Center Line Electric, Inc.

Health and Safety Program

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GENERAL SAFETY RULES

All of our safety rules must be obeyed, failure to do so will result in strict disciplinary action being taken, and may result in permanent discharge.

1. Report unsafe conditions to your immediate supervisor.

2. Promptly report all injuries to your supervisor.

3. Keep your mind on your work at all times. No horseplay on the job, injury or termination, or both can result from horse playing on the job.

4. Personal safety equipment must be worn as prescribed for each job such as, safety glasses for eye protection, hard hats are to be worn at all times within the confines of the construction area, gloves when handling materials, and safety shoes are highly recommended for protection against foot injuries. Recreational shoes are prohibited.

5. Use eye protection where there is danger from flying objects or particles. This includes the use of all hand tools and portable electric tools.

6. Properly care for and be responsible for all personal protective equipment.

7. Dress properly, wear appropriate work shoes or boots, shirts and ling legged pants must be worn to prevent sunburn and to protect against acid burns, steam burns, weld splatter and cuts. Minimum clothing for the upper body is a Tee Shirt.

8. If any part of your body should be exposed to an acid or caustic substance, immediately go to the nearest water available and flush over affected area. Secure medical aid immediately.

9. Watch where you are walking, DON'T RUN, be alert for loads that are being carried overhead and be alert for trip hazards.

10. The use of illegal drugs or alcohol or being under the influence, will result in immediate termination.

11. If you are taking a prescription medication that warns against driving or operating machinery, notify your supervisor before you begin your shift.

12. Do not distract fellow workers.

13. Defacing or damaging sanitation facilities are forbidden.

14. A good job is a clean job and a clean job is a safe job. All working areas should be free from rubbish and debris.
15. Materials left in the aisles, walkways, stairways, or roads of other points of egress are forbidden.

16. Compressors or compressed air are not to be used to blow dirt from your clothes, hair, face or hands.

17. Never work aloft if you have a fear of height, and are subject to dizzy spells, or if you are apt to be nervous or sick.

18. Never move an injured person unless it is necessary. Keep the injured person as comfortable as possible and utilize job site First Aid facilities until paramedics arrive.

19. Know where fire-fighting equipment is located and how to use it.

20. Learn to lift correctly with the legs and not the back. If a load is too heavy, get someone to help, 20% of all construction related injuries result from lifting materials incorrectly.

21. Riding on loads, fenders, running boards, sideboards, and gates or with your legs dangling over the ends or sides of a truck will not be tolerated.

22. Do not use power tools and equipment until you have been properly instructed in safe work methods and are authorized to use them.

23. Be sure that all guards are in place. Do not remove, displace, damage or destroy safety devices or safeguards that are furnished or provided for use on the job, nor interfere with the use thereof.

24. Keep all tools in good condition and never use tools with cracked or loose handles or other defects.

25. Do not enter any areas that have been roped off or barricaded.

26. If you must work around power shovels, cranes, trucks, or dozers, make sure operators can see you at all times.

27. Never oil, lubricate, or fuel equipment while it is running or in motion.

28. Danger areas should always be roped off and/or barricade.

29. Keep away from the edge of cuts, embankments, trenches, holes and/or pits.

30. Trenches must be shored or sloped to comply with the most stringent requirements, Keep out of trenches or cuts that have not been properly sloped or shored. Excavated or other materials shall not be stored closer than 3 feet from the edge of any excavation.

31. Use only extension cords of the three-prong type. The electrical grounding system should be checked daily.
32. The use of safety belts with safety lines when working from unprotected high places in MANDATORY. Always keep your line as tight as possible.

33. Never throw anything overboard; persons below can be seriously injured.

34. Open fires are prohibited.

35. When burning or welding, fire extinguishers must be nearby.

36. Compressed gas cylinders must be secured in an upright position.

37. Gasoline should be stored and transported only in authorized cans only. Smoking is prohibited near flammable liquids.

38. Do not use or work with equipment that is not your personal property or the property of Center Line Electric, Inc.

39. All Ladders are to be inspected before each use, check for broken, missing, loose, and oily or greasy rungs or side rails. Ladders must extend three feet above a landing for proper use. Check ropes, pulleys and other workers parts on extension ladders. Check feet of ladder to make sure they are non-slip and sturdy. Keep all ladders free of debris, hoses, wire, and materials. Defective ladders are required to be properly tagged and removed from service. Clean and store tools/materials properly, report all defective items to your supervisor.

40. All ladders should be set up properly, place on level ground or use blocks to level feet. Stepladders should be secured locked or spreading bar before climbing; making sure legs are fully open. Single or extension ladders, tie or hold ladder so it will not slip. Do not extend 2-section ladders; keep an overlap of at least three rungs. Use the ‘four and one” rule when using a ladder, one foot of base for every four feet of height.

41. Climb and work safely, keep both hands onside-rails when climbing, keeping one hand on the ladder when working, face the ladder and avoid twisting or turning. Wear non-skid shoes that are not wet, greasy or oily. Most ladders only allow one person to use at a time, do not rush when climbing, no sliding or jumping off ladders.

42. Safety belts are required when you need to be hands free, hoist tools and materials after you reach the top. Never step on the top 2 rungs when working, a longer ladder may be required.

43. Be cautious of overhead hazards such as wires or cables. Never use metal, wood/metal or a ladder that is wet. Never use chairs, or boxes for climbing, choose a ladder that is right for the job, and use it correctly. If you have any doubts ask your supervisor.

44. Fixed or mobile (rolling) scaffolds check floor planking to be sure it is nailed or tied to prevent slipping. Always check rails and toe-boards to prevent accidents, use a protective screen if people have to pass under the scaffold. Provide a firm footing on level ground, tie off every other lift.

45. When working scaffolding, do not build higher than 4 times the shortest base dimension, install cross and horizontal bracing. Lock casters to prevent movement when working; never move a scaffold while there is someone on a platform.

46. Do not operate Aerial Lifts if you are not trained to do so, test the controls before each use. Set the brakes and make sure outriggers are in place before using, always wear a safety belt with lanyard attached to lift. Check the overhead for clearance, stay in the bucket or on the platform, and never climb out on the lip for a longer reach.

47. Notify your supervisor of unlabeled or suspect toxic substance immediately and avoid contact.

48. Center Line Electric, Inc. has a printed “shut-down” procedure, refer to this form when performing a “shut-down” operation.

49. All posted safety rules must be obeyed and not removed without prior approval/authorization from management.

50. Know what emergency procedures have been established for your job site, (location of emergency phone, first aid kits, and fire extinguishers). Make sure you know all emergency numbers.

51. Employees must at all times comply with all known Federal, State, and Local laws and regulations, Customer and Site owner safety policies/procedures and CLE safety policies, rules and procedures.

52. When blowing out lines with compressed air, make sure all employees are informed of the operation and where the air stream is going to exhaust. Make sure all employees are using appropriate PPE. Make sure the exhausted air is going in safety direction. If necessary post the exhaust area with the correct signage and barriers.

53. Never use compressed air to clean off your clothing or skin. Never, absolutely never blow your face or head off with compressed air. Sweep a given area first and completely before blowing off with compressed air and only use the air if absolutely necessary.

	Health & Safety Manual	
	Original Issue	**January, 2010**

1. Introduction

1.1. Center Line Electric, Inc. (herein referred to as Center Line Electric) is firmly committed to maintaining a safe, healthy working environment for all employees both in the office and out in the field. Our objective is to ensure that all Center Line Electric personnel and contractors conduct operations in a safe, effective and efficient manner.

1.2. If at any point in time you do not feel safe, stop what you are doing and notify your immediate Center Line Electric supervisor or Owner's Representative. Never do something to put you or another person in danger.

1.3. While we realize that accidents, operational mishaps and injuries do occur, these occurrences are never considered acceptable. The only acceptable safety performance is zero incidents.

1.4. Proactive safety management is a key element in Center Line Electric's total quality management philosophy. An effective safety system requires total involvement from all levels of personnel. Commitment from all levels of Center Line Electric and each contractor's staff is necessary to attain our goal of performance perfection.

1.5. Center Line Electric has established a written safety program based on information from OSHA. Copies of the safety program are available upon request. All Center Line Electric employees will have access to the most current edition of the program.

2. Definitions

2.1. "Employer" means Center Line Electric for the purpose of this manual.

2.2. "Employee" refers to any Center Line Electric employee.

2.3. "Owner" means the Owner or operator of a project or jobsite that Center Line Electric employees will perform project work.

2.4. "Owner's Representative" refers to the person in responsible charge of the Owner's work or project.

3. Bloodborne Pathogens

3.1. The information in this section is intended to comply with the requirements of standard 29 CFR 1910.1030.

3.2. Center Line Electric recognizes that employees of this organization may encounter non-routine occupational exposure to bloodborne pathogens. This program has been written to eliminate or minimize employee exposure to blood or other potentially infectious materials.

3.3. The Corporate Safety Director has been designated as the Exposure Control Program Coordinator and will be responsible for enforcement, review annually and maintenance of this program.

3.4. A copy of this written program will be made available and accessible to all employees.

3.5. Exposure Determination

3.5.1. It has been determined at Center Line Electric, that no employee or job classification has a "reasonably anticipated" occupational exposure to blood. However, because Center Line Electric is concerned about the health and safety of its employees, the following job classifications have been listed that may have a potential of non-routine exposure to blood or other potentially infectious materials: Management, Good Samaritan First Aid Responders or any employee designated to assist in the transportation of an injured employee.

3.5.2. This exposure determination was made without regards to the use of personal protective equipment.

3.6. Compliance Methods

3.6.1. Universal Precautions – Universal precautions will be observed at Center Line Electric in the provision of first aid, the removal of sharps and waste, and the housekeeping of any first aid area in order to prevent contact with blood or other potentially infectious material (OPIM). All blood and OPIM will be considered infectious regardless of the perceived status of the source individual.

3.6.2. Engineering and Work Practice Controls – Engineering and work practice controls are limited to hand washing and housekeeping practices. In the event an employee must give self-injection of insulin, this employee will be required to be responsible for removing the used needle from the building. At no time will insulin needles be discarded in waste containers within Center Line Electric. Engineering controls will be examined and maintained or replaced on a regular schedule to ensure their effectiveness.

3.6.3. Personal Protective Equipment – All personal protective equipment used in first aid or housekeeping will be provided without cost to employees. Personal protective equipment will be chosen based on the

anticipated exposure to blood or other potentially infectious materials. The following PPE is used at Center Line Electric:

3.6.3.1. Latex/Vinyl Gloves – Used for providing first aid to injured employees or first aid housekeeping.

3.6.3.2. Safety Glasses – Used for providing first aid to injured employees or first aid housekeeping.

3.6.3.3. CPR Mask – Used when performing CPR.

3.6.3.4. All PPE will be examined on a regular schedule and maintained or replaced to ensure their effectiveness.

3.6.4. Housekeeping

3.6.4.1. Center Line Electric will ensure an antiseptic hand cleanser is available at each hand washing facility in conjunction with paper towels. In the event there is no available hand washing facility, hand sanitizer will be made available with paper hand towels.

3.6.4.2. Contaminated materials will be placed into a leak-proof biohazard bag/container which is red in color and will bear the biohazard warning label. This biohazard waste will be picked up by a contracted licensed waste hauler.

3.6.4.3. Areas involving a first aid incident will be cleaned and decontaminated as soon as possible after the incident.

3.6.5. Post-Exposure

3.6.5.1. When an employee incurs an exposure incident, it should be immediately reported to their supervisor and to the Corporate Safety Director. The Corporate Safety Director will be responsible for maintaining records of all exposure incidents. All employees who incur an exposure incident will be offered post-exposure evaluation and follow-up in accordance with the OSHA standard.

3.6.5.2. When an employee incurs an exposure incident, the employee will be offered the option of having their blood collected for testing of the employees HIV/HBV serological status. The blood sample will be preserved for at least 90 days to allow the employee to decide if the blood should be tested. The employee will be offered the Hepatitis B vaccination, at no charge. If the employee declines the vaccination, the employee must sign a declination form. If the employee later decides they wish to have the vaccine, it shall be given at no cost to the employee.

3.7. Employee Training

3.7.1. Training for employees includes the following areas, but not limited to:

3.7.1.1. Explanation of OSHA bloodborne pathogen standard.

3.7.1.2. Bloodborne pathogen definitions.

3.7.1.3. Modes of transmission.

3.7.1.4. Prevention strategies.
3.7.1.5. Immunization process.
3.7.1.6. Exposure control plan.
3.7.1.7. Housekeeping requirements.
3.7.1.8. Post-exposure/follow-up.

3.7.2. Employees with occupational exposure will participate in the training program.

3.7.3. Employees will be provided training at the time of hire and annually thereafter.

3.8. Recordkeeping

3.8.1. All training records will include the dates and contents of the training, and names and job titles of persons attending. Training records will be kept for at least three years, plus the current year. All medical records will be retained for the duration of employment, plus 30 years.

3.8.2. All records required by this program will be made available upon request to the employee for examination and copying.

3.8.3. Employees must sign a consent form before any medical records will be released to anyone other than the employee. Center Line Electric shall ensure that all records required by this section shall be made available upon request of employees, the Assistant Secretary and the Director for examination and copying. Center Line Electric shall comply with the requirements involving transfer of records set forth in CFR 1910.1020(h).

4. Confined Space

4.1. Purpose

4.1.1. The purpose of the this program is to provide specific procedures and safe work practices for Center line Electric's employees required to enter confined spaces.

4.1.1.1. Objectives

4.1.1.2. The objective of the Confined Space program at Center Line Electric.

4.1.1.3. To comply with state and federal regulation regarding confined spaces.

4.1.1.4. To identify, evaluate, and eliminate potential hazards within the confine spaces prior to entry.

4.1.1.5. To establish and implement a permit system for entry into confined spaces.

4.1.1.6. To provide training to employees who may work in confined spaces on proper procedures and entry techniques.

4.2. Hazard Recognition

There are three parts to hazard recognition. You must identify the confined space, evaluate the conditions of the confined space and evaluate the hazards involved with the confined space.

4.2.1. Procedure for Identifying Confined Spaces

4.2.1.1. Center Line Electric shall designate a representative to evaluate each workplace to determine the existence and type of confined space in the area where employees will be working.

4.2.1.2. Before employees are allowed to begin work, the designated representative shall coordinate with the authorized representative of the owner (or the general contractor) to evaluate the jobsite and to determine the type of confined space(s) that exist in the work area.

4.2.1.3. If permit-required spaces are found to exist, the designated representative will identify the location by posting an appropriate sign: **"Danger Permit-Required Confined Space, Do Not Enter"**.

4.2.1.4. The designated representative will determine the need for, and provide as necessary, pedestrian, vehicle or other barriers to protect entrants from external hazards.

Procedures for Evaluating Conditions in a Confined Space

4.2.1.5. Test conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized to begin. Except that if isolation of the space

is infeasible because the space is large or is part of a continuous system (such as a sewer), pre-entry testing shall be performed to the extent feasible before entry is authorized and, if entry is authorized, entry conditions shall be continuously monitored in the areas where authorized entrants are working.

4.2.1.6. Test or monitor the permit space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations.

4.2.1.7. Atmospheric Testing

4.2.1.7.1. Types of testing:

- Evaluation Testing – The atmosphere of a confined space should be analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmosphere that may exist or arise so that appropriate permit entry procedures can be developed and acceptable entry conditions stipulated for that space. Evaluation and interpretation of the confined space Owner's data and development of the entry procedure should be done by, or reviewed by, the Owner's technical qualified professional and based on evaluation of all serious hazards.
- Verification Testing – The atmosphere of a permit space which may contain a hazardous atmosphere should be tested for residues of all contaminants identified by evaluation testing using permit specified equipment to determine that residual concentrations at the time of testing and entry are within the range of acceptable entry conditions. Testing order should be oxygen, flammable and then toxins. Results of testing should be recorded on the permit in the space provided adjacent to the stipulated acceptable entry conditions.

4.2.1.7.2. Duration of Testing – Measurement of values for each atmospheric parameter should be made for at least the minimum response time of the test instrument specified by the manufacturer.

4.2.1.7.3. Testing Sequence

- First, test to make sure the oxygen content is between 19.5% and 23.5%.
- Test the concentration of flammable gases, which must be less than 10% of the LFL.
- Airborne combustible dust cannot meet or exceed its LFL.
- Toxicity:
  - List any toxic materials that could be present and their permissible exposure limits.
  - Test to make sure none of these materials has a concentration greater than the PEL.
- If the air is unsafe according to any of these tests, the hazard must be controlled before entry is allowed.
- If the air becomes hazardous later on (during the entry), the permit must be canceled and everyone must leave the space.
- Evaluate for heat stress potential and document findings in the permit.
- The person performing the atmospheric tests signs or initials the permit after each test result.

4.2.1.7.4. Testing Stratified Atmospheres – It is important to understand that some gases or vapors are heavier than air and will settle to the bottom of a confined space. Also, some gasses are lighter than air and will be found around the top of the confined space. Therefore, it is necessary to test all areas (top, middle, and bottom) of a confined space with properly calibrated testing instruments to determine what gasses are present. If testing reveals oxygen-deficiency, or the presence of toxic gases or vapors, the space must be ventilated and retested before workers enter. If ventilation is not possible and entry is necessary (for emergency rescue, for example), workers must have appropriate respiratory protection.

4.2.1.7.5. Periodically retest to verify that the atmosphere remains within acceptable entry conditions.

4.2.1.8. Alternate Procedures for Evaluating Conditions

Center Line Electric may use these alternate procedures for entering a permit space under these conditions:

4.2.1.8.1. The employer can demonstrate that the only hazard posed by the permit space is an actual or potential hazardous atmosphere.

4.2.1.8.2. The employer can demonstrate that continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry.

4.2.1.8.3. The employer develops monitoring and inspection data that supports the demonstrations required by paragraphs 1 and 2 of this section.

4.2.1.8.4. If an initial entry of the permit space is necessary to obtain the data required by paragraph 3 of this section, the entry is performed in compliance with the Procedures for Evaluating Conditions in a Confined Space.

4.2.1.8.5. The determinations and supporting data required by paragraphs 1, 2 and 3 of this section are documented by the employer before entry and are made available to each employee who enters the permit space. This documentation will include the date, location of the space and signature.

4.2.1.8.6. Entry into the permit space under the terms of this section is performed in accordance with the following requirements:

- Any conditions making it unsafe to remove an entrance cover shall be eliminated before the cover is removed.
- When entrance covers are removed, the opening shall be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space.
- Before an employee enters the space, the internal atmosphere shall be tested, with a calibrated direct-reading instrument, for the following conditions in the order given:
  - Oxygen content (minimum = 19.5%).

  - Flammable gases and vapors (<10% of the LFL).
  - Potential toxic air contaminants. Instruments must be calibrated based on manufacturer's requirements.
- Any employee or that employee's representative who enters the space shall be provided an opportunity to observe the pre-entry testing.
- There may be no hazardous atmosphere within the space whenever any employee is inside the space.
- Continuous forced air ventilation shall be used as follows:
  - An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.
  - The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space.
  - The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.
- The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.
- If a hazardous atmosphere is detected during entry:
  - Each employee shall leave the space immediately;
  - The space shall be evaluated to determine how the hazardous atmosphere developed; and
  - Measures shall be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.
- The employer shall verify that the space is safe for entry and that the pre-entry measures required have been taken,

through a written entry permit.

4.2.1.8.7. The permit space will be re-evaluated at any time an entrant has reason to believe that the evaluation of the space may not have been adequate or that any changes have occurred with the space.

4.2.1.9. Reclassification of Confined Spaces

A space classified by the employer as a permit-required confined space may be reclassified as a non-permit confined space under the following procedures. Center Line Electric will obtain analytical documentation from the confined space Owner if a space meets the requirement outlined in paragraphs 4.2.1.9.1 through 4.2.1.95.

4.2.1.9.1. If the permit space poses no actual or potential atmospheric hazards, and if all hazards within the space are eliminated without entry into the space, the permit space may be reclassified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated.

4.2.1.9.2. If it is necessary to enter the permit space to eliminate hazards, such entry shall be performed in accordance with the Procedures for Evaluating Conditions in a Confined Space. If testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated.

Note: Control of atmospheric hazards through forced air ventilation does not constitute elimination of the hazards. The alternate procedures for evaluating conditions covers permit space entry where the employer can demonstrate that forced air ventilation alone will control all hazards in the space.

4.2.1.9.3. The employer shall document the basis for determining that all hazards in a permit space have been eliminated, through a Confined Space Entry Permit.

4.2.1.9.4. If hazards arise within a permit space that has been declassified to a non-permit space, each employee in the space shall exit the space. The employer shall then reevaluate the space and determine whether it must be reclassified as a permit space, in accordance

with other applicable provisions of this section.

4.2.1.9.5. Employees or their representative are entitled to request additional monitoring at any time.

4.3. Designation of Responsible Parties

4.3.1. Center Line Electric's confined space entry supervisor will complete the confined space permit, review the work task, procedures, and define roles and team responsibilities. Only those employees with the appropriate training will be assigned positions of responsibility and authorized to enter or attend an entry of a confined space.

4.3.2. Attendants may be assigned to monitor more than one permit space provided the duties described in this program can be effectively performed for each permit space that is monitored. Likewise, attendants may be stationed at any location outside the permit space to be monitored as long as the duties described in this program can be effectively performed for each permit space that is monitored. If there are any issues or conditions change, all space will be evacuated.

4.3.3. If multiple spaces are to be monitored by a single attendant, Center Line Electric will include in the permit the means and procedures to enable the attendant to respond to an emergency affecting one or more of the permit spaces being monitored without distraction from the attendant's responsibilities for the other spaces.

4.4. Duties of Responsible Parties

4.4.1. Duties of Authorized Entrants – Center Line Electric shall ensure that all authorized entrants:

4.4.1.1. Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.

4.4.1.2. Properly use equipment provided by the Owner for confined space entry.

4.4.1.3. Communicate with the attendant as necessary to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space.

4.4.1.4. Alert the attendant whenever:

4.4.1.4.1. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.

4.4.1.4.2. The entrant detects a prohibited condition.

4.4.1.5. Exit from the permit space as quickly as possible whenever:

4.4.1.5.1. An order to evacuate is given by the attendant or the entry supervisor.

4.4.1.5.2. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.

4.4.1.5.3. The entrant detects a prohibited condition.

4.4.1.5.4. An evacuation alarm is activated.

4.4.2. Duties of Attendants – Center Line Electric shall ensure that each attendant:

4.4.2.1. Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.

4.4.2.2. Is aware of possible behavioral effects of hazard exposure in authorized entrants.

4.4.2.3. Continuously maintains an accurate count of authorized entrants in the permit space and ensures that the means used to identify authorized entrants accurately identifies who is in the permit space.

4.4.2.4. Remains outside the permit space during entry operations until relieved by another attendant.

4.4.2.5. Communicates with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space.

4.4.2.6. Monitors activities 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:

4.4.2.6.1. If the attendant detects a prohibited condition.

4.4.2.6.2. If the attendant detects the behavioral effects of hazard exposure in an authorized entrant.

4.4.2.6.3. If the attendant detects a situation outside the space that could endanger the authorized entrants.

4.4.2.6.4. If the attendant cannot effectively and safely perform all the duties required of his position.

4.4.2.7. Summons rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards.

4.4.2.8. Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:

4.4.2.8.1. Warn the unauthorized persons that they must stay away from the permit space.

4.4.2.8.2. Advise the unauthorized persons that they must exit immediately if they have entered the permit space.

4.4.2.8.3. Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.

4.4.2.9. Performs non-entry rescues as specified by Center Line Electric rescue procedure.

4.4.2.10. Performs no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

4.4.3. Duties of Entry Supervisors – Center Line Electric shall ensure that each entry supervisor:

4.4.3.1. Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.

4.4.3.2. Verifies, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.

4.4.3.3. Terminates the entry and cancels the permit if hazardous conditions arise.

4.4.3.4. Verifies that rescue services are available and that the means for summoning them are operable.

4.4.3.5. Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations.

4.4.3.6. Determines, whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

4.5. Coordination with Owner

4.5.1. When employees are to work in facilities containing confined space(s) that are controlled by the Owner, the Center Line Electric authorized representative shall coordinate all confined space entry requirements with a properly authorized representative of the Owner.

4.5.2. Examples of the types of information that must be shared by the Owner to Center Line Electric are:

4.5.2.1. The Owner shall apprise the Center Line Electric representative of all elements, including the hazards, the experiences that the Owner has had with the space and the reason(s) why a space is classified as a permit required confined space.

4.5.2.2. Any precautions or procedures that have been implemented by the Owner for the protection of their employees in or near the confined space area where employees of Center Line Electric will be working.

4.5.2.3. Coordinate all entry operations to protect both the Owner employees and Center Line Electric employees who are working near the confined space to be entered. If Owner employees and Center Line Electric employees are to work in the confined space simultaneously, entry procedures shall be developed and implemented to ensure the safety of all authorized entrants, and to ensure that employees of one employer do not endanger the employees of another employer.

4.5.2.4. The authorized Center Line Electric representative shall obtain from the Owner any available information regarding the permit space hazards and any entry operations mandated by the Owner. Further, the authorized Center Line Electric representative shall provide a copy of the company confined space program to the Owner for their review and approval before any entry operation is performed by any Center Line Electric employee. Approval to use the company confined entry program as is, or as modified by special requirements of the Owner, shall be in writing and shall be signed by an authorized representative of the Owner.

4.5.2.5. Furnish or make available any material safety data sheet information as to the contents, if any, previously contained in the confined space.

4.6. Preparations for Entry into Permit Space – Before entry into a permit space is authorized, the Center Line Electric representative shall:

4.6.1. Ensure all persons are trained in confined space work.

4.6.2. Implement all measures necessary to prevent unauthorized entry.

4.6.3. Identify the hazards (if any) that may be encountered in the confined space.

4.6.4. Specify acceptable entry conditions.

4.6.5. Possibly conduct purging, inerting, flushing or ventilating of the confined space to eliminate or control atmospheric hazards.

4.7. Items of Equipment to be provided by Center Line Electric.

4.7.1. Testing and monitoring equipment.

4.7.2. Communication equipment may include, but is not limited to:

4.7.2.1. Visual (observation).

4.7.2.2. Voice.

4.7.2.3. Telephone.

4.7.2.4. Two-way radio.

4.7.2.5. Other means as appropriate.

4.7.3. Ventilating equipment.

4.7.4. Personal protective equipment.

4.7.5. Lighting Equipment – Appropriate light shall be provided within and outside the confined space. Some of the precautions that shall be taken when selecting lighting are as follows:

4.7.5.1. If the atmosphere inside the confined space is classified as flammable/explosive, the electrical equipment used shall be explosion proof.

4.7.5.2. All personnel entering the confined space shall be provided with explosion-proof flashlights, if other means of lighting is not available.

4.7.5.3. Only approved low-voltage (6 or 12 volt) lights and extension cords with ground fault circuit interrupters shall be used.

4.7.6. Rescue equipment and atmospheric monitoring meters.

4.7.7. Entry and exit equipment.

4.7.8. Rescue and emergency equipment.

4.8. Isolating Energy Sources

4.8.1. Before any confined space is entered by Center Line Electric employees, the space shall be removed from service and shall be completely protected against the release of energy and/or material(s) into the space following Center Line Electric's energy isolation policy and lockout/tag procurers . This means that all energy sources leading to the confined space or located within the confined space which are potentially hazardous to the workers shall be locked out, tagged, relieved, disconnected and/or restrained. If entry is made into an Owner's confined space, Center Line Electric's designated representative shall verify that all valves, disconnects, pressure piping, and all other energy sources are bled, opened and locked, drained tested and relieved of stored energy. Additionally, Center Line Electric's designated person should accompany the Owner's Representative and witness the securance of all energy sources.

4.8.2. The objective for isolating all energy sources is to prevent unexpected or accidental energizing start-up or release of stored energy that could cause injury to workers within the confined space.

4.9. Fire Protection

To preclude the possibility of fires occurring in the confined space that could become a hazard to the workers inside, the following precautions shall be taken as a minimum:

4.9.1. Access to and egress from the confined space shall be maintained clear of any obstructions at all times. If welding or cutting is to be performed in the confined space, combustible materials shall be removed, if combustible materials cannot be removed they will covered with flame-retardant materials.

4.9.2. Flammable liquids (i.e. acetone, alcohol, etc.) shall be stored in UL or FM approved containers and stored outside the space . When the work task requires flammable liquid(s) to be brought into the confined space, only the amount needed to complete the specific task will enter the space.

4.9.3. Properly rated fire extinguishers shall be immediately available.

4.9.4. Cylinders containing oxygen, acetylene or other fuel gases shall not be taken inside the confined space.

4.9.5. All rags, brushes, wipes, gloves, etc., shall be stored in metal containers with lids.

4.9.6. Center Line Electric fire watch shall be posted during all welding, burning and heating operations to monitor for fires, and ensure that after the work has ceased or at the end of a work shift there are no fire conditions present and remain at the hot work location for an additional 30 minutes.

4.9.7. Where flammable liquids or gases are used in confined spaces, continuous monitoring with a calibrated combustible gas meter shall be taken into the confined space.

4.10. Permit System

4.10.1. Before entry is authorized, the Center Line Electric shall document the completion of measures required by this program by preparing an entry permit which should include:

- 4.10.1.1. Specific permit space identification.
- 4.10.1.2. Purpose and date of entry.
- 4.10.1.3. Duration of authorization.
- 4.10.1.4. Authorized entrants by name.
- 4.10.1.5. Names of authorized attendant and entry supervisor.
- 4.10.1.6. Actual or possible hazards of the confined space.
- 4.10.1.7. Control and isolation methods to be used.
- 4.10.1.8. Acceptable entry conditions.
- 4.10.1.9. Results of initial and periodic atmospheric testing.
- 4.10.1.10. Rescue and emergency services to be summoned.
- 4.10.1.11. Communication procedures between attendant and entrants.
- 4.10.1.12. Equipment to be provided.
- 4.10.1.13. Other information as necessary.
- 4.10.1.14. Other permits, such as hot work.

4.10.2. Before entry begins, the entry supervisor identified on the permit shall verify that the acceptable entry conditions exist, verify the required precautions have been taken and sign the entry permit to authorize entry. The entry supervisor shall be the only person that can sign the permit to authorize entry.

4.10.3. The completed permit shall be made available at the time of entry to all authorized entrants, by posting it at the entry portal or by any other

equally effective means; so that the entrants can confirm that pre-entry preparations have been completed.

4.10.4. The Owner shall retain each canceled entry permit for at least one year to facilitate the annual review of the permit-required confined space program. Any problems encountered during an entry operation shall be noted on the pertinent permit so that appropriate revisions to the permit space program can be made.

4.11. Preventing Accidents

4.11.1. Center Line Electric will take steps to protect you before you are authorized to enter a permit space. These include:

4.11.1.1. Identifying the hazards in the space.

4.11.1.2. Taking measures to control the hazards such as isolation, lockout/tagout, atmospheric testing and ventilation.

4.11.1.3. Training you to follow safe entry and work procedures.

4.11.1.4. Providing you with appropriate safety equipment.

4.11.1.5. Ensuring that a thoroughly trained and equipped emergency rescue team is available if needed.

4.11.1.6. Performing a program review at any time we, or the employees, feel the measures taken under this program may not protect employees. If the review finds deficiencies, they will be corrected before any subsequent entries are authorized.

4.11.2. As a member of the team that is involved with a permit-required confined space entry, here's what you should do before you enter the space:

4.11.2.1. Read the written permit.

4.11.2.2. Check the MSDS for any hazardous chemical you may use or find in the space. The MSDS will tell you how to detect and protect yourself against exposure and what to do if you are exposed.

4.11.2.3. Ask yourself what could go wrong and plan what you will do if it does.

4.12. Rescue Provisions

4.12.1. Before entering any permit-required confined space (PRCS), provisions for employee rescue must be established. Rescue equipment may include: tri-pods or retractors; full body harnesses; wristlets; air-supplied respirators; trained rescue personnel; air monitoring equipment; and any other materials unique to the confined space.

4.12.2. Provisions for rescue must be established BEFORE entry is made.

4.12.2.1. If the contractor is relying upon a local fire department or EMTA service for rescue from confined spaces, the contractor is required to ensure the local service has the

appropriately trained persons and equipment to perform rescue operations.

4.12.2.2. If outside services are designated for rescue and emergency services, the outside service must be given an opportunity to examine the entry site, practice rescue, and accept or decline responsibility.

4.12.2.3. If employees have been designated for Non-entry rescue and emergency services, Center Line Electric will ensure the employees are properly trained and equipped to perform the rescue services.

4.12.3. There are three types of confined space rescue:

4.12.3.1. Self-rescue – Self-rescue requires teamwork.

4.12.3.1.1. At the first sign of trouble, the entrant notifies the attendant and begins to evacuate immediately – without taking time to notify other workers in the space.

4.12.3.1.2. Upon being notified that the entrant is evacuating, the attendant warns other workers in the space to evacuate and summons the rescue team if necessary.

4.12.3.2. Non-entry Rescue – When the entrant cannot self-rescue, the attendant may be needed to use non-entry rescue techniques. In such cases, the attendant should use a mechanical device like a hand-cranked, man-rated winch with tripod. OSHA requires that a mechanical device be available to retrieve personnel from vertical entry permit spaces more than 5 feet deep. A winch with a 25:1 mechanical advantage lets you lift 250 lbs with 10 lbs of force. Here's how it works:

4.12.3.2.1. The entrant wears a full-body harness connected to the retrieval line.

4.12.3.2.2. The winch's wire cable is attached to the entrant's body harness, so the attendant can crank the entrant back out in an emergency.

4.12.3.2.3. A retrieval line should be attached to the harness at the center of the back near shoulder level.

4.12.3.2.4. Wristlets may be used to pull the entrant through a very small opening, but only if absolutely necessary.

4.12.3.2.5. Cranking an entangled person can quickly cause injury. Any extra pressure on the line means the entrant may have become entangled in a ladder or other obstacle – stop cranking immediately. Back off by lowering the cable a bit, and then move the cable with your hands to disentangle.

4.12.3.2.6. **Never try to drag entrants out of the space without mechanical assistance**.

4.12.3.2.7. Do not use a motorized crane, winch or other machine to pull an entrant out. Powered equipment can move too far, too fast and may cause injury or death if entrants get entangled.

