts nominal or greater than 300 volts to ground. Additionally, power supplies with low voltage, high current (greater than 50 amps) shall be considered high voltage.

The minimum clear working space in front of electric equipment such as switchboards, control panels, switches, circuit breakers, motor controllers, relays and similar equipment may not be less than specified in Table 1-2.

#### Minimal Depth of Clear Working Space In Front of Electric Equipment

Nominal Voltage to Ground	Conditions 2a (ft)		
	A	B	C
601-2500	3	4	5
2501-9000	4	5	6
9001-25000	5	6	9
25001-75kV1a	6	8	10
Above 75kV1a	8	10	12

**1a.** Minimum depth of clear working space in front of electric equipment with a nominal voltage to ground above 25,000 volts may be the same as for 25,000 volts under Conditions (a), (b), and (c) for installations built prior to April 16, 1981.

**2a.** Conditions (a), (b), and (c) are as follows: (a) Exposed live parts on one side and no live or grounded parts on the other side of the working space, or exposed live parts on both sides effectively guarded by suitable wood or other insulating materials. Insulated wire or insulated busbars operating at not over 300 volts are not considered live parts. (b) Exposed live parts on one side and grounded parts on the other side. Concrete, brick, or tile walls will be considered as grounded surfaces. (c) Exposed live parts on both sides of the workspace not guarded as provided in Condition (a) with the operator between.

There shall be a written procedure for common tasks involving high voltage. These tasks can include voltage measurements, circuit disconnection by fuse cutouts, inspection of high voltage cable, etc. The procedure should include preparation for work, PPE requirements, steps to perform the task, special tools or instruments required, etc.

A mandatory job meeting must be conducted to plan and review the required work and the procedures to perform the work. This meeting should include a supervisor and those who will be involved in the work.

A minimum of two people (buddy system) will be required when performing any tasks that involve high voltage.

#### **22.1.11.1 Exceptions**

- a. Routine switching of circuits, if the plant can demonstrate that conditions at the site allow this work to be performed safely.
- b. Work performed with live-line tools if the employee is positioned so that they are neither within reach of nor otherwise exposed to contact with energized parts.
- c. Emergency repairs are to the extent necessary to safeguard the general public.

A list should be developed and maintained of equipment that operates or have components that operate or have the potential of over 600 volts. Examples of equipment are switchgears, motor control centers, power factor correction capacitors, unit substations and primary switches.

#### **22.1.12 Training**

All employees that can be involved in the maintenance of equipment with high voltage as defined above shall be trained in the hazards and proper work practices. Low voltage safety training is a prerequisite before an employee can receive high voltage training.

Training should include the following areas:

- a. Dangers associated with high voltage that is not usually a problem with voltages less than 600 volts
- b. Testing methods
- c. Performance of voltage checks
- d. Dangers of induced voltages and currents
- e. Safety grounds
- f. Workspace around equipment
- g. Buddy system
- h. PPE requirements and how to determine proper PPE and available PPE
- i. Work planning and job meetings
- j. Levels of high voltage available within the plant
- k. Review of the plant power distribution one-line diagram

#### **22.1.13 Retraining**

High voltage re-training must be provided annually.

## 23.1 Scaffolds

Scaffolds pose a serious safety hazard if not used or erected properly. It is the policy of CDL Electric to ensure employees are trained in hazards associated with scaffold use, how to properly inspect scaffolds, and safe work practices pertaining to the use of scaffolds.

### 23.1.1 Purpose

This program has been established to:

- Ensure the safe use of scaffolds.
- Ensure that work units understand and comply with safety standards related to scaffolds.
- Assign responsibilities to personnel which are necessary for successful implementation.

### 23.1.2 Scope & Applicability

1. This program applies to all employees at all CDL Electric locations except where there is a more stringent client scaffold safety policy in place.

#### 2. Scaffold Use

CDL Electric employees are permitted to work from the following scaffold types after completing Scaffold User Training offered/approved by CDL Electric EHS:

- Fabricated Frame Scaffold / Frame Scaffold
- Bakers Scaffold

#### 3. Scaffold Erecting

CDL Electric employees are permitted to erect the following scaffold types after completing Scaffold User Training approved by CDL Safety and Hands-on Scaffold Erector Training as dictated by section 23.18 of this document:

- Bakers scaffold

**Note:** Any other type of scaffold (including but not limited to suspended, tube and coupler, ladder jack, pump jack, Fabricated Frame Scaffold / Frame Scaffold and pole scaffolds) is not permitted to be erected by CDL Electric employees unless they have received specialized User and Erector Training by a qualified third-party trainer on the specific type of scaffold.

- A qualified contractor can be used to erect the above types of scaffolds.
- CDL Safety does not provide a User Training program for these types.

### 23.1.3 References

The following have been used as references in the development of this program:

- CDL Safety Policy 3.1 Fall Protection Program
- CDL Safety Policy 8.1 Personal Protective Equipment Policy
- OSHA regulation - 1910.28 - Safety requirements for scaffolding
- OSHA regulation - 1910.29 - Manually propelled mobile ladder stands and scaffolds (towers)
- OSHA regulations - 1926 Subpart L - Scaffolds

### 23.1.4 Responsibilities

#### 1. Department of Environmental Health and Safety

- a. Assist work units in implementing the provisions of this program.
- b. Periodically review and update this written program.
- c. Periodically evaluate the overall effectiveness of this program.

#### 2. Division Management

- a. Determine the applicability of this program to activities conducted within their work unit.
- b. Coordinate implementation of this program within their work unit.
- c. Actively support this program as part of the work unit's overall safety effort.