4.12.3.3. Entry Rescue – Entry rescue is to be done by specifically training confined space rescue teams or individuals. Center Line Electric will have an entry rescue team on call while confined space work activities are being preformed, (Emergency Rescue service or arrangement with local municipal Fire Department. Outside services and the fire department must be given an opportunity to examine the entry site, practice rescue and an outside service, other than the fire department, can either accept or decline responsibility as appropriate

4.12.4. Monitoring of the space must inform the entrants of the potential hazards and results. The entrants or their representative shall participate in the permit review process and signing. Entrants shall review calibrated air monitoring data before entry. Ventilation must be used and air quality testing must be conducted before and during entry.

4.13. 4.13 Outside Contractors (Subcontractors)

4.13.1. Center Line Electric will coordinate all activities of any contractors who will be required to work in or around PRCS. Contractors who are entering the space will be required to develop and implement their own confined space plan and it shall be at least as effective as this plan and able to coordinate with Center Line Electric and any client personnel on-site.

4.13.2. Each Contractor or subcontractor working in the general area shall ensure that their work does not change the existing environmental and physical conditions inside the confined spaces. Regular meetings shall be conducted to confirm that this is not happening and shall be documented by the Entry Supervisor.

5. Electrical Safety

5.1. The information in this section is intended to comply with the requirements of 29 CFR 1926 Subpart K and NFPA 70E "Electrical Safety Requirements for Employee Workplaces". ***For safe work procedures when working on or near energized electrical equipment or components refer to the Arc Flash and Shock Protection Program.***

5.2. What are the hazards of electricity?

5.2.1. Shock – Electrical current travels in closed circuits. You get a shock when some part of your body becomes part of an electric circuit. An electric current enters the body at one point and exits the body at another. You will get a shock if you touch:

5.2.1.1. Both wires of an electric circuit.

5.2.1.2. One wire of an electric circuit and ground.

5.2.1.3. A metallic part that is "hot" because it is contacting an energized wire and you are in contact with the ground.

The severity of shock a person can receive depends on:

5.2.1.4. Quantity (amperes) of current through the body.

5.2.1.5. Path of current through the body.

5.2.1.6. Length of time the body is in the circuit.

Effects of Electricity

5.2.1.7. >3 mA is a painful shock which can cause indirect accident.

5.2.1.8. >l0 mA is muscle contraction, "NO-LET-GO" danger.

5.2.1.9. >30 mA is lung paralysis, usually temporary.

5.2.1.10. >50 mA is possible ventricular fibrillation, usually fatal.

5.2.1.11. 100 mA to 4A is certain ventricular fibrillation and usually death.

5.2.1.12. >4A is heart paralysis, severe burns and usually death. Usually caused by voltages above 600V.

5.2.2. All Center Line Electric employees shall follow the safe work practices addressed in this section to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts.

5.2.3. Burns and Other Injuries – Electric burns are one of the most serious injuries you can receive and should be given immediate attention. A severe shock can also cause considerably more damage to the body than is visible. A person can suffer internal bleeding and severe destruction of tissues, muscles, nerves, and internal organs. This is the result of current flowing through tissue or bone, generating heat, and causing injury. In addition, shock is often only the beginning in a chain of events. The final injury may well be from a fall, cut, burns or broken bones.

5.2.4. Arcing occurs when high-amperage currents jump from one conductor to another through air, generally during opening or closing circuits or when static electricity is discharged. Fire may occur if the arcing takes place in an atmosphere that contains an explosive mixture.

5.2.5. Explosions – Explosions occur when electricity provides a source of ignition for an explosive mixture in the atmosphere. Ignition can be due to overheated conductors or equipment, or normal arcing at switch contacts. OSHA standards, the National Electric Code, and related safety standards have precise requirements for electrical systems and equipment when applied in such areas. The Center Line Electric supervisor or Owner's Representative will make a hazard assessment and give you instructions in these cases.

5.2.6. Fires – Electricity is one of the most common causes of fire. High resistance connections are a primary source of ignition. High resistance connections occur where wires are improperly spliced or connected to other components such as receptacle outlets and switches. Heat develops in a conductor from current flow. If you put more current through a conductor than it can handle, it may get hot enough to start a fire.

5.3. What is approved for construction?

5.3.1. Only three-prong extension cords with approved rating:

S	Service cord (600V) rubber.
J	junior service (300V).
T	Thermoplastic.
E	Elastomer plastic.
O	Oil resistant jacket only.
OO	Oil resistant jacket and conductor.
W-A	UL approved for outdoor use.
W	OSA certified for outdoor use.
Type W	600/2000V rubber power cable, with full-size green grounding conductors.
Type G or GGC	600-2000V rubber power cable, with internal grounding conductor power tools.

5.3.2. Double insulated or three-prong.

5.3.3. Use of Insulating and Grounding Techniques

5.3.3.1. GFCI's – The GFCI is a fast–acting circuit breaker than senses small imbalances in the circuit by current leakage to ground. The GFCI continually matches the amount of current going to an electrical device against the amount of current returning from the device. Whenever the difference is greater than 5 milliamps, the GFCI interrupts the electric power within as little as 1/40 of a second, preventing electrocution.

5.3.3.2. GFCI's are required for all 120-volt, single-phase, 15- and 20-ampere receptacle outlets on construction sites which is not a part of the permanent wiring of the building or structure, and which are in use by employees. Receptacles on the ends of extension cords are not part of the permanent wiring and, therefore, must be protected by

GFCI's whether or not the extension cord is plugged into permanent wiring.

5.3.3.3. Assured Equipment Grounding Conductor Program – Covers all cord sets, receptacles which are not a part of the permanent wiring of the building or structure, and equipment connected by cord and plug which are available for use or used by employees. A written description of the Center Line's assured equipment grounding conductor program, including the specific procedures adopted, will be kept at the jobsite. This program will outline the specific procedures for the required equipment inspections, tests and test schedule. Center Line Electric's safety director will be responsible for designating the competent person(s) to implement this program.

5.3.3.4. Electrical equipment noted in the assured equipment grounding conductor program must be visually inspected for damage or defects before each day's use. Any damaged or defective equipment will be tagged "DO NOT USE" and must not be used by employees until repaired.

5.3.3.5. Two tests are required by OSHA. One is a continuity test to ensure that the equipment grounding conductor is electrically continuous. It must be performed on all cord sets, receptacles which are not part of the permanent wiring of the building or structure, and on cord- and plug-connected equipment which is required to be grounded. This test may be performed using a simple continuity tester, an ohmmeter, or a receptacle tester.

5.3.3.6. The other test must be performed on receptacles and plugs to ensure that the equipment grounding conductor is connected to its proper terminal. This test can be performed with the same equipment used in the first test.

5.3.3.7. These tests are required before first use, after any repairs, after damage is suspected to have occurred and at 3-month intervals. Cord sets and receptacles which are essentially fixed and not exposed to damage must be tested at regular intervals not to exceed 6 months. Any equipment which fails to pass the required tests shall not be made available or used by employees.

5.3.3.8. Each receptacle, cord set, and cord- and plug-connected equipment will be marked using a color coded system in order to identify it as passing the continuity test and visual inspection. The color coding system used will be made available on the job site.

5.3.3.9. Center Line Electric will not make available, or permit the use of any equipment which has not met the

requirements of the assured equipment grounding conductor program.

5.3.4. NO ADAPTORS.

5.3.5. Tools and cords must be inspected on a regular basis.

How to examine and test extension cords:

5.3.5.1. What is the cord type?

5.3.5.2. Is there any insulation showing?

5.3.5.3. Is there twisting of the wire inside the extension cord?

5.3.5.4. Is there proper strain relief?

5.3.5.5. Is the cord wired correctly?

How to examine and test power tools:

5.3.5.6. Is the tool double-insulated?

5.3.5.7. If the tool is three-prong type, is the third prong missing?

5.3.5.8. Check the continuity of the ground.

5.3.5.9. Is the cord damaged?

5.3.5.10. Is there proper strain relief?

5.3.5.11. Proper safety guards are in place.

5.3.5.12. Are the tools equipped with the proper switch?

5.4. Guarding

5.4.1. Live parts of electric equipment operating at 50 volts or more must be guarded against accidental contact by:

5.4.1.1. Location in cabinet, room, vault or similar enclosure accessible only to qualified persons.

5.4.1.2. Use of permanent, substantial partitions or screens to exclude unqualified persons.

5.4.1.3. Location on a suitable balcony, gallery, or platform elevated and arranged to exclude unqualified persons.

5.4.1.4. Elevation of 8 feet or more above the working surface.

5.4.2. Entrances to rooms and other guarded locations containing exposed live parts must be marked to identify all hazards.

5.4.3. Electric installations that are over 600 volts and that are open to unqualified persons must be made with metal-enclosed equipment or enclosed in a vault or are controlled by a lock. In addition, equipment must be marked with appropriate caution signs.

5.5. General Safety Tips

5.5.1. Maintain your electrical equipment according to manufacturer and company standards.

5.5.2. Respect warning signs, fences, cages or other barriers for special electrical hazards.

5.5.3. Regularly inspect tools, cords, grounds and accessories. It's not only a good idea; it's required by the regulations before starting work every day.

5.5.4. Repair only those items that you are authorized to repair. If you are not qualified, arrange to have equipment repaired or replaced immediately.

5.5.5. Use safety features like three-prong plugs, double insulated tools and safety switches. Keep machine guards in place and follow proper procedures.

5.5.6. Keep electric cables and cords to equipment clean and free from kinks. Never carry equipment by the cord.

5.5.7. Extension cords are more vulnerable to damage; use and maintain them properly. Never:

5.5.7.1. Use worn or frayed cords.

5.5.7.2. Fasten with staples, hang from nails, or suspend by wire or any other method that could damage the insulation.

5.5.7.3. Run them through holes in walls, ceilings, floors, doorways or windows without protection.

5.5.8. Don't touch water, damp surfaces, ungrounded metal or any bare wires if you are not protected. Wear approved rubber gloves when working with live wires or ungrounded surfaces, and rubber-soled shoes or boots when working on damp or wet surfaces.

5.5.9. Don't wear metal or conductive objects (rings, watches, etc.) or clothing when working with electricity unless they are rendered non-conductive by covering, wrapping or other insulating means. The conductive items might make you a ground and could cause injury.

5.5.10. If you are working near overhead power lines of 50 kV or less you or any equipment you are using must not come any closer than 10 feet from the lines. Add 4 inches of distance for every 10 kV over 50 kV.

5.5.10.1. If you have to work under overhead lines, the lines shall be de-energized and grounded or other protective measures shall be provided before work is started.

5.5.10.2. If the vehicle you are using is in transit with its structure lowered, the clearance may be reduced to 4 ft. Add 4 inches of distance for every 10 kV over 50 kV.

5.5.10.3. If insulating barriers are installed to prevent contact with the lines, and if the barriers are rated for the voltage of the line being guarded and are not a part of or an attachment to the vehicle or its raised structure, the clearance may be reduced to a distance within the designated working dimensions of the insulating barrier.

5.5.10.4. Employees standing on the ground may not contact the vehicle or mechanical equipment or any of its attachments, unless:

5.5.10.4.1. The employee is using protective equipment rated for the voltage; or

5.5.10.4.2. The equipment is located so that no uninsulated part of its structure can come closer to the line than safely permitted.

5.5.10.5. If any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines is intentionally grounded, employees working on the ground near the point of grounding may not stand at the

grounding location whenever there is a possibility of overhead line contact. Additional precautions, such as the use of barricades or insulation, shall be taken to protect employees from hazardous ground potentials, depending on earth resistivity and fault currents, which can develop within the first few feet or more outward from the grounding point.

5.5.11. If you are using portable ladders where you or the ladder could contact exposed energized parts, the ladders must have non-conductive side rails.

5.5.12. If you are working in a confined or enclosed space that contains exposed energized parts, you must use protective shields, protective barriers or insulating materials to avoid contact with these parts.

5.5.12.1. Center Line Electric will provide any required protective shields, barriers or insulating materials.

5.5.13. Do not enter space containing exposed energized parts unless illumination is provided that enables you to perform the work safely.

5.5.14. Conductive materials and equipment that may come in contact with any part of any employee's body shall be handled in a manner that will prevent them from contacting exposed energized conductors or circuit parts. Any tools or material are considered an extension of your body and protective barriers need to be in place to prevent accidental contact with energized parts (such as the use of insulating barriers, guarding and insulated tools).

5.6. Crane Operation Near Power Lines

5.6.1. If any part of the equipment, load line, or load could get closer than 20 feet (50 feet if over 350kV) to a power line, one of the following requirements must be met:

5.6.1.1. Obtain confirmation from the utility owner that the power line has been de-energized and is visibly grounded at the project site.

5.6.1.2. Implement approved measures to ensure that no part of the equipment, line, or load can get closer than 20 feet (50 feet if over 350kV) to the power line. Such methods may include a spotter, proximity detector, visual aids that identify clearance distance, or range control warning devices.

5.6.1.3. Determine the line’s voltage and minimum approach distance using the following table:

Nominal Voltage (kV)	Minimum Clearance Distance (ft)
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 utility owner or registered engineer

5.6.2. When equipment is traveling under or near a power line with no load the following requirements must be met:

5.6.2.1. The boom/mast and support system are lowered sufficiently to meet the requirements of this section.

5.6.2.2. The clearances specified in the table below are maintained.

5.6.2.3. The effects of speed and terrain on equipment movement are considered when maintaining minimum clearance distances.

5.6.2.4. A dedicated spotter is used. The spotter must be in continuous contact with the operator, be positioned effectively to judge distance, give timely information to the operator, and be able to communicate directly with the operator.

5.6.2.5. In conditions of poor visibility means of identifying the locations of the lines must be implemented and a safe path of travel must be identified.

5.6.2.6. Minimum Clearance Distances While Traveling With No Load:

Nominal Voltage (kV)	While Traveling-Minimum Clearance Distance (ft)
Up to .75	4
Over .75 to 50	6
Over 50 to 345	10
Over 345 to 750	16
Over 750 to 1000	20
Over 1000	As established by utility owner or registered engineer

5.7. Training Requirements

5.7.1. Qualified employees shall, at a minimum, be trained in and familiar with the skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment, to determine the nominal voltage of exposed live parts, and the approach distances and the corresponding voltages to which they will be exposed.

5.7.2. All other employees who may face a risk of injury due to electric shock or other electrical hazards will also be trained in and familiar with the safety related work practices that pertain to their respective job assignments.

5.7.3. The degree of training provided will be determined by the employee's respective job assignments.

6. Fall Protection

6.1. Center Line Electric is committed to maintaining a safe workplace and zero exposure to slips, trips and falls from elevations. The project manager and supervisor shall determine prior to beginning work if there are fall hazards involved in the project and shall arrange for the necessary training and equipment to be provided. This shall include, but not be limited to, whether the walking/working surfaces have the strength and structural integrity to support employees safely. Employees shall be allowed to work on those surfaces only when the surfaces have the requisite strength and structural integrity.

6.2. A fall protection plan shall be implemented when there are unprotected sides and/or edges. Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems or personal fall arrest systems. This includes work near and around excavations. All fall protection plans and devices shall be in compliance with current OSHA and state specific standards. When the standard methods of protection are not feasible or a greater hazard would be created, the exposure determination will be made without regards to the use of personal protective equipment. Center Line Electric will discuss the extent to which scaffolds, ladders or vehicle-mounted work platforms can be used.

6.3. Fall Protection System Considerations

6.3.1. Selection and Use Considerations

6.3.1.1. The kind of personal fall system selected should match the particular work situation, and any possible free fall distance shall be kept to a minimum; less than 2 feet. Consideration should be given to the particular environment. For example, the presence of acids, dirt, moisture, oil, grease, etc., and their effect on cables, harnesses, etc., shall be evaluated. Hot or cold environments may also have an adverse affect on the system. Wire rope should not be used where an electrical hazard is anticipated. As required by the standard, Center Line Electric must plan to promptly rescue an employee should a fall occur, since the suspended employee may not be able to reach a work level independently.

6.3.1.2. Where lanyards, connectors and lifelines are subject to damage by the following work operations, if applicable; welding, chemical cleaning and sandblasting, the component should be protected, or other securing systems should be used. The supervisor or competent person in charge of the project should fully evaluate the work conditions and environment (including seasonal weather changes) before selecting the appropriate personal fall protection system. Once in use, the system's effectiveness

should be monitored. In some cases, a program for cleaning and maintenance of the system may be necessary.

6.3.2. Testing Considerations

6.3.2.1. Before purchasing or putting into use a personal fall arrest system, the supervisor should obtain from the supplier information about the system based on its performance during testing so that it is known if the system meets this standard. Testing should be done by a competent entity using recognized test methods. Not all systems may need to be individually tested; the performance of some systems may be based on data and calculations derived from testing of similar systems, provided that enough information is available to demonstrate similarity of function and design. Once the system has been stressed (such as used in a potential fall), the components shall be retested in accordance with the manufacturer's recommendations.

6.3.3. Component Compatibility Considerations

6.3.3.1. Ideally, a personal fall arrest system is designed, tested and supplied as a complete system. However, it is common practice for lanyards, connectors, lifelines, deceleration devices and body harnesses to be interchanged since some components wear out before others. The supervisor and employees should realize that not all components are interchangeable. For instance, a lanyard should not be connected between a body harness and deceleration device of the self-retracting type since this can result in additional free fall for which the system was not designed. Any substitution or change to a personal fall arrest system should be fully evaluated or tested by a competent person to determine that it meets the standard, before the modified system is put in use. If modifications are to be made they shall be in accordance with manufacturer's recommendations and/or with guidance and signature of a qualified Professional Engineer.

6.3.4. Competent Person(s)

6.3.4.1. Center Line Electric has specially trained individuals to serve as competent persons for fall protection. The on-site competent person(s) will be appointed for specific projects.

6.3.4.2. These individuals are trained to recognize fall hazards, develop and implement the Fall Protection Work Plans, and warn employees of hazards or acts that may cause falls. The competent person must remain on-site in close enough proximity to the potential fall hazard area to be in

verbal communication with possibly affected personnel. During the time that employees could be at risk for falls, the competent person shall not have other assignments that could distract them from adequately monitoring the area.

6.3.5. Employee Training

6.3.5.1. Thorough employee training in the selection and use of personal fall arrest systems is imperative and must be conducted prior to any potential exposure. Training should include the following: application limits; components of the regulations; proper anchoring and tie-off techniques; estimation of free fall distance, including determination of deceleration distance, and total fall distance to prevent striking a lower level; methods of use; and inspection and storage of the system. Site specific training must also discuss which scaffolds, ladders or vehicle mounted work platforms can be used.

6.3.5.2. Careless or improper use of the equipment could result in serious injury or death. Employees should be familiar with manufacturer's recommendations and shall practice using the equipment, before a system is actually used. Of uppermost importance is the reduction in strength caused by certain tie-offs (such as using knots, tying around sharp edges, etc.) and maximum permitted free fall distance. Also, to be stressed are the importance of inspections prior to use, the limitations of the equipment and unique conditions at the worksite which may be important in determining the type of system to use.

6.3.5.3. Retraining shall take place when deficiencies in previous training have been noted; when changes in the work or in equipment occur; when standards etc. change to render any previous training obsolete. When Center Line Electric has reason to believe that any affected employee who has already been trained does not have the understanding and skill by this program, they will retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:

6.3.5.3.1. Changes in the workplace render previous training obsolete;

6.3.5.3.2. Changes in the types of fall protection systems or equipment to be used render previous training obsolete; or

6.3.5.3.3. Inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the requisite understanding or skill.

6.3.6. Instruction Considerations

6.3.6.1. Comprehensive instructions shall be obtained from the supplier as to the system's proper use and application, including, where applicable:

6.3.6.1.1. The force measured during the sample force test.

6.3.6.1.2. The maximum elongation measured for lanyards during the force test.

6.3.6.1.3. The deceleration distance measured for deceleration devices during the force test.

6.3.6.1.4. Caution statements on critical use limitations.

6.3.6.1.5. Application limits.

6.3.6.1.6. Proper hook-up, anchoring and tie-off techniques, including the proper dee-ring or other attachment point to use on the body harness for fall arrest.

6.3.6.1.7. Proper climbing techniques.

6.3.6.1.8. Methods of inspection, use, cleaning and storage.

6.3.6.1.9. Specific lifelines which may be used.

6.3.7. The following information should be provided to employees during training:

6.3.7.1. Inspection Considerations

6.3.7.1.1. Personal fall arrest systems must be regularly inspected. Any component with any significant defect, such as cuts, tears, abrasions, mold or undue stretching, alterations or additions which might affect its efficiency; damage due to deterioration; contact with fire, acids or other corrosives; distorted hooks or faulty hook springs; tongues unfitted to the shoulder of buckles; loose or damaged mountings; non-functioning parts; or wearing or internal deterioration in the ropes must be withdrawn from service immediately, and should be tagged or marked as unusable, or destroyed.

6.3.7.2. Rescue Considerations

6.3.7.2.1. When personal fall arrest systems are used, employees shall be promptly rescued or can rescue themselves should a fall occur. The availability of rescue personnel, ladders or other rescue equipment should be evaluated. In some situations, equipment, which allows employees to rescue themselves after a fall

has been arrested, may be desirable, such as devices, which have descent capability.

6.3.7.3. Tie-off Considerations – The following tie-off considerations shall be taken:

6.3.7.3.1. Planning for a suitable anchoring point(s).

6.3.7.3.2. The strength of a personal fall arrest system.

6.3.7.3.3. Type of tie-off which may reduce the strength, such as the following: tie-off using a knot, tie-off using a rope lanyard or lifeline, tie-off around sharp surfaces.

6.3.7.3.4. Horizontal lifelines.

6.3.7.3.5. The strength of an eye-bolt.

6.3.7.3.6. Elongation and deceleration distance.

6.3.7.4. Vertical Lifeline Considerations

6.3.7.4.1. Employees must have a separate lifeline when the lifeline is vertical. The reason for this is that in multiple tie-offs to a single lifeline, if one employee falls, the movement of the lifeline during the arrest of the fall may pull other employees' lanyards, causing them to fall as well.

6.3.7.5. Free-Fall Considerations

6.3.7.5.1. Be aware that a system's maximum arresting force is evaluated under normal use conditions established by the manufacturer, and in no case using a free fall distance in excess of 6 feet (1.8 m). A few extra feet of free fall can significantly increase the arresting force on the employee, possibly to the point of causing injury. Because of this, the free fall distance should be kept at a minimum and, as required by the standard, in no case greater than 6 feet (1.8 m). To help assure this, the tie-off attachment point to the lifeline or anchor should be located at or above the connection point of the fall arrest equipment to harness. Another important consideration is that the arresting force, which the fall system must withstand, also goes up with greater distance of free fall, possibly exceeding the strength of the system.

6.3.7.6. Obstruction Considerations

6.3.7.6.1. The location of the tie-off should also consider the hazard of obstructions in the potential fall path of the employee. Tie-offs,

which minimizes the possibilities of exaggerated swinging, should be considered.

6.3.7.7. Other Considerations

6.3.7.7.1. Because of the design of some personal fall arrest systems, additional considerations may be required for proper tie-off. For example, heavy deceleration devices of the self-retracting type should be secured overhead in order to avoid the weight of the device having to be supported by the employee. In addition, if self-retracting equipment is connected to a horizontal lifeline, the sag in the lifeline should be minimized to prevent the device from sliding down the lifeline to a position, which creates a swing hazard during fall arrest. In all cases, manufacturer's instructions should be followed.

6.4. Outline of Fall Protection Work Plan

6.4.1. Center Line Electric will use the following forms for on-site fall protection as needed. Each fall protection work plan will be developed by a qualified or competent person and maintained on-site, to be submitted to the designated authority when appropriate. The plan will describe how Center Line Electric will protect employees on the work site when above the ground, above or on other work surfaces, or water.

6.4.2. The six primary elements needed are:

6.4.2.1. Identification of all fall hazards in the work area – All jobs and tasks to be done must be reviewed to make this determination.

6.4.2.2. Description of the method of fall arrest or fall restraint to be provided shall have details such as using scaffolding with standard guardrails, and full-body harness with lanyard secured to an anchorage point.

6.4.2.3. Description of the correct procedures for the assembly, maintenance, inspection and disassembly of the fall protection system to be used. The following is an example of how this section may appear on fall protection plans:

6.4.2.3.1. The scaffolding will be erected and disassembled by Center Line Electric (or a subcontractor). The supervisor or other competent person will inspect the scaffolding before allowing employees to work on it at the start of each workday and after major changes in the weather

conditions. The scaffolding must meet the requirements of OSHA 1910.28.

6.4.2.3.2. Some critical items are:

- It must be on a firm base.
- Planks must be in good condition and secured from shifting. They must also be fitted to fill the scaffolding frame.
- All open sides and ends must be enclosed with standard guardrails and toe boards.

6.4.2.3.3. Fall arrest equipment, including approved full-body type Ill harness, lanyards and horizontal lifelines attached to eye bolts, safety horizontal lifeline, support beams, attachment points in the manlifts, or other pre-approved attachment points.

6.4.2.3.4. Employees will put the equipment on before climbing to the roof. They will snap into the horizontal lifeline immediately after mounting the roof.

6.4.2.3.5. All equipment will be inspected by the employee using it each day before putting it on. The inspection will include checking for damage, wear and mildew.

6.4.2.3.6. Any defective equipment will be taken to the job shack or work truck for evaluation by the job competent person and turned in for repair or destroyed, as appropriate.

6.4.2.4. Description of the correct procedures for handling, storage and securing of tools and materials. Below are some examples of how this section may appear:

6.4.2.4.1. All fall protection equipment will be kept in the job equipment shack or work truck. It will be picked up from the shack at the start of each workday by each using employee and returned after the shift is over. Employees will advise the supervisor of any damage to the equipment and shall take steps to ensure it is not used until adequately repaired.

6.4.2.4.2. Webbing will be properly cleaned, if dirty.

6.4.2.4.3. Tools will be secured as follows:

- Tool belts will be used to carry hand tools to the elevated work surface.
- Tools too large for the tool belt will be raised by rope and pulley.

- When hand tools are used, they will be returned to the tool belt immediately after use.
- Large tools, such as hammer drills, will be secured to the scaffold guardrails with the cable provided.

6.4.2.5. Description of the method of providing overhead protection for workers who may be in, or pass through, the area below the work site. Below are some examples of how this section may appear the fall protection plan:

6.4.2.5.1. The area under the scaffolding will have a warning line installed to protect against other employees accidentally walking under it.

6.4.2.5.2. In order to prevent tools from falling from scaffolding, the scaffolding will have #18 screen installed between the toe board and the guardrail at all locations where employees must work below.

6.4.2.6. Description of the method for prompt, safe removal of injured workers. An example of this requirement might appear as follows:

6.4.2.6.1. If a crewmember is injured, the supervisor or competent person will evaluate the employee's condition and administer first aid. If the employee's condition appears serious, the competent person or other designated person will call 911 or other local emergency rescue unit to request assistance.

6.4.3. All employees shall be trained on all fall protection equipment and additional personal protective equipment (if necessary) prior to the start of any work activity 6 feet above surface level. Training records shall be submitted to the designated authority for approval and maintained on the job site at all times. Center Line Electric will verify compliance with this safety program by preparing a written certification record. The written certification record will contain the name or other identity of the employee trained, the date(s) of the training, and the signature of the person who conducted the training or the signature of the Center Line Electric Corporate Safety Director. If Center Line Electric relies on training conducted by another employer, the certification record will indicate the date the employer determined that the training was adequate rather than report the date of the actual training. The latest certifications will be properly maintained.

6.5. Competent Person for Fall Protection

6.5.1. Center Line Electric shall assign a competent person to train employees and administer a fall protection plan. The name of the competent person shall appear on each Fall Protection Plan. The competent person shall have experience, knowledge and training in the safe use of access ways and fall protection systems and the recognition of hazards related to their use, including:

6.5.1.1. The nature of access and fall hazards in the work area;

6.5.1.2. The correct procedures for constructing, erecting, maintaining, using, and dismantling access ways and fall protection systems;

6.5.1.3. The maximum intended load-carrying capacities of access ways and fall protection systems;

6.5.1.4. All applicable requirements from this section; and

6.5.1.5. The limitations on the use of mechanical equipment during the performance of roofing work on low-sloped roofs, the correct procedures for handling and storage of equipment and materials, and the erection of overhead protection.

6.5.1.6. The use of operation of guardrail systems, personal fall arrest systems, safety net systems, warning lines systems, safety monitoring systems, controlled access zones and other protection to be used.

6.5.1.7. The handling and storage of equipment and materials and the erecting of overhead protection.

6.5.1.8. The role of employees in fall protection plans.

6.5.1.9. Applicable standards contained in this program.

6.6. Accident Investigation

6.6.1. In the event of a fall, or some other related serious incident occurs, Center Line Electric will investigate the circumstances to determine if the fall protection plan needs to be changed and implement those changes as necessary.

6.7. Equipment Usage

6.7.1. Center Line Electric will ensure all applicable OSHA, ANSI and ASTM requirements are met when using equipment and raw materials in fall protection system.

6.8. Fall Protection Work Plan (Form)

6.8.1. The following is the On-Site Fall Protection Work Plan that Center Line Electric will use if applicable to the project and shall be made available to employees, client safety personnel, etc. as needed. These forms shall be completed prior to the start of work and shall conform to the specific job site. The Fall Protection Work Plan shall be kept on the job site at all times. Prior to the start of work (at the safety meeting), the

supervisor or competent person shall inform all employees of where the Site Specific Fall Protection Work Plan is located.

6.9 Administrative Duties

6.9.1 Center Line Electric's Safety Director is responsible for developing and Maintaining this written plan. This person is solely responsible for all facets Of the plan and has full authority to make necessary decisions to ensure its Success. The Safety Director is also qualified, by appropriate training and experience that is commensurate with the complexity of the plan, to administer or oversee our fall protection policy and procedures.

Worksite Information

Company Name: _____ Date Prepared: _____

Project Name: _____

Worksite Address/City: _____

Competent Person to Develop and Implement the Plan: _____

Plan Document Location at this Worksite: _____

Fall Hazard Identification and Protection Selection (Identifying and controlling Fall Hazards above 6 feet are mandatory, those below 6 feet are **highly recommended**)

Identify each fall hazard that exists or will exist during this project:

X	Hazard Type	General Location(s)	Fall Protection Method	Overhead
	Slipping down slopes			
	Roof Openings			
	Floor Openings			
	Open Sided Floors			
	Scaffold Work			
	Mobile Lift Work			
	Ladder Work			
	Excavation Edges			
	Grade Drop-Offs			
	Other:			

Fall Protection Methods: Copy to the above table a fall protection method from the list below for each hazard identified. Assembly and implementation instructions for the method(s) used are located elsewhere in this document.

***** Standard Guardrails
***** Fall Restraint Harness/Belt
***** Warning Line System
***** Warning Line & Safety Monitor
***** Fall Arrest Harness
***** Safety Net
***** Cover or Hatch
***** Positioning Belt

Other: _____

_____

Overhead Hazard Protection Methods: For each hazard identified, specify on the table the method(s) of overhead protection for workers below by number from the list below:

1. Hard Hats Required
2. Overhead Hazard Signs
3. Debris Nets
4. Toe Boards on Guardrails
5. Screens on Guardrails
6. Barricade to Control Access
7. Other _____
8. Other _____

At times it is necessary for personnel to access the scaffold through the guardrails; however, it is imperative that anyone working below be protected from falling tools, etc. If a protective screen does not permit necessary access, the competent person, with input from the crew, will implement a system that adequately protects people on the ground while simultaneously allowing work to proceed on the scaffold. It is always good practice to demarcate a work area with barrier tape, thus restricting the space to informed, involved personnel only.

Fall Protection System Assembly and Maintenance

Fall protection systems will be assembled and maintained according to manufacturer's instructions when using a manufactured system. If not using a manufactured system, the equipment must be approved and its use signed off by a qualified Professional Engineer. Copies of those instructions are available on-site for reference. Any fall protection system used will meet current OSHA and state specific standards. Assembly and maintenance instructions unique to this worksite such as components, placement of systems, anchor points, areas where systems are particularly subject to damage, etc. are specified below:

Standard Guardrails: Must be 39" to 45" above the work surface at top rail with midrail and toe board and be able to withstand 200 pounds of pressure on the top rail in any direction. Must not have significant deflection and must be inspected regularly for damaged or missing components. Note: A guardrail does not protect a person standing on a ladder, stilts, a box or other surface above the work surface.

Post Material: _____ Rail Material: _____

Post Spacing (max = 8'): _____ Anchor Method: _____

Other Instructions: _____

Fall Arrest Harness: Must have anchor points capable of withstanding 5,000 pounds shock unless a deceleration device in use limits free fall to 2 feet in which case a 3,000 pound anchor point may be used. Free fall may not exceed 6'. A lower level may not be contacted during a fall. Lifelines must be placed or protected to prevent abrasion damage. Snap hooks may not be connected to each other, or to loops in webbing. Inspect components for deformation, wear and mildew.

System Component List: _____

Anchor Points at this worksite: _____

Configuration and placement sketch attached: Yes ___ No ___
Other Instructions: _____

Positioning Belt: Employees must not be able to fall more than 2 feet. The anchorage must be able to sustain four times the intended load. Snap hooks must not be connected to each other or to loops in webbing.

System Component List: _____

Anchor Points: _____

Other Instructions: _____

Fall Restraint Harness/Belt: Anchor points must be able to withstand four times the intended load. The system must always prevent a free fall from the work surface. Several alternate anchor points may be necessary to achieve this requirement. Inspect components for deformation, wear and mildew.

System Component List: _____

Anchor Points at this worksite: _____

Configuration and placement sketch attached: Yes ___ No ___

Other Instructions: _____

Safety Net: Must be installed within 30 feet vertically of the work surface and must extend out from the outermost projection of the work surface as specified below. A person falling into the net cannot contact any object below the net. The system must be tested or certified to withstand a 400 pound object dropped from the highest work surface. Mesh at any point must not exceed 35 square inches with the largest opening being 6" side to side. Inspect weekly for mildew, wear or damage and remove any objects in net as soon as possible.

System Component List: _____

Anchor Points at this worksite: _____

Maximum Fall Distance from Work Surface to Net: _____ ft.

Distance from Outer Edge of Net to Outermost Edge of Work Surface:

____ Up to 5' fall = 8' ____ 5' to 10' fall = 10' ____> 10' Fall = 13'

Configuration and placement sketch attached: Yes ___ No ___

Other Instructions: _____

Cover or Hatch: Must be able to support twice the weight of employees and equipment that would be on it at the same time or twice the maximum axle load of the largest vehicle that would cross it. Must be secured to prevent accidental displacement and marked with the work "Cover" or "Hole".