#### 3. Supervisors

- a. Be thoroughly informed of the contents of this program and its application to their areas of

- responsibility and authority.
  - b. Ensure employees comply with all provisions of this program.
  - c. Ensure employees receive training appropriate to their assigned tasks and maintain documentation of such training.
  - d. Ensure employees are provided with and use appropriate protective equipment.
  - e. Take prompt corrective action when unsafe conditions or practices are observed.
  - f. Investigate injuries and incidents within their work unit related to scaffold use.
4. Employees
- a. Follow the work practices described in this program, including the use of appropriate protective equipment and conducting pre-use inspections.
  - b. Attend all training required by this program.
  - c. Immediately report any unsafe conditions or concerns related to scaffolds to their supervisor.

### **23.1.5 Definitions**

**Bakers Scaffold** See Appendix B.

**Base Plate** A plate used to distribute the load of a leg/post/frame/upright.

**Competent Person** A person who is capable of identifying existing and predictable hazards in the surroundings or working conditions, which are unsanitary or hazardous to employees, and who has authorization to take prompt corrective measures to eliminate them. For the purposes of this program, an employee is considered a Competent Person after they have completed both the User and Erector portions of the training.

**Fabricated Frame Scaffold / Frame Scaffold** See Appendix AK.

**Guardrail System** A vertical barrier, consisting of, but not limited to, toprails, midrails, and posts, erected to prevent employees from falling off a scaffold platform or walkway to lower levels.

**Ladder Jack Scaffold** See Appendix AK.

**Mudsill** Devices used to uniformly distribute the scaffold load over a larger area than that distributed by the base plate alone in order to prevent a scaffold from settling into the earth.

**Outriggers** Devices that increase the stability of the scaffold.

**Pole/Wood Scaffold** See Appendix AK.

**Personal Fall Arrest System** A system including but not limited to an anchorage, connectors, and a body harness used to arrest a person in a fall from a working level. The use of a body belt for fall arrest is prohibited.

**Pump Jack Scaffold** See Appendix AK.

**Qualified Person** One who by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

**Qualified Third-Party Trainer/Vendor** One that specializes in providing training on how to erect, safely use, inspect and maintain the types of scaffolds in question.

**Suspended Scaffold** See Appendix AK.

**Toe-Board** A horizontal barrier that is erected along the exposed edges of an elevated surface to prevent materials, tools or equipment from falling. Must be at least 4 inches high.

**Tube & Coupler Scaffold** See Appendix AK.

### **23.1.6 General Requirements**

- a. Training and demonstrated competency are required before employees are allowed to operate/setup/erect a scaffold.
- b. Scaffolds must be erected and utilized according to the manufacturer's instructions. No CDL Electric employee is permitted to design a scaffold system.
- c. When the working height of a scaffold reaches 6 feet, fall protection shall be addressed by the installation of a guardrail system on all open sides or a personal fall arrest system.

- d. No CDL Electric employee is permitted to erect a scaffold with a height more than four times its minimum base dimension. A qualified third-party vendor must be utilized to erect any scaffold which exceeds the 4 to 1 ratio (4:1).
- e. Hardhats must be worn by all employees using and those working in close proximity to the scaffold.

### **23.1.7 Training**

- a. Training must be completed prior to using or erecting a scaffold.
- b. Training can be conducted by either an equipment manufacturer, equipment vendor, safety consultant who specializes in scaffold training or by completing the training provided by EHS.
  - The Director of Safety must pre-approve third party trainers.
- c. To be considered a competent person, both User Training and Hands-On Scaffold Erector Training must be completed.
- d. Employees who only perform work on scaffolds (do not erect) must complete User Training consisting of the following:
  - i. The nature of any electrical hazards, fall hazards, and falling object hazards in the work area;
  - ii. The correct procedures for dealing with electrical hazards and for erecting, maintaining, and disassembling the fall protection systems and falling object protection being used;
  - iii. The proper use of the scaffold, and the proper handling of materials;
  - iv. The maximum intended load and the load-carrying capacities of the scaffold;
  - v. Aware of the protocol regarding inspecting the scaffold.
- e. In addition to the requirements of section 23.18.d, employees who erect/disassemble scaffold must also complete Hands-On Scaffold Erector Training consisting of the following (see Appendix C):
  - i. The correct procedures for erecting, disassembling, moving, operating, repairing, inspecting and maintaining the type of scaffold in question.

**Note:** Only upon completion of both User Training and Erector Training is an employee considered a competent person, which allows them to conduct the pre-use safety inspection)
- f. Refresher training in relevant topics will be provided when any of the following occur:
  - i. An employee is observed using the scaffold in an unsafe manner;
  - ii. An accident or a near-miss incident occurs;
  - iii. Changes in the types of scaffolds, fall protection, falling object protection, or other equipment present a hazard that an employee has not previously been trained on;
  - iv. Changes in the worksite present a hazard that an employee has not previously been trained in.

### **23.1.8 Inspection**

- a. Each scaffold must undergo a documented pre-use safety inspection by a competent person prior to use on each shift.
  - i. Scaffolds not used during a shift do not have to undergo an inspection during that shift.
  - ii. Inspections must be documented using the checklist found in Appendix A, one provided by the scaffold manufacturer, or equivalent.
- b. The scaffold shall be removed from service if a deficiency is found. In order to remove a scaffold from service, an out of service tag or equivalent shall be placed at the scaffold access points. The supervisor is then responsible for ensuring the necessary arrangements are made for replacement or repair.
- c. Scaffold users must immediately report any unsafe condition to their supervisor.
- d. CDL Electric employees are not permitted to repair damaged parts. Only qualified personnel (vendor/manufacturer) shall perform scaffold repairs.
- e. All replacement parts shall be the same design as the original or an equivalent design as designated by the manufacturer.



### **23.1.9 Recordkeeping**

- a. Each work unit is responsible for maintaining the following records in order to meet the requirements of this program:
  - i. A listing of all scaffolds used by the work unit.
  - ii. A record of training which includes: (Use Appendix E or equivalent)
    - Name of employee and trainer
    - Date
    - Type of scaffold
    - Date of User Training and/or Hands-On Scaffold Erector Training
  - iii. Copies of all pre-use inspection records for one year after completion.
- b. EHS is responsible for maintaining the following records in order to meet the requirements of this program:
  - EHS will retain training records for training they have provided indefinitely.

### **23.1.10 Contractors**

- a. Contractors are required to follow all applicable OSHA regulations and manufacturer's instructions.
- b. Contractors are not permitted to use any scaffold owned by CDL Electric.

## Appendix AJ - Scaffold Inspection Checklist

(page 1 of 2)

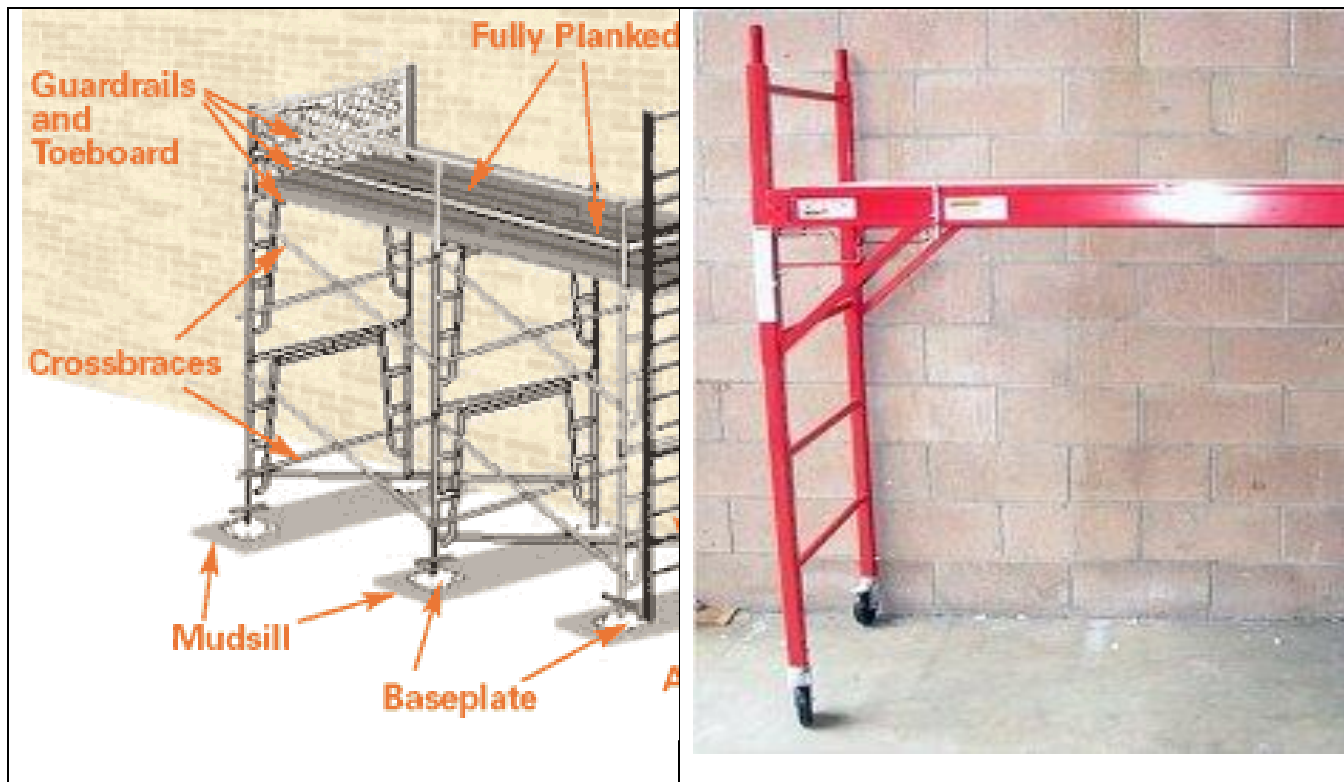
**Scaffold type:** \_\_\_\_\_ **Scaffold location:** \_\_\_\_\_

*Each box indicates one work shift OR one workday if only operating on one shift*

- ☐☐☐☐ Inspect job site to determine ground conditions, strength of supporting structure & overhead obstructions.
- ☐☐☐☐ Check to see if power lines near scaffolds are de-energized or that the scaffold/tools/materials are at least 10 feet away from energized power lines.
- ☐☐☐☐ Verify that the scaffold is the correct type for the loads, materials, employees, and weather conditions (do not use scaffold in winds exceeding 25 MPH, do not place tarps/plastic sheets on top of or around the scaffold).
- ☐☐☐☐ Check footings to see if they are level, sound, rigid, and capable of supporting the loaded scaffold.
- ☐☐☐☐ Check that wheels are locked in place.
- ☐☐☐☐ Check legs, posts, frames, and uprights to see if they are on baseplates and mudsills.
- ☐☐☐☐ Check metal components for bends, cracks, holes, rust, welding splatter, pits, broken welds, and non-compatible parts.
- ☐☐☐☐ Check for safe access. Do not use the cross braces as a ladder for access or exit.
- ☐☐☐☐ Check that all cross bracing is in place to support legs.
- ☐☐☐☐ Check wooden planks for cracks, splits greater than one-quarter (1/4) inch, end splits that are long, many large loose knots, warps greater than one-quarter (1/4) inch, boards and ends with gouges, mold, separated laminate(s), and grain sloping greater than 1 in 12 inches from the long edge. Planks must be scaffolding grade lumber or equivalent.
- ☐☐☐☐ If the planks deflect one-sixtieth (1/60) of the span or 2 inches in a 10-foot wooden plank, the plank has been damaged and must not be used.
- ☐☐☐☐ Check to see if the planks are close together, with spaces no more than 1 inch around uprights.
- ☐☐☐☐ Check to see if 10-foot or shorter planks are 6 to 12 inches over the center line of the support, and that 10-foot or longer planks are no more than 18 inches over the end.
- ☐☐☐☐ Check to see if the platform is 14 inches or less away from the wall or 18 inches or less away if plastering or stucco.
- ☐☐☐☐ Check for guardrails and midrails on platforms more than 6 feet high.
- ☐☐☐☐ Check for employees under the platform and provide falling object protection such as toe boards or barricade the area. Make sure that hard hats are worn.
- ☐☐☐☐ Ensure any ropes/chains and pulleys used to hoist materials/tools onto the scaffold are in good condition.
- ☐☐☐☐ Ensure scaffolds that are 4:1 (height to width) or more are secured to the building/structure or as described by the scaffold's manufacturer to prevent tipping. Some types of scaffolds may require the use of outriggers.