Material to Use: _____

Other Instructions: _____

Warning Line System: Must block access to all fall hazards in the work area and be placed 6' back from the edge (see the standard when using powered roofing equipment) Made up of rope wire or chain between 39" - 45" above the surface flagged at 6 foot intervals and attached to stanchions such that pulling on one section of chain will not take up slack in the other sections. The stanchions must be able to withstand a 16 pound force applied horizontally at 30" high.

System Component List: _____

Configuration and placement sketch attached: Yes ___ No ___

Other Instructions: _____

Controlled Access Zone (CAZ): Is made up of a warning line as described above 6' to 25' back from the edge plus the following additional precautions when employees work in the CAZ between the fall hazard and the warning line. A competent person designated as safety monitor will be in visual and voice range of employees in the control zone, on the same working surface and will watch, warn and direct employees regarding fall hazards. This system is not to be used in adverse weather conditions such as snow, rain, or high wind nor after dark.

Monitor(s): _____

Control Zone Employees:

1. _____
2. _____
3. _____

Other Fall Protection System: Provide a description of how the system is to be assembled, disassembled, operated, inspected and maintained, including specifications for materials to be used in this construction:

_____

_____

_____

_____

_____

_____

_____

Emergencies and Injuries

First Aid Trained Employee(s) on Site:

Name: _____ Title: _____
Name: _____ Title: _____

First Aid Kit Location(s): _____

Nearest Medical Facility: _____

Emergency Services Phone Numbers

Medical: _____
Fire: _____
Police: _____

Location of Nearest
Telephone: _____

If a crewmember is injured at elevation, the supervisor or competent person will evaluate the employee's condition and may choose to administer first aid. Emergency services will be called as needed. If an injured employee can't return to ground level, the employee will be brought down to a lower level by emergency services.

Employee Training

All employees must be instructed on the provisions of this plan and have been trained in the proper use of the fall protection equipment involved. By signing this document, the employees acknowledge that they understand the plan and have been trained in the use of the equipment.

Name	Signature	Date

The competent person's signature verifies that the hazard analysis has been done, the employees informed of the plan's provisions and that employees have received training in the fall protection system in use:

Name: _____ Signature: _____ Date: _____

Fall Protection Competent Person Evaluation Form

This checklist has been devised to help determine if the designated person assigned as a COMPETENT PERSON is competent within the description and intent of FALL RESTRAINT AND FALL ARREST standards such as OSHA 29 CFR 1910.66.

Employee's Name: _____ Position: _____

Date of evaluation by employer: _____ Length of time with employer: _____

Length of experience in fall protection: _____

Training

Does the designated individual have training in:

	Yes	No
Use of fall protection equip	☐	☐
Inspection of fall prot equip	☐	☐
Requirements of the standards	☐	☐
Maintenance of fall protection equipment	☐	☐
Storage of fall prot equipment	☐	☐
Identifying fall hazards	☐	☐
Requirements of fall restraint and fall arrest standards	☐	☐
Current first aid	☐	☐

Knowledge

Does the individual have knowledge about:

	Yes	No
Fall hazards	☐	☐
Use of protective systems	☐	☐
Residual risk classifications	☐	☐
Fall protection work plans	☐	☐
Emergency removal	☐	☐
Line capacity	☐	☐

Authority

Does the designated individual have authority to:	Yes	No
Take prompt measures to eliminate existing and predictable hazards?	☐	☐
Stop work until hazards are corrected or eliminated or controlled and remove employees from the hazardous area until proper systems are in place?	☐	☐

Comments _____

	Yes	No
Do your consider the individual to be competent within the requirements of the Fall Restraint and Fall Arrest standard?	☐	☐

IF NOT, WHY?

Areas to be strengthened: _____

_____

_____

Evaluator's Signature: _____

7. Grounding Conductor

7.1. In an effort to work safely with electrical tools, Center Line Electric personnel shall adhere to this grounding program. Where a client has a stricter policy or program, the more stringent work practices shall apply.

7.2. Personnel shall:

7.2.1. Make sure the path to ground from circuits, equipment, and enclosures is permanent and continuous.

7.2.2. Make sure equipment connected by cord and plug is grounded under these conditions:

7.2.2.1. Equipment with exposed non-current carrying metal parts.

7.2.2.2. Cord and plug connected equipment which may become energized.

7.2.2.3. Equipment that operates at over 150 volts to ground.

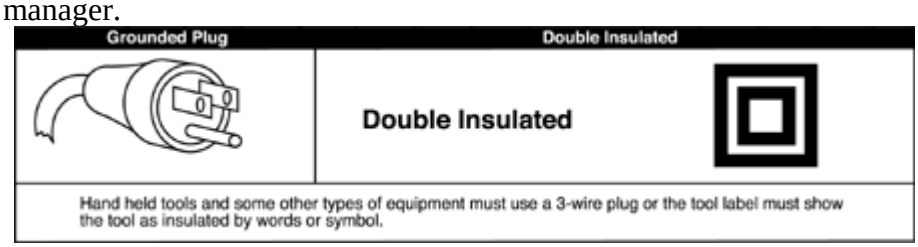
7.2.2.4. Equipment in hazardous locations.

7.2.3. Ground the following type of equipment:

7.2.3.1. Hand-held motor-operated tools including hedge clippers, lawn mowers, snow blowers, portable lamps, any tools likely to be used in wet locations.

7.2.3.2. Appliances (refrigerators, freezers, etc.).

7.2.4. Only use double insulated 3-prong plugs or other equally protective equipment. If the client requires that their plug types be used, they must be as protective as this program. Exceptions may be made only with concurrence of the Corporate Safety Director and the project manager.



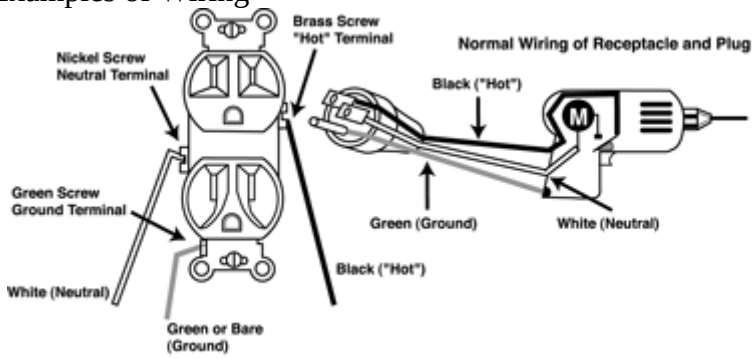
7.2.5. Make sure exposed metal parts of fixed equipment that do not conduct electricity, but may become energized, are grounded if the equipment is in a wet or damp location and is not isolated.

7.2.6. Make sure ground wires are identified and look different than the other conductors (wires).

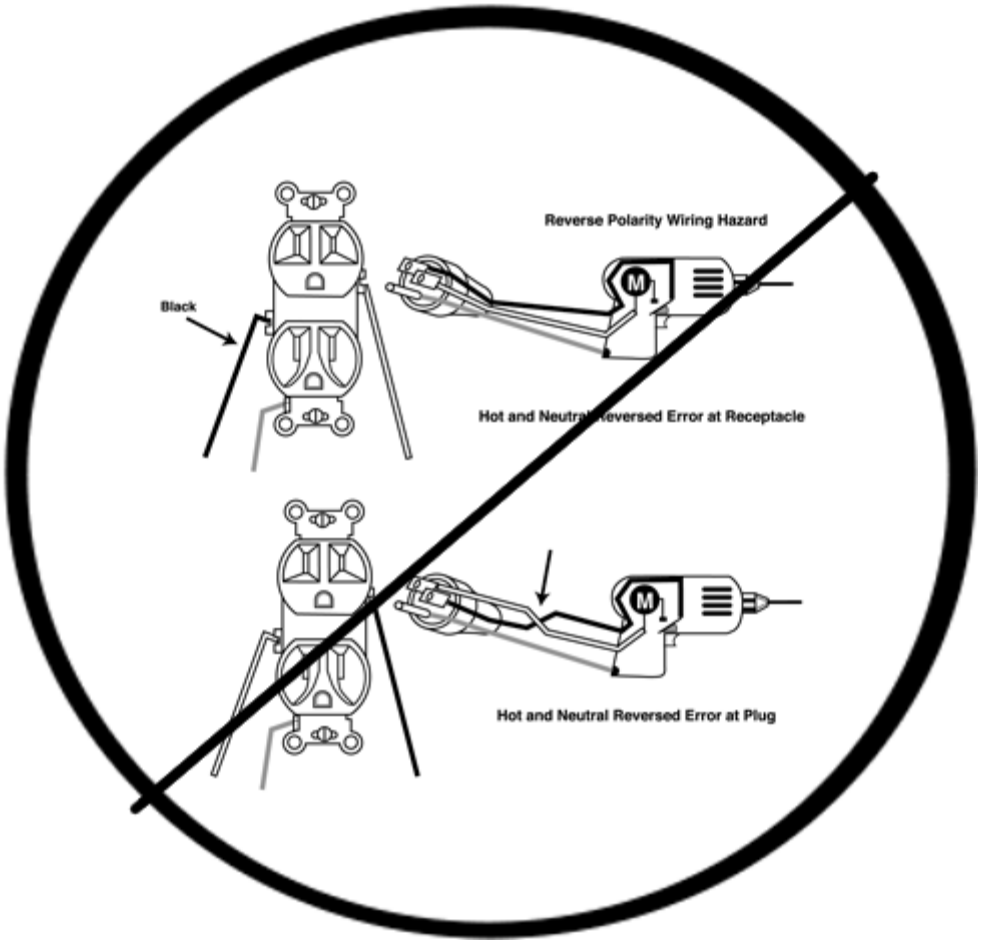
7.2.7. Make sure grounded conductors are not attached to any terminal or lead to reverse polarity of the electrical outlet or receptacle (as illustrated below).

7.2.8. Make sure grounding terminals or grounding-type devices on receptacles, cords, connectors, or attachments plugs are not used for purposes other than grounding.

7.3. Examples of Wiring



Correct Wiring



Incorrect Wiring

7.3.1. Make sure all electrical circuits that are rated at 600 volts or less have overcurrent protection.

7.3.2. Protect conductors and equipment according to their ability to safely conduct electrical current.

7.3.3. Make sure overcurrent devices do not interrupt the continuity of grounded conductors unless all conductors are opened at the same time, except for motor running overload protection.

7.3.4. Protect employees from electrical arcing or suddenly moving electrical parts by locating fuses and circuit breakers in safe places. If this is not possible, install shields on fuses and circuit breakers.

7.3.5. Make sure the following fuses and thermo cutouts have disconnecting mechanisms:

- 7.3.5.1. All cartridge fuses accessible to nonqualified persons.
- 7.3.5.2. All fuses on circuits over 150 volts to ground.
- 7.3.5.3. All thermal cutouts on circuits over 150 volts to ground.
- 7.3.5.4. The disconnecting mechanisms must be installed so you can disconnect the fuses or thermal cutouts without disrupting service to equipment and circuits unrelated to those protected by the overcurrent device.

7.3.6. Provide easy access to overcurrent devices for each person using the equipment.

7.3.7. Protect the overcurrent devices by locating them away from easily ignitable material.

- 7.3.7.1. They must be placed to avoid exposure to physical damage (being run over, burned, etc.).

7.3.8. Make sure circuit breakers:

- 7.3.8.1. Clearly indicate when they are open (off) and closed (on).
- 7.3.8.2. That operate vertically are installed so the handle is in the "up" position when the breaker is closed (on).
- 7.3.8.3. Used as switches in 120-volt, fluorescent lighting circuit must be approved for that purpose and marked "SWD".
- 7.3.8.4. That have arcing or suddenly moving parts, are shielded or located so employees will not get burned or injured by the operation of the circuit breaker.

7.3.9. Make sure fuses that have arcing or suddenly moving parts, are shielded or located so employees will not get burned or injured by the operation of the fuses.

8. Hazardous Communications

8.1. The information contained in this section is intended to comply with the requirements of 29 CFR 1926.59. Center Line Electric will develop, implement, and maintain at each workplace a written hazard communication program that describes how labels and other forms of warning, material safety data sheets and employee information will be met.

8.2. Center Line Electric's hazardous communication program will be available to all employees or their representatives upon request on-site. For situations where there is multi-employers at the worksite, the site supervisor will communicate to the other employer's supervisor. The communication will include a list of chemicals that these workers might be exposed to, the location of the MSDS sheets and the labeling system used by Center Line Electric (NFPA 704 labeling system is used). This program describes how labels and other forms of warning, material safety data sheets, and other employee information is to be communicated. Access for other employers' employees will be the same as with Center Line Electric employees. All information will be in the contractor/tool trailer and the information, including a copy of this safety program, will be in the notebook at the desk. This program will have methods Center Line Electric will use to provide the other employer on-site access to MSDS sheets for each hazardous chemical the other employers' employees may be exposed to while working; the methods Center Line Electric will use to inform other employers' employees of any precautionary measures that need to be taken to protect employees during the workplace's normal operating conditions and in foreseeable emergencies; and the methods Center Line Electric will use to inform the other employer of the labeling system used by the workforce.

8.3. Center Line Electric will ensure that all employees who are assigned to a client site will be provided the following information and training on the hazardous chemicals in the work areas by the client:

- 8.3.1. The requirements of the hazard communication program.
- 8.3.2. Hazardous chemical present at the worksite.
- 8.3.3. Location of written hazard communication program.
- 8.3.4. Location of the MSDS file.
- 8.3.5. How to detect the presence or release of hazardous chemicals.
- 8.3.6. Physical and health risks of the hazardous chemicals.
- 8.3.7. How to reduce or prevent exposure to hazardous chemicals through use of control procedures, work practices, personal protective equipment and emergency procedures.

8.4. Two Major Areas of Responsibility

- 8.4.1. Chemical Manufacturer's/Distributor's Responsibility
  - 8.4.1.1. Hazard evaluation.
  - 8.4.1.2. Report the hazards.
- 8.4.2. Center Line Electric and Owner's Responsibility
  - 8.4.2.1. Make sure MSDS's are available in the work area.

8.4.2.2. Ensure that all containers are properly labeled.
8.4.2.3. Conduct educational training.
8.4.2.4. Establish and maintain a "Written Haz. Com. Plan".

8.5. Hazard Evaluation
8.5.1. Toxicity
8.5.1.1. Types of hazards involved.
8.5.1.2. The dose makes the poison.
8.5.2. Probability of Exposure
8.5.2.1. Types of exposures.
8.5.2.2. Personal characteristics.
8.5.2.3. Chemical interaction.

8.6. Toxicity
8.6.1. Types of Hazards
8.6.1.1. Physical hazards.
8.6.1.2. Health hazards.
8.6.2. The Dose Makes the Poison
8.6.2.1. Types of concentrations.
8.6.2.2. Types of exposure limits.

8.7. Probability of Exposure
8.7.1. Routes of entry.
8.7.2. Duration and frequency of exposure.
8.7.3. Personal characteristics.
8.7.4. Chemical Interaction
8.7.4.1. Additive.
8.7.4.2. Synergistic.
8.7.4.3. Antagonistic.
8.7.4.4. Cumulative.

8.8. MSDS Requirements
8.8.1. Must be made available to workers in each work area.
8.8.2. Employees must be made aware of the contents and location of the MSDS's.
8.8.3. All MSDS sheets shall be complete and kept on file. All MSDS sheets shall be available for all employees.
8.8.4. Center Line Electric will ensure our clients have a MSDS for each chemical used.

8.9. Labeling Requirements
8.9.1. Container Labeling
8.9.1.1. Chemical name.
8.9.1.2. Health hazards.
8.9.1.3. Physical hazards.
8.9.1.4. Name and address of chemical manufacturer, importer or other responsible party.

8.9.2. DOT Requirements
8.9.2.1. Rules of placarding.
8.9.2.2. Ways of identification.
8.9.3. NFPA 704 System
8.9.3.1. General appearance.
8.9.3.2. Hazard ranking system.
8.9.4. Center Line Electric or Center Line Electric employees will not remove or deface labels on any containers of hazardous chemicals.
8.9.5. Hazardous chemicals will be labeled legibly in English. For non-English speaking employees, the label information will be presented to them in their language as well.

8.10. Detection Methods
8.10.1. Odor.
8.10.2. Color.
8.10.3. Physical state.
8.10.4. Reaction to the body.

8.11. Construction Health Hazards
8.11.1. The following is a list of chemicals our employees will encounter. Further information on each chemical may be obtained by reviewing the MSDS located at the worksite where each chemical is used. This list will be reviewed periodically and updated as required.
8.11.1.1. Acetone
8.11.1.2. Acetylene gas
8.11.1.3. Adhesives
8.11.1.4. Aggregate
8.11.1.5. Aluminum Etching Agent
8.11.1.6. Ammonia
8.11.1.7. Anti-freeze
8.11.1.8. Arsenic Compounds
8.11.1.9. Asbestos
8.11.1.10. Asphalt (petroleum)
8.11.1.11. Benzene (and Derivatives)
8.11.1.12. Bleaching Agents
8.11.1.13. Carbon Black
8.11.1.14. Carbon Monoxide (in Cylinders)
8.11.1.15. Caulking, Sealant Agents
8.11.1.16. Caustic Soda (Sodium Hydroxide
8.11.1.17. Cement
8.11.1.18. Chromate Salts
8.11.1.19. Chromium
8.11.1.20. Cleaners
8.11.1.21. Cleaning Agents
8.11.1.22. Coal Tar Pitch
8.11.1.23. Coatings (Brush or Spray Applied)
8.11.1.24. Cobalt

8.11.1.25. Concrete Curing Compounds
8.11.1.26. Creosol
8.11.1.27. Cutting Oil
8.11.1.28. De-Emulsifier for Oil
8.11.1.29. Diesel Gas, Diesel Oil
8.11.1.30. Drywall
8.11.1.31. Enamel
8.11.1.32. Etching Agents
8.11.1.33. Ethyl Alcohol
8.11.1.34. Explosives
8.11.1.35. Fiberglass, Mineral Wool
8.11.1.36. Foam Insulation and Fireproofing
8.11.1.37. Form Oils
8.11.1.38. Freon 20, R20 (and others)
8.11.1.39. Galvanized Junction Boxes, Outlets, Switches
8.11.1.40. Gasoline (Petrol, Ethyl)
8.11.1.41. Glues
8.11.1.42. Graphites
8.11.1.43. Greases
8.11.1.44. Grouts
8.11.1.45. Gypsum (Calcium Sulfate)
8.11.1.46. Helium
8.11.1.47. Hydraulic Brake Fluid
8.11.1.48. Hydrochloric Acid
8.11.1.49. Inks
8.11.1.50. Insulations
8.11.1.51. Iron
8.11.1.52. Kerosene
8.11.1.53. Lead
8.11.1.54. Lime (Calcium Oxide)
8.11.1.55. Limestone
8.11.1.56. Lubricating Oils
8.11.1.57. Lye (Sodium Hydroxide, Potassium Hydroxide)
8.11.1.58. Magnesium
8.11.1.59. Masonry Materials (Bricks, Stone, Cement Block, Panels)
8.11.1.60. Metal Conduit
8.11.1.61. Metals (Aluminum, Nickel, Copper, Zinc, Bentonite Clay Cadmium, Iron, Etc.)
8.11.1.62. Methanol (Methyl Alcohol)
8.11.1.63. Methyl Ethyl Ketone
8.11.1.64. Mortar
8.11.1.65. Motor Oil Additives
8.11.1.66. Muriatic Acid (Hydrochloric Acid)
8.11.1.67. Naptha (Coal Tar)
8.11.1.68. Nitrogen Dioxide (In Cylinders)
8.11.1.69. Oxygen (in Cylinders)
8.11.1.70. Ozone

8.11.1.71. Paint Remover
8.11.1.72. Paint Stripper
8.11.1.73. Paints/Lacquers
8.11.1.74. Particle Board
8.11.1.75. Pentachlorophenol
8.11.1.76. Photographic Developers and Fixers
8.11.1.77. Photogravure Ink (Copy Machines)
8.11.1.78. Pipe (Fiberglass, Copper, PVC)
8.11.1.79. Plastics
8.11.1.80. Polishes (Wood, Metal)
8.11.1.81. Propanol
8.11.1.82. Putty
8.11.1.83. PVC-Pipe Cement
8.11.1.84. Resins, Epoxy/Synthetics
8.11.1.85. Rooking Felts (Asbestos, Glass-Fiber, Tarred, etc.)
8.11.1.86. Sealers
8.11.1.87. Shellac
8.11.1.88. Solder, Flux (Zinc Chloride, Fluorides)
8.11.1.89. Solder, Soft (Lead, Tin)
8.11.1.90. Solvents
8.11.1.91. Sulfuric Acid
8.11.1.92. Thinner, Paint/Lacquer
8.11.1.93. Tin
8.11.1.94. Transit
8.11.1.95. Turpentine, Gum Spirit, Oil of Turpentine
8.11.1.96. Varnishes
8.11.1.97. Waterproofing Agents
8.11.1.98. Waxes
8.11.1.99. Wood Alcohol (Methanol)
8.11.1.100. Wood Dust (Hard Wood, Soft Wood)
8.11.1.101. Wood Preservatives
8.11.1.102. Xylene
8.11.1.103. Zinc

8.11.2. Construction Noises and Levels

Sound Pressure Level (dB)	Sources or Effect of Noise
114-139	Powder-actuated Tools
114-118	Hard Rock Drilling
105-125	Riveting Tools Used on Metal Plates
98-100	Heavy Truck Cab
95-102	Crawler Tractor
90-120	Earth Moving Equipment
90-115	Power Shovel Cab
87-89	Diesel Air Compressor
65-105	Welding Equipment

8.12. Hazardous Non-Routine Tasks

8.12.1. Periodically, employees are required to perform hazardous non-routine tasks. Some examples of non-routine tasks are: confined space entry, tank cleaning and painting reactor vessels. Before starting work on such projects, each affected employee will be given information by the Center Line Electric supervisor or Owner's Representative about the hazardous chemicals he may encounter during such activity. This information will include specific chemical hazards, protective and safety measures the employee can use, and steps the company is using to reduce the hazards, including ventilation, respirators, presence of another employee and emergency procedures.

8.12.2. Center Line Electric will ensure there is documentation as to how and by whom this information was given to our employees.

8.13. Welding Health Hazards

8.13.1. Zinc is used in large quantities in the manufacture of brass, galvanized metals and various other alloys. Inhalation of zinc oxide fumes can occur when welding or cutting on zinc-coated metals. Exposure to these fumes is known to cause metal fume fever. Symptoms of metal fume fever are very similar to those of common influenza. They include fever, chills, nausea, dryness of the throat, cough, fatigue, and general weakness and aching of the head and body. The victim may sweat profusely for a few hours, after which the body temperature begins to return to normal. The symptoms of metal fume fever have rarely, if ever, lasted beyond 24 hours.

8.13.2. 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 sever lung irritation. Long-term exposure to low levels of cadmium in air can result in emphysema and can damage the kidneys.

8.13.3. Beryllium is sometimes used as an alloying element with copper and other base metals. Acute exposure to high concentrations of beryllium can result in chemical pneumonia. Long-term exposure can result in shortness of breath, chronic cough and significant weight loss, accompanied by fatigue and general weakness.

8.13.4. Iron Oxide – Iron is the principal alloying element in steel manufacture. During the welding process, iron oxide fumes arise from both the base metal and the electrode. The primary acute effect of this exposure is irritation of nasal passages, throat and lungs. Although long-term exposure to iron oxide fumes may result in iron pigmentation of the lung, most authorities agree that these iron deposits in the lung are not dangerous.

8.13.5. Mercury compounds are used to coat metals to prevent rust or inhibit foliage growth (marine plants). Under the intense heat of the arc or gas flame, mercury vapors will be produced. Exposure to these vapors may produce stomach pain, diarrhea, kidney damage or respiratory failure.

Long-term exposure may produce tremors, emotional instability and hearing damage.

8.13.6. Lead – The welding and cutting of lead-bearing alloys or metals whose surfaces have been painted with lead-based paint can generate lead oxide fumes. Inhalation and ingestion of lead oxide fumes and other lead compounds will cause lead poisoning. Symptoms include metallic taste in the mouth, loss of appetite, nausea, abdominal cramps and insomnia. In time, anemia and general weakness, chiefly in the muscles of the wrists, develops.

8.13.7. Fluorides are found in the coatings of several types of fluxes used in welding. Exposure to these fluxes may irritate the eyes, nose and throat. Repeated exposure to high concentrations of fluorides in air over a long period may cause pulmonary edema (fluid in the lungs) and bone damage. Exposure to fluoride dust and fumes has also produced skin rashes.

8.13.8. Also present/generated are:

8.13.8.1. Chlorinated hydrocarbon solvents.

8.13.8.2. Phosgene.

8.13.8.3. Carbon monoxide.

8.13.8.4. Nitrogen oxides.

8.13.8.5. Ozone.

8.14. Welding Physical Agents

8.14.1. Ultraviolet radiation is generated by the electric arc welding process. Skin exposure to UV can result in severe burns, in many cases without prior warning. UV radiation can also damage the lens of the eye. Many arc welders are aware of the condition know as "arc-eye", a sensation of sand in the eyes. This condition is caused by excessive eye exposure to UV.

8.14.2. Infrared radiation is produced by electric arc and other flame cutting equipment. IR may heat the skin surface and the tissues immediately below the surface. Except for this effect, which can progress to thermal burns in some situations, IR radiation is not dangerous. Most welders protect themselves from IR and UV with welder's helmets or glasses and protective clothing.

8.14.3. Intense visible light can produce adaptation, pupillary reflex and shading of the eyes. Such actions are protective mechanisms to prevent excessive light from being focused on the retina. In the arc welding process, eye exposure to intense visible light is prevented for the most part by the welder's helmet. However, some individuals have sustained retinal damage due to careless "viewing" of the arc. At no time should the arc be observed without eye protection.

8.15. Asbestos

8.15.1. The first step in recognition of asbestos hazards in the construction industry is to develop knowledge of the types of construction materials

that have historically contained asbestos. Common materials that may contain asbestos include:

8.15.1.1. Sprayed-on insulation on ceilings or walls.
8.15.1.2. Sprayed-on insulation on beams.
8.15.1.3. Insulation around or in ductwork.
8.15.1.4. Boiler insulation and pipe coverings.
8.15.1.5. Ceiling, floor or wall tiles, or panels.
8.15.1.6. Fire walls and doors.
8.15.1.7. Sprayed-on decorative surfaces.
8.15.1.8. Gaskets in piping or other systems.
8.15.1.9. Automotive braking systems.

8.15.2. The second step is positive identification of asbestos in the material. This is done by taking a bulk sample of the material and submitting it to a laboratory for analysis.

8.15.3. Only a small amount of the material is needed for analysis. Be careful not to overexpose yourself when taking samples. Use of an appropriate respirator and other protective equipment may be required.

8.16. Coal Tar Pitch Volatiles

8.16.1. The term "coal tar products", as used by NIOSH, includes coal tar and two of the fractionation products of coal tar, creosote and coal tar pitch, derived from the carbonization of bituminous coal. These chemicals contain identifiable components by themselves which are carcinogenic, such as benzo(a)pyrene, benzanthracene, chrysene and phenanthrene.

8.16.2. In construction operations, coal tar pitch volatile exposures occur primarily from roofing materials and foundation coatings used in waterproofing and damp-proofing.

8.16.3. Exposure to coal tar pitch vapors can cause severe dermatitis, damage to the bladder and kidneys, emphysema, and bronchitis or asthma. Many types of cancer have been related to coal tar pitch including mouth, esophagus, lung, skin, pancreas, colon rectum, prostate and leukemia. Cancer may not show up for up to 30 years, but exposure can increase the chances.

8.17. Silicosis

8.17.1. Silicosis is a disease of the lungs caused by the inhalation of silica dust. Only the crystalline material found in quartz, tridymite, cristobalite and a few other non-silicate materials is able to cause silicosis. Silicosis is a progressive disease with symptoms increasing in severity as time goes on, especially with continued exposure to silica dust.

8.17.2. Silicosis is well known in industries and occupations where the crystalline form of free silica dust is present such as foundries, mining and glass manufacturing. Silica exposure in construction work can occur in various ways. These include sandblasting, rock crushing,

batching and mixing concrete, drilling through granite and sandstone, and tunneling through rock.

8.18. Wood Dust

8.18.1. Woods, wood dusts, and substances from wood may be toxic, irritant, allergenic, or carcinogenic. Toxic woods such as Eastern Satinwood, South African Boxwood and Ipe, contain substances which cause systemic signs and symptoms when absorbed, inhaled or ingested. Wood toxins are often alkaloids. Effects may include headache, anorexia, vomiting, bradycardia, or somnolence.

8.18.2. Irritant woods cause injury to mucous membranes upon contact, and severe irritants may intact skin, causing dermatitis. Examples of irritant woods are dahoma and mansonia.

8.18.3. Allergic woods such as certain members of the birch, pine, dogwood beech or mahogany cause allergic reactions, including asthma and contact dermatitis in sensitized individuals.

NFPA's Hazard Rating Diamond

The National Fire Protection Association has developed a rating system to identify and rank hazards of a material. You've probably seen the colorful labels used to communicate these hazards. The label is diamond-shaped, made up of four smaller diamonds, one each blue, red, yellow, and white. A number or special symbol is placed on the four diamonds.

One glance at a NFPA diamond label and you have a wealth of information about the material. The diamond gives useful information if the material is on fire and reactive information. The diamond's hazard information is valid under normal circumstances.

The **blue diamond**, appearing on the left side of the label, conveys Health Hazard information for persons exposed to the material. A number from 0 to 4 is written in the blue diamond. The higher the number the higher the hazard, as follows:

0-No hazard.

1-Can cause irritation if not treated.

2-Can cause injury. Requires prompt treatment.

3-Can cause serious injury despite medical treatment.

4-Can cause death or major injury despite medical treatment.

The **red** diamond, appearing at the top of the label, conveys **Flammability Hazard** information. Again, the numbers 0 to 4 are used to rate the flammability hazard, as follows:

Flashpoints:

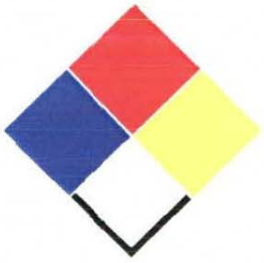
0-Will not burn.

1-Ignites after considerable preheating.

2-Ignites if moderately heated.

3-Can be ignited at all normal temperatures.

4-Very flammable gases or very volatile flammable liquids.



The yellow diamond, appearing at the right side of the label, conveys **Reactivity** (or Stability) information. The numbers 0 to 4 are also used to rank reactivity hazards, as follows:

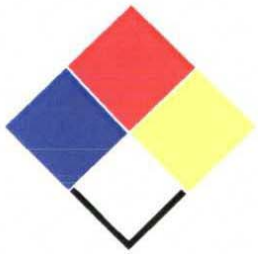
0-Normally stable. Not reactive with water.

1-Normally stable. Unstable at high temperature and pressure. Reacts with water.

2-Normally unstable but will not detonate.

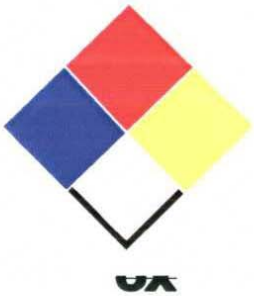
3-Can detonate or explode but requires strong initiating force or heating under confinement.

4-Readily detonates or explodes.



The diamond, appearing at the bottom of the label, conveys **Special Hazard** information. This information is conveyed by use of symbols that represent the special hazard. Some of the common symbols are shown here:

W	denotes the material is water reactive
OX	denotes an oxidizing agent
COR	denotes a corrosive hazard
ALK	denotes an Alkali hazard
ACID	denotes an Acid hazard



To determine the NFPA Hazard Ratings for a material that does not have the label affixed, check the Material Safety Data Sheet. NFPA Hazard Ratings are commonly displayed there. Guidebooks are also available from safety supply vendors to assist with this task.

9. Lead, Cadmium, Metals Exposure

9.1. Center Line Electric will ensure that all work involving heavy metals (heavy metals in this program means lead, cadmium and other heavy metals found naturally occurring or in combination with other elements in nature) be conducted in accordance with this policy to maintain employee or occupant exposures below permissible exposure limits. Heavy metals are found naturally on earth. Heavy metals can combine with various other substances to form numerous compounds. Heavy metals, such as lead and cadmium, are also present in the workplace. Center Line Electric has no operations that directly produce any heavy metals, but Center Line Electric employees may be exposed to these heavy metals at various client sites. When Center Line Electric employees are assigned to a multi-contractor client site where the permissible exposure limit (PEL) may be exceeded, Center Line Electric will ensure that the owner has developed and implemented a written program to reduce employee exposure to or below the PEL levels of any heavy metal. Center Line Electric will ensure that this program is reviewed and revised as appropriate to reflect the most recent exposure monitoring data. This written program will be provided (upon request) to all affected employees, their representatives, Center Line Electric representatives, owner representatives, the Assistant Secretary, and the Director.

9.2. The client's program shall address the sources of the heavy metals or description of each operation, including material processed, controls in place, crew size, employee job responsibilities and maintenance practices. The program will also address means of engineering and work practice controls, with specific means that will be employed to achieve compliance; air monitoring data, including sources of heavy metals; a report of technology considered in meeting the PEL levels; detailed schedule for implementation; a work practice program; a written emergency situation plan; and any other relevant information needed.

9.3. Heavy metals, especially lead and cadmium, enter the body in two different ways. They enter the body by means of ingestion or inhalation. Once they have entered the body, they are then absorbed by the blood stream which circulates them through the entire body. While the heavy metals are being circulated, the body attempts to filter them out. Some of these heavy metals are filtered out, but much of them are absorbed by soft tissues such as the kidneys, liver, and brain tissue or hard tissue such as bones and cartilage.

9.4. Health effects from heavy metals can vary depending on the length and level of exposure. In an acute exposure, an individual is exposed to a high level of contaminant over a short period of time. Exposure like this can result in a condition which affects the brain and quickly develops into seizures, coma and even death.

9.5. In chronic exposure, an individual is exposed to low levels of contaminants over a long period of time. This exposure can result in damage to the brain tissue, reproductive system, urinary tract, nervous system and the formation of blood.

9.6. Training of all Center Line Electric employees, whose job classification may expose them to airborne heavy metals above the action levels (30 micrograms per cubic meter of air for lead and 2.5 micrograms per cubic meter of air for cadmium, as examples) will be trained by qualified representatives in the following:

9.6.1. The content of the OSHA standards and their appendices,

9.6.2. The specific nature of the operations that could result in exposure to heavy metals above the action levels,

9.6.3. The purpose, proper selection, fitting, use and limitations of respirators,

9.6.4. The purpose and a description of the medical surveillance program and the medical removal protection program,

9.6.5. The engineering controls and work practices associated with the employee's job assignments.

9.6.6. The contents of the compliance program in effect.

9.7. Training will be conducted at the time of initial job assignment and annually thereafter, or when there has been a change to the process. This training will be documented using the trainers' signature, date and name of the trainees. These records will be kept for one year.

9.8. When Center Line Electric employees enter a client site with potential of exposure to heavy metals, Center Line Electric will ensure that air monitoring is conducted; a medical surveillance program is established, including medical removal; a compliance program is in effect; signage is properly displayed; and recordkeeping is properly maintained showing all monitoring and other data used in conducting employee exposure, training, each employee subject to medical surveillance and medical removal records.

9.9. With regards to breathing zone air monitoring, personal and area monitoring will be conducted for each job activity conducted by Center Line Electric employees that may emit airborne concentrations of heavy metals. No employee is exposed to lead at concentrations greater than 50 micrograms per cubic meter of air averaged over an 8-hour period.

9.10. Prior to each job where there may be an exposure above the action levels of heavy metals (2.5 micrograms for cadmium, 30 micrograms per cubic meter of air for lead), the employer will use engineering controls and PPE to help reduce the effect of exposure when the levels are higher than the action levels. The employer will establish medical surveillance requirements based on the OSHA standards for employees who are or may be exposed above the action level for more than 30 days. Medical surveillance includes an initial surveillance, on-going

surveillance (e.g., biological monitoring, six-part medical exam, medical exam and consultation) medical treatment and medical removal.

9.11. Where any employee is exposed to heavy metals above the Permissible Exposure Limits (PEL) for more than 30 days per year, the employer will establish and implement a written compliance program to reduce employee exposure to PEL or below. If engineering and work practices controls do not reduce exposure to acceptable limits, Center Line Electric will institute the respiratory program for employees. Respirators will be provided that are NIOSH-certified powered, air purifying respirators (PAPRs) to all employees requiring the use of a respirator. This program will be compliant to OSHA 1910.134. There is no cost to the employees.

9.12. The compliance program as mentioned earlier, and the paragraph above, must provide for frequent and regular inspections of job sites, materials and equipment by a competent person. Written programs, which must be reviewed, revised and updated every six months, will include the following as necessary information:

9.12.1. A description of each activity in which heavy metals is emitted (e.g., equipment used, material involved, controls in place, crew size, employee job responsibilities, operating procedures and maintenance practices);

9.12.2. Specific plans to achieve compliance and engineering plans and studies where engineering controls are required;

9.12.3. Information on the technology considered to meet the PEL;

9.12.4. Air monitoring data that documents the source of heavy metals emissions;

9.12.5. A detailed schedule for implementing the program, including copies of documentation (e.g., purchase orders for equipment, construction contracts);

9.12.6. A work practice program, including regulations for use of protective work clothing and equipment and housekeeping and hygiene facility guidelines;

9.12.7. An administrative control schedule for job rotation, if used;

9.12.8. A description of arrangements made among contractors on multi-contractor sites to inform affected employees of potential exposure to heavy metals and their responsibility to comply with this standard; and

9.12.9. Any other relevant information needed.

9.13. With regards to engineering controls, engineering controls reduce employee exposure in the workplace either by removing or isolating the hazard or isolating the worker from exposure through the use of technology. Mechanical ventilation may be used to control heavy metals exposure.

9.14. Administrative controls can be used to reduce employee exposure by removing the employee from the hazard (e.g., job rotation). If administrative controls are used to reduce employee exposure to heavy metals, the department of the affected

employee will establish and implement a job rotation schedule. The program will identify by name or number each affected employee, specify the duration and exposure level at each job or work station where each affected employee is located, and include other information useful to access the reliability of administrative controls to reduce employee heavy metal exposure.

9.15. Work practice controls reduce the likelihood of exposure by altering the manner in which a task is performed. Safe work practices under the lead, cadmium and other heavy metals construction standards include, but are not limited to, maintaining separate hygiene facilities (e.g., change rooms, showers, hand washing facilities and lunch areas) and requiring proper housekeeping practices (e.g., cleanup methods). Workers must wash hands and face if they come into contact with lead containing material.

9.16. All surfaces will be maintained as free as practicable from the accumulation of any heavy metals. Compressed air will not be used to cleanup floors and other surfaces where heavy metals may accumulate unless it is used in conjunction with ventilation systems designed to capture the airborne dust created by the compressed air. Shoveling, dry or wet sweeping, and brushing will be used only where vacuuming and other equally effective methods have been tried and found to be ineffective. Vacuums will be equipped with high-efficiency particulate air (HEPA) filters and used and emptied in a manner that minimizes the re-entry of heavy metals back into the workplace.

9.17. Food, beverages, tobacco products and cosmetics are prohibited in all areas where employees are exposed to heavy metals above the PEL, regardless of respirator use. Center Line Electric will ensure that the client will provide the following for employees who are exposed to heavy metals above the PEL:

9.17.1. Clean change areas equipped with separate storage facilities for protective work clothing and equipment to prevent cross-contamination of street clothes;

9.17.2. Shower and hand washing facilities; and

9.17.3. Lunchroom facilities or eating areas which are as free as practicable from heavy metals contamination. Employees will wash their hands and face prior to eating, drinking, smoking or applying cosmetics in these areas.

9.18. Center Line Electric will provide (at no cost to the employee) and ensure the proper use of personal protective equipment where employees are exposed to heavy metals above the PEL, or are exposed to heavy metals compounds that may cause skin or eye irritation, regardless of respirator use. Appropriate personal protective work clothing and equipment which prevent contamination of employees and their garments include, but are not limited to, the following;

9.18.1. Disposable coveralls or similar full-body suits;

9.18.2. Gloves, hats and disposable shoe coverlets; and

9.18.3. Face shields, vented goggles or other appropriate protective equipment, if necessary.

9.19. Where there is suspicion of heavy metals exposure, the following will be addressed (at no cost to the employees):

9.19.1. Blood sampling and monitoring will be conducted every six months until two consecutive blood samples and analysis are acceptable.

9.19.2. Sampling and monitoring will be performed monthly during the removal period.

9.19.3. Any employee with elevated blood levels will be temporarily removed.

9.19.4. Employees will be notified in writing within five business days when heavy metals are not acceptable.

9.19.5. The standards require temporary medical removal with medical removal protection benefits.

9.20. Center Line Electric will implement engineering and/or work practice controls, including administrative controls, to reduce and maintain employee exposure to heavy metals at or below the PEL to the extent that such controls are feasible. Whenever all feasible engineering and work practice controls that can be instituted are not sufficient to reduce employee exposure at or below the PEL, Center Line Electric will use them nonetheless to reduce employee exposure to the lowest feasible level and will supplement them by the use of respiratory protection.

9.21. Signage will be of adequate size of font and displayed in the immediate work area. These signs will be illuminated and cleaned as necessary so that the legend is readily visible. Signs that contradict or detract from the meaning of the sign are prohibited. The following warnings signs will be posted in and around each work area where an employee's exposure to heavy metals is above the PEL. Employees shall abide by these warnings and will not disturb the lead containing material

Warning
Lead Work Area
Poison
No Smoking or Eating

Employees shall abide by these warnings and avoid disturbing the lead containing material.

9.22. When performing maintenance of the ventilation systems, including the changing of filters or in emergency situations involving substantial releases, respirators and proper personal protective equipment shall be used. In emergency situations, all employees will be evacuated except for those employees needed to clean up the released materials.

10. Lifting/Mobile Equipment/Rigging

10.1. Center Line Electric employees do not operate cranes, crawlers or other lifting equipment. If the project requires such equipment, it will be subcontracted to an experienced qualified firm. Only designated subcontracted personnel shall be allowed to operate this equipment. All attaching or detaching of lifting equipment to loads or lifting loads will be accomplished by a qualified rigger. For this application, a qualified rigger is anyone who attaches or detaches lifting equipment to loads or lifting devices. In order to be considered a qualified rigger, the person shall have successfully completed a rigger-training program. A qualified operator is also a qualified rigger. Riggers will remain qualified provided they successfully complete refresher training.

10.2. Stability and Load Ratings

10.2.1. Stability is of utmost importance in crane safety. A rating chart that reflects the load ratings which directly relate to stability shall be posted in the cab of each type of lifting equipment on a project. Center Line Electric shall ensure that the chart is posted, but shall not be responsible for interpretation or inspection of this equipment. The chart shall be substantial, clearly visible, and made of durable plastic or other material. It shall include pictures or drawings of the type of equipment as furnished by the manufacturer.

10.2.2. Center Line Electric shall ensure that the subcontractor has on-site complete legible copies of records of monthly safety inspections on the equipment including, but not limited to, brakes, hooks and rope. The supervisor shall not be responsible for completing these items or for interpretation. The records shall cover the previous six months at least and shall be available to potentially affected site personnel. The subcontractor shall also have on-site written reports and test procedures for load tests showing the procedures used and confirming the adequacy of any repairs or alterations. These repairs or alterations shall be made ONLY by qualified persons whose names shall be on each record. These records shall be available to all site personnel and shall cover at least the previous six months.

10.2.3. Ropes, brakes, and hook inspections shall be made at least monthly and prior to each use. Records of these shall be maintained on-site as specified above and shall designate the identity of the rope and be signed and dated by the person inspecting.

10.2.4. A carbon dioxide fire extinguisher or other equally effective extinguisher shall be available on-site for the duration of use of the lifting equipment. Personnel who may need to use the extinguishers shall be trained in the use, potential hazards and applicable emergency procedures.

10.2.5. All lift equipment used near energized electrical lines shall maintain a safe distance from the lines as specified in the Center Line Electric electrical safety section of the manual. Basically, the equipment needs to be at least 10 feet from lines of 50 KV or less and 35 feet from all

others. A safety watch or barrier mechanism shall ensure the safe distance at all times.

10.3. Overhead and Gantry Cranes

10.3.1. The operator shall be currently trained in safe work standards of this equipment, including the use of fire extinguishers and other emergency procedures. Only designated personnel will be permitted to operate a crane covered by this section. Designated means selected or assigned by Center Line Electric, or the subcontractor representative as being qualified to perform specific duties.

10.3.2. Center Line Electric shall ensure that the subcontractor has on-site complete legible copies of records of monthly safety inspections on the equipment including, but not limited, to hoist chains, hooks, running ropes and other parts. Center Line Electric shall not be responsible for inspections, for completing these records or for interpretation. The records shall cover the previous six months at least and shall be available to potentially affected site personnel. These records will include the date of the inspection, signature of the person performing the inspection and the serial number or other identifier of the equipment inspected. The subcontractor shall also have on-site written reports and test procedures for load tests showing the procedures used and confirming the adequacy of any repairs or alterations. These repairs or alterations shall be made ONLY by qualified persons whose names shall be on each record. These records shall be available to all site personnel and shall cover at least the previous six months. The certified monthly inspections will include the signature of the person who performed the inspection, date of inspection and the serial number, or other identifier of the hook inspected

10.3.3. The inspections of hoist chains (including end connections) shall include, but not be limited to, excessive wear, hooks (looking for deformations or cracks), twist, distorted links interfering with proper function, and stretch beyond manufacturer's recommendations. The records must include the date of inspection, the signature and printed name of the inspector, and a clear identification of the items being inspected.

10.3.4. The subcontractor shall provide records for at least the past six months' preventive maintenance on all equipment to be used on-site. If the equipment is leased, the sub must obtain the records from the leasing company. The preventative maintenance program shall be based upon the equipment manufacturer's recommendations.

10.3.5. Any equipment that is found to be defective shall have an "OUT OF ORDER" sign or signs posted clearly on all entrances to the cabs of the equipment. It shall be the subcontractor's responsibility to ensure that no person shall operate defective equipment. ONLY qualified personnel will make repairs or modifications to this equipment.

10.3.6. If Center Line Electric personnel plan to operate lifting or mobile equipment, this plan shall be expanded to cover all aspects as required in the OSHA and specific state standards; all supervisors and Operators shall be adequately trained; and the safety program shall be fully implemented. Rigger qualification training will incorporate familiarization with rigging, hardware, slings and safety issues associated with rigging, lifting loads and lift planning. Training will include classroom work, hands-on training and exams. Hands-on training will include proper inspection, use, selection and maintenance of loose gear (slings, shackles, hooks, chains, etc.).

10.4. Center Line Electric employees or subcontractors will follow the following general rigging safety rules at all times:

10.4.1. Rigging equipment shall not be loaded in excess of its recommended safe working load.

10.4.2. Rigging equipment shall be inspected prior to use and on each shift as necessary.

10.4.3. Rigging equipment, when not in use, shall be removed from the immediate work area.

10.4.4. Tag lines will be used to control all loads. No one is to be under any suspended load.

10.4.5. All hooks will have operable latches in place to eliminate the throat opening.

10.5. All crane operators will have met the requirements for ASME B30.5 5-3.1(a).

10.6. All workers shall use proper hand signals.

10.7. All crawler, truck or locomotive cranes in use shall meet the applicable requirements for design, inspection, construction, testing, maintenance and operation as prescribed in ANSI B30.5-1968.

10.8. All work areas will be air monitored for toxic gases or oxygen deficient atmospheres.

10.9. No modifications or additions which affect the safe operation of the equipment may be made without the manufacturer's written approval.

11. Lockout/Tagout

11.1. Introduction

11.1.1. Machinery and equipment operate because some form of energy (i.e., electric, pneumatic) gives them power. When equipment is energized unexpectedly, such as during servicing or maintenance, energy can cause serious injury or even death. Many accidents can be prevented by proper lockout/tagout procedures. Center Line Electric's lockout/tagout standard is designed to meet OSHA's requirements to prevent deaths and injuries to workers by controlling hazardous energy.

11.2. Energy Control Program

11.2.1. The energy control program is a program consisting of energy control procedures, employee training and periodic inspections to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, start-up or release of stored energy could occur and cause injury, the machine or equipment shall be isolated from the energy source, and rendered inoperative.

11.2.2. If an energy-isolating device is not capable of being locked out, the Owner's energy control program shall utilize a tagout system.

11.2.3. If an energy-isolating device is capable of being locked out, the Owner's energy control program shall utilize lockout, unless the Owner can demonstrate that the utilization of a tagout system will provide full employee protection.

11.3. Energy Control Procedure (See Appendix A of this document for Electrical Energy Lockout Procedure.)

11.3.1. Purpose – This procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance or servicing is done on machines or equipment. It shall be used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources and locked out before employees perform any servicing or maintenance.

11.3.2. Compliance with this Program – All employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout. The authorized employees are required to perform the lockout in accordance with this procedure. All employees, upon observing a machine or piece of equipment which is locked out to perform servicing or maintenance shall not attempt to start, energize or use that machine or equipment.

11.3.3. Methods to Control Hazardous Energy

11.3.3.1. Valve Lockout Methods – Suitable lengths of chain can be used to secure most valves. Handwheels can be secured by passing the chain through the handwheel and the valve yoke or around piping. Chain ends are snugged

up with one or more locks through the links. An electrical multiple lockout device can also be used to secure the chain. Plug type valves with handles will be secured with ball valve lockout devices. Chain operated valves must be secured so that the chain operator will not allow the valve wheel handle to open. Monitor operated valves (MOV's) must have their source of power disconnected (e.g., air, hydraulic fluid, electrical supply must be disconnected).

11.3.3.2. Isolation Methods – Blank and blind isolation means the piece of equipment or system is separated from any energy source (e.g., air, water, steam, hydrocarbon products). To properly isolate, the following methods are acceptable:

11.3.3.2.1. Blanking – A blank properly installed downstream of the isolating valve. This is a preferred method.

11.3.3.2.2. Double Block and Bleed – If two block valves with a bleeder valve are between the valves and are between the source of the hazard and the piece of equipment to be worked on, and the valves hold securely, a blank is not required. However, the two block valves (closed) and the bleeder valve (open) must be chained, locked and tagged in their respective positions. Please inspect the bleeder valve to make sure it is open and not plugged with scale or sludge.

11.3.3.2.3. Block and Bleed Valve – If a block and bleed valve is between the source of the hazard and the equipment to be worked on, a blank is not required. The same requirements for double block and bleed above must be followed.

11.3.3.2.4. Break in Line – A line disconnected, with steps taken to prevent material for passing through the break. Bleeder valves, if available, must be checked frequently to ensure they're open. All valves must be locked and tagged "Do Not Operate".

11.3.3.3. Electrical Lockout/Tagout Procedure – See Appendix A of this document for electrical lockout/tagout procedure.

11.3.3.4. Cord and Plug Connected Equipment – If servicing or maintenance is performed on cord and plug connected equipment, the following procedures shall be performed to protect employees.

11.3.3.4.1. Unplug equipment from its electrical socket.

11.3.3.4.2. Place a lockable cover over the plug and a lock on the plug cover during machine/ equipment servicing or maintenance.

11.3.4. Sequence of Lockout – Notify all affected employees that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.

11.3.4.1. Identify the type and magnitude of the energy that the machine or equipment utilizes, understand the hazards of the energy, and know the methods to control the energy. The different types of hazardous energy include, but are not limited to:

11.3.4.1.1. Electrical – Currents that flow through conductors such as wires and cables;

11.3.4.1.2. Mechanical – Stored or built-up energy in springs;

11.3.4.1.3. Stored Energy – Hydraulic, free-moving weight, pneumatic, steam, any other type of liquid or non-liquid based pressure;

11.3.4.1.4. Chemical – Chemical reactions involving: poisonous, corrosive, acids, flammable, oxidizers, etc.; and

11.3.4.1.5. Thermal – Reactors, burners or lasers.

11.3.4.2. If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open switch, close valve, etc.).

11.3.4.3. De-activate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s).

11.3.4.4. Lock out the energy isolating device(s) with the assigned and approved individual lock(s) in the following sequence:

11.3.4.4.1. Lockout or tagout devices shall be affixed to each energy isolating device by authorized employees.

11.3.4.4.2. Lockout devices shall be affixed in a manner to that which will hold the energy isolating devices in a "safe" or "off" position.

11.3.4.4.3. Tagout devices shall be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited.

11.3.4.4.4. Where tagout devices are used with energy isolating devices designed with the capability of being locked, the tag attachment shall be fastened at the same

point at which the lock would have been attached.

11.3.4.4.5. Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.

11.3.4.5. Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.

11.3.4.6. Ensure that the equipment is disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the pushbutton or other normal operating control(s) or by testing to make certain the equipment will not operate. Return operating control(s) to neutral or "off" position after verifying the isolation of the equipment.

11.3.4.7. The machine or equipment is now locked out.

11.4. Restoring Equipment to Service

11.4.1. When the servicing or maintenance is completed and the machine or equipment is ready to return to normal operating condition, the following steps shall be taken:

11.4.1.1. Check the machine or equipment and the immediate area around the machine or equipment to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.

11.4.1.2. Check the work area to ensure that all employees have been safely positioned or removed from the area. Verify that the controls are in neutral.

11.4.1.3. Remove the lockout devices and re-energize the machine or equipment. The removal of some forms of blocking may require re-energization of the machine before safe removal.

11.4.1.4. Notify affected employees that the servicing or maintenance is completed and the machine or equipment is ready for use.

11.5. Lockout or Tagout Devices Removal

11.5.1. Each lockout or tagout device shall be removed from each energy-isolating device by the employee who applied the device. When the authorized employee who applied the lockout or tagout

device is not available to remove it, that device may be removed under the direction of the employer as long as the following criteria have been met:

11.5.1.1. Verification by the employer that the authorized employee who applied the device is not at the facility.

11.5.1.2. Efforts to contact the authorized employee and inform them that the lockout or tagout device has been removed have failed.

11.5.1.3. Ensuring that the authorized employee has this knowledge before he/she resumes work at that facility.

11.6. Protective Materials and Hardware

11.6.1. Only those locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other pieces of hardware designated as lockout/tagout equipment may be used for isolating, securing or blocking of machines or equipment from energy sources.

11.6.2. Lockout devices and tagout devices shall meet the following requirements:

11.6.2.1. Durable.

11.6.2.2. Standardized – Lockout and tagout devices shall be standardized within the facility in at least one of the following criteria: color, shape or size, and additionally, in the case of tagout devices, print and format shall be standardized.

11.6.2.3. Substantial – Substantial enough to prevent removal without the use of excessive force or unusual techniques. Tagout device attachment means shall be of a non-reusable type, attachable by hand, self-locking and non-releasable with a minimum unlocking strength of no less than 50 pounds.

11.6.2.4. Identifiable – Lockout devices and tagout devices shall indicate the identity of the employee applying the device(s) and the time and date the devices were applied.

11.6.3. Tagout devices shall warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as the following: *Do Not Start, Do Not Open, Do Not Close, Do Not Energize, Do Not Operate*.

11.7. Periodic Inspection

11.7.1. Center Line Electric will ensure periodic inspection of the energy control procedure is conducted at least annually to ensure that the procedure and the requirements of this standard are being followed.

11.7.2. The periodic inspection shall be performed by an authorized employee other than the one(s) utilizing the energy control procedure being inspected. A certified review of the inspection, including date, equipment, employees and the inspector, will be documented.

11.7.3. The periodic inspection shall be conducted to correct any deviations or inadequacies identified.

11.7.4. Where lockout is used for energy control, the periodic inspection shall include a review between the inspector and each authorized employee of that employee's responsibilities under the energy control procedure being inspected.

11.7.5. Where tagout is used for energy control, the periodic inspection shall include a review between the inspector and each authorized and affected employee of that employee's responsibilities under the energy control procedure being inspected and the tagout elements set forth in this program.

11.7.6. Center Line Electric shall certify that the periodic inspections have been performed. The certification shall identify the machine or equipment on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection and the person performing the inspection.

11.8. Training and Communication

11.8.1. A list of authorized employees will be kept on file by management. Management will make all changes to the authorized list. Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.

11.8.2. All affected employees will be communicated to prior to and after the lockout/tagout procedure. All affected employees shall be instructed in the purpose and use of the energy control procedure.

11.8.3. All other employees whose work operations are or may be in an area where energy control procedures may be utilized, shall be instructed about the procedure and about the prohibition relating to attempts to restart or re-energize machines or equipment which are locked out or tagged out.

11.8.4. When tagout systems are used, employees shall also be trained in the following limitations of tags:

11.8.4.1. Tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restraint on those devices that is provided by a lock.

11.8.5. When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be bypassed, ignored or otherwise defeated.

11.8.6. Tags must be legible and understandable by all authorized employees, affected employees and all other employees whose work operations are or may be in the area, in order to be effective.

11.8.7. Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.

11.8.8. Tags may evoke a false sense of security and their meaning needs to be understood as part of the overall energy control program.

11.8.9. Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

11.8.10. Each authorized employee shall be retrained when there is a change in job assignments, a change in machines, a change in the energy control procedures or a new hazard is introduced.

11.8.11. All training and retraining will be documented, signed and certified.

11.9. Additional Requirements

11.9.1. In situations in which lockout or tagout devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment or component thereof, the following sequence of actions shall be followed in this order:

11.9.1.1. Clear the machine or equipment of tools and materials.

11.9.1.2. Remove employees from the machine or equipment area.

11.9.1.3. Remove the lockout or tagout devices.

11.9.1.4. Energize and proceed with testing or positioning.

11.9.1.5. De-energize all systems and reapply energy control measures to continue the servicing and/or maintenance.

11.9.1.6. Document the procedure stating who performed each step and who verified each step.

11.9.2. Only qualified persons may work on electric circuit parts or equipment that have not been de-energized. Such persons shall be capable of working safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, PPE, insulating and shielding materials, and insulated tools.

11.9.3. Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this program, the on-site employer and the outside employer shall inform each other of their respective lockout or tagout procedures.

11.9.4. The on-site employer shall ensure that his/her employees understand and comply with the restrictions and prohibitions of the outside employer's energy control program.

11.10. Group Lockout or Tagout

11.10.1. When servicing and/or maintenance is performed by a crew, craft, department or other group, they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device.

11.10.2. Group lockout or tagout devices shall be used in accordance with the lockout or tagout procedures outlined in this program including, but not necessarily limited to, the following specific requirements:

11.10.2.1. Primary responsibility is vested in an authorized employee for a set number of employees working under

the protection of a group lockout or tagout device (such as an operations lock).

11.10.2.2. Provision for the authorized employee to ascertain the exposure status of individual group members with regard to the lockout or tagout of the machine or equipment.

11.10.2.3. When more than one crew, craft, department, etc. is involved, assignment of overall job-associated lockout or tagout control responsibility to an authorized employee designated to coordinate affected work forces and ensure continuity of protection.

11.10.2.4. Each authorized employee shall affix a personal lockout or tagout device to the group lockout device, group lockbox, or comparable mechanism when he or she begins work, and shall remove those devices when he or she stops working on the machine or equipment being serviced or maintained.

11.11. Shift or Personnel Changes

11.11.1. Specific procedures shall be utilized during shift or personnel changes to ensure the continuity of lockout or tagout protection, including provision for the orderly transfer of lockout or tagout device protection between off-going and oncoming employees to minimize exposure to hazards from the unexpected energization or start-up of the machine or equipment or the release of stored energy.

11.12. Owner Requirements

11.12.1. Much of the work performed by Center Line Electric employees will be at customer sites. The customer's lockout/tagout program and responsibilities shall take precedence.

11.12.2. If an employee at any time feels a customer's lockout/tagout process or implementation is inadequate, the employee shall notify his or her supervisor immediately. Do not perform work until the situation has been addressed.

Appendix A

Electrical Lockout/Tagout Procedure

1.0 Purpose

This procedure establishes the requirements for lockout of electrical energy sources in order to provide an electrically safe working condition. It is used to ensure that equipment and conductive components are disconnected from all sources of electrical energy, effectively locked out, and tested before work begins. The project owner or host contractor's lockout procedure may be followed as long as it meets or exceeds the requirements of this document.

2.0 Responsibilities

All employees shall receive instruction in the purpose and use of this procedure prior to starting work on each project. The designated site safety representative will ensure that all personnel are informed of their roles and responsibilities. Employees are responsible for adhering to the requirements of this procedure. Failure to follow this procedure or removing a lockout without authorization may result in immediate dismissal as per Center Line Electric's Disciplinary Action Policy.

3.0 Preparation for Lockout

3.1. Review all available documentation to identify all possible sources of electrical energy and the location of disconnecting means. Sources of this information may include:

- Electrical one-line diagrams
- Tags, labels, and signs
- Manufacturer's service manual
- Schematic or diagrammatic drawings

3.2. Determine if the interrupting ability of the disconnecting means is adequate. A circuit interlock is NOT acceptable as the sole interrupting means.

3.3. Identify what personnel in the work area may be affected.

3.4. Evaluate the work to determine the location of any other possible types of energy sources (e.g. hydraulic lines or pressurized systems) and establish methods to control them.

3.5. Provide all equipment necessary for shutdown, including a voltage tester (rated for the equipment or circuit) to test each phase conductor in order to verify the de-energized condition. See Appendix B "Lockout Checklist" for assistance.

3.6. When the possibility of stored electrical energy exists, have a means of electrical discharge available. Where there is a potential for induced voltages, provide ground connecting devices.

4.0 Sequence of Lockout

4.1 All affected employees shall be notified that a lockout system is going to be in place, the reason for the lockout, and the equipment/circuit affected.

4.2 The qualified employee shall know the location of all energy sources and disconnecting means and be knowledgeable of hazards associated with electrical energy.

4.3 The qualified person shall de-energize and disconnect the electrical supply and relieve any stored energy. Note: Proper arc flash/shock PPE shall be worn during switching operations. PPE may not be removed until all the steps of this lockout procedure are complete. Refer to the Arc Flash/Shock Protection Program to determine the necessary personal protective equipment.

4.4 Apply lockout device to all disconnecting means

4.5 Verify effectiveness of the lockout device by attempting to operate the disconnecting means.

4.6 Use a voltage tester to verify the absence of voltage using the following procedure:

- Ensure the tester and the leads are appropriate for the voltage rating of the equipment or conductive parts.
- Visually inspect the instrument for damage. Do not use the instrument if there is any indication of damage.
- Verify the instrument is operating properly by testing an energized component with a known voltage.
- Test for absence of voltage
- After testing, verify proper instrument operation again on a known energized source.

4.7 Where required, use a grounding device to eliminate induced voltage or stored energy. If there is a possibility of contact with other exposed conductors or circuit parts, apply ground connecting devices rated for the available fault current.

4.8 The electrical source is now locked out.

5.0 Restoring to Normal Condition

5.1 Visually verify that the job or task is complete

5.2 Clear all tools, equipment, and scrap material

5.3 Remove all grounding devices

5.4 Notify all affected personnel that the job is complete and the equipment is to be re-energized. Keep all personnel clear of the equipment

5.5 Perform any necessary quality control tests or checks on the equipment.

5.6 Notify the customer or owner of the equipment that it is ready to be put into operation.

5.7 Remove lockout devices. The authorized person who installed the lockout device is to remove them.

5.8 Return the disconnecting device to the normal operating condition.

6.0 Simple Lockout/Tagout Procedure

Lockout/tagout procedures that involve one or more qualifying persons de-energizing only one set of conductors or circuit component for the sole purpose of safeguarding employees from exposure to electrical hazards shall be considered a simple lockout/tagout.

6.1 A simple lockout/tagout must be a planned activity, however a specific written plan is not required.

6.2 Each worker is responsible for his or her own lockout/tagout. Where more than one person is involved in the task, each person shall install his or her own lockout device.

6.3 When a lockout/tagout extends for more than one day (but not into another shift), it shall be verified that the lockout is still in place at the beginning of the next day. When a lockout/tagout proceeds into a successive shift, the complex lockout/tagout procedure must me followed.

7.0 Complex Lockout

A complex lockout/tagout plan is required where one of the following exist:

- Multiple energy sources
- Multiple crews
- Multiple crafts
- Multiple locations
- Multiple employers
- Unique disconnecting means
- Complex switching sequences
- Lockout that continues into another shift of different workers

7.1 All complex lockout/tagout procedures shall require a written plan of execution. The plan shall include the requirements in sections 1.0 through 5.0 of this procedure.

7.2 A person in charge shall be involved with a complex lockout/tagout procedure. The person in charge may perform other duties but shall be at the procedure location.

7.3 The person in charge shall develop a written plan of execution and communicate that plan to all persons engaged in the job. The person in charge shall be held accountable for the safe execution of the complex lockout/tagout plan. The person in charge shall ensure that each person understands the hazards to which they are exposed and the safety-related work practices they are to use.

7.4 The plan shall identify the method to account for all persons who might be exposed to electrical hazards in the course of the lockout. One of the following methods shall be used:

- Each individual shall install his or her own personal lockout device.
- The person in charge locks his or her key in a lock box.
- The person in charge maintains a sign-in/out log for all personnel entering the area
- Any other equally effective method approved by Center Line Electric's safety director.

7.5 The person in charge can install locks or direct their installation on behalf of other employees.
7.6 The person in charge can remove locks or direct their removal on behalf of other employees, only after all personnel are accounted for and ensured to be clear of potential electrical hazards.
7.7 Where the complex lockout is continued into another shift, the person in charge shall identify the method for transfer of the lockout and of communication with all employees.

8.0 Review

8.1 This procedure will be reviewed no later than August 10, 2013 in order to detect any possible deficiencies in the procedure or with employee understanding. An audit will be performed by the corporate safety director and shall cover at least one lockout/tagout in progress and the procedure details.

Appendix B

EQUIPMENT LOCKOUT CHECKLIST

Prior to Equipment Lockout
Check all that apply

Identify Voltage _____
Review one-line diagram _____
(to determine all energy sources)
No critical loads affected _____
Person Protective Equip _____
Tools needed:
Non contact voltage tester _____
Volt meter _____
Amp probe _____
Rubber Blankets _____
Lockbox with locks and tags _____
Rotation meter _____
Grounds _____
Megger _____
Hot sticks _____
Pre-task meeting:
Scope of work to be performed _____
Check list reviewed _____
Proper PPE _____
Safe work practices _____
Emergency Procedures _____
Reviewed lockout procedure _____
All unauthorized personnel clear _____
Adequate lighting provided _____
Coordinate with other trades _____
Coordinate with utility/owner _____

After De-energizing Circuit
Check all that apply

Shut off breaker/switch _____
Lock and Tag in place _____
Supervisors name and
contact info on tag _____
Lockout/Tagout log completed _____
VERIFY CIRCUIT IS DE-ENERGIZED:
Meter rated for voltage _____
Test known live source _____
Test de-energized equipment _____
Re-test known live source _____
Verify periodically and after breaks
Visually verify stabs are open _____
Grounds applied _____

Prior to Re-Energizing Circuit
Check all that apply

Verify work (terminations secure, _____
bolts torqued, phasing, etc...)
Unit inspected for defects or _____
possible necessary maintenance
Remove all tools and material _____
Remove ground cables _____
Clear all personnel _____
Remove lock and tag _____
Lockout log updated _____

CENTERLINE ELECTRIC

LOCKOUT LOG

Lock #	Location Installed	Date Applied	Super. Initials	Date Removed	Super. Initials

12. Noise Abatement

12.1. The OSHA General Industry Standard includes a requirement for a hearing conservation program if employees are exposed to noise at a sound level of 85 dBA or greater on an eight-hour time weighted average. Center Line Electric employees are not typically exposed to continuous sources of noise for an entire shift. It is the policy of Center Line Electric in the interest of employee safety, to monitor employee exposure to noise and to maintain a Hearing Conservation Program for personnel exposed to 85 dBA of noise over an 8-hour work day. At the time of this revision to the Safety Program, Center Line Electric is not required to implement or maintain a Hearing Conservation Program, because no one is exposed to more than 85 dBA of noise while at work.

12.2. Persons exposed to 85 dBA over a full shift will be provided annual training updated to reflect changes in protective equipment, work processes, noise levels, control measures, and other pertinent information. These persons shall also have copies of noise exposure records and annual audiograms. A copy of the noise exposure monitoring will be posted in the workplace. The audiograms are private information and shall be shared only with the employee and medical personnel in the company.

12.3. If there are indications that noise levels exceed 85 dBA, Center Line Electric will implement exposure monitoring to identify which employees should become part of a Hearing Conservation Program.