## Scaffold Inspection Checklist

(page 2 of 2)



**Note:** Any Comments or Deficiencies Found or Deficiencies Corrected or If The Scaffold Was Removed From Service

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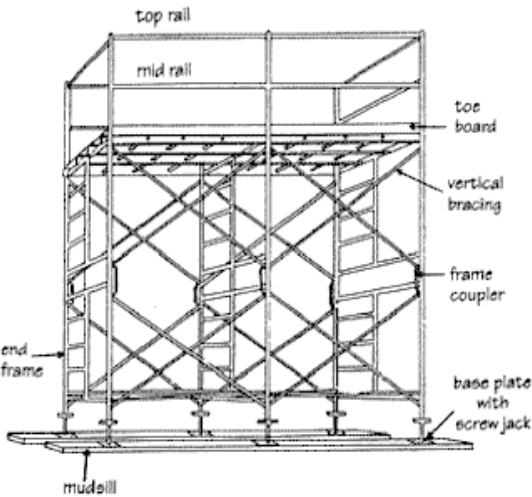


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**Each box indicates one work shift OR one workday if only operating on one shift**

Date AND/OR Shift					
Inspectors Initials					


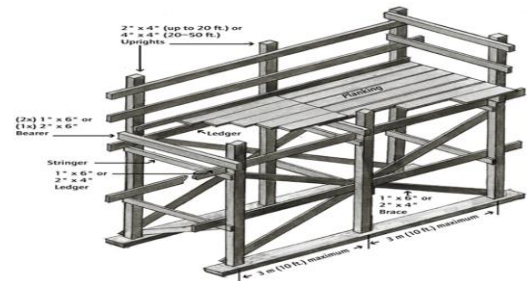

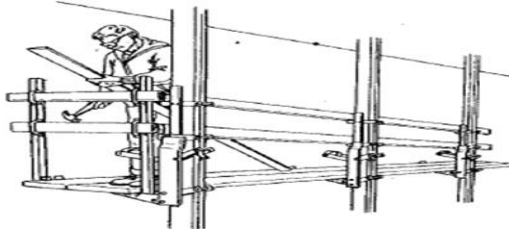

## Appendix AK - Examples of Scaffold types

(Page 1 of 2)

 <p>A technical line drawing of a fabricated frame scaffold. It shows a rectangular structure with multiple levels. Labels include: 'top rail' at the highest level, 'mid rail' below it, 'toe board' on the side, 'vertical bracing' forming an X-shape, 'frame coupler' connecting vertical poles, 'end frame' at the side, 'base plate with screw jack' at the bottom, and 'mud sill' at the very base.</p>	<p><b><u>Fabricated Frame Scaffold / Frame Scaffold</u></b></p> <p>A type of scaffold that consists of large, prefabricated (modular) metal or fiberglass pieces that fit together. Cross-bracing is utilized on the sides of the scaffold.</p> <p>This is a common type of scaffold because they are versatile, economical, and easy to use. They are frequently used in one or two tiers by residential contractors, painters, etc.</p> <p>Can also be mobile.</p>
 <p>A photograph of a mobile scaffold. It is a metal frame with a wooden deck, mounted on four casters. It has a vertical ladder on one side and a horizontal bar across the middle.</p>	<p><b><u>Example of Mobile Scaffold</u></b></p> <p>Fabricated Frame / Frame and/or Bakers</p>
 <p>A photograph of a yellow bakers scaffold. It is a simple rectangular frame with a wooden deck, mounted on four casters. It has vertical rails on the sides and horizontal cross-bracing.</p>	<p><b><u>Bakers Scaffold</u></b></p> <p>This scaffold has wheels for easy mobility and consists of two end frames, one on each end, and a work platform.</p> <p>The wheels contain a manually operated lock to prevent movement while the scaffold is in use.</p> <p>Typically, only one level high.</p>

## Examples of Scaffold types

(Page 2 of 2)

	<p><b><u>Tube &amp; Coupler Scaffold</u></b></p> <p>A type of scaffold consisting of tubing which serves as posts, bearers, braces, ties, and runners.</p> <p>Special couplers (ex. As seen to the left) connect the uprights and join the various members.</p>
	<p><b><u>Wood or Pole Scaffold</u></b></p> <p>A type of scaffold in which every structural component, from uprights to braces to platforms, is made of wood.</p>
	<p><b><u>Ladder Jack Scaffold</u></b></p> <p>A type of scaffold consisting of a platform resting on brackets attached to a ladder.</p>
	<p><b><u>Pump Jack Scaffold</u></b></p> <p>A type of scaffold consisting of a platform supported by moveable brackets on vertical poles. The brackets are designed to be raised and lowered in a manner similar to an automobile jack.</p>
	<p><b><u>Suspended Scaffold</u></b></p> <p>A type of scaffold where the platform is suspended by ropes, or other non-rigid means, from an overhead structure.</p>