12.3.1. An audiometric testing program shall be implemented and available to all potentially exposed personnel. This testing shall be at no cost to the employee.

12.3.2. The initial audiogram shall be provided within six months of an employee's first exposure at or above 85 dBA and shall constitute a baseline level against which all future audiograms can be based. When a mobile van is used, the baseline shall be established within one year.

12.3.3. A baseline audiogram will be obtained on any employee that may be exposed to noise throughout the work day. Ideally this will be done before placement in a work position. The baseline test shall be administered at least 14 hours without exposure to workplace noise (typically first thing Monday morning). If it is not possible to remain in a low noise environment, hearing protection may be used to meet this requirement.

12.4. At least annually after obtaining the baseline audiogram, each person in the Hearing Conservation Program exposed at or above 85 dBA shall receive another audiogram which will be compared to the baseline to determine if the audiogram is valid and whether a standard threshold shift has occurred. If there is indication a threshold shift has occurred, the employee shall be informed in writing within 21 days of the determination. The employee's use of hearing protection will then

be re-evaluated and/or refitted and, if necessary or desired, a medical evaluation will be provided.

12.5. Permissible Exposure

12.5.1. In the field, noise can be difficult and expensive to measure and characterize. Generally speaking, if there is sufficient noise that requires personnel to shout to carry on conversation at arm's length (3 feet), they should be wearing hearing protection. Center Line Electric establishes permissible noise exposure limits for all employees using American Conference of Government Industrial Hygienists (ACGIH) exposure limits, which are more stringent than OSHA requirements. These are graduated limits that combine exposure duration (per day), and sound level.

12.6. Hearing Protection Devices

12.6.1. Center Line Electric will make available to all employees appropriate hearing protection devices. Devices may include earplugs or earmuffs. The specific device will be selected based on project work type and any project-specific or client requirements. These devices shall be at no cost to the employee and shall be replaced as necessary.

12.6.2. Hearing protection devices will be evaluated for the specific noise environments in which they will be used.

12.6.3. Hearing protection devices will be re-evaluated whenever employee noise exposures increase to the extent that the hearing protectors provided may no longer provide adequate attenuation. Center Line Electric will provide more effective hearing protectors when necessary.

12.7. Education and Training

12.7.1. All Center Line Electric employees enrolled in the hearing conservation program will be given training on the physics of sound, the physiology of hearing, effects of noise on hearing, audiometric testing, and the use of hearing protection. This may occur in a 40-hour HAZWOPER class and subsequent refresher training. Training for personnel not involved in HAZWOPER, but potentially exposed to hazardous levels of noise will receive training via another source (often the audiology firm being used to perform annual testing).

12.8. Recordkeeping

12.8.1. All audiograms and hearing conservation records will become a part of the employee's personnel file and shall be maintained for the duration of employment. All noise monitoring, training and PPE records shall be kept in an active file for at least three years then moved to an inactive file for permanent safe keeping.

13. PPE Assessments

13.1. The information in this section is intended to comply with the requirements of 29 CFR 1926 Subpart E.

13.1.1. Protective equipment, including personal protective equipment 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 wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

13.2. Methods of Controlling Hazards

13.2.1. Engineering Controls – The standard requires the use of engineering controls to control the safety and health risks prior to the use of PPE. The following are acceptable engineering controls:

13.2.1.1. Substitution of Materials – Change the materials being used to reduce the safety and health risks to the employee.

13.2.1.2. Process Changes – Change the process that is being used to reduce the safety and health risks.

13.2.1.3. Isolation – Isolate the work area to reduce unneeded exposure to the safety and health risks.

13.2.1.4. Ventilation – Ventilate the work area and any other areas that have exposure to safety and health hazards.

13.2.2. Personal Protective Equipment – PPE will be fitted to the employee using the equipment and will be issued to the employee by the company, unless the equipment is personal in nature and often used away from the worksite (i.e., non-specialty safety glasses, safety shoes, cold weather outwear). The following are the most common types of PPE:

13.2.2.1. Eye.
13.2.2.2. Ear.
13.2.2.3. Head.
13.2.2.4. Foot.
13.2.2.5. Skin/body.
13.2.2.6. Respiratory.
13.2.2.7. Fall protection.
13.2.2.8. Fire protection.

13.3. General PPE Requirements

13.3.1. Know What is Available – Know what different types of eye protection are available; know the different sizes available and the different options available to the users.

13.3.2. Know the Conditions and the Considerations Needed for Selection – What are the hazards, how do they affect the human body and how can you protect against them.

13.3.3. Know the Proper Maintenance for the Selected PPE – All PPE has proper maintenance to be followed which is usually printed on the original package. If this information is not available, refer to your safety and health officer.

13.3.4. Each employee is responsible for the proper maintenance of their issued PPE. Any defective equipment is to be turned in to the company for replacement. Employee owned PPE safety equipment is permitted; however, Center Line Electric will be responsible for the assurances of its adequacy, maintenance and sanitation.

13.3.5. Defective or damaged PPE shall not be used.

13.3.6. Center Line Electric will ensure the Owner has assessed the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, Center Line Electric shall:

13.3.6.1. Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment.

13.3.6.2. Communicate selection decisions to each affected employee.

13.3.7. Center Line Electric shall verify that the required workplace hazard assessment has been performed through a written certification that identifies the hazards that are present or are likely to be present. The assessment must include the name of the person certifying that the evaluation has been performed; the date(s) of the hazard assessment; and a statement which identifies the document as a certification of hazard assessment.

13.4. PPE Training Requirements

13.4.1. Center Line Electric shall provide training to each employee who is required by this section to use PPE. Each such employee shall be trained to know at least the following:

13.4.1.1. When PPE is necessary;

13.4.1.2. What PPE is necessary;

13.4.1.3. How to properly don, doff, adjust and wear PPE;

13.4.1.4. The limitations of the PPE; and

13.4.1.5. The proper care, maintenance, useful life and disposal of the PPE.

13.4.2. Center Line Electric will pay for all employees' PPE that is required by us for the employee to do his or her job safely, and in compliance with OSHA standards.

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

13.4.4. When Center Line Electric or the Owner has reason to believe that any affected employee who has already been trained does not have the understanding and skill required, Center Line Electric shall retrain the employee. Circumstances where retraining is required include, but are not limited to, situations where:

13.4.4.1. Changes in the workplace render previous training obsolete; or

13.4.4.2. Changes in the types of PPE to be used render previous training obsolete; or

13.4.4.3. Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.

13.4.5. Center Line Electric shall verify that each affected employee has received and understood the required training through a written certification that contains the name of each employee trained, the date(s) of training and that identifies the subject of the certification. Training will be documented.

13.5. Considerations When Making Selections

13.5.1. Match the PPE to the hazard.

13.5.2. Obtain advice from safety personnel, supervisor or from the written permit.

13.5.3. More than one item may be needed to provide proper safety and better wearer comfort for the specific task.

13.5.4. Physical comfort and restriction of workers may increase the potential for problems.

13.5.5. Legal requirements for the job.

13.6. Eye and Face Protection

13.6.1. You should always use the correct eye and face protection if you work with:

13.6.1.1. Molten metals.

13.6.1.2. Liquid chemicals.

13.6.1.3. Hazardous gases.

13.6.1.4. Flying particles.

13.6.1.5. Injurious radiant energy.

13.6.2. Safe eyewear is the basic form of eye protection.

13.6.2.1. Coverage from the front and the sides is required.

13.6.2.2. Detachable side protectors are acceptable.

13.6.2.3. Types of eye and face protection include:

13.6.2.3.1. Safety glasses.

13.6.2.3.2. Goggles.

13.6.2.3.3. Face shields.

13.6.2.3.4. Welding helmets.

13.6.2.3.5. Full hoods.

13.6.2.4. Safety glasses and goggles should be worn under face shields and welding helmets.

13.6.2.5. Tinted lenses may be needed for outdoor use.
13.6.2.6. Tinted or phototropic lenses should not be used for work moving inside and outside.
13.6.2.7. Specialty lenses are required for welding and cutting.
13.6.2.8. To identify eye protection look for the ANSI code printed on the lens or the ear piece of the eye protection.

13.7. Prescription Lenses
13.7.1. If you wear contact lenses, you may face additional hazards from dust or chemicals.
13.7.1.1. Dust caught underneath the lens can cause painful abrasions.
13.7.1.2. Some chemicals can react with your contacts to cause injury.
13.7.1.3. Contacts are not eye protection, and protective eyewear must be worn if eye hazards are present.
13.7.2. If you wear prescription glasses you must wear one of the following:
13.7.2.1. Goggles or other devices designed to fit over your regular glasses.
13.7.2.2. Protective eyewear ground to your prescription.

13.8. Head Protection
13.8.1. Head protection is required if you work where there is a risk of injury from falling objects or if you work near exposed electrical conductors which may contact the head.
13.8.2. Hard hats are designed to protect you from impact and penetration caused by objects hitting your head, and from limited electrical shock or burns.
13.8.2.1. The shell of the hat is designed to absorb some of the impact.
13.8.2.2. The suspension, which consists of the headband and the strapping, is even more critical for absorbing impact. The shell must be suspended 1¼ inches from the wearer's head.
13.8.2.3. Hard hats are tested to withstand the impact of an 8-pound weight dropped 5 feet.
13.8.2.4. Hard hats come in three classes:
13.8.2.4.1. Class A hard hats are made from insulating material to protect you from falling objects and electrical shock by voltages of up to 2,200 volts.
13.8.2.4.2. Class B hard hats are made from insulating material to protect you from falling objects and electrical shock by voltages of up to 20,000 volts.

13.8.2.4.3. Class C hard hats are designed to protect you from falling objects, but offer no protection from electrical shock.

13.9. Hand Protection

13.9.1. When working with chemicals, gloves should be taped at the top, or folded with a cuff to keep liquids from running inside your glove or onto your arm.

13.9.2. Vinyl, rubber or neoprene gloves are sufficient when working with most chemicals. However, if you work with petroleum-based products a synthetic glove will be needed.

13.9.3. Leather or cotton knitted gloves are appropriate for handling most abrasive materials. Gloves reinforced with metal staples offer greater protection from sharp objects.

13.9.4. Do not wear gloves reinforced with metal when working around electricity.

13.9.5. It is dangerous to wear gloves while working on moving machinery. Moving parts can easily pull your glove, hand and arm into the machinery.

13.10. Foot Protection

13.10.1. Foot injuries are most likely to occur:

13.10.1.1. When heavy or sharp objects fall on your foot.

13.10.1.2. When something rolls over your foot.

13.10.1.3. When you step on an object that pierces the sole of your shoe.

13.10.2. As with other safety gear, your footwear depends on the job you will be performing.

13.10.3. Safety shoes and boots are made with a steel-reinforced box toe to protect your foot from being pierced or crushed.

13.10.4. Most safety shoes and boots are now made with puncture resistant soles.

13.10.5. If you're working with electrical wire or connections, you'll need to wear metal-free nonconductive safety shoes or boots.

13.10.6. Rubber or synthetic footwear may be needed when working around chemicals.

13.10.7. Avoid wearing leather shoes or boots when working with caustic chemicals because the chemicals may penetrate through safety shoes or boots.

13.10.8. Foot guards and heel and ankle shields may be necessary for particular types of work.

13.11. Hearing Protection

13.11.1. You need to protect your ears when:

13.11.1.1. The sound in your work area is irritating.

13.11.1.2. You need to raise your voice to be heard by someone closer than 2 feet away.

13.11.1.3. There are signs indicating hearing protection is required.

13.11.1.4. Sound levels reach 85 decibels or higher in an 8-hour time period.

13.11.1.5. There are short burst of sound which can cause hearing damage.

13.11.2. Earplugs offer the most protection. Foam earplugs that fit snugly are the most effective.

13.11.3. To insert properly:

13.11.3.1. Roll the plug into a small diameter.

13.11.3.2. Place it well into the ear canal.

13.11.3.3. You may find it helpful to pull your ear back and up as you insert the earplug.

13.11.3.4. After you have inserted it, hold the plug in your ear for a few seconds to ensure a good fit.

13.11.4. Earmuffs may also be used to protect your ears. Earmuffs fit over the outside of your ears.

13.11.5. The cups on the earmuffs should be made of sponge to give a good seal.

13.11.6. Facial hair can decrease your protection by breaking the seal.

13.11.7. Wearing earrings and eyeglasses with earmuffs can also pose seal problems.

13.11.8. To ensure the proper degree of protection, earplugs and earmuffs may have to be worn together. This is especially true in an extremely noisy environment.

13.12. Types of Protective Clothing

13.12.1. Coveralls or Work Clothes – Gives protection from common rubs and scrapes. Use those of all natural fibers if involved with welding.

13.12.2. Splash Suits

13.12.2.1. Chemical – Gives protection from splashing of hazardous liquids or powders.

13.12.2.2. Physical – Typically used in welding and cutting operations.

13.12.3. Fully Encapsulated Suits – Seldom if ever used in the construction industry. They provide the highest level of chemical protection.

13.13. Types of Respiratory Protection

13.13.1. Respiratory protection will be used when engineering control measures are not feasible or during emergency situations with high exposure. Respirators will be provided that are applicable and suitable for the purpose intended.

13.13.2. When Center Line Electric employees are assigned to work at an Owner's site where respirators are necessary to protect their health or where respirators are required by the Owner, Center Line Electric's employees will ensure there is, available to them a written respiratory protection program with worksite-specific procedures.

13.13.3. All respiratory protection programs shall be updated as necessary to reflect any changes in workplace conditions that affect respirator use.

13.13.4. Air-Purifying Devices (Class 1)
- 13.13.4.1. Mechanical filter respirator.
- 13.13.4.2. Chemical-cartridge respirator.
- 13.13.4.3. Combination M & C respirator.
- 13.13.4.4. Gas mask.
- 13.13.4.5. Powered air-purifying respirators.
- 13.13.4.6. Limitations.

13.13.5. Atmosphere or Air-Supplying Devices (Class 2)
- 13.13.5.1. Supplied-Air Respirators
  - 13.13.5.1.1. Continuous flow.
  - 13.13.5.1.2. Demand flow.
  - 13.13.5.1.3. Pressure-demand flow.
- 13.13.5.2. Self-Contained Breathing Apparatus (SCBA)
  - 13.13.5.2.1. Closed circuit.
  - 13.13.5.2.2. Open circuit.
- 13.13.5.3. Combination SCBA and Supplied-Air Respirator
  - 13.13.5.3.1. Limitations.

13.13.6. Combination Air-Purifying and Atmosphere-Supplying Device (Class 3)
- 13.13.6.1. Limitations.

13.14. Respiratory Training

13.14.1. Prior to any worker using a respirator of any type, they must first undergo a medical evaluation, then respiratory training and a respirator fit-test. If all three of these are not completed, then the employee may not use a respirator.

13.14.2. The medical evaluation will be performed by a physician or other licensed health care professional (PLHCP). This evaluation will be conducted confidentially during the employee's normal working hours. The employee will be provided the opportunity to discuss all results with the PLHCP.

13.14.3. The respiratory training will address employee knowledge of respirator, fit, use, limitations, emergency situations, wearing, maintenance and storage, medical sign, and symptoms of effective use. The training will also include all other general requirements of the OSHA standard.

13.14.3.1. Employees using a tight-fitting facepiece respirator will be fit tested prior to initial use of the respirator, whenever a different respirator facepiece (size, style, model or make) is used, and at least annually thereafter.

13.14.3.2. Center Line Electric shall not permit respirators with tight-fitting facepieces to be worn by employees who have facial hair that comes between the sealing surface of the facepiece and the face or that interferes with valve function or any condition that interferes with the face-to-facepiece seal or valve function.

13.14.3.3. If an employee wears corrective glasses or goggles or other personal protective equipment, Center Line Electric shall ensure that such equipment is worn in a manner that does not interfere with the seal of the facepiece to the face of the user.

13.14.4. Center Line Electric will conduct an additional fit-test whenever the employee reports or Center Line Electric notices a change in the employee's physical condition that could affect respirator fit.

13.14.5. All training, evaluations and respirator equipment will be provided to the employee at no cost.

13.14.6. All training and evaluation records will be kept in the safety/inspection confidential file cabinet.

13.14.7. The program administrator for the respiratory protection program will be determined and named by the Corporate Safety Director. The program administrator must be knowledgeable of the complexity of the program, conduct evaluations and be properly trained.

13.15. Respirator Selection

13.15.1. The selection of appropriate respirators will be based on the respiratory hazard(s) to which the employee is exposed, and workplace and user factors that affect respirator performance and reliability.

13.15.2. Center Line Electric will provide only a NIOSH-certified respirator. The respirator shall be used in compliance with the conditions of its certification.

13.15.3. Prior to Center Line Electric employees utilizing respirators, Center Line Electric shall identify and evaluate the respiratory hazard(s) in the workplace, including a reasonable estimate of employee exposures to respiratory hazard(s) and an identification of the contaminant's chemical state and physical form. Where Center Line Electric cannot identify or reasonably estimate the employee exposure, Center Line Electric shall consider the atmosphere to be IDLH.

13.15.4. If Center Line Electric employees are working at an Owner's site, it will be the responsibility of the Owner to identify and evaluate the respiratory hazard(s) at their workplace.

13.15.5. If no exposure estimates or data are available from an Owner, Center Line Electric employees will consider the atmosphere to be IDLH.

13.15.6. Center Line Electric shall provide the following respirators for employee use in IDLH atmospheres:

13.15.6.1. A full facepiece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes; or

13.15.6.2. A combination full facepiece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.

13.16. Program Issues

13.16.1. For all tight-fitting respirators, the employees must perform a user seal check each time they put on the respirator.

13.16.2. The Corporate Safety Director shall ensure appropriate surveillance be maintained of work area conditions and degree of employee exposure or stress. Employees must leave the respirator use area to wash their faces and respirator facepieces as necessary to prevent eye or skin irritation associated with respirator use, if they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece, or to replace the respirator or the filter, cartridge or canister elements.

13.16.3. For all IDLH atmospheres one employee or, when needed, more than one employee, must be located outside the IDLH atmosphere to ensure visual, voice, or signal line communication is maintained with the employee(s) in the IDLH atmosphere.

13.16.4. The employee(s) located outside the IDLH atmosphere must be trained and equipped to provide effective emergency rescue.

13.16.5. The Owner representative must be notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue.

13.16.6. The Owner representative, once notified, must provide necessary assistance appropriate to the situation.

13.16.7. The employee(s) located outside the IDLH atmospheres must be equipped with pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry or equivalent means for rescue where retrieval equipment is not required.

13.17. Maintenance and Care of Respirators

13.17.1. Center Line Electric shall provide each respirator user with a respirator that is clean, sanitary and in good working order. Center Line Electric shall ensure that respirators are cleaned and disinfected at the following intervals:

13.17.1.1. Respirators issued for the exclusive use of an employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition;

13.17.1.2. Respirators issued to more than one employee shall be cleaned and disinfected before being worn by different individuals;

13.17.1.3. Respirators maintained for emergency use shall be cleaned and disinfected after each use; and

13.17.1.4. Respirators used in fit testing and training shall be cleaned and disinfected after each use.

13.17.2. Center Line Electric shall ensure all respirators are 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.

13.17.2.1. Emergency respirators will be kept accessible to the work area, stored in compartments or in covers that are clearly marked as containing emergency respirators, and stored in accordance with any applicable manufacturer instructions.

13.17.3. Center Line Electric shall ensure all respirators used in routine situations be inspected before each use and during cleaning, all respirators maintained for use in emergency situations be inspected at least monthly and in accordance with the manufacturer's recommendations, and shall be checked for proper function before and after each use, and emergency escape-only respirators be inspected before being carried into the workplace for use.

13.18. Types of Fall Protection

13.18.1. Barrier Systems – These are safety systems designed to block employees from falling though wall or floor openings.

13.18.2. Personal Fall Arrest Systems – These are systems designed to stop an employee from hitting the ground after they have fallen.

13.18.3. Safety Net Systems – These systems are designed to catch an employee after they have fallen.

Filter Lens Shade Numbers for Protection
Against Radiant Energy

Welding Operation	Shade Number
Shielded metal-arc welding -, -1/8, -inch diameter electrodes	10
Gas-shielded arc welding (nonferrous) 1/8-inch diameter electrodes	11
Gas-shielded are welding (ferrous) 1/8-inch diameter electrodes	12
Shielded metal-arc welding 1/4-inch diameter electrodes	12
5/16-, 3/8-inch diameter electrodes	14
Atomic hydrogen welding	10-14
Carbon-arc welding	14
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1 inch to 6 inches	4 or 5
Heavy cutting, over 6 inches	5 or 6
Gas welding (light), up to 1/8-inch	4 or 5
Gas welding (medium), 1/6-inch to 1/2-inch	5 or 6
Gas welding (heavy), over 1/2-inch	6 or 8

14. Respiratory Protection

14.1. Center Line Electric employees perform most of their work outside and routinely use respiratory protection. They may use filtering face pieces occasionally for nuisance odors or nuisance dust. In addition, they use full face respirators with organic vapor cartridges for disinfecting water reservoirs with 200 ppm solution of chlorine (diluted with water) and when using xylene in locations with little or no natural ventilation that cannot be effectively ventilated with fans or confined space blowers.

14.2. This respiratory protection plan outlines requirements for respirator selection, medical fitness, equipment maintenance, training, fit testing, respirator use, program evaluation, etc. This plan is intended to ensure the respirator wearer is safely using the proper respirator. At least annual plan evaluation allows for continuous improvements to maintain a protective program.

14.3. General Requirements

14.3.1. Respirators are worn to protect employees from overexposure to toxic chemicals, oxygen deficient atmospheres, radioactive materials, and/or infectious biological agents if administrative and/or engineering controls do not reduce exposure to below regulated limits.

14.3.2. Note: Center Line Electric personnel are not expected to encounter radioactive materials. If they are found to be present in or near a job site, the Corporate Safety Director or his/her qualified designee shall be consulted immediately to effectively control any potential hazards.

14.3.3. The respirators used by Center Line Electric personnel are:

14.3.3.1. Full face piece air purifying respirators in full face mask style with organic vapor cartridges (yellow or yellow with black or purple/pink).

14.3.3.2. Center Line Electric employees only use full face masks with organic vapor cartridges when using xylene.

14.3.3.3. Filtering face pieces with exhalation valves for nuisance odors or dust.

14.3.4. Center Line Electric personnel use Scott Air Packs. All Center Line Electric 40-hour trained persons are also trained to use these supplied air packs.

14.3.5. Paper dust masks may be used by Center Line Electric personnel in non-hazardous conditions.

14.3.6. Respirators shall not be substituted for engineering or environmental control methods without approval of the Corporate Safety Director. If the air quality can be improved with ventilation or other engineering controls, that shall be tried first.

14.3.6.1. Respirators are considered an acceptable method of protecting the health and safety of all personnel only under the following circumstances:

14.3.6.1.1. When it has been determined that there are no feasible engineering or work practice controls that can be used to adequately control the hazard; or

14.3.6.1.2. During intermittent, non-routine operations; or

14.3.6.1.3. During the interim periods when engineering controls are being designed and/or installed; or for

14.3.6.1.4. Voluntary Usage: It is not Center Line Electric's practice to provide respiratory protection if not needed; however, if an employee is bothered by nuisance odor or nuisance dust, an appropriate filtering face piece respirator will be provided and the section of this policy dealing with voluntary use will apply. The employee will complete a medical questionnaire confidentially and it shall be sent directly to a designated health care provider for assessment prior to using any type of respirator, including a filtering face piece The medical questionnaire shall be provided by a physician or taken directly from the OSHA or state specific regulation for respiratory protection.

14.3.6.1.5. The use of a respirator or any restrictive breathing device may impose additional cardiovascular stress on an employee. A health evaluation must be provided, at no cost to the employee, by a physician at least every three years to determine if the employee is physically able to perform the work and use the respiratory protective equipment. This evaluation must be prior to assignment of job duties which require the use of a respirator. The employee will complete a medical questionnaire confidentially and it shall be sent directly to a designated health care provider for assessment prior to using a respirator. The medical questionnaire shall be provided by a physician or taken directly from the regulation for respiratory protection.

14.3.6.1.6. Respirators are also used for emergency response. Center Line Electric personnel will respond to emergencies if there is a

safety or health hazard present, including those requiring respiratory protection.

14.3.6.2. The program administrator, who is knowledgeable of the complexity of the program, conducts evaluations and is properly trained, will ensure that personnel are provided with NIOSH approved respirators (at no cost to the employee) after the requirement has been confirmed by the Corporate Safety Director.

14.3.6.3. Individuals provided with respirators shall use them in accordance with the manufacturer's instructions and the training received.

14.3.6.4. The Corporate Safety Director or his/her qualified designee shall conduct regular inspections and evaluations to determine the continued effectiveness of the Respiratory Protection Program.

14.3.6.5. The Corporate Safety Director shall re-evaluate respiratory hazards, following notification of changes, to ensure that the respiratory protection provided is adequate.

14.4. Respirator Training

14.4.1. The Corporate Safety Director will be responsible for assuring that all personnel are trained in the proper selection, use and maintenance of their respirators. Training records will be maintained at the main office. Retraining will occur when changes are made to this program, when tasks requiring a respirator have changed or when new persons are hired. This training may be a formal class or it may take place via planned safety meetings. Respirator training will include the following:

14.4.1.1. Ventilation systems, enclosures, protective equipment, SOPs, and administrative controls in place and why they are needed;

14.4.1.2. Respiratory hazards and what happens when respirators are not properly used;

14.4.1.3. An explanation of why a site may not be totally free of airborne contaminants and that every reasonable effort is being made to reduce or eliminate the need for respirators;

14.4.1.4. Terms or abbreviations such as IDLH, PEL and TLV, Short Term Exposure Limit, APR, NIOSH, MSHA, supplied air, organic vapors, etc.;

14.4.1.5. Medical screening procedures and requirements;

14.4.1.6. SOPs for cleaning and disinfecting water reservoirs with chlorine (200 ppm solution), for using xylene in confined spaces and other areas without adequate ventilation;

14.4.1.7. The function, capabilities and limitations of the selected respirators;

14.4.1.8. Hands-on donning the respirator and checking its fit and operation;

14.4.1.9. Proper wearing of the respirator, including those persons with beards and contact lenses;

14.4.1.10. Persons with facial hair that interferes with the respirator seal will be required to be clean shaven;

14.4.1.11. Respirator maintenance;

14.4.1.12. Pertinent regulations; and

14.4.1.13. Recognizing and handling emergency situations and reminders that Center Line Electric personnel are NOT emergency responders.

14.4.2. Hands-on inspection, donning, fit checking and cleaning will be emphasized in the training. It is important that all wearers develop good habits for care and use of this equipment, and that they check the fit each time they don the respirator. Annual refresher training will be provided to respirator users, which will remind participants of all these topics and any new developments. Training may be coordinated with annual fit testing.

14.4.3. Respirators will be selected by a competent person or the Corporate Safety Director. The following factors shall be taken into account when selecting the proper respirator:

14.4.4. Characteristics of Hazardous Operation or Process

14.4.4.1. Hot operations: welding, chemical reactions, soldering, melting, molding and burning.

14.4.4.2. Liquid operations: painting, degreasing, dipping, spraying, brushing, coating, etching, cleaning, pickling, plating, mixing, galvanizing and chemical reactions.

14.4.4.3. Solid operations: pouring, mixing, separations, extraction, crushing, conveying, loading, bagging and demolition.

14.4.4.4. Pressurized spraying: cleaning parts, applying pesticides, degreasing, sand blasting and painting.

14.4.4.5. Shaping operations: cutting, grinding, filing, milling, molding, sawing and drilling.

14.4.5. Nature of Hazard

14.4.5.1. Gaseous Contaminants

14.4.5.1.1. Inert gases (helium, argon, etc.) which do not metabolize in the body, but displace air to produce an oxygen deficiency.

14.4.5.1.2. Acid gases (SO2, H_2S, HCl, etc.) which are acids or produce acids by reaction with water.

14.4.5.1.3. Alkaline gases (NH3, etc.), which are alkalis or produce alkalis by reaction with water.

14.4.5.1.4. Organic gases (butane, acetone, etc.) which exist as true gases or vapors from organic liquids.

14.4.5.1.5. Organometallic gases (tetraethyl lead, organo-phosphates, etc.) that have metals attached to organic groups.

14.4.5.2. Particulates or Dust

14.4.5.2.1. Dusts are mechanically generated solid particulates (0.5 to 10µm).

14.4.5.2.2. Fumes are solid condensation particles of small diameter (0.1 to 1.0 µm).

14.4.5.2.3. Mists are liquid particulate matter (5 to 100 µm).

14.4.5.2.4. Smoke is chemically generated particulates (solid and liquid) of organic origins (0.01 to 0.3 µm).

14.4.5.3. Concentration of Contaminant

14.4.5.3.1. Immediately Dangerous to Life and Health (IDLH): Conditions that pose an immediate threat to life or health or conditions that pose an immediate threat of severe exposure to contaminants, such as radioactive materials. Air-purifying respirators are never to be used in IDLH atmospheres.

14.4.5.3.2. Short-Term Exposure Limit (STEL): An exposure limit that is the maximum concentration to which workers can be exposed for a period of up to 15 minutes with no detrimental effects.

14.4.5.3.3. Threshold Limit Value (TLV): These are the upper exposure limits of airborne concentrations that are accepted as safe for employees to be exposed to on a day-in, day-out basis. The Time Weighted Average (TWA) is the maximum concentration that employees working eight hours per day, 40 hours per week can be exposed to with no adverse health effects.

14.4.5.4. Respirator Design

14.4.5.4.1. NIOSH/MSHA Approved: All respirators used must be approved by the National Institute of Occupational Safety and Health (NIOSH) or the Mine Safety and Health Administration (MSHA). NIOSH approved respirators are labeled with a NIOSH ID number. Filters are labeled with the type of hazard the respirator is approved to protect against. Respirator replacement parts are labeled with part numbers and only approved replacement parts should be used.

Any modifications that do not use approved replacement parts voids the approval of the respirator.

14.4.5.4.2. Enclosure Design

- Tight-fitting units: full face piece and half-mask.
- Loose-fitting units: hood, helmet, and enclosed suit.

14.4.5.5. Location of Hazardous Area

14.4.5.5.1. Confined Space: See special problems.

14.4.5.5.2. Proximity to non-contaminated or "clean" environment.

14.4.5.6. Worker Activity

14.4.5.6.1. Duration of job.

14.4.5.6.2. Physical exertion: light, medium, heavy.

14.4.5.6.3. Temperature of job area.

14.4.6. Respirator Fit Testing

14.4.6.1. A fit test shall be used to determine the ability of each individual respirator wearer to obtain a satisfactory fit with any air-purifying respirator. Both quantitative and qualitative fit tests will be performed. Personnel must successfully pass the fit test annually before being issued an air-purifying respirator. Qualitative fit tests will be supplemental to quantitative fit tests.

14.4.6.2. Qualitative fit tests will be performed at least annually on any personnel using tight fitting full face masks.

14.4.6.2.1. The worker is exposed to an atmosphere containing an odorant and then asked to breathe deeply, move head side to side, move head up and down, and talk. The wearer reports any noticeable odor that is leaking into the mask. The Corporate Safety Director or his/her qualified designee will perform the fit testing.

14.4.6.3. Quantitative fit testing will be performed if a client requests it or if the Corporate Safety Director determines that it is necessary.

14.4.6.3.1. A particle counting instrument is used to accurately measure respirator fit by comparing the dust concentration in the surrounding air with the dust concentration inside the respirator. The ratio of these concentrations is called the fit factor. A modified filter cartridge (or a modified respirator face piece) equipped with a sampling port is used to collect air from inside the respirator. With the sampler

attached, the wearer is asked to breathe deeply, move head side to side, move head up and down, and talk. During these movements, any leakage is measured by the particle counting device.

14.4.6.3.2. An acceptable fit test is a measured fit factor at least 10 times greater than the assigned protection factors (APF). APF's are respirator design characteristics. A fit factor of at least 10 times the APF is used as acceptance criteria because APF's are not considered reliable predictors of performance levels that will be achieved during actual use.

14.4.6.4. Field Fit Checks

14.4.6.4.1. After successfully completing an initial fit test, employees should check the fit of their respirator immediately before and periodically during respirator use in the field.

14.4.6.5. Positive Pressure Check

14.4.6.5.1. Cover the exhalation valve with your hand and exhale gently into the face piece. If a slight positive pressure is built up inside the face piece without any evidence of leakage, the fit is satisfactory. This test method is the most widely used to check proper fit in the field.

14.4.6.6. Negative Pressure Check

14.4.6.6.1. Close off the air inlet valves (i.e., cover the cartridges with your hands), inhale gently to collapse the face piece slightly and hold your breath for 10 seconds. If the face piece remains slightly collapsed and no leakage is detected, the respirator fits properly. It may be difficult to get a good seal when trying to cover the inlet valves (cartridges).

14.4.6.7. Considerations for Proper Fit

14.4.6.7.1. Facial Hair – A person who has hair (stubble, moustache, sideburns, beard, low hairline or bangs) which passes between the face and the sealing surface of a tight-fitting face piece shall not be permitted to wear a respirator. A person who has hair (moustache, beard) which interferes with the functions of the respirator valve(s) shall not be permitted to wear a respirator.

14.4.6.7.2. Glasses and Eye/Face Protective Devices – If a spectacle, goggle, face shield or welding helmet must be worn with a respirator, it shall be worn so as not to adversely affect the respirator seal. A spectacle which has temple bars or straps which pass between the sealing surface of a respirator face piece and the wearers face shall not be used. If a full-face piece respirator is used, special prescription glasses are available if needed.

14.4.6.8. Issuance and Assignment of Respirators

14.4.6.8.1. Respiratory protective equipment shall not be ordered, purchased or issued to personnel unless the respirator wearer has received permission from the Corporate Safety Director, has received respirator training and a fit test.

14.4.6.8.2. A qualitative or quantitative fit test will be done annually. A fit test shall be repeated when a person has a condition that may interfere with face piece sealing such as a significant change in weight (~10%), significant scarring in the area of the face seal, dental changes, reconstructive or cosmetic surgery, or any other condition that may affect the fit of the face piece seal. A fit test shall be repeated when job duties change and necessitate a change in respirator equipment.

14.4.6.8.3. The user can only obtain and wear the respirator specified on the fit test report.

14.4.6.8.4. Personal respirators will be labeled with the user name on their bag or container.

14.4.6.9. Respirator Cleaning, Maintenance and Storage

14.4.6.9.1. Respirators should be regularly cleaned and disinfected. Respirators issued for the exclusive use of one worker may be cleaned as often as necessary. Weekly or monthly cleaning is usually adequate, but more frequent cleaning may be necessary. Shared respirators must be cleaned and disinfected after each use.

14.4.6.9.2. All respirators will be stored in a clean Ziploc bag or other type of clean container.

14.4.6.10. Cleaning and Disinfecting

14.4.6.10.1. Remove any filters or cartridges. Filters and cartridges should not be washed. Discard

any filters which are clogged or cartridges which are spent. Disassemble valves and other reusable face piece parts.

14.4.6.10.2. Wash the face piece and associated parts (and breathing tube if applicable) with a mild detergent and warm water. Liquid dish washing detergent works well. Do not use organic solvents.

14.4.6.10.3. Rinse the respirator face piece and parts in clean, warm water.

14.4.6.10.4. Prepare a disinfectant solution to kill germs. Two tablespoons of bleach per gallon of water is a suitable disinfectant. Other commercially available disinfectants can be used if they are recommended by the manufacturer. Disinfectant wipes (70% isopropyl alcohol) can also be used as a disinfectant.

14.4.6.10.5. Immerse the face piece and parts in the disinfectant solution for two minutes. Rinse with clean warm water and air dry overnight.

14.4.6.10.6. After drying, reassemble the respirator and place the face piece in a sealable plastic bag or other airtight container. Ziploc baggies work well as storage containers for smaller respirators.

14.4.6.11. Storage

14.4.6.11.1. When not in use, the respirator and cartridges will be kept in a sealed container and stored in a clean, dry, non-contaminated moderate temperature, environment. It is especially important to keep gas and vapor cartridges in a sealed container so they do not passively adsorb gases and vapors from the storage area to extend the filter service life. Particulate filters should also be protected from dusts and dirt. Emergency use respirators should be stored in a sturdy compartment that is quickly accessible and clearly marked.

14.4.6.12. Inspection Procedures and Schedules

14.4.6.12.1. Each respirator shall be inspected routinely before and after use. A respirator shall be inspected by the user immediately prior to each use to ensure that it is in proper working condition. After cleaning, each

respirator shall be inspected to determine if it is in proper working condition and if it needs replacement of parts or repairs. Each respirator stored for emergency or rescue use shall be inspected at least monthly.

14.4.6.12.2. Proper respirator maintenance shall be the responsibility of each employee and the site safety officer or the Corporate Safety Director. Respirator cartridges for organic vapors shall be changed daily or more often as recommended by the manufacturer or as determined by the concentration of airborne contaminants.

14.4.6.13. Special Problems

14.4.6.13.1. Vision

- When a respirator user must wear corrective lenses, a protective spectacle or goggle, a face shield, a welding helmet or other eye and face protective device, the item shall be fitted to provide good vision and shall be worn in such a manner as not to interfere with the seal of the respirator.
- Temple bars or straps of a corrective spectacle which pass between the sealing surface of a respirator and the face may prevent a good seal and, therefore, such a spectacle shall not be worn with a respirator. Special corrective lenses, which are made to be mounted inside a full face piece, are available and should be used by a person who needs corrective lenses.

14.4.6.13.2. Contact Lenses

- Regulations have traditionally prohibited contact lens wearing with respirators; however, in recent years it has become more common to wear contacts and the vision correction may not be equivalent when the person wears glasses. For this reason, the American Society for the Prevention of Blindness and many of the safety organizations have allowed contacts to be worn with respirators provided there is little or no chance or getting dust or chemicals into the eyes

and causing a safety hazard. Center Line Electric personnel who are spraying liquids or involved in dusty tasks should wear goggles; personnel shall wear goggles if they are wearing contact lenses.

14.4.6.13.3. Communications

- Speech transmission may be difficult while wearing a respirator, so to the extent possible full face masks with speaking diaphragms shall be purchased.

14.4.6.13.4. Immediately Dangerous to Life or Health (IDLH) Atmospheres

- An IDLH atmosphere is one that is oxygen deficient or contains excessive concentrations of a contaminant, including concentrations of a substance above the lower explosive limits. Under no circumstances should air-purifying respirators be used in an IDLH atmosphere. When respirators are required for entry into IDLH atmospheres, at least one standby person shall be present in a safe area. The standby person shall have the proper rescue and communications equipment available to assist the respirator wearers in case of emergency. Communications (visual, voice, telephone, radio, or other suitable means of "positive communications") shall be maintained between the standby person and the respirator wearers. Respirator wearers in IDLH atmospheres shall be equipped with a safety harness and a safety line to permit them to be removed to a safe area if needed.
- Center Line Electric personnel are prohibited from entering IDLH atmospheres. If there is any chance of this occurring, work shall stop and the Corporate Safety Director shall be consulted immediately.

14.4.6.13.5. Confined Spaces

- All confined spaces shall be considered immediately dangerous to life or health

unless and until proven otherwise. Before a person is allowed to enter a confined space, tests shall be carried out to determine the concentration of any known or expected flammable or toxic contaminant present and to determine the concentration of oxygen. A person shall not be allowed to enter a confined space without wearing the proper type of respirator. Even if the concentration of air contaminants is found to be below the legal exposure limits and sufficient oxygen is present, personnel will continuously ventilate and continuously monitor the air quality in the space as long as persons are to work in the space. Confined spaces and other minimally ventilated areas are monitored with a 4-gas meter capable of detecting percentage of oxygen, carbon monoxide, LEL and hydrogen sulfide. The meter is calibrated at least every six months and prior to each use.

- An air-purifying respirator may be worn by a person in a confined space only if the tests show that the atmosphere is not legally oxygen deficient (see Table 1 for minimum legal oxygen requirement) and only if tests show that the concentrations of air contaminants are not immediately dangerous to life or health. While a person is in a confined space, the atmosphere of the confined space shall be monitored and potential hazards continually assessed.
- Center Line Electric personnel are not using air-supplied respirators without additional training and amendments to this program. An air-line-type supplied-air respirator may be worn in a confined space only if tests show that the atmosphere is not deficient in oxygen to a degree that would be immediately dangerous to life or health and only if tests show that concentrations of air contaminants are not immediately dangerous to life or health. While a

person is wearing an air-line-type supplied-air respirator in a confined space, the level of respiratory hazards in the atmosphere of the confined space shall be monitored.

- If the results of air monitoring show that the atmosphere is IDLH, then a person who is required to enter the confined space shall wear either a positive-pressure self-contained breathing apparatus or a combination positive-pressure-air-line respirator with an auxiliary self-contained egress air supply. Center Line Electric personnel will not be involved in this type of space without additional training and changes to this program.
- When respirators are used in a confined space, the provisions given earlier for a standby person with communications and a lifeline shall be implemented as will all the items in the Center Line Electric Confined Space Program.

14.4.6.13.6. Low-Temperature Environments

- A low-temperature environment may cause fogging of the lens in a respiratory-inlet covering and very low temperatures may cause freezing or improper sealing of the exhalation valve. Coating the inside surface of the lens may prevent fogging at low atmospheric temperatures approaching 32°F, but severe fogging of the lens may occur at temperatures below 0°F. Full face pieces are available with nose cups that direct the warm and moist air through the exhalation valve without contacting the lens. These face pieces should provide satisfactory vision at temperatures as low as -25°F, when used in accordance with manufacturer's recommendations. At very low temperatures, the exhalation valve of a respirator may freeze open or closed due to the presence of moisture. Dry respirable air should be used with an airline respirator and with the type of

self-contained breathing apparatus that employs a cylinder of air when these devices are used in low-temperature atmospheres. In either case, the Corporate Safety Director should be consulted for additional options.

14.4.6.13.7. High-Temperature Environments

- A person working in a high temperature environment is under stress due to the heat. Wearing a respirator in such an environment causes additional stress and this additional stress should be minimized by using additional ventilation, cooling equipment, a light weight respirator and proper clothing for the temperature. Pre-planning for the weather is mandatory and the Corporate Safety Director should be consulted for additional options.

14.4.6.14. Medical Screening for Respirator Use

14.4.6.14.1. The medical status of individuals who are required to wear respirators shall be evaluated and a statement shall be provided from a qualified physician indicating that the individual is medically qualified to wear a specified type of respirator. The records of these medical opinions will become part of the employee's personnel file and shall be maintained at the main office.

14.4.6.14.2. Persons with physical disabilities such as, but not limited to, respiratory impairments or claustrophobia may not be assigned to tasks requiring the use of respirators unless it has been determined by a qualified physician that they are physically able to perform the work and use the equipment. Each respirator user's medical status shall be reviewed confidentially at least every three years by a qualified health care professional.

14.4.6.14.3. The physician shall be provided a copy of the OSHA or state specific respirator standard, a description of the employee's duties, information on the type(s) of respirator that may be used and a copy of this written program.

14.4.6.15. Annual Program Evaluation

14.4.6.15.1. The Corporate Safety Director shall conduct evaluations of the workplace as necessary to ensure that the provisions of the current written program are being effectively implemented and that it continues to be effective.

14.4.6.15.2. The Corporate Safety Director shall regularly consult employees required to use respirators to assess their views on program effectiveness and to identify any problems. Any problems that are identified during this assessment shall be corrected and the program amended. Factors to be assessed include, but are not limited to:

- Respirator fit and comfort (including the ability to use the respirator without interfering with effective workplace performance);
- Appropriate respirator selection;
- Proper respirator use under the workplace conditions the employee encounters; and
- Proper respirator maintenance.

14.4.6.16. Recordkeeping

14.4.6.16.1. Center Line Electric will retain written information in the main office files regarding medical evaluations (only the physician's approval or denial…not the confidential questionnaires), fit testing and all aspects of the respirator program. This information will assist in auditing the adequacy of the program, and provide a record for compliance determinations by OSHA.

14.4.6.17. Medical Evaluation

14.4.6.17.1. Records of medical evaluations required by this section must be retained and made available in accordance with 29 CFR 1910.1020.

14.4.6.18. Fit Testing

14.4.6.18.1. Center Line Electric shall establish a record of the annual qualitative and/or quantitative fit tests administered including:

- The name or identification of the employee tested;
- Type of fit test performed;

- Specific make, model, style and size of respirator tested;
- Date of test;
- The person conducting the test; and
- The pass/fail results for qualitative fit tests or the fit factor and strip chart recording or other recording of the test results for quantitative fit tests.

14.4.6.18.2. Fit test records shall be retained for respirator users for the duration of their employment and shall then be kept in their inactive personnel file

14.4.6.18.3. Current and past copies of this respirator program shall be retained in the main office.

14.4.6.18.4. This program and all written materials shall be made available upon request to affected employees and to OSHA or state inspectors for examination and copying.

14.4.6.19. Competent Person(s)

14.4.6.19.1. The Site Supervisor is generally designated as the competent person. He or she will conduct a step-by-step evaluation to ensure that only respiratory protection appropriate for the conditions of exposure is selected and utilized and shall be knowledgeable of inhalation hazards and respiratory protective equipment.

14.5. Respirator Inspection Checklist

14.5.1. Any person who discovers a problem, such as those below, should obtain a new respirator from the Site Supervisor:

14.5.2. Disposable Respirators

14.5.2.1. Holes in filter.

14.5.2.2. Elasticity of straps.

14.5.2.3. Deterioration of straps and metal nose clip.

14.5.3. Air-Purifying Respirators

14.5.3.1. Face Piece

14.5.3.1.1. Dirt.

14.5.3.1.2. Cracks, tears, or holes.

14.5.3.1.3. Distortion of face piece.

14.5.3.1.4. Cracked, scratched, or loose fitting lenses.

14.5.3.2. Head Straps

14.5.3.2.1. Breaks or tears.

14.5.3.2.2. Loss of elasticity.

14.5.3.2.3. Broken buckles or attachments.

14.5.3.2.4. Worn serrations on head harness, which might allow face piece to slip.

14.5.3.3. Inhalation and Exhalation Valves

14.5.3.3.1. Dust particles, dirt, or detergent residue on valve and valve seat.

14.5.3.3.2. Cracks, tears or distortion in valve material.

14.5.3.3.3. Missing or defective valve covers.

14.5.3.4. Filter Elements

14.5.3.4.1. Proper filter for the hazard.

14.5.3.4.2. Approval designation.

14.5.3.4.3. Missing or worn gaskets.

14.5.3.4.4. Worn threads on filter and face piece.

14.5.3.4.5. Cracks or dents in filter housing.

14.5.3.4.6. Deterioration of gas mask canister harness.

14.5.3.4.7. Service life indicator or end of service date.

14.5.3.5. Breathing Tube (if applicable)

14.5.3.5.1. Cracks or holes.

14.5.3.5.2. Missing or loose hose clamps.

14.5.3.5.3. Broken or missing end connectors.

14.6. Standard Operating Procedure for Disinfecting Water Reservoirs

14.6.1. Disinfectant: Household bleach is made of 5.25% sodium hypochlorite (52,500 ppm); therefore, a 1% bleach solution is 525 ppm. Some experiments have shown that 200 ppm (or even less in some experiments) will inactivate most viruses. A 10% solution of household bleach and water corresponds to 1½ cups of bleach per gallon of water, or 1 part bleach to 9 parts water.

14.6.2. Protective Clothing: Rain gear or waterproof/water resistant clothing to protect personal clothing; rubber gloves (Barrier by Ansel or similar); goggles to protect eyes; rubber boots; hard hat and hearing protection as needed.

14.6.3. Respirator: Full face piece respirator with organic vapor acid gas cartridges (yellow).

14.6.4. Procedure: The disinfectant solution is applied using a fire hose from a water trailer or, in the case of a small tank, by a hand held garden sprayer.

14.6.4.1. The person applying will let it sit for a contact time of at least 15 minutes, then

14.6.4.2. Rinse disinfecting equipment and properly dispose of any leftover solution.

14.6.5. Decontamination: Leave respirator and goggles on.

14.6.5.1. Wash or wet wipe hands and face (respirator and goggles as well) to remove any splashed solution,

14.6.5.2. Remove coveralls and boots with gloved hands. Rinse gloves and remove. Wipe respirator and remove from face. Remove goggles. Rinse hands and face again.

14.7. Standard Operating Procedure for Using Xylene in a Confined Space

14.7.1. Xylene is one of the top 30 chemicals produced in the United States in terms of volume. It is used as a solvent and as a cleaning agent, a thinner for paint, and in varnishes. It is found in small amounts in airplane fuel and gasoline.

14.7.2. Xylene evaporates and burns easily. It does not mix well with water; however, it does mix with alcohol and many other chemicals. Most people begin to smell xylene in air at 0.08-3.7 parts of xylene per million parts of air (ppm) and begin to taste it in water at 0.53-1.8 ppm.

14.7.3. Xylene is a liquid that can leak into soil, surface water (creeks, streams, rivers) or groundwater, where it may remain for months or more before it breaks down into other chemicals. However, because it evaporates easily, most xylene (if not trapped deep underground) goes into the air, where it stays for several days. In the air, it is broken down by sunlight into other less harmful chemicals. Xylene very quickly evaporates into the air from surface soil and water.

14.7.4. You are most likely to be exposed to xylene by breathing it. Levels of xylene measured in the air of industrial areas and cities of the United States range from 1 to 88 parts of xylene per billion parts of air (a part per billion [ppb] is one thousandth of a part per million [ppm]; one ppm equals 1,000 ppb). Levels of xylene in public drinking water supplies have been reported to range from 0 to 750 ppb.

14.7.5. Xylene is most likely to enter your body when you breathe the vapors. Less often, xylene enters the body through the skin following direct contact. It is rapidly absorbed by the lungs after you breathe it. Physical exercise like hard work increase the amount absorbed by the lungs. Absorption of xylene through the skin also occurs rapidly following direct contact. Xylene passes into the blood soon after entering the body.

14.7.6. Respirator Selection

14.7.6.1. In a confined space or a poorly ventilated space, xylene will evaporate easily and the vapors remain in the space until vented out. If they cannot be vented, using a respirator is recommended. If levels are high enough (above 100 ppm averaged over an 8-hour shift, the PEL) a respirator is required. Usually a ½ mask is sufficient for concentrations up to 1000 ppm; however, to prevent eye irritation a full face mask is recommended. The vapors are flammable so a combustible gas meter will also be used. If the LEL or LFL reading on the meter is greater than 1, respirators are needed.

14.7.6.2. Center Line Electric personnel will follow the company's Confined Space procedures for air monitoring and ventilation, as well as this procedure for respiratory protection and PPE.

14.7.7. Protective Clothing

14.7.7.1. Poly coated Tyvek or other coveralls that are flame retardant or flame resistant; chemically resistant gloves (Barrier by Ansel or similar); eye protection (unless a full face mask is used); hard hat and hearing protection as needed. It is company policy to use gloves, hard hats, safety glasses and steel-toed boots unless doing so could result in a safety issue in the tank. Occasionally a client will require that our crews wear Nomex.

14.7.8. Procedure

14.7.8.1. The xylene is applied from small pump cans onto rags. At most, there are two quarts of xylene inside cans in the space at a time. The xylene kept inside a closed pump can and is used to prepare surfaces for lining. Confined spaces and other minimally ventilated areas are monitored with a 4-gas meter capable of detecting percentage of oxygen, carbon monoxide, LEL, and hydrogen sulfide. The meter is calibrated at least every six months and prior to each use.

14.7.8.2. All confined space procedures will be followed, including air monitoring prior to entry and continuous monitoring while personnel are working in the space, especially with xylene or other flammable materials. Continuous mechanical ventilation will be used to maintain acceptable conditions in and around the space during use of xylene or other materials. The meter is set to alarm at 10% of the LEL protecting entrants from flammable atmospheres. The LEL for xylene is about 1% (10,000 parts per million) in air, thus the meter would alarm in a 0.1% (1000 ppm) xylene and air mixture. The PEL for xylene is 100 ppm and the STEL (short-term exposure limit, 15 minutes not to be exceeded during the workday) is 150 ppm. The mechanical ventilation should be capable of maintaining levels below these. If the LEL scale reads 1 or more, personnel will increase or redirect the ventilation to bring levels back to zero. If this fails, less xylene will be used and the space will be allowed to ventilate to obtain a zero reading. Colorimetric tubes specific for xylene will be used to further document that levels are being maintained below the PEL and STEL during the work.

14.7.8.3. If the LEL scale reads 1 or greater, that indicates a need for respiratory protection. A full face mask is likely sufficient; however, Draeger tubes will be used to determine what the levels are and to support the use of air purifying respirators in lieu of supplied air.

14.7.8.4. When finished, personnel will leave respirator and goggles on.

14.7.8.5. Wash or wet wipe hands and face (respirator and goggles as well) to remove any splashed solution.

14.7.8.6. Remove coveralls and boots with gloved hands. Rinse gloves and remove. Wipe respirator and remove from face. Remove goggles. Rinse hands and face again.

14.8. Recharging Breathing Air Cylinders

14.8.1. An egress cylinder is fully charged at a pressure of 2550 pounds per square inch (psi). A 45 cubic foot, 30-minute, low-pressure SCBA cylinder is fully charged at 2216 psi. A high-pressure, 45-minute SCBA cylinder is fully charged at 4500 psi.

14.8.2. Recharge breathing air cylinders with certified respirable compressed air that, as a minimum, conforms to Grade D standards. NEVER recharge a breathing air cylinder with pure oxygen or air from a standard air compressor normally used to drive pneumatic tools.

14.8.3. Block or otherwise stabilize a cylinder to be recharged so it cannot fall, shift or in any way break the airline connection during recharging.

14.8.4. Cylinders do not need to be submerged during recharging.

14.8.5. Use only the standard coupling made for breathing air cylinders. CGA connection No. 346 is required for SCBA and egress bottles.

14.8.6. Use the following procedure for recharging cylinders:

14.8.6.1. Connect the fill hose to both the source and cylinder.

14.8.6.2. Fully open one valve, and then open the other slightly using it to meter the airflow. The rate of fill for both SCBA and ALE bottles should be no more than approximately 600 pounds per minute, and both should take between five and six minutes to fill.

14.8.7. Note: Faster fill rates will generate excessive heat resulting in a reduced volume (pressure) of air once the air (and bottle) cools. Even properly filled cylinders may require "topping off".

14.8.7.1. Close both cylinder and source valves.

14.8.7.2. Slowly bleed air pressure from fill line, and then disconnect cylinder.

14.9. Compressed Breathing Air Systems

14.9.1. Breathing airline couplings shall be incompatible with outlets for other gas or standard air compressor systems to prevent supplying airline respirators with non-respirable (toxic) gases or oxygen.

14.9.2. SEC's standard airline coupling for breathing air systems is Hansen quick-connect fitting with a locking dot. The Foster quick-connect coupling may also be used as these two couplings are interchangeable. The locking dot feature is required for all quick-connect couplings on breathing air systems.

14.9.3. Airline hose length may not exceed 300 feet from cylinder bank or other source to the user. No more than three connections shall be in the airline between the regulator and the user, excluding the one at the regulator and the one at the user.

14.9.4. Protect breathing air hose from direct contact with chemicals that may permeate the hose. Acceptable methods of hose protection include suspension of the hose above the contaminated surface or covering the hose with a sleeve. Breathing air hose that has become contaminated will be removed from service and properly disposed (save the fittings).

14.9.5. Adjust the breathing air regulator to provide between 90 and 125 psi.

14.9.6. A low-pressure alarm is required between the breathing air source and regulator unless there is an attendant assigned for "bottle watch" who has no other duties except the air supply system and emergency standby.

15. Trenching/Shoring

15.1. Center Line Electric shall comply with OSHA and other state and local laws. Center Line Electric shall implement a Site Specific Excavation Plan when employees may be entering an excavation or a trench, or if otherwise applicable to a project.

15.2. Introduction

15.2.1. Prior to opening an excavation, underground installations (e.g., sewer, telephone, water, fuel, electric lines) shall be located and protected from damage or displacement. Utility companies and other responsible authorities shall be contacted to locate and mark the locations and, if they so desire, direct or assist with protecting the underground installations. Utility companies should be contacted at least 24 hours prior to any digging. When the utility is exposed, it will be protected from any damage

15.3. Excavation Inspection and Testing

15.3.1. When persons will be in or around an excavation, the excavation, adjacent areas and protective systems shall be inspected daily as needed throughout the work shifts, and after every rainstorm or other hazard-increasing occurrence by a competent person.

15.3.2. If evidence of a situation which could result in possible cave-ins, slides, failure of protective systems, hazardous atmospheres or other hazardous condition is identified, exposed workers shall be removed from the hazard and all work in the excavation stopped until all necessary safety precautions have been implemented.

15.3.3. In locations where oxygen deficiency or gaseous conditions are known or suggested, air in the excavation shall be tested prior to the start of each shift or more often if directed by the designated authority. A log of all test results shall be maintained at the work site.

15.4. Hazard Recognition

15.4.1. Types of Hazards

15.4.1.1. Cave-ins.
15.4.1.2. Hazardous atmosphere.
15.4.1.3. Undermining, surcharge loads, vibrations.
15.4.1.4. Fall hazards.
15.4.1.5. Ladders, stairways, ramps.
15.4.1.6. Placement of spoil.
15.4.1.7. Utility locations.
15.4.1.8. Water accumulation.
15.4.1.9. Rescue procedures and equipment.
15.4.1.10. Project specific excavation hazards.

15.5. Safety Procedures

15.5.1. Activity hazard analyses on phases of excavation shall be implemented on site-specific excavation plans:

15.5.1.1. Protective systems.

15.5.1.2. Stability of adjacent structures.

15.5.1.3. Protection from water.

15.5.1.4. Protection from falling material.

15.5.2. Mobile Equipment and Motor Vehicle Precautions

15.5.2.1. When vehicles or mobile equipment are utilized or allowed adjacent to an excavation, substantial stop logs or barricades shall be installed. The use of a ground guide is recommended.

15.5.2.2. Workers shall stand away from vehicles being loaded or unloaded to avoid being struck by spillage or falling materials.

15.5.2.3. Excavating or hoisting equipment shall not be allowed to rise, lower or swing loads over personnel in the excavation without substantial overhead protection.

15.5.2.4. When operations approach the location of underground utilities, excavation shall progress with caution until the exact location of the utility is determined. Workers shall be protected from the utility and the utility from damage or displacement.

15.5.2.5. If the excavation is near public highways or roads where public traffic is imminent, the employees shall be provided reflective vests. When required, a flagman will be posted to direct traffic.

15.5.3. Excavations Classified as Confined Spaces

15.5.3.1. Employees entering excavations classified as confined spaces, which otherwise present the potential for emergency rescue, shall wear a harness with a lifeline securely attached to it. In addition, employees shall adhere to Center Line Electric's Confined Space Plan.

15.5.4. Safe Access

15.5.4.1. Center Line Electric shall provide safe access to prevent personnel, vehicles and equipment from falling into excavations. Protection shall be provided in accordance with current OSHA and state or local standards.

15.5.4.2. All wells, calyx holes, pits, shafts, etc., shall be barricaded or covered.

15.5.4.3. Excavations shall be backfilled as soon as possible. Upon completion of exploration and similar operations, test pits, temporary wells, calyx holes, etc., shall be backfilled immediately.

15.5.4.4. Walkways or bridges with standard guardrails shall be provided where people or equipment are required or permitted to cross over excavations.

15.5.4.5. Safe access for personnel shall be in compliance with OSHA and state specific standards. Ladders, ramps or stairs will be at the maximum of 25 feet from the workers for easy egress.

15.5.5. Sloping and Benching

15.5.5.1. Sloping and benching of the ground shall be in accordance with OSHA and state specific standards.

15.5.6. Support Systems

15.5.6.1. Support systems shall be in accordance with one of the systems outlined in OSHA and state specific standards.

15.5.6.2. Installation and removal of support systems shall be in compliance with OSHA and state specific standards.

15.5.6.3. Installation of support systems shall be closely coordinated with excavations of trenches. Bracing or shoring of trenches shall be carried along with the excavation.

15.5.7. Shield Systems

15.5.7.1. Shield systems shall be in accordance with OSHA and state specific standards. Pumps shall be available to protect employees from the accumulation of water in any excavation. All excavations will be inspected by a competent person prior to beginning any work.

15.5.8. Materials and Personal Protective Equipment

15.5.8.1. A list of materials and personal protective equipment (PPE) used shall be documented on Site Specific Excavation Plans. Materials and equipment shall be free from damage or defects that might impair their proper function.

15.5.8.2. Manufactured materials and equipment shall be used and maintained in a manner consistent with the recommendations of the manufacturer and in a manner that will prevent employee exposure to hazards.

15.5.8.3. When material or equipment is damaged, a competent person shall examine the material or equipment and evaluate its suitability for continued use.

15.5.9. Medical Support

15.5.9.1. There will be at least two employees with first aid/CPR training on the job sites.

15.5.10. Emergency Telephone Numbers

15.5.10.1. Telephone numbers and directions to the nearest hospital shall be posted conspicuously on all job sites.

15.5.11. Competent Person

15.5.11.1. A competent person means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are hazardous to employees, and who has authorization to take prompt corrective measures to eliminate them. A competent person must have the authority to stop work and ensure that hazards are corrected.

15.5.11.2. A competent person must be trained in and knowledgeable of excavation and trenching standard, in addition to other programs that may apply (i.e., Hazard Communication, Confined Space, Respiratory Protection, Fall Protection, etc.).

15.5.11.3. A competent person must perform and document daily excavation inspection, and shall know when inspections should be performed. He/she must be capable of assuring the proper locations of underground installations or utilities, determine adequate system, and ensure employees have the proper personal protective equipment in hand.

15.5.12. Soil Classification

15.5.12.1. The determination of soil types and special considerations must be done in specific measures. Shoring, sloping, shield and excavation will be determined from this specific measure of soil type. Timber shoring and aluminum hydraulic shoring must be determined according to appendixes A and C of the OSHA standard. The devices should be used while in good repair and maintenance. If damaged, they must be inspected. The employees should be protected from hazards of falling, rolling, or sliding material or equipment. These devices should not be subjected to excessive forces and be installed to protect employees from lateral loads. Employees are forbidden and restricted from being in the shield when installing or removing. The shield must be designed to resist calculated trench forces.

16. Welding, Cutting, Hot Work

16.1. Center Line Electric shall be in compliance with OSHA 29 CFR 1910.254, as well as specific state and local rules for any cutting and welding operations. Center Line Electric shall implement a Site Specific Cutting and Welding Plan if applicable to the project.

16.2. General

16.2.1. Prior to welding or cutting operation, the Supervisor/Safety and Health Officer (SHO) shall contact the Fire Inspector or other qualified person to inspect the work area and issue a permit. No welding or cutting shall be allowed until it is determined safe for hot work by the local Fire Inspector and the supervisor.

16.2.2. Person(s) performing welding and cutting shall be trained in the safe operation of their equipment, safe welding/cutting practices, and welding/cutting respiratory and fire protection. All employees shall adhere to this plan and future site-specific cutting and welding plans applicable to the project. All employees shall also, comply with all local, federal and state laws.

16.3. Electrical and Pressurized System Requirements

16.3.1. Welding cylinders, arc welding and cutting systems and their use shall meet the applicable requirements of OSHA, as well as state and local rules.

16.3.2. Workers and the public shall be shielded from welding rays, flashes, sparks, molten metal and slag.

16.3.3. Cable, hoses, and other equipment shall be kept clear of passageways, ladders, and stairways.

16.4. Welding and Cutting of Hazardous Materials

16.4.1. Center Line Electric personnel do not do hot work on gas lines. If this needs to be done, it shall be subbed out. When welding, cutting, or heating on steel pipelines containing natural gas, 49 CFR Part 192, Welding of Steel in Pipelines, shall apply.

16.4.2. Before welding, cutting, or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made to determine its flammability: preservative coatings shall be considered highly flammable when scrapings burn with extreme rapidity.

16.4.3. When welding, cutting, or heating toxic preservative coatings in the open air, employees shall be protected by respirator.

16.4.4. All structural welding on critical items such as scaffolding, shoring, forms, ladders, piling, etc., shall be performed by a certified welder, using qualified welding procedures.

16.5. Hazard Control

16.5.1. Employees performing welding, cutting, or heating shall be protected by personal protective equipment (PPE) appropriate for the hazards: respiratory, vision, and skin protection required.

16.5.2. 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.

16.5.3. All welding and cutting equipment and operations shall be in accordance with standards and recommended practices of ANSI Z49.1.

16.5.4. Assessment and Selection

16.5.4.1. It is necessary to consider certain general guidelines for assessing the foot, head, eye and face, and hand situations that exist in an occupational or educational operation or process, and to match the protective devices to the particular hazard. It should be the responsibility of the Supervisor/Safety Officer to exercise common sense and appropriate expertise to accomplish these tasks.

16.5.5. PPE Assessment

16.5.5.1. Conduct a walk-thru survey of the areas in question. The purpose of the survey is to identify sources of hazards to workers and coworkers. Consideration should be given to the basic hazard categories:

16.5.5.1.1. Impact.

16.5.5.1.2. Penetration.

16.5.5.1.3. Compression (roll-over).

16.5.5.1.4. Chemical.

16.5.5.1.5. Heat.

16.5.5.1.6. Harmful dust.

16.5.5.1.7. Light (optical) radiation.

16.5.5.2. Select the protective equipment which ensures a level of protection greater than the minimum required to protect employees from the hazards; and

16.5.5.3. Fit the user with the protective device and give instructions on care and use of the PPE (training). It is very important that end users be made aware of all warning labels for and limitations of their PPE.

16.5.5.4. Note: Follow selection guidelines in 29 CFR 1910, Subpart I, Appendix B.

16.6. Respiratory Protection

16.6.1. All welding, cutting, and heating operations shall be ventilated (natural or mechanical) such that personnel exposures to hazardous concentrations of airborne contaminants are within acceptable limits.

16.6.2. Either general mechanical or local exhaust ventilation shall be provided whenever welding, cutting, or heating is performed in a confined space (see Center Line Electric's Confined Space Plan and 29 CFR 1910.146 for cutting and welding practices).

16.6.3. Whenever the following materials are encountered in confined spaces, local mechanical exhaust ventilation and personal respiratory protection shall be used:

Antimony	Cobalt	Nickel
Arsenic	Copper	Ozone
Barium	Lead	Selenium
Cadmium	Manganese	Silver
Chromium	Mercury	Vanadium

16.6.4. Whenever these materials, except beryllium, are encountered in indoor operations, local mechanical exhaust ventilation shall be used: when beryllium is encountered in indoor operations, local mechanical exhaust ventilation and personal respiratory protection shall be used.

16.6.5. Welding, cutting, or heating operations which involve or generate fluorine or zinc compounds shall be performed in accordance with the following:

16.6.5.1. In confined spaces, local mechanical exhaust ventilation or personal respiratory protection shall be used.

16.6.5.2. In open spaces, sampling shall be performed to determine concentrations of fluorides or zinc compounds and the need for local exhaust ventilation or personal respiratory protection.

16.6.6. Other persons exposed to the same atmosphere as welders or cutters shall be protected in the same manner as welders or cutters.

16.6.7. Center Line Electric shall indicate the method of welding and cutting on Site Specific Welding & Cutting Plans, and shall describe the procedures to be followed.

16.7. Fire Prevention and Protection

16.7.1. Before conducting welding, or cutting operations, the area shall be surveyed to ensure it is free of the following hazards:

16.7.1.1. Proximate combustible materials.

16.7.1.2. The presence or possible generation of potentially explosive atmospheres (flammable gases, vapors, liquids, or dusts).

16.7.1.3. The presence or nature of an oxygen-enriched atmosphere.

16.7.2. Basic Precautions:

16.7.2.1. All potential fire hazards shall be addressed and mitigated.

16.7.2.2. If the object to be welded or cut cannot readily be moved, all movable fire hazards in the vicinity shall be taken to a safe place.

16.7.2.3. If the object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards shall be used to confine the heat, sparks, and slag, and to protect the immovable fire hazards.

16.7.2.4. If the first two requirements cannot be followed, then welding and cutting shall not be performed.

16.7.2.5. See Center Line Electric's Fire Prevention Plan. Center Line Electric personnel shall comply with 29 CFR 1910.252 and state and local regulations.

16.8. Conditions Requiring a Fire Watch

16.8.1. The supervisor shall assign a person or persons as fire watch if:

16.8.1.1. Working in locations where other than a minor fire might develop.

16.8.1.2. Combustible materials are closer than 35 feet (10.7 meters) to the point of operation.

16.8.1.3. Combustibles that are 35 feet or more away but are easily ignited.

16.8.1.4. Wall or floor openings within 35 feet radius expose combustible materials.

16.8.2. Fire watchers shall have extinguishers readily available. A fire watch shall be maintained at least ½ hour after the cutting or welding has ceased to ensure that the residual heat does not ignite anything.