## Appendix AL - Hands-On Scaffold Erector Training Checklist

Trainee Name:	Work Unit:
Trainer Name:	Department:
Scaffold make and model:	Date:

**Note:** Hands-On Scaffold Erector Training must be completed for each type of Scaffold.

Step	Completed Step?	Comments
1) Review manufacturer's owner's manual / instructions.		
2) Put on appropriate PPE. Hardhat is required. Gloves as needed.		
3) Inspect all of the scaffold components.		
4) Select a secure foundation on which to erect the scaffold.		
5) Assemble the scaffold according to the manufacturer's owner's manual / instructions.		
6) Ensure the scaffold is stable and level.		
7) Ensure safe access onto the scaffold is provided.		
8) Review all items listed in Appendix A of this program with the trainees.		
9) Perform an inspection of the scaffold using Appendix A of this program.		
10) Disassemble scaffold. (This step MUST BE DONE)		
11) Store scaffold in a safe location.		

## **Appendix AM - Hands-On Scaffold Erector Trainer Guidelines**

- 1) Pre-Requisites:
  - a. Complete Scaffold User Training.
  - b. Review and become familiar with the CDL Electric Scaffold written program.
  - c. Be experienced erecting the type of scaffold you are training on.
  - d. Review the manufacturer's owner's manual / instructions. If unavailable, contact the manufacturer or visit the manufacturer's website to obtain a copy.
- 2) Choose a safe location:
  - a. Open area.
  - b. Away from vehicles and pedestrian traffic.
  - c. Away from overhead hazards (electric lines, moving equipment, etc.)
  - d. Flat surface on solid ground.
  - e. If necessary, barricade the area with cones (or equivalent) to keep vehicles and pedestrians out of the training area.
- 3) Review the specifics of the scaffold:
  - a. Type of scaffold
  - b. Parts/pieces
  - c. Owner's manual / instructions
- 4) Document training using Appendix E of the CDL Electric Scaffold Safety Program or equivalent recordkeeping form.

## Appendix AN - Scaffold Training Certification Form

Name of Trainer (print and sign): \_\_\_\_\_

Type of scaffold: \_\_\_\_\_

Name (Print)	Date of User Training	Date of Hands-On Scaffold Erector Training	Signature



## **Appendix AO - Safe Work Practices**

### **Before use**

- a. Follow all instructions from the manufacturer for erecting.
- b. Consideration shall be given to the amount of wind. Follow the manufacturer's instruction regarding operation in windy conditions. Scaffolds shall not be used in winds exceeding 25 MPH.
- c. Modifications and additions that may affect the capacity or safe operation are prohibited.
- d. Welding operations completed while using scaffolds shall be conducted per the Hot Work Permit.
- e. Inspect the scaffold. If the scaffold fails inspection or becomes unsafe, a "out of service" tag or equivalent shall be attached to the access points in a conspicuous location.
- f. Scaffolds with noted/reported deficiencies shall not be used until the deficiencies are corrected and the scaffold is re-inspected.

### **During use**

- a. Hard hats are required PPE when working on or in near proximity.
- b. Ensure fall protection is in place.
- c. Non-skid shoes shall be worn when working on a scaffold.
- d. Scaffolds may never be overloaded. Only tools and materials needed may be stored on the scaffold.
- e. Special consideration is needed to ensure no overloading or tipping of the scaffold occurs when utilizing add-ons such as pulleys and shelves that attach to the scaffold.
- f. Cross bracing shall not be used as a ladder or to access the working levels of the scaffold.
- g. Mobile scaffolds may not be moved while occupied by personnel. Wheels must be locked when scaffolds are in use.
- h. Tag lines shall be used to control materials/equipment during transport onto the scaffold.
- i. Ladders or other similar devices shall not be used on scaffolds to increase working height.
- j. Sitting or climbing on the guardrails is prohibited.
- k. Scaffold shall be kept clean of debris, excessive amounts of materials or tools, ice, snow, or other slippery substances.
- l. Consideration shall be given to the protection of bystanders via barricading, or equivalent means.
- m. The following approach distances to energized electrical lines must be maintained:

<b>Voltage Range (Phase to Phase)</b>	<b>Minimum Safe Approach Distance (feet)</b>
0 to 300V	Avoid Contact
300V to 50 KV	10
>50KV to 200KV	15
>200KV to 350KV	20
>350KV to 500KV	25
>500KV to 750KV	35
>750KV to 1000KV	45

### **After use**

All equipment and debris must be removed from scaffolds at the end of the shift. Items may not be thrown off the scaffold items are to be lowered with a rope/bucket or handed off.

- a. Steps must be taken to protect against unauthorized use of scaffolds. (This may be necessary when a scaffold is located outdoors or in a high pedestrian traffic area).  
Options include but aren't limited to:
  - Dismantling the scaffold at the end of the shift;
  - Securing the worksite so that access to the scaffold is prohibited;
  - Barricading the scaffold;
  - Covering access points with fencing/other adequate items preventing climbing the scaffold;
  - Removing the access ladder;
  - Placing caution/danger tape around the scaffold.

## **24.1 Safety Disciplinary Program**

### **24.1.1 Purpose**

The purpose of this program is to establish a firm but fair disciplinary action policy to enforce the safety system.

### **24.1.2 Scope**

This policy is applicable to all employees.

### **24.1.3 Responsibilities**

It is the responsibility of each and every person employed by CDL Electric to work in a safe and efficient manner. The safety policy provides guidelines and procedures to help ensure that safe work practices are observed. In the event that any employee violates provisions of the CDL Electric safety policy or works in a manner that threatens his/her own health and safety or the health and safety of the employees around him, he will be subject to disciplinary action, up to and including termination of employment.

The safety manager, operations managers, supervisors and foremen hold positions responsible for enforcing the safety system and for issuing disciplinary action as required by this section of the safety manual.