16.8.3. Before cutting or welding is permitted the area shall be inspected by a competent person assigned by the supervisor (or the supervisor, if qualified). If hot work is being done on fuel lines or other items that contain or have contained flammable or combustible materials, the competent person shall ensure that the line is inerted and that the Oxygen level inside the line is below 8%. Precautions that are taken shall be in the form of a written permit. Most often a Marine Chemist is required to approve these operations and to sign the permit.

16.8.4. The competent person shall also verify that the Oxygen level available to the welder/cutter is between 19.5% and 22% and that air quality conditions are suitable for breathing. If this cannot be achieved, the Safety Officer shall be consulted and supplied air respiratory protection may be used. Any welding, cutting, or burning of lead based metals, zinc, cadmium, mercury, beryllium or exotic metals or paints shall have proper ventilation and/or respiratory protection.

16.8.5. First aid equipment shall be available at all times and work shall be conducted in accordance with all facility specific rules as well as applicable OSHA, state, and local standards.

16.8.6. If working in confined spaces ventilation, securing cylinders, lifelines, electrode removal, gas cylinders shutoffs and warning signs must be assessed by a competent person and controls implemented

16.9. Oxygen-Fuel Welding and Cutting

16.9.1. Personnel in charge of oxygen or fuel-gas supply equipment (including distribution and piping systems and generators) must be knowledgeable in the systems, their maintenance, and all safety precautions associated with the use of oxygen.

16.9.2. Oxygen cylinders shall be stored in an upright secured position at least 20 feet from any flammable gases or petroleum products. If working in refineries or facilities that make, use or store flammable or combustible materials, the distance from these items shall be at least 20 feet. The supervisor shall ensure that all work is conducted in accordance with OSHA regulations and any other client specific rules. When there is conflicting information, the more stringent shall apply. Exceptions shall be allowed only with approval of the Safety Officer, the Project Manager, and the Facility Owner (or a qualified representative).

16.10. Arc Welding and Cutting

16.10.1. Personnel assigned to operate arc welding equipment must be properly trained and qualified to use the equipment. They must also be knowledgeable of the maintenance required on such equipment and ensure that it is in good working condition prior to starting work.

16.10.2. These persons must also be familiar with OSHA 1910.254 and with 1910.252 (a, b, and c). If gas shielded arc welding is done they must be familiar with the American Welding Society Standard A 6-1-1966. The Center Line Electric supervisor or Safety Officer shall ensure that welders are adequately trained and knowledgeable in these safety precautions. If the hot work is subbed out the subcontractor shall provide certification or assurance that all personnel assigned to work on the project are competent and trained to perform the necessary hot work.

16.10.3. Welding and other hot work equipment operators shall inspect their equipment prior to beginning work and make sure it is in good working condition. If they detect any potential defects or safety hazards, they shall discontinue use of the equipment until it has been properly repaired. Repairs shall be made only by qualified personnel in accordance with the manufacturer's instructions and specifications.

16.11. Material Safety Data Sheets (MSDS)

16.11.1. Workers performing welding should have access to MSDS's for each type of metal and welding rod used.

16.11.2. Employees shall be informed of MSDS location on job sites.

16.12. Training

16.12.1. Only trained personnel certified in welding and cutting operations is allowed to perform welding and cutting operations.

16.12.2. All personnel involved in these activities shall wear the appropriate PPE.

16.12.3. Personnel assigned to fire watch must be trained in proper use and selection of fire extinguishers. They must also have the capability to call 911 and/or know where alarms are and how to sound them. The supervisor shall ensure that all personnel on the project know what the emergency procedures are on the facility where they are working

including location of alarms, evacuation points, and first aid equipment.

16.12.4. Cutters, welders, and supervisors must be suitably knowledgeable in the safe operations, use, and maintenance of the welding or cutting equipment they are using and the safe use of the process at hand.

16.13. Hot Work Program

16.13.1. This program's purpose is to comply with corporate directives and provide procedures and guidelines for hot work authorization and practice, which represent a composite of petroleum industry safe practices for this type of task. These guidelines cannot be expected to cover all contingencies that may be encountered in the work environment. If special needs or problems arise that vary from these guidelines, the Safety/Inspection Services Manager may grant a variance depending on the situation, keeping in mind that any alternative procedures must be at least as effective as these instructions in providing a safe work environment.

16.14. Scope

16.14.1. Hot work authorization shall be required for all cutting, grinding, burning, welding, cad welding, use of non-explosion proof portable power tools or electrical equipment, hot taps, sandblasting, internal combustion engines (gas or diesel), or any other work capable of producing an ignition source in specific areas covered by this program, unless an exception has been specifically designated in this program, at all client facilities. This program applies to hot work performed by Center Line Electric and contractor firms.

16.14.2. Hot Work authorization (i.e., a hot work permit) shall be issued by a permit writer, designated by the Safety/Inspection Services Manager (or his designated representative) to perform this function, who has received training in the proper work permit procedures.

16.14.3. This program is Center Line Electric's hot work program. Safety practices common to all client facilities are found in the body of this program.

16.15. Definitions

16.15.1. Hot Work - Any activity that results in arcs, sparks, fire, molten slag or hot material that has the potential to cause fires or explosions.

16.15.2. Hot Work Permit – A hot work permit is a written authorization allowing hot work and which is used to document the conditions of a work area and safety-related safeguards for work that involves welding, cutting, burning or other spark producing ignition sources.

16.15.3. Ignition Control Permit – An ignition control permit is a form that may be used to document the control of ignition sources in classified areas (e.g., tank farm, loading rack, aboveground piping with connections) at client's locations. The ignition control permit is typically used in lieu of a hot work permit for dike mowing, vehicle entry into classified areas, use of electronic devices or non-intrinsically safe equipment, etc. The

ignition control permit cannot be used for Hot Work involving welding, torch cutting, use of open flame, etc.

16.15.4. Permit Writer – A Center Line Electric employee or representative who has been designated by the Safety/Inspection Services Manager (or his designated representative) and trained as required in the hot work permit program, and is thus authorized to issue a hot work permit. This person is considered to be the most knowledgeable person involved in the hot work permit system.

16.15.5. Contractor Permit Writer – An employee of a contractor firm responsible for the on-site safety during hot work activities and qualified to write hot work permits. The individual must be trained and qualified by their company on hot work rules, regulations and permitting. Only contractor firms that are approved by Center Line Electric to be self-permitting may write their own permits.

16.15.6. Designated Non-Hazardous Areas - Identified by the client Facility Manager or client safety representative. These areas may include fabrication shops or areas where there are no flammable or combustible materials present. This can include temporary fabrication areas such as pipeline right-of-ways or specified work areas within client facilities.

16.15.7. Abnormal Operations – Emergency alarm situations or any activity or situation where product or crude oil is or may be open to the atmosphere.

16.15.8. Self-Permitting Contractor – A Center Line Electric contractor which has had their company hot work program reviewed by the client as per client procedures in the Contractor Safety Program, and which has been approved in writing by the Safety/Inspection Services Manager (or his designated representative) as per the procedures in the client's Contractor Safety Program to be self-permitting for hot work at client locations. Approval of self-permitting status will be maintained by the Safety/Inspection Services Manager (or his designated representative). Most Center Line Electric contractors are required to develop their own approved hot work programs.

16.16. Procedure

16.16.1. Responsibilities – General responsibilities are outlined below.

16.16.1.1. Permit Writer (Center Line Electric)

16.16.1.1.1. Complete the hot work permit for hot work performed by Center Line Electric employees, and ensure all necessary site preparation, equipment preparation, monitoring and review with personnel is complete before work commences. The permit writer may perform this work or ensure it is performed by the proper personnel. The site work is composed of several items which are detailed below.

16.16.1.1.2. Coordinate general activities between contractor firms and Center Line Electric employees, in client work areas.

16.16.1.1.3. Inform contractor firms where a hot work permit or ignition control permit is required. Coordinate between contractor firms if more than one firm is working in an area and multiple hot work permits are required. Inform contractor firms of hazards in the work area, and apprise of any special Center Line Electric safety precautions or procedures that have been implemented.

16.16.1.1.4. When working with contractor firms that are not approved to self permit (e.g., cannot write their own hot work permit), the Center Line Electric permit writer will be required to issue a hot work permit.

16.16.1.1.5. Ensure all hot work performed under his/her direction is covered by a valid hot work permit as required.

16.16.1.1.6. Remain on-site when the covered hot work is being performed.

16.16.1.1.7. Monitor the hot work and ensure the work proceeds safely within the terms of the work permit and in compliance with all other applicable rules and procedures. Details of the monitoring to be conducted are indicated below. Revoke the hot work permit if conditions of the permit are violated or if changes in conditions create a potential safety hazard.

16.16.1.1.8. Close the hot work permit at completion of work or upon permit expiration and ensure documentation is properly filed.

16.16.1.2. Permit Writer (Contractor)

16.16.1.2.1. Complete the hot work permit, and ensure all necessary site preparation, equipment preparation, monitoring and review with personnel is complete before work commences.

16.16.1.2.2. Notify the appropriate client Facility Manager or designee prior to hot work, if work is stopped due to unsafe conditions and at the completion of hot work.

16.16.1.2.3. Ensure all hot work performed under his/her direction is covered by a valid hot work permit as required.

16.16.1.2.4. Remain on-site when the covered hot work is being performed.

16.16.1.2.5. Monitor the hot work and ensure the work proceeds safely within the terms of the work permit and in compliance with all other applicable rules and procedures. Details of the monitoring to be conducted are indicated below. Revoke the hot work permit if conditions of the permit are violated or if changes in conditions create a potential safety hazard.

16.16.1.2.6. Close the hot work permit at completion of work or upon permit expiration and ensure documentation is returned to Center Line Electric.

16.16.1.3. Self-Permitting Contractor Firms

16.16.1.3.1. A self-permitting contractor firm must come to the job site prepared, equipped and trained to perform the hot work safely and in compliance with their hot work program, and Center Line Electric requirements, including appropriate, properly calibrated monitoring equipment and appropriate fire suppression equipment.

16.16.1.3.2. A self-permitting contractor firm must ensure that Center Line Electric on-site supervision is notified and ensure that site preparation, equipment preparation, permitting, monitoring and documentation are properly prepared and conducted prior to commencement of covered work.

16.16.1.3.3. Contractor firm must ensure that contractor employees will adhere at all times to all conditions of the Hot Work Permit.

16.16.1.4. Fire Watch

16.16.1.4.1. Fire watches must be trained in their responsibilities and how to operate the assigned fire extinguishing equipment.

16.16.1.4.2. Prior to hot work, fire watches must check and monitor the surrounding area for spills, sewers, leaking equipment and possible ignition sources, and plan potential escape routes for personnel.

16.16.1.4.3. The primary responsibility of the fire watch is to protect workers and warn other people in the area. Fire watches will remain in the vicinity of the hot work and within

immediate reach of the fire extinguisher equipment at all times during the covered hot work. If a fire occurs, the fire watch should notify workers and try to safely extinguish it if possible. If the fire watch cannot extinguish the fire, they are responsible to try to contain the fire, sound an alarm and get help.

16.16.1.4.4. A fire watch must shut down hot work immediately if an unsafe condition such as release of flammable materials develops or could develop.

16.16.1.4.5. A fire watch may only leave his/her assignment if relieved by another qualified fire watch. The fire watch must remain on-site in the immediate vicinity of the hot work and monitor for ignition of combustible materials for at least 30 minutes after hot work is complete.

16.16.1.5. Safety/Inspection Services Manager

16.16.1.5.1. Ensure training has been conducted for Center Line Electric employees and Center Line Electric permit writers as required for their job responsibilities, and verify that they know and understand the content of their training.

16.16.1.5.2. Review the Center Line Electric hot work program for compliance and recommend changes as necessary for continuous improvement.

16.16.1.5.3. Review or oversee review of contractor firm hot work programs for compliance with Center Line Electric requirements. Approval will be communicated via the client approval process.

16.16.1.5.4. Perform field audits to periodically review contractor firm compliance with this program, including review of contractor written hot work permits. Communicate adverse findings with contractor firm management or representative and demand contractor firm makes corrections, if necessary.

16.16.1.5.5. Annually review Center Line Electric's program by auditing selected closed and cancelled hot work permits.

16.17. General Guidelines for Permit Issuance

16.17.1. Locations where a hot work permit is required include any area where a fire may occur due to ignition of flammable or combustible liquids or materials, or ignitable materials such as dry grass, wood, etc.

16.17.2. Locations where a hot work permit is not required include designated non-hazardous areas such as fabrication shops or areas where no flammable or combustible materials are present. These areas are generally temporary in nature and are designated by the client Facility Manager or the HES department.

16.17.3. The permit writer will verify that coordination with appropriate Center Line Electric on-site personnel has been completed prior to permit issuance.

16.17.4. The permit writer will conduct a hazard evaluation of the site and a job analysis to determine all hazards of the hot work location prior to permit issuance. Actions listed indicated below to make the area safe will be implemented as necessary.

16.17.5. The permit writer will ensure that Center Line Electric and contractor employees check and calibrate their LEL monitoring equipment as necessary according to manufacturer's instructions. Calibration must be documented properly and maintained as per the Center Line Electric component's or contractor's procedures.

16.17.6. The permit writer must ensure that the work area is tested for combustible gases using the properly calibrated combustible gas analyzer. The lower explosive limit (LEL) must be less than 10% (must be 0% if working in a confined space). Any concentration greater than 10% LEL will prohibit hot work, except in areas with oxygen readings less than 10% (i.e., nitrogen purged equipment). Any other areas with LEL greater than 10% will require consultation with the Safety/Inspection Services Manager (or his designated representative) prior to any hot work.

16.17.7. The permit writer will complete the hot work permit and review all permit conditions with the personnel performing the hot work. Any special conditions must be noted on the permit and discussed with affected personnel. Personnel must be informed that it is their responsibility to discontinue hot work immediately if an unsafe condition develops or could develop, and report to the permit writer. The permit must be posted in a prominent location prior to commencement of hot work.

16.17.8. The permit writer will determine the need for a fire watch and designate one or more fire watches if deemed necessary. Fire watches will normally be required for hot work in all locations where flammable liquid, vapor or gas is or could be present. Fire watches are also required during all welding, cutting and grinding (except cad-welding) on all piping or equipment which contains or has contained petroleum. Fire suppression equipment as necessary will also be designated by the permit writer.

16.17.9. Permits will normally be written for one shift, but in no case for longer than 24 hours. Permits are valid only for the time and date specified. If hot work continues beyond the term of the permit, a new permit must be issued.

16.17.10. At the conclusion of the hot work or upon permit expiration, the permit will be closed by the permit writer. The permit writer will ensure a copy of the closed permit is given to the local client Facility Manager, or supervisor. The Facility Manager will ensure the permit is filed as per the client's records management procedures.

16.18. General Hot Work Procedures

16.18.1. All personal protective equipment (PPE) listed on the permit must be in good condition and used as required. All fire suppression equipment listed must be available and operational.

16.18.2. When hot work is to be performed on tanks, lines or other equipment, the permit writer is to ensure that all associated pipes, lines or other connections shall be blinded, isolated by a double block and bleed valve, or skilleted to assure complete isolation of the hot work area from combustible gases. An exception to this provision is when a hot tap is performed and product flow in the tank, pipeline, etc. is required and at some pipeline locations where valves have been welded in the line.

16.18.3. Sewer, plumber or mud plugs are not to be used in lieu of blinds when isolating lines. However, when required (i.e., no other practical alternative) plugs shall be vented to a safe location.

16.18.4. The permit writer will ensure that all sewers and manholes in the immediate area are tested and sealed as necessary.

16.18.5. The permit writer is to verify that nearby moving or energized equipment that may create a safety hazard is de-energized and locked/tagged out.

16.18.6. The permit writer is to ensure that used containers are cleaned before any welding or cutting is performed on them.

16.18.7. The permit writer is to verify that all flammables and combustibles are removed a minimum of 35' away from the hot work, if possible, or that acceptable alternatives are arranged. Flammables/combustibles may need to be shielded or covered by guards or flameproof covers if they cannot be moved.

16.18.8. When hot work or a hot tap is to be performed on a vessel or line while in service, it must be performed in accordance with the components' standards and procedures and accepted industry standards. Any hot tap work must be discussed and approved by the client Facility Manager.

16.18.9. Continuous monitoring or periodic retesting of the area must be conducted as per the conditions in the hot work permit or instruction of the permit writer.

16.18.10. To avoid potential buildup of an explosive atmosphere, when hot work is performed in a confined space utilizing cutting torches and the work is stopped and the space vacated for more than 15 minutes, the torches

and hoses must be removed or the hoses (oxygen and acetylene/propane) disconnected from the regulators.

16.18.11. The permit writer will periodically check the hot work to verify appropriate oversight is conducted.

16.19. Training

16.19.1. Purpose – Purpose of training is to ensure understanding of and compliance with the program, to enhance safety at client facilities and protect all personnel in the hot work area.

16.19.2. Required Training – All personnel working under the hot work permit parameters are required to be trained and know their responsibilities under the permit.

16.19.3. Learning Objectives – Ensure employees and contractors understand and are following the Center Line Electric hot work program when performing hot work at client facilities.

17. Aerial Work Platforms

17.1. Purpose

17.1.1. To protect the health and welfare of all Center Line Electric, Inc. and subcontractor employees from the safety hazards associated with the use and operation of aerial work platforms.

17.2. Scope

17.2.1. This procedure applies to all employees that work for Center Line Electric, Inc. including all sub-contractor employees that operate aerial work platforms.

17.3. Definitions

17.3.1. Aerial Device or Aerial Work Platform – An entire device that is designed and manufactured to raise personnel to an elevated work position on a platform supported by scissors, masts or booms.

17.3.2. Articulating Boom – An aerial device that has two or more hinged boom sections.

17.3.3. Authorized Person – A person who is approved and assigned to perform specific types of duties by the employer and who is qualified to perform those duties due to his/her training or experience.

17.3.4. Commercial Chassis – a vehicle that is built for over-the-road travel.

17.3.5. Extensible Boom – An aerial device, except for the aerial ladder-type, that has a telescopic boom.

17.3.6. Insulated Aerial Device – An aerial work platform that is designed with dielectric components to meet specific electrical insulating ratings.

17.3.7. Mechanically Positioned – That the elevating assembly, whether a mechanical (cable or chain), hydraulic, pneumatic, electric or powered mechanism is used to raise or lower the platform.

17.3.8. Platform – The portion of an aerial work platform, such as a bucket, basket, stand, cage, or the equivalent, that is designed to be occupied by personnel.

17.3.9. Qualified Person – A person who possesses a recognized degree, certificate, professional standing, or skill and who, by knowledge, training and experience, has demonstrated the ability to deal with problems relating to the subject matter, the work, or the project.

17.3.10. Vertical Tower – An aerial device that is designed to operate vertically on a level surface.

17.4 Inspection – Maintenance and Testing

17.4.1. All Center Line Electric, Inc. employees will assure compliance with all of the following.

17.4.1.1. Each aerial work platform shall be inspected, maintained, repaired and kept in proper working condition in accordance with the manufacturer's or owner's operating or maintenance and repair manual or manuals.

17.4.1.2. All aerial lifts are to be inspected prior to each use to make sure it is in safe working condition. A thorough annual inspection with record of dates and results of the inspection are maintained at our corporate headquarters.

17.4.1.3. Any aerial work platform found ot to be in a safe operating condition shall be removed from service until repaired. All repairs shall be made by an authorized person in accordance with the manufacturer's or owner's operating or maintenance and repair manual or manuals.

17.4.2. If the aerial work platform is rated and used as an insulated aerial device, the electrical insulating components shall be tested for compliance with the rating of the aerial work platform in accordance with ANSI A92.2-1992. Such testing shall comply with all of the following provisions:

17.4.2.1. The test shall be performed not less that annually.

17.4.2.2. Written, dated, and signed test/inspection reports will be made available by Center Line Electric, Inc. for examination: by a MIOSHA representative.

17.4.2.3. The insulated portion of an aerial device shall not be altered in any manner that might reduce its insulating value.

17.4.2.4. All danger, caution and control markings and operational plates shall be legible and not obscured.

17.5. Permits

17.5.1. This section applies to operation within the State of Michigan only.

17.5.2. Center Line shall provide the operator of an aerial work platform with an aerial work platform with an aerial work platform "operators permit". All sub-tractors must supply their employees themselves.

17.5.3. A permit shall be carried by the operator or be available at the job site and shall be displayed upon request by a MIOSHA representative.

17.5.4. A permit shall indicate the type of aerial work platforms an operator is qualified to operate.

17.5.5. A permit issued by Center Line to operate an aerial work is only valid when performing work for Center Line and will be issued for a period of not more than Two (2) years.

17.5.6. A permit shall contain all of the following information:

17.5.6.1. Operator's Name

17.5.6.2. Name of Issuing Authority

17.5.6.3. The types of aerial work platforms the operator is authorized to operate.

17.5.6.4. Date Issued

17.5.6.5. Expiration Date

17.6. Training

17.6.1. Centerline Electric, Inc. will provide each employee who will operate an aerial work platform with appropriate training for the given piece of equipment before an "operators permit" is issued/reissued. Such

training will ensure that each operator is in compliance with the minimum following requirements.

17.6.1.1. Is instructed by a qualified person in the intended purpose and function of each of the controls.

17.6.1.2. Is trained by a qualified person or reads and understands the manufacturer's or owner's operating instructions and safety rules.

17.6.1.3. Understands by reading or by having a qualified person explain all decals, warnings and instructions displayed on the aerial work platform.

17.6.1.4. Reads and understands the provisions of this subrule or be trained by a qualified person on their content.

17.7. Pre-Operation Procedures

17.7.1. Before use on each work shift, an aerial work platform shall be given a visual inspection by the operator for defects that would affect its safe operations and use. Visual inspection for all of the following:

17.7.1.1. Cracked Welds
17.7.1.2. Bent or Broken Structural Members
17.7.1.3. Hydraulic or Fuel Leaks
17.7.1.4. Damaged Controls and Cables
17.7.1.5. Loose Wires
17.7.1.6. Tire Condition
17.7.1.7. Fuel and Hydraulic Fluid Levels
17.7.1.8. Slippery Conditions on the Platform
17.7.1.9. Operate all platform and ground controls to ensure that they perform their intended functions and all controls are clearly marked. Check operation of safety interlocks. Follow pre-operation checklist found in operator manual.

17.7.2. Before the aerial work platform is used, and during use on the job site, the operator shall inspect for all of the following:

17.7.2.1. Ditches, Drop-offs and Holes
17.7.2.2. Bumps and Floor Obstructions
17.7.2.3. Debris
17.7.2.4. Overhead Obstruction and Power Lines

17.7.3. All unsafe items found as a result of the inspection of the aerial work platform or work area shall be corrected before further use of the aerial work platform.

17.7.4. When proper clearances cannot be maintained, the owner of the electrical lines or his authorized representative shall be notified and provided with all pertinent information before the commencement of operations near electrical lines.

17.7.5. Any overhead wire shall be considered to be an energized line until the owner of the line or his authorized representative states that it is de-energized and grounds are installed.

17.8. Operating Procedures

17.8.1. The aerial work platform shall be used only in accordance with the manufacturer's or owner's operating instructions and safety rules.

17.8.2. When operating aerial work platforms or other equipment under, over, by, or near energized electric power lines, the following clearances shall be maintained:

Voltage	Minimum Clearance
0-50KV	10 feet
Over 50KV	10 Feet + .4 Inch Per KV

17.8.3 The clearance requirements set forth in above do not apply to the following situations:

17.8.3.1. Where work is performed from an insulated aerial device which is insulated for the work and the work is performed in accordance with the provisions of Construction Safety Standards part 16 power Transmission and Distribution of the Michigan Administrative code or OSHA Subpart V power Transmission and Distribution (1926.950 to 1926.960).

17.8.3.2. Where the electric power transmission or distribution lines have been de-energized and visibly grounded at the point of work or where insulating carriers that are not a part of an attachment to the aerial work platform have been erected to prevent physical contact with the line.

17.8.3.3. Where work is being performed by two (2) licensed joureyperson electricians on equipment up to .5KV.

17.8.3.4. The manufacturer's rated load capacity shall not be exceeded. The employee shall ensure the load and its distribution on the platform are in accordance with the manufacturer's specifications. The aerial work platform rated load capacity shall not be exceeded when loads are transferred to the platform at elevated heights.

17.8.3.5. Only personnel, their tools and necessary material shall be on or in the platform.

17.8.3.6. The guardrail system of the platform shall not be used to support any of the following:

17.8.3.6.1. Materials

17.8.3.6.2. Other Work Platforms Employees

17.8.3.7. Personnel shall maintain firm footing on the platform while working thereon. The use of railings, planks, ladders, or any other devices on the platform for achieving additional height is prohibited.

17.8.4. Fuel gas cylinders shall not be carried on platforms that would allow the accumulation of gases.

17.8.5. A full body harness with an energy absorbing lanyard which is attached and locked to the attachment point provided and approved by the "platform" manufacturer will be provided by Centerline and will be used by any employee on an aerial work platform, 100% of

the time while on the "platform". Sub-contractors must supply their own fall protection equipment. Belting or tying off to an adjacent structure or another piece of equipment while working from a given piece of equipment is forbidden, unless a following procedure is adhered to completely. Center Line Electric, Inc., will not allow any employee to exit an elevated aerial work platform, except where elevated work areas are inaccessible or hazardous to reach by other means.

17.8.6. Only aerial work platforms that are equipped with a manufacturer's installed platform controls for horizontal movement shall be moved while in the elevated position.

17.8.7. Before and during driving while elevated, an operator of a platform shall do both of the following;

17.8.7.1. Look in the direction of, and keep a clear view of the path of travel and make sure that the path is firm and level.

17.8.8. Maintain a safe distance from all of the following:

17.8.8.1. Obstacles
17.8.8.2. Debris
17.8.8.3. Drop-offs
17.8.8.4. Holes
17.8.8.5. Depressions
17.8.8.6. Ramps
17.8.8.7. Overhead Obstructions
17.8.8.8. Overhead Electrical Lines
17.8.8.9. Other Hazards To Safe Elevated Travel

17.8.9. Outriggers or stabilizers when provided are to be used in accordance with the manufacturer's instructions. Outriggers and stabilizers shall be positioned on pads or a solid surface.

17.8.10. Aerial work platforms shall be elevated only when on a firm and level surface or within the slope limits allowed by the manufacturer's instructions.

17.8.11. A vehicle mounted aerial work platform (bucket truck) shall have its brakes set before elevating the platform.

17.8.12. A vehicle mounted aerial work platform (bucket trucks) shall have wheel chocks installed before using the unit on an incline.

17.8.13. Climbers shall not be worn while performing work from an aerial work platform.

17.8.14. Platform gates shall be closed while the platform is in an elevated position. Stunt driving and horseplay are prohibited.

17.8.15. Altering, modifying, or disabling safety devices or interlocks is prohibited.

17.8.16. Care shall be taken to prevent ropes, cords, and hoses from becoming entangled in the aerial work platform.

17.8.17. A platform operator shall ensure that the area surrounding the aerial work platform is clear of personnel and equipment before lowering the platform.

17.8.18. Before and during travel, except as provided for horizontal movement, an operator shall do all of the following:

17.8.18.1. Inspect to see that booms, platforms, aerial ladders or towers are properly cradled or secured.

17.8.18.2. Ensure that outriggers are in a stored position.

17.8.18.3. Limit travel speed according to the following factors:

17.8.18.3.1. Condition of the surface

17.8.18.3.2. Congestion

17.8.18.3.3. Slope

17.8.18.3.4. Location of Personnel

17.8.18.3.5. Other Hazards

17.8.18.4. The aerial work platform shall not be positioned against another object to steady the platform.

17.8.18.5. The aerial work platform shall not be operated from a position on a truck, trailer, railway car, floating vessel, scaffold or similar equipment.

17.8.18.6. The boom and platform of the aerial work platform shall not be used to move or jack the wheels off the ground unless the machine is designed for that purpose by the manufacturer.

17.8.18.7. If the platform or elevating assembly becomes caught, snagged, or otherwise prevented from normal motion by adjacent structures or other obstacles such that control reversal does not free the platform, all personnel shall be removed from the platform before attempts are made to free the platform.

17.9 Exiting Aerial Lift In Elevated Position

17.9.1. Full body harness must be worn when accessing a work area requiring leaving the basket of JLG/Scissor Lift. The following steps must be followed:

17.9.1.1. Review job with foreman to insure this is the most practical and safest way to accomplish this job.

17.9.1.2. Foreman MUST be notified before an employee begins a job requiring leaving the basket.

17.9.1.3. All straps and buckles should be sung on the harness.

17.9.1.4. A “Y” type two ended energy absorbing lanyard will be attached to the back D-ring on the harness.

17.9.1.5. Lanyard must be secured to stable structure OUTSIDE basket before leaving platform.

17.9.1.6. Exit through the door of the basket if possible.

17.9.1.7. 100% tie off is required at all times while working outside of a basket. This means that one end of a two ended lanyard must always be connected to an anchor point.

18. Scaffold Safety Procedures and Requirements

18.1. It is Center Line Electric's (CLE) purpose in issuing these procedures to further ensure a safe workplace based on the following formal, written procedures for scaffold work. These procedures will be reviewed and updated as needed to comply with new OSHA and MIOSHA regulations, new best practices in scaffolding, and as business practices and Customer Requirements demand. CLE, Safety Director is the plan coordinator/manager and is responsible for its implementation. Copies of the written program may be obtained at the Safety Director's offce.

18.2. Application

18.2.1. This general scaffold plan applies to:

18.2.1.1. All employees who perform work while on a scaffold.

18.2.1.2. All employees who are involved in erecting, disassembling, moving, operating, repairing, maintaining, or inspecting scaffolds.

18.3. General Procedures

18.3.1. The following general procedures apply to all scaffold operations for CLE.

18.3.1.1. Taking into account the OSHA rules we must apply and the engineering/manufacturing requirements of our scaffolds, the following rules apply.

18.3.1.1.1. Each scaffold and scaffold component we use will support, without failure, its own weight and at least four times the maximum intended load applied or transmitted to it.

18.3.1.1.2. When we use non-adjustable suspension scaffolds, each suspension rope, including connecting hardware, will support, without failure, at least six times the maximum intended load applied or transmitted to that rope.

18.3.1.1.3. Direct connections to roofs and floors, and counterweights used to balance adjustable suspension scaffolds, shall be capable of resisting at least 4 times the tipping moment imposed by the scaffold operating at the rated load of the hoist, or 1.5 (minimum) times the tipping moment imposed by the scaffold operating at the stall load of the hoist, whichever is greater.

18.3.1.1.4. Each suspension rope, including connecting hardware, used on non-adjustable suspension scaffolds shall be capable of supporting, without failure, at least 6 times

the maximum intended load applied or transmitted to that rope.

18.3.1.1.5. Each suspension rope, including connecting hardware, used on adjustable suspension scaffolds shall be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope with the scaffold operating at either the rated load of the hoist, or 2 (minimum) times the stall load of the hoist, whichever is greater.

18.3.1.1.6. The stall load of any scaffold hoist shall not exceed 3 times its rated load.

18.3.1.2. Scaffolds shall be designed by a qualified person and shall be constructed and loaded in accordance with that design.

18.4. Platform Construction

18.4.1. This section documents the safety procedures and requirements we use to construct all scaffold platforms.

18.4.2. The following safety rules apply for this scaffold platform construction:

18.4.2.1. Each platform on all working levels of scaffolds shall be fully planked or decked between the front uprights and the guardrail supports as follows:

18.4.2.1.1. Each platform unit (e.g., scaffold plank, fabricated plank, fabricated deck, or fabricated platform) shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 1 inch (2.5 cm) wide, except where the employer can demonstrate that a wider space is necessary (for example, to fit around uprights when side brackets are used to extend the width of the platform).

18.4.2.2. The platform shall be planked or decked as fully as possible and the remaining open space between the platform and the uprights shall not exceed 9 ½ inches (24.1 cm).

18.4.2.3. Full planking or decking does not apply to platforms used solely as walkways or solely by employees performing scaffold erection or dismantling. In these situations, only the planking that the employer establishes is necessary to provide safe working conditions is required.

18.4.2.4. On scaffolds where platforms are overlapped to create a long platform, the overlap shall occur only over supports, and shall not be less than 12 inches (30 cm) unless the platforms are nailed together or otherwise restrained to prevent movement.

18.4.2.5. At all points of a scaffold where the platform changes direction, such as turning a corner, any platform that rests on a bearer at an angle other than a right angle shall be laid first, and platforms which rest at right angles over the same bearer shall be laid second, on top of the first platform.

18.4.2.6. Wood platforms shall not be covered with opaque finishes, except that platform edges may be covered or marked for identification. Platforms may be coated periodically with wood preservatives, fire-retardant finishes, and slip-resistant finishes; however, the coating may not obscure the top or bottom wood surfaces.

18.4.2.7. Scaffold components manufactured by different manufacturers shall not be intermixed unless the components fit together without force and the scaffold's structural integrity is maintained by the user. Scaffold components manufactured by different manufacturers shall not be modified in order to intermix them unless a competent person determines the resulting scaffold is structurally sound.

18.4.2.8. Scaffold components made of dissimilar metals shall not be used together unless a competent person has determined that galvanic action will not reduce the strength of any components.

18.4.2.9. Supported Scaffolds:

18.4.2.9.1. Supported scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means, as follows:

18.4.2.9.1.1 Guys, ties, and braces shall be installed at locations where horizontal members support both inner and outer legs.

18.4.2.9.1.2. Guys, ties, and braces shall be installed according to the scaffold manufacturer's recommendations or at the closest horizontal member to the 4:1 height and be

repeated vertically at locations of horizontal members every 20 feet (6.1 m) or less thereafter for scaffolds 3 feet (0.91 m) wide or less, and every 26 feet (7.9 m) or less thereafter for scaffolds greater than 3 feet (0.91 m) wide. The top guy, tie or brace of completed scaffolds shall be placed no further than the 4:1 height from the top. Such guys, ties and braces shall be installed at each end of the scaffold and at horizontal intervals not to exceed 30 feet (9.1 m) (measured from one end [not both] towards the other).

18.4.2.9.1.3. Ties, guys, braces, or outriggers shall be used to prevent the tipping of supported scaffolds in all circumstances where an eccentric load, such as cantilevered work platform, is applied or is transmitted to the scaffold.