CDL Electric is committed to safety and senior management holds all supervisory staff responsible and accountable for safety within their respective divisions.

Physical inspections by CDL Electric officials or insurance representatives that indicate violations showing overall lack of commitment to CDL Electric safety goals shall be under the same level of disciplinary actions.

### **24.1.4 Requirements**

Safety is a core value and a condition of employment at CDL Electric.

The following actions constitute a safety violation:

- a. Not following verbal or written safety procedures, guidelines, or rules of CDL or our clients
- b. Horse play, failure to wear required PPE, and or abuse of PPE
- c. Being under the influence of drugs or alcohol during work
- d. Bringing weapons on the job site
- e. Failure to report incidents or injuries
- f. Attempted or actual physical force to cause injury, threatening statements or other actions to cause an employee to feel they are at risk of injury.
- g. Sexual or other harassment or other unlawful discrimination

### **24.1.5 Procedure**

The following procedures will be followed after issuing a safety violation notice:

- a. The first offense will result in a verbal warning. The employee will be met with and informed that he or she is being issued a verbal warning and informed of the infraction, rule or procedure that was violated and the corrective action to be taken. Proper procedure will be discussed to clarify the situation and allow the employee to correct his/her behavior. The person making this verbal warning will inform the employees division manager that this warning has been issued so the division manager may make a written record of the warning.
- b. The second offense will result in a written reprimand and additional training. The reprimand will be written on the standard Corrective Action Plan form (Appendix AJ) and will describe the unsafe activity or behavior that needs correction. Refer to the section of the safety program that was violated (when applicable). The employee receiving the reprimand has the right to submit a written rebuttal to the reprimand. The employee must sign the reprimand. The reprimand and any rebuttal will become a part of the employee's company file.

- c. The third offense will result in another written reprimand (using the Corrective Action Plan) and possible time off without pay, the duration of which will be decided at the time of the disciplinary action and is to be weighed by the severity of the offense. Again, the employee may submit a written rebuttal to the reprimand. The employee must sign the reprimand. The reprimand and any rebuttal will become a part of the employee's company records. This third offense may result in the termination of the offending employee.

The above actions are to be taken against a sliding twelve-month scale. If an employee receives a reprimand on January 1 and commits his/her third offense on or before December 31st of the same year, he is terminated. The employee does not have to commit the same violation each time to receive further reprimands. He could receive a verbal reprimand for smoking in a no smoking area on his/her first offense and get a written reprimand for his/her second offense which might be a forklift violation and yet another for failing to use proper personal protective equipment. He will be terminated upon his/her fourth offense in the last twelve months.

In the case of serious safety violations such as by-passing guarding or other unsafe activities that put the violator or other employees at serious risk of injury, the manager may move the violator directly to the second or third warning level. If the violator's actions put him or others at risk of death or dismemberment the manager has the option to terminate him with no further warning.

## Appendix AP – Corrective Action Plan



### Employee Information

Employee Name: \_\_\_\_\_ Date: \_\_\_\_\_  
Job Title: \_\_\_\_\_ Department: \_\_\_\_\_  
Employee within their 60-day probationary period? **YES** **NO**

### Type of Warning

☐ First Warning ☐ Second Warning ☐ Final Warning

### Type of Offense

☐ Tardiness/Leaving Early ☐ Absenteeism ☐ Violation of Company Policies  
☐ Substandard Work ☐ Violation of Safety Rules ☐ Rudeness to Customers/Coworkers  
☐ Other: \_\_\_\_\_

### Details

Description of Infraction:

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Corrective Action:

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### Acknowledgement of Receipt of Warning

*By signing this form, you confirm that you understand the information in this warning. You also confirm that you and your manager have discussed the warning and a plan for improvement. Signing this form does not necessarily indicate that you agree with this warning.*

\_\_\_\_\_  
Employee Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Manager Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Human Resource Manager

\_\_\_\_\_  
Date

## **25.1 Process Safety Management**

### **25.1.1 Introduction**

The purpose of Process Safety Management is to prevent or minimize consequences of catastrophic releases of toxic, reactive, flammable or explosive chemicals in various industries.

### **25.1.2 Responsibility**

CDL Electric is required to recognize and participate as a contract employer at client locations with PSM Programs in place. CDL Electric as a contractor has certain obligations to fulfill in order to comply with established PSM programs.

- a. Contract employer responsibilities are as follows:
  - i. Contract employee is trained in the work practices necessary to safely perform his/her job.
  - ii. Contract employee is instructed in the known potential fire, explosion, or toxic release hazards related to his/her job and the process, and the applicable provisions of the emergency action plan.
  - iii. Contract employee has received and understood the training required by this paragraph. CDL Electric shall prepare a record, which contains the identity of the contract employee, the date of training, and the means used to verify that the employee understood the training.
  - iv. Contract employee follows the safety rules of the facility including the safe work practices required with 1910.119(f)(4).
  - v. Shall advise the employer of any unique hazards presented by CDL Electric's work, or of any hazards found by CDL Electric's work.
  - vi. Will ensure that trade secret information will be kept in confidence as process safety information is released to them.

### **25.1.3 Process Safety Information**

CDL Electric employees shall participate in all as directed client PSM requirements, including:

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Employee Participation          | <input type="checkbox"/> Process Hazard Analysis    | <input type="checkbox"/> Training               |
| <input type="checkbox"/> Pre-Startup Safety Review       | <input type="checkbox"/> Hot Work Permits           | <input type="checkbox"/> Incident Investigation |
| <input type="checkbox"/> Compliance Audits               | <input type="checkbox"/> Process Safety Information | <input type="checkbox"/> Operating Procedures   |
| <input type="checkbox"/> Contractors                     | <input type="checkbox"/> Mechanical Integrity       | <input type="checkbox"/> Management of Change   |
| <input type="checkbox"/> Emergency Planning and Response | <input type="checkbox"/> Trade Secrets              |   |

### **25.1.4 CDL Electric Duties**

CDL Electric, as a contract employer shall ensure its employees abide by employers' safe work practices during operations such as lockout/tagout; confined space entry; opening process equipment or piping; hot work; and control over entrance into a facility. These safe work practices shall apply to client employees and contractor employees. To comply with 1910.119(f)(4) CDL Electric employees are required to complete all required documentation for any permit-required activities.

CDL Electric shall not perform hot work until a hot work permit is obtained from the client. The permit shall document that the fire prevention and protection requirements (CFR 1910.252(a)) have been implemented prior to beginning the hot work operations.

CDL Electric employees must immediately report all accidents, injuries and near misses. An incident investigation shall be initiated within 48 hours. Resolutions and corrective actions must be documented and maintained 5 years.

In the event CDL Electric becomes the sole operator of a facility, the existing PSM Program for that facility may be amended and adopted or, in the absence of a PSM Program, an assessment will be required prior to assuming operating responsibilities.

## 26.1 Respiratory Protection

### 26.1.1 Purpose

The purpose of the Respiratory Protection Program is to protect employees against harmful dusts, fogs, fumes, mists, gases, smokes, sprays, bioaerosols, and vapors, through the use of engineering controls, administrative controls, or personal protective equipment (PPE).

If effective engineering or administrative controls are not feasible, respirators shall be provided by CDL Electric when such equipment is necessary to protect the health of the employee. The Director of Safety shall determine the operations or conditions necessitating the use of respirators.

### 26.1.2 Definitions

**Air Purifying Respirator** - a type of respirator with an air-purifying filter, cartridge, or canister, that removes specific air contaminants by passing ambient air through the air purifying element.

**Atmosphere-supplying Respirator** - a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere and includes supplied air respirators (SARs) and self-contained breathing apparatus (SCBA) units.

**Canister or Cartridge** - a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

**Employee Exposure** - exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection. **Filter** - a component used in respirators to remove solid or liquid aerosols from the inspired air.

**Fit Test** - a protocol to quantitatively or qualitatively evaluate the fit of a tightfitting respirator on an individual.

**Immediately Dangerous to Life or Health (IDLH)** - an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

**Loose Fitting Facepiece** - a respiratory inlet covering that is designed to form a partial seal on the face.

**NIOSH approval** - the approval of a respirator for worker protection by the National Institute for Occupational Safety and Health (NIOSH).

**Powered Air Purifying Respirator (PAPR)** - an air purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

**Respiratory Inlet Covering** - that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both.

**Self-Contained Breathing Apparatus (SCBA)** - an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

**Supplied Air Respirator (SAR) or Airline Respirator** - an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

**Tight-fitting Facepiece** - a respiratory inlet covering that forms a complete seal with the face.

### 26.1.3 Responsibilities

- a. Departments with employees who are required to use respiratory protection shall:
  - i. Develop (with the help of the Director of Safety) and implement a written site-specific policy defining the use of respirators for each application.
  - ii. Facilitate employee medical clearance, training, competency validation, and fit testing.
  - iii. Notify the responsible safety office of any personnel changes in jobs requiring respiratory protection.
  - iv. Purchase appropriate respirators, cartridges, and approved replacement parts for employees included in the respiratory protection program.
  - v. Implement a program for cleaning and inspecting respirators each time they are used.
  - vi. Ensure that emergency use respirators are inspected once per month and maintain documentation of these inspections.

- vii. Develop and implement a change schedule for cartridges for air-purifying respirators.
- viii. Immediately report any problems to the safety office.
- ix. Consult the Director of Safety regarding proposed voluntary use of respirators by employees. Responsibilities for departments with voluntary respirator users are found in Supplement T.
- b. Employees who are required to use respiratory protection shall:
  - i. Comply with department- or site-specific policies on respirator use.
  - ii. Participate in medical clearance procedures, training sessions, tests for competency validation and fit tests.
  - iii. Inspect their respirators before each use and clean them after each use.
  - iv. Report any problems to their supervisors.
  - v. Notify Division Supervisor of any changes in medical condition or work practice that could impact their medical clearance for respirator use.
  - vi. Notify Division Supervisor or the Director of Safety of any changes in physical condition (such as facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight) that may affect respirator fit, or when they find the fit of the respirator unacceptable. Employees who choose to use respiratory protection shall follow the policies in Supplement T, "Voluntary Use of Respiratory Protection".
- c. Director of Safety shall:
  - i. Maintain documentation of training, competency validation, medical clearance and fit testing, and make this documentation available to departments and supervisors with employees on the respiratory protection program. This documentation will also be located in the Human Resource files.
  - ii. Provide consultation to the other responsible Divisions as needed.
- d. The responsible Divisions shall:
  - i. Recommend appropriate respirators and cartridges to the user's department for procurement purposes. Only NIOSH-approved respirators will be used.
  - ii. Assist each department in developing a written site-specific policy on required respirator use, including the types of respirators to be used and cartridge change schedules/criteria for air-purifying respirators.
  - iii. Coordinate annual respirator fit testing for every employee assigned a task requiring the use of a tight-fitting respirator.
  - iv. Coordinate annual respirator training, including competency validation, for all employees who must wear respirators.
  - v. Coordinate periodic monitoring to assess concentrations of airborne contaminants.
  - vi. Conduct periodic reviews of departmental policies and practices related to respirator storage and use.
  - vii. Conduct periodic reviews of CDL's Respiratory Protection Program.
  - viii. Provide to the employee health provider respirator-specific information (such as respirator weight) needed for the health evaluation of employees wearing respiratory protection.
  - ix. Approve all voluntary respirator use and keep records of employees and departments of use.
- e. Employee Occupational Health and Wellness (medical facility) shall:
  - i. Conduct the health screening of respirator wearers and provide documentation of medical clearance to the Director of Safety. (Medical clearance expiration dates are thereby made available to employees and departments via the Human Resources online safety training website.) If there are medical clearance restrictions, Employee Occupational Health and Wellness (medical facility) will provide this information directly to the employee and his/her supervisor (as well as to the Director of Safety).
  - ii. Provide health consultations as requested.