18.4.2.10. Supported scaffold poles, legs, posts, frames, and uprights shall bear on base plates and mud sills or other adequate firm foundation.

18.4.2.11. Footings shall be level, sound, rigid, and capable of supporting the loaded scaffold without settling or displacement.

18.4.2.12. Unstable objects shall not be used to support scaffolds or platform units. Unstable objects shall not be used as working platforms.

18.4.2.13. Front-end loaders and similar pieces of equipment shall not be used to support scaffold platforms unless they have been specifically designed by the manufacturer for such use.

18.4.2.14. Forklifts shall not be used to support scaffold platforms unless the entire platform is attached to the fork and forklift is not moved horizontally while the platform is occupied.

18.4.2.15. Supported scaffold poles, legs, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement.

18.5. Suspension Scaffolds

18.5.1 All suspension scaffold support devices, such as outrigger beams, cornice hooks, parapet clamps, and similar devices, shall rest on surfaces capable of supporting at least 4 times the load imposed on them by the scaffold operating at the rated load of the hoist (or at least 1.5 times the load imposed on them by the scaffold at the stall capacity of the hoist, whichever is greater).

18.5.2. Suspension scaffold outrigger beams, when used, shall be made of structural metal or equivalent strength material, and shall be restrained to prevent movement.

18.5.3. The inboard ends of suspension scaffold outrigger beams shall be stabilized by bolts or other direct connections to the floor or roof deck, or they shall have their inboard ends stabilized by counterweights, except masons' multi-point adjustable suspension scaffold outrigger beams shall not be stabilized by counterweights.

18.5.4. Before the scaffold is used, direct connections shall be evaluated by a competent person who shall confirm, based on the evaluation, that the supporting surfaces are capable of supporting the loads to be imposed. In addition, masons' multi-point adjustable suspension scaffold connections shall be designed by an engineer experienced in such scaffold design.

18.5.5. Counterweights shall be made of non-flowable material. Sand, gravel and similar materials that can be easily dislocated shall not be used as counterweights.

18.5.6. Only those items specifically designed as counterweights shall be used to counterweight scaffold systems. Construction materials such as, but not limited to, masonry units and rolls of roofing felt, shall not be used as counterweights.

18.5.7. Counterweights shall be secured by mechanical means to the outrigger beams to prevent accidental displacement.

18.5.8. Counterweights shall not be removed from an outrigger beam until the scaffold is disassembled.

18.5.9. Outrigger beams which are not stabilized by bolts or other direct connections to the floor or roof deck shall be secured by tiebacks.

18.5.10. Tiebacks shall be equivalent in strength to the suspension ropes.

18.5.11. Outrigger beams shall be placed perpendicular to its bearing support (usually the face of the building or structure). However, where the employer can demonstrate that it is not possible to place an outrigger beam perpendicular to the face of the building or structure because of obstructions that cannot be moved, the outrigger beam may be placed at some other angle, provided opposing angle tiebacks are used.

18.5.12. Tiebacks shall be secured to a structurally sound anchorage on the building or structure. Sound anchorages include structural members,

but do not include standpipes, vents, other piping systems, or electrical conduit.

18.5.13. Tiebacks shall be installed perpendicular to the face of the building or structure, or opposing angle tiebacks shall be installed. Single tiebacks installed at an angle are prohibited.

18.5.14. Suspension scaffold outrigger beams shall be:

18.5.14.1. Provided with stop bolts or shackles at both ends;

18.5.14.1.1. Securely fastened together with the flanges turned out when channel iron beams are used in place of I-beams;

18.5.14.1.2. Installed with all bearing supports perpendicular to the beam center line;

18.5.14.1.3. Set and maintained with the web in a vertical position; and

18.5.14.1.4. When an outrigger beam is used, the shackle or clevis with which the rope is attached to the outrigger beam shall be placed directly over the centerline of the stirrup.

18.5.15. Suspension scaffold support devices such as cornice hooks, roof hooks, roof irons, parapet clamps, or similar devices shall be:

18.5.15.1. Made of steel, wrought iron, or materials of equivalent strength; or supported by bearing blocks; and

18.5.15.2. Secured against movement by tiebacks installed at right angles to the face of the building or structure, or opposing angle tiebacks shall be installed and secured to a structurally sound point of anchorage on the building or structure. Sound points of anchorage include structural members, but do not include standpipes, vents, other piping systems, or electrical conduit.

18.5.15.3. Tiebacks shall be equivalent in strength to the hoisting rope.

18.5.16. When winding drum hoists are used on a suspension scaffold, they shall contain not less than four wraps of the suspension rope at the lowest point of scaffold travel. When other types of hoists are used, the suspension ropes shall be long enough to allow the scaffold to be lowered to the level below without the rope end passing through the hoist, or the rope end shall be configured or provided with means to prevent the end from passing through the hoist.

18.5.17. The use of repaired wire rope as suspension rope is prohibited.

18.5.18. Wire suspension ropes shall not be joined together except through the use of eye splice thimbles connected with shackles or cover plates and bolts.

18.5.19. The load end of wire suspension ropes shall be equipped with proper size thimbles and secured by eye splicing or equivalent means.

18.5.20. Ropes shall be inspected for defects by a competent person prior to each work shift and after every occurrence which could affect a rope's

integrity. Ropes shall be replaced if any of the following conditions exist:

18.5.20.1. Any physical damage which impairs the function and strength of the rope.

18.5.20.2. Kinks that might impair the tracking or wrapping of rope around the drum(s) or sheaves(s).

18.5.20.3. Six randomly distributed broken wires in one rope lay or three broken wires in one strand in one rope lay.

18.5.20.4. Abrasion, corrosion, scrubbing, flattening or peening causing loss of more than one-third of the original diameter of the outside wires.

18.5.20.5. Heat damage caused by a torch or any damage caused by contact with electrical wires.

18.5.20.6. Evidence that the secondary brake has been activated during an over speed condition and has engaged the suspension rope.

18.5.21. Swaged attachments or spliced eyes on wire suspension ropes shall not be used unless they are made by the wire rope manufacturer or qualified person.

18.5.22. When wire rope clips are used on suspension scaffolds:

18.5.22.1. There shall be a minimum of 3 wire rope clips installed, with the clips a minimum of 6 rope diameters apart;

18.5.22.2. Clips shall be installed according to the manufacturer's recommendations;

18.5.22.3. Clips shall be retightened to the manufacturer's recommendations after the initial loading;

18.5.22.4. Clips shall be inspected and retightened to the manufacturer's recommendations at the start of each work-shift thereafter;

18.5.22.5. U-bolt clips shall not be used at the point of suspension for any scaffold hoist;

18.5.22.6. When U-bolt clips are used, the U-bolt shall be placed over the dead end of the rope, and the saddle shall be placed over the live end of the rope.

18.5.23. Suspension scaffold power-operated hoists and manual hoists shall be tested by a qualified testing laboratory.

18.5.24. Gasoline-powered equipment and hoists shall not be used on suspension scaffolds.

18.5.25. Gears and brakes of power-operated hoists used on suspension scaffolds shall be enclosed.

18.5.26. In addition to the normal operating brake, suspension scaffold power-operated hoists and manually operated hoists shall have a braking device or locking pawl which engages automatically when a hoist makes either of the following uncontrolled movements: an instantaneous change in momentum or an accelerated overspeed.

18.5.27. Manually operated hoists shall require a positive crank force to descend.

18.5.28. Two-point and multi-point suspension scaffolds shall be tied or otherwise secured to prevent them from swaying, as determined to be necessary based on an evaluation by a competent person. Window cleaners' anchors shall not be used for this purpose.

18.5.29. Devices whose sole function is to provide emergency escape and rescue shall not be used as working platforms. This provision does not preclude the use of systems which are designed to function both as suspension scaffolds and emergency systems.

18.6. Gaining Access to Scaffolds

18.6.1 We know that getting to the working platform is critical to the safety of our employees. This section outlines the mechanical requirements for gaining access to scaffold platforms such as: (1) ladders, (2) ramps and walkways, (3) stair-rails, and (4) direct access from another scaffold. This section is divided into two parts. The first part is for workers gaining access to scaffold platforms to do work; the second part is access for employees erecting and dismantling scaffolds.

18.6.1.1. When scaffold platforms are more than 2 feet (0.6 m) above or below a point of access, portable ladders, hook-on ladders, attachable ladders, stair towers (scaffold stairways/towers), stairway-type ladders (such as ladder stands), ramps, walkways, integral prefabricated scaffold access, or direct access from another scaffold, structure, personnel hoist, or similar surface shall be used. Cross-braces shall not be used as a means of access.

18.6.1.2. Portable, hook-on, and attachable ladders (Additional requirements for the proper construction and use of portable ladders are contained in subpart X of this part—Stairways and Ladders):

18.6.1.2.1. Portable, hook-on, and attachable ladders shall be positioned so as not to tip the scaffold;

18.6.1.2.2. Hook-on and attachable ladders shall be positioned so that their bottom rung is not more than 24 inches (61 cm) above the scaffold supporting level;

18.6.1.2.3. When hook-on and attachable ladders are used on a supported scaffold more than 35 feet (10.7 m) high, they shall have rest platforms at 35-foot (10.7 m) maximum vertical intervals.

18.6.1.2.4. Hook-on and attachable ladders shall ve specifically designed for use with the type of scaffold used;

18.6.1.2.5. Hook-on and attachable ladders shall have a minimum rung length of 11 ½ inches (29 cm); and

18.6.1.2.6. Hook-on and attachable ladders shall have uniformly spaced rungs with a maximum spacing between rungs of 16 ¾ inches.

18.6.1.3. Stairway-type ladders shall:

18.6.1.3.1. Be positioned such that their bottom step is not more than 24 inches (61 cm) above the scaffold supporting level;

18.6.1.3.2. Be provided with rest platforms at 12 foot (3.7 m) maximum vertical intervals;

18.6.1.3.3. Have a minimum step width of 16 inches (41 cm), except that mobile scaffold stairway-type ladders shall have a minimum step width of 11 ½ inches (30 cm); and

18.6.1.3.4. Have slip-resistant treads on all steps and landings.

18.6.1.4. Stair Towers (scaffold stairway/towers) shall be positioned such that their bottom step is not more than 24 inches (61 cm) above the scaffold supporting level.

18.6.1.4.1. A stair-rail consisting of a top-rail and a mid-rail shall be provided on each side of each scaffold stairway.

18.6.1.4.2. The top-rail of each stair-rail system shall also be capable of serving as a handrail, unless a separate handrail is provided.

18.6.1.4.3. Handrails, and top-rails that serve as handrails, shall provide an adequate handhold for employees grasping them to avoid falling.

18.6.1.4.4. Stair-rail systems and handrails shall be surfaced to prevent injury to employees from punctures or lacerations, and to prevent snagging of clothing.

18.6.1.4.5. The ends of stair-rail systems and handrails shall be constructed so that they do not constitute a projection hazard.

18.6.1.4.6. Handrails, and top-rails that are used as handrails, shall be at least 3 inches (7.6 cm) from other objects.

18.6.1.4.7. Stair-rails shall be not less than 28 inches (71 cm) nor more than 37 inches (94 cm) from the upper surface of the stair-rail to the surface of the tread, in line with the face of the riser at the forward edge of the tread.

18.6.1.4.8. A landing platform at least 18 inches (45.7 cm) wide by at least 18 inches (45.7 cm) long shall be provided at each level.

18.6.1.4.9. Each scaffold stairway shall be at least 18 inches (45.7 cm) wide between stair-rails.

18.6.1.4.10. Treads and landings shall have slip-resistant surfaces.

18.6.1.4.11. Stairways shall be installed between 40 degrees and 60 degrees from the horizontal.

18.6.1.4.12. Guardrails meeting the requirements of paragraph (g)(4) of this section shall be provided on the open sides and ends of each landing.

18.6.1.4.13. Riser height shall be uniform, within ¼ inch, (0.6 cm) for each flight of stairs. Greater variations in riser height are allowed for the top and bottom steps of the entire system, not for each flight of stairs.

18.6.1.4.14. Tread depth shall be uniform, withing ¼ inch, for each flight of stairs.

18.7. Ramps and Walkways

18.7.1. Ramps and walkways 6 feet (1.8 m) or more above lower levels shall have guardrail systems which comply with subpart M of this part – Fall Protection.

18.7.2. No ramp or walkway shall be inclined more than a slope of one (1) vertical to three (3) horizontal (20 degrees above the horizontal).

18.7.3. If the slope of a ramp or a walkway is steeper than one (1) vertical in eight (8) horizontal, the ramp or walkway shall have cleats not more than fourteen (14) inches (35 cm) apart which are securely fastened to the planks to provide footing.

18.7.4. Integral prefabricated scaffold access frames shall:

18.7.4.1. Be specifically designed and constructed for use as ladder rungs; have a rung length of at least 8 inches (20 cm);

18.7.4.2. Not be used as work platforms when rungs are less than 11 ½ inches in length, unless each affected employee uses fall protection, or a positioning device, which complies with 1926.502;

18.7.4.3. Be uniformly spaced within each frame section;

18.7.4.4. Be provided with rest platforms at 35-foot (10.7 m) maximum vertical intervals on all supported scaffolds more than 35 feet (10.7 m) high; and

18.7.4.5. Have a maximum spacing between rungs of 16 ¾ inches (43 cm). Non-uniform rung spacing caused by joining end frames together is allowed, provided the resulting spacing does not exceed 16 ¾ inches (43 cm).

18.7.5. Steps and rungs of ladder and stairway type access shall line up vertically with each other between rest platforms.

18.7.6. Direct access to or from another surface shall be used only when the scaffold is not more than 14 inches (36 cm) horizontally and not more than 24 inches (61 cm) vertically from the other surface.

18.8. Erecting and Dismantling

18.8.1. Our company shall provide safe means of access for each employee erecting or dis-mantling a scaffold where the provision of safe access is feasible and does not create a greater hazard. We shall have a competent person determine whether it is feasible or would pose a greater hazard to provide, and have employees use a safe means of access. This determination shall be based on site conditions and the type of scaffold being erected or dismantled.

18.8.2. Hook-on or attachable ladders shall be installed as soon as scaffold erection has progressed to a point that permits safe installation and use.

18.8.3. When erecting or dismantling tubular welded frame scaffolds, (end) frames, with horizontal members that are parallel, level and are not more than 22 inches apart vertically may be used as climbing devices for access, provided they are erected in a manner that creates a usable ladder and provides good hand hold and foot space.

18.8.4. Cross braces on tubular welded frame scaffolds shall not be used as a means of access or egress.

. 18.9. Fall Protection Plan

18.9.1. Fall protection planning is critical to the safety and well being of our employees. Our fall protection plan follows the OSHA requirements that are different depending on the type of scaffold we are using. In this plan we address fall protection for our scaffold erectors and dismantlers separately.

18.9.2. One fact never changes. We know we must provide fall protection for any employee on a scaffold more than 10 feet above a lower level.

18.9.3. This fall protection plan for our working employees is for the following type(s) of scaffold(s):

18.9.3.1. Single- or two-point adjustable suspension scaffold- We will protect each employee on our single- or two-point adjustable suspension scaffolds by a personal fall arrest system. Our personal fall arrest systems:

18.9.3.1.1. Meet the requirements of 1926.502(d) (OSHA's Fall protection rule).

18.9.3.1.2. Are attached by lanyard to a vertical lifeline, horizontal lifeline, or scaffold structural member.

18.9.4. Note: Vertical lifelines shall not be used when overhead components, such as overhead protection or additional platform levels, are part of a single-point or two-point adjustable suspension scaffold.

18.9.4.1. When vertical lifelines are used, they shall be fastened to a fixed safe point of anchorage, shall be independent of the scaffold, and shall be protected from sharp edges and

abrasion. Safe points of anchorage include structural members of buildings, but do not include standpipes, vents, other piping systems, electrical conduit, outrigger beams, or counterweights.

18.9.4.2. When horizontal lifelines are used, they shall be secured to two or more structural members of the scaffold, or they may be looped around both suspension and independent suspension lines (on scaffolds so equipped) above the hoist and brake attached to the end of the scaffold. Horizontal lifelines shall not be attached only to the suspension ropes.

18.9.4.3. When lanyards are connected to horizontal lifelines or structural members on a single-point or two-point adjustable suspension scaffold, the scaffold shall be equipped with additional independent support lines and automatic locking devices capable of stopping the fall of the scaffold in the event one or both of the suspension ropes fail. The independent support lines shall be equal in number and strength to the suspension ropes.

18.9.4.4. Vertical lifelines, independent support lines, and suspension ropes shall not be attached to each other, nor shall they be attached to or use the same point of anchorage, nor shall they be attached to the same point on the scaffold or personal fall arrest system.

18.9.5. Self-contained adjustable scaffold supported by the frame structure- We will protect each employee on our self-contained, frame structure supported, adjustable scaffolds by a guardrail system. The guardrail system:

18.9.5.1. Has a minimum 200-pound top-rail capacity.

18.9.5.2. Will be installed before being released for use by our employees.

18.9.5.3. Guardrail systems shall be installed along all open sides and ends of platforms. Guardrail systems shall be installed before the scaffold is released for use by employees other than erection/dismantling crews.

18.9.5.4. The top edge height of top-rails or equivalent member on supported scaffolds manufactured or placed in service after January 1, 2000 shall be installed between 38 inches (0.97 m) and 45 inches (1.2 m) above the platform surface. The top edge height on supported scaffolds manufactured and placed in service before January 1, 2000, and on all suspended scaffolds where both a guardrail and a personal fall arrest system are required shall ve between 36 inches (0.9 m) and 45 inches (1.2 m). When conditions warrant, the height of the top edge may exceed the 45-inch height.

18.9.5.5. When mid-rails, screens, mesh, intermediate vertical members, solid panels, or equivalent structural members

are used, they shall be installed between the top edge of the guardrail system and the scaffold platform.

18.9.5.6. When mid-rails are used, they shall be installed at a height approximately midway between the top edge of the guardrail system and platform surface.

18.9.5.7. When screens and mesh are used, they shall extend from the top edge of the guardrail system to the scaffold platform, and along the entire opening between the supports.

18.9.5.8. When intermediate members (such as balusters or additional rails) are used, they shall not be more than 19 inches (48 cm) apart.

18.9.5.9. Each toprail or equivalent member of a guardrail system shall be capable of withstanding, without failure, a force applied in any downward or horizontal direction at any point along its top edge of at least 100 pounds (445 n) for guardrail systems installed on single-point adjustable suspension scaffolds or two-point adjustable suspension scaffolds, and at least 200 pounds (890 n) for guardrail systems installed on all other scaffolds.

18.9.5.10. Mid-rails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members of a guardrail system shall be capable of withstanding, without failure, a force applied in any downward or horizontal direction at any joint along the mid-rail or other member of at least 75 pounds (333 n) for guardrail systems with a minimum 100 pound top-rail capacity, and at least 150 pounds (666 n) for guardrail systems with a minimum 200 pound top-rail capacity.

18.9.5.11. Suspension scaffold hoists and non-walk-through stirrups may be used as end guardrails, if the space between the hoist or stirrup and the side guardrail or structure does not allow passage of an employee to the end of the scaffold.

18.9.5.12. Guardrails shall be surfaced to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.

18.9.5.13. The ends of all rails shall not overhang the terminal posts except when such overhang does not constitute a projection hazard to employees.

18.9.5.14. Steel or plastic banding shall not be used as a top-rail or mid-rail.

18.9.5.15. Manila or plastic (or other synthetic) rope being used for top-rails or mid-rails shall be inspected by a competent person as frequently as necessary to ensure that is continues to meet the strength requirements.

18.9.5.16. Cross-bracing is acceptable in place of a mid-rail when the crossing point of two braces is between 20 inches (0.5 m)

and 30 inches (0.8 m) above the work platform or as a top-rail when the crossing point of two braces is between 38 inches (0.97 m) and 48 inches (1.3 m) above the work platform. The end points at each upright shall be no more than 48 inches (1.3 m) apart.

18.10. Falling Object Protection

18.10.1. All employees must wear hardhats when working on, assembling, ir dismantling scaffolds. This is our primary protection from falling objects. Additionally, we will:

18.10.1.1. Install all guardrail systems with openings small enough to prevent passage of potential falling objects.

18.10.1.2. Prevent tools, materials, or equipment that inadvertently fell from our scaffolds from striking employees by barricading the area below the scaffolding.

18.10.2. In addition to wearing hardhats each employee on a scaffold shall be provided with additional protection from falling hand tools, debris, and other small objects through the installation of toe-boards, screens, or guardrail systems, or through the erection of debris nets, catch platforms, or canopy structures that contain or deflect the falling objects as dictated by a given job sites concerns.

18.10.3. When the falling objects are too large, heavy or massive to be contained or deflected by any of the above-listed measures, the Company will place such potential falling objects away from the edge of the surface from which they could fall and shall secure those materials as necessary to prevent their falling.

18.10.4. Where there is a danger of tools, materials, or equipment falling from a scaffold and striking employees below, the following provisions apply:

18.10.4.1. The area below the scaffold to which objects can fall shall be barricaded, and employee shall not be permitted to enter the hazard area: or

18.10.4.2. A toe-board shall be erected along the edge of platforms more than 10 feet (3.1 m) above lower levels for a distance sufficient to protect employees below, except on float (ship) scaffolds where an edging of ¾ x 1 ½ inch (2 x 4 cm) wood or equivalent may be used in lieu of toe-boards.

18.10.5. Where tools, materials, or equipment are piled to a height higher than the top edge of the toeboard, paneling or screening extending from the toeboard or platform to the top of the guardrail shall be erected for a distance sufficient to protect employees below: or

18.10.5.1. A guardrail system shall be installed with openings small enough to prevent passage of potential falling objects; or

18.10.5.2. A canopy structure, debris net, or catch platform strong enough to withstand the impact forces of the potential falling objects shall be erected over the employees below.

18.10.5.3. Canopies, when used for falling object protection, shall comply with the following criteria:

18.10.5.3.1. When canopies are used on suspension scaffolds for falling object protection, the scaffold shall be equipped with additional independent support lines equal in number to the number of points supported, and equivalent in strength to the strength of the suspension ropes.

18.10.5.3.2. Independent support lines and suspension ropes shall not be attached to the same points of anchorage.

18.10.5.4. Where used, toe boards shall be:

18.10.5.4.1. Capable of withstanding, without failure, a force of at least 50 pounds (222 n) applied in any downward or horizontal direction at any point along the toe board ; and

18.10.5.4.2. At least three and one-half inches (9 cm) high from the top edge of the toe board to the level of the walking/working surface. Toe boards shall be securely fastened in place at the outermost edge of the platform and have not more than ¼ inch (0.7 cm) clearance above the walking/working surface. Toe boards shall be solid or with openings not over one inch (2.5 cm) in the greatest dimension.

18.11. Using Scaffolds

18.11.1. Site preparation, scaffold erection, fall protections, and gaining access to the working platforms are only some of the requirements for scaffold work. While this all takes concentration and safe work practices, the most dangerous time can be when employees are concentrating on their work and not particularly aware of the hazards of working from scaffolds. It is critical that employees who use scaffolds be trained, among other things, in the recognition of the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize those hazards. Our competent person will inspect all scaffolds and scaffold components for visible defects before each work shift, and after any occurrence that could affect a scaffold's structural integrity. However, in addition to that, all users of scaffolds in this company will know and understand the following safety rules:

18.11.1.1. Scaffolds and scaffold components will never be loaded in excess of their maximum intended loads or rated capacities.

18.11.1.2. Debris must not be allowed to accumulate on platforms. The use of shore or lean-to scaffolds is prohibited.

18.11.1.3. Scaffolds and scaffold components shall be inspected for visible defects by a competent person before each work shift, and after any occurrence which could affect a scaffold's structural integrity.

18.11.1.4. Any part of a scaffold damaged or weakened such that its strength is lessened shall be immediately tagged out, repaired or replaced, braced to meet those provisions, or removed from service until repaired.

18.11.1.5. Scaffolds shall not be moved horizontally while employees are on them, unless they have been designed by a registered professional engineer specifically for such movement or, for mobile scaffolds, where the provisions of 1926.452 (w) are followed.

18.11.1.6. The clearance between scaffolds and power lines shall be as follows: Scaffolds shall not be erected, used, dismantled, altered, or moved such that they or any conductive material handled on them might come closer to exposed and energized power lines than (see table in 1926.451 (f)(6).

18.11.1.7. Scaffolds and materials may be closer to power lines than specified above where such clearance is necessary for performance of work, and only after the utility company, or electrical system operator, has been notified of the need to work closer and the utility company, or electrical system operator, has de-energized the lines, relocate the lines, or installed protective coverings to prevent accidental contact with the lines.

18.11.1.8. Scaffolds shall be erected, moved dismantled, or altered only under the supervision and direction of a competent person qualified in scaffold erection, moving, dismantling or alteration. Such activities shall be performed only by experienced and trained employees selected for such work by the competent person.

18.11.1.9. Employees shall be prohibited from working on scaffolds covered with snow, ice, or other slippery material except as necessary for removal of such materials.

18.11.1.10. Where swinging loads are being hoisted onto or near scaffolds such that the loads might contact the scaffold, tag lines or equivalent measures to control the loads shall be used.

18.11.1.11. Suspension ropes supporting adjustable suspension scaffolds shall be of a diameter large enough to provide sufficient surface area for the functioning of brake and hoist mechanisms.

18.11.1.12. Suspension ropes shall be shielded from heat-producing processes. When acids or other corrosive substances are used on a scaffold, the ropes shall be shielded, treated to

protect against the corrosive substances, or shall be of a material that will not be damaged by the substance being used.

18.11.1.13. Work on or from scaffolds is prohibited during storms or high winds unless a competent person has determined that it is safe for the employees to be on the scaffold and those employees are protected by a personal fall arrest system or wind screens. Wind screens shall not be used unless the scaffold is secured against the anticipated wind forces imposed.

18.11.1.14. Debris shall not be allowed to accumulate on platforms.

18.11.1.15. Makeshift devices, such as but not limited to boxes and barrels, shall not be used on top of scaffold platforms to increase the working level height of employees.

18.11.1.16. Ladders shall not be used on scaffolds to increase the working level height of employees, except on large area scaffolds where employers have satisfied the following criteria:

18.11.1.16.1. When the ladder is placed against a structure which is not part of the scaffold, the scaffold shall be secured against the sideways thrust exerted by the ladder;

18.11.1.16.2. The platform units shall be secured to the scaffold to prevent their movement;

18.11.1.16.3. The ladders legs shall be on the same platform or other means shall be provided to stabilize the ladder against unequal platform deflection, and the ladder legs shall be secured to prevent them from slipping or being pushed off the platform.

18.11.1.17. Platforms shall not deflect more than 1/60 of the span when loaded.

18.11.1.18. To reduce the possibility of welding current arcing through the suspension wire rope when performing welding from suspended scaffolds, the following precautions shall be taken, as applicable:

18.11.1.18.1. An insulated thimble shall be used to attach each suspension wire rope to its hanging support (such as cornice hook or outrigger). Excess suspension wire rope and any additional independent lines from grounding shall be insulated;

18.11.1.18.2. The suspension wire rope shall be covered with insulating material extending at least 4 feet (1.2 m) above the hoist. If there is a tail line below the hoist, it shall be insulated to prevent contact with the platform. The

portion of the tail line that hangs free below the scaffold shall be guided or retained, or both, so that is does not become grounded;

18.11.1.18.3. Each hoist shall be covered with insulated protective covers;

18.11.1.18.4. In addition to a work lead attachment required by the welding process, a grounding conductor shall be connected from the scaffold to the structure. The size of this conductor shall be at lease the size of the welding process work lead, and this conductor shall not be in series with the welding process or the work piece;

18.11.1.18.5. If the scaffold grounding lead is disconnected at any time, the welding be shut off; and

18.11.1.18.6. An active welding rod or uninsulated welding lead shall not be allowed to contact the scaffold or its suspension system.

18.12 Prohibited Practices

18.12.1. The following practices will never be tolerated in this company:

18.12.1.1. Scaffold components manufactured by different manufacturers will never be intermixed unless components fit together without force and the scaffold's structural integrity is maintained.

18.12.1.2. Unstable objects will never be used to support scaffolds or platform units. Footings must be level, sound, rigid, and capable of supporting the loaded scaffold without settling or

18.12.1.3. Crossbraces will never be used as a means of access displacement.

18.12.1.4. The use of shore or lean-to scaffolds is prohibited.

18.13. Duties of Competent and Qualified Persons

18.13.1 When working with scaffolds in this company there are some tasks that must be done by our competent or a qualified person. By definition they are:

18.13.1.1. Competent person-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 authorization to take prompt corrective measures to eliminate them.

18.13.1.2. 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.

THE FOLLOWING TASKS WILL ONLY BE DONE BY THE PERSON WE HAVE DEEMED COMPETENT OR QUALIFIED TO PERFORM THEM:

18.13.2. Competent Person(s)

18.13.2.1. We will not intermix scaffold components manufactured by different manufacturers unless the components fit together without force and the scaffold's structural integrity is maintained. Scaffold components manufactured by different manufacturers will not be modified in order to intermix them unless our competent person determines the resulting scaffold is structurally sound.

18.13.2.2. Before a suspension scaffold is used, direct connections must be evaluated by our competent person who will confirm, based on the evaluation, that the supporting surfaces are capable of supporting the loads to be imposed.

18.13.2.3. Prior to each work shift and after every occurrence that could affect a rope's integrity, suspension scaffold ropes will be inspected by our competent person. Ropes will be replaced if any of the conditions outline in 1926.451(d)(10) exist.

18.13.2.4. Scaffolds will be erected, moved, dismantled, or altered only under the supervision and direction of a competent person.

18.13.3. Qualified Person(s)

18.13.3.1. Scaffolds must be designed by a qualified person and shall be constructed and loaded in accordance with that design.

18.13.3.2. Swaged attachments or spliced eyes on wire suspension ropes of suspension scaffolds will not be used unless they are made by the wire rope manufacturer or a qualified person.

18.13.3.3. Scaffolds will not be modified in order to intermix them unless our competent person determines the resulting scaffold is structurally sound.

18.13.3.4. Before a suspension scaffold is used, direct connections must be evaluated by our competent person who will confirm, based on the evaluation, that the supporting surfaces are capable of supporting the loads to be imposed.

18.13.3.5. Prior to each work shift and after every occurrence that could affect a rope's integrity, suspension scaffold ropes will be inspected by our competent person. Ropes will be replaced if any of the conditions outlines in 1926.451(d)(10) exist.

18.13.3.6. Scaffolds will be erected, moved, dismantled, or altered only under the supervision and direction of a competent

person, or be modified in order to intermix them unless our competent person determines the resulting scaffold is structurally sound.

NOTE: ONLY QUALIFIED AND COMPETENT PERSONNEL ARE ALLOWED TO MODIFY SCAFFOLDING SYSTEMS. NON-QUALIFIED PERSONNEL MAY CREATE MORE HAZARDS. IF MODIFICATIONS ARE ATTEMPTED BY NON-QUALIFIED PERSONNEL THEY WILL BE SUBJECT TO DISCIPLINARY ACTION UP TO AND INCLUDING TERMINATION OF EMPLOYMENT.

18.14. Training

18.14.1. Recognizing the need for training for employees who: (1) perform work while on scaffolds, (2) are involved in erecting, disassembling, moving, operating, repairing, maintaining, or inspecting scaffolds, and (3) have lost the requisite proficiency, training is one of the highest priority of this program.

18.14.1.1. Our employees who perform work on scaffolds will be trained by a qualified person to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize those hazards. The training will include the following areas as applicable;

18.14.1.1.1. The nature of and the correct procedures for dealing with electrical hazards.

18.14.1.1.2. The nature of and the correct procedures for erecting, maintaining, and disassembling the fall protection and falling object protection systems used.

18.14.1.1.3. The proper use of the scaffold, and the proper handling of materials on the scaffold.

18.14.1.1.4. The maximum intended load and the load-carrying capacities of the scaffolds used. – Tagging out of scaffolds.

18.14.1.1.5. Any other pertinent requirements of OSHA rules.

18.14.1.2. Our employees who erect, disassemble, move, operate, repair, maintain, or inspect scaffolds will be trained by our competent person to recognize the hazards associated with the work being done. The training will include the following topics as applicable:

18.14.1.2.1. The nature of scaffold hazards.

18.14.1.2.2. The correct procedures for erecting, disassembling, moving, operating, repairing, inspecting, and maintaining the type of scaffold in question.

18.14.1.2.3. The design criteria, maximum intended load-carrying capacity, and intended use of the scaffold.

18.14.1.2.4. Tagging out of scaffolds.

18.14.1.2.5. Any other pertinent requirements of this subpart.

18.14.1.3. When we have reason to believe that one of our employees lacks the skill or understanding needed for safe work involving the erection, use or dismantling of scaffolds, we will retrain the employee so that the requisite proficiency is regained. Retraining will be done in at least the following situations:

18.14.1.3.1. Where changes at the worksite present a hazard about which the employee has not been previously trained.

18.14.1.3.2. Where changes in the types of scaffolds, fall protection, fall object protection, or other equipment present a hazard about which an employee has not been previously trained.

18.14.1.3.3. Where inadequacies in an affected employee's work involving scaffolds indicate that the employee has not retained the requisite proficiency.

19. First Aid Procedures

19.1. Policy

19.1.1 To insure that prompt and effective medical assistance is provided to the employees of Center Line Electric, Inc. (CLE) in case of workplace injury or illness, the following first aid and medical services procedure is provided.

19.1.2. It is the responsibility of each manager/supervisor to assure that compliance to the First Aid & Medical Services Procedure is provided.

19.1.3. This policy covers minimum performance standards applicable to all CLE Associates employees and locations. Local practices requiring more detailed or stringent rules, or local, state or other federal requirements regarding this subject can and should be added as an addendum to this procedure as applicable.

19.2. Purpose

19.2.1. This First Aid & Medical Services Procedure is designed to establish specific common guidelines for CLE locations to follow in assuring that prompt medical attention is provided to employees suffering from either a work related or non-work related injury or illness.

19.2.2. Each CLE facility and jobsite must ensure that readily available medical personnel and first aid supplies are available to all employees to provide advice and consultation within reason, regarding matters of employee occupational health and to respond in case of accident. This includes identifying and posting the location of a designated medical treatment facility and/or emergency care center in a conspicuous location at each fixed location or fixed jobsite. Should outside medical services be unable to respond in a reasonable amount of time as defined by OSHA (3 to 4 minutes