## **26.1.4 Procedures**

### **26.1.4.1 General**

If the responsible Division or individual employee suspects that a specific job task might require the use of a respiratory protective device, a comprehensive workplace review will be conducted. This assessment may include air monitoring to assess employee exposures to airborne contaminants. If an unsafe exposure situation exists, the feasibility of engineering or administrative controls will be considered. If these preferred methods of controlling exposure are not feasible, the respiratory protection program will be implemented as described below.

### **26.1.4.2 Health Evaluation**

The use of a respirator may impose additional stress on the worker. Each employee, prior to being assigned to tasks requiring the use of a respirator, shall receive a health evaluation performed by Employee Occupational Health and Wellness (medical facility) to determine that he/she is physically able to perform assigned tasks while wearing a respirator. This evaluation will be repeated at intervals specified by the medical facility (or sooner if there is a change in the employee's medical condition or level of effort during tasks requiring respirator use).

### **26.1.4.3 Respirator Selection**

Respirators will be selected by the Director of Safety on the basis of hazards and the concentration of the contaminant to which an employee is exposed.

### **26.1.4.4 Fit Testing**

All individuals required to use a tight-fitting respirator must undergo fit-testing to ensure an effective mask-to-face seal. Individuals must be fit-tested before initial use of their respirators and at least annually thereafter. The Director of Safety or Director of Fabrication performing the fit test will provide the employee with information on the specific manufacturer, model, and size of respirator, along with the type of cartridges needed, if applicable. The Director of Safety shall maintain necessary records of all fit tests for tight-fitting respirators.

### **26.1.4.5 Preventive Conditions**

Tight-fitting respirators shall not be worn when conditions prevent a good face seal. Such conditions include, but are not limited to, facial hair, any piece of clothing, or personal protective equipment that interfere with the seal of the facepiece to the face of the user. Only loose-fitting respirators are acceptable under these conditions. Where corrective eyewear interferes with the seal of the facepiece, a spectacle kit shall be provided by the department, or a loose-fitting respirator shall be provided.

### **26.1.4.6 Issuance**

When respirator use is required, all respirators, cartridges, and approved replacement parts will be purchased by the department of the respirator wearer. Respirators will be issued to an employee for his or her exclusive use when feasible.

### **26.1.4.7 Respirator Use**

Respirators will be used in accordance with specific procedures described in the manual provided by the manufacturer. Prior to each use in a contaminated atmosphere, the user of a tight-fitting respirator will perform a positive and negative pressure fit check and adjust the mask until a good fit is achieved. Users of loose-fitting respirators will assure adequate air flow to the respirator facepiece before entering a contaminated atmosphere.

### **26.1.4.8 Maintenance**

Each respirator user will have the responsibility for maintaining his/her own respirator. Parts should be replaced when needed. Respirators intended for non-routine; general use will be maintained by a designated competent person within the owning department.

- a. Inspection - Respirators used routinely will be inspected before each use by the respirator wearer and during cleaning. Emergency use respirators must be inspected before and after each use and at



least monthly. The Director of Safety will occasionally review departmental records of the monthly inspection of emergency use shared respirators. Documentation of the inspection will be provided to the Director of Safety at the time of the inspection. (The manual supplied by the manufacturer with each respirator will provide specific inspection procedures.)

- b. Cleaning, Disinfection, and Storage - Respirators will be cleaned and disinfected after each use according to procedures for specific respirators. OSHA has published Respirator Cleaning Procedures (29 CFR 1910.134 Appendix B-2) available at <http://tinyurl.com/57fovk>. After cleaning and drying, respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the facepiece and exhalation valve. It is not acceptable to hang a respirator by its straps.
- c. Repair - Respirators needing repair will be repaired by the designated competent person using manufacturer-approved replacement parts only. Repairs must be made in a manner that maintains the respirator's NIOSH approval.

### **26.1.5 Emergency Use**

The only respirator approved for entry into all contaminated atmospheres is a Self-Contained Breathing apparatus (SCBA) used in the pressure-demand mode. All individuals who will be required to wear an SCBA must be trained, tested, and certified by the Director of safety or the Director of Fabrication. Other types of respirators may be used for escape from contaminated atmospheres and for tasks performed in atmospheres that are not IDLH (Immediately dangerous to life or health). The use of these respirators for emergencies shall be approved by the Director of Safety.

### **26.1.6 Worksite Specific Policies**

All work areas where respirators are used must have site- or task-specific respirator policies. These policies must outline when respirators will be used, the types of respirators for each application, provisions for employees with beards or other preventive conditions, cartridge change schedules for air purifying respirators, storage locations for respirators, and inspection/maintenance schedules for respirators that are not used routinely. They must also specify the responsibilities of respirator users, their supervisors, and others who may be involved in respirator or cartridge ordering, recordkeeping, and notification of the responsible Division about new employees who will be required to wear respirators.

### **26.1.7 Training**

Employees required to use respirators will receive initial and annual training, which will be coordinated by the responsible Division. Training will include the respiratory hazards to which employees are potentially exposed during routine and emergency situations. Employees shall receive specific instructions related to the respirator they use and, when possible, the training will include practice in donning the respirator. The training will consist of instruction in selection, inspection, use, and maintenance of respirators. Employees must be able to demonstrate knowledge of why the respirator is necessary, how to care for and use the respirator properly, how to recognize when the respirator is not functioning properly, and general requirements of this respiratory protection policy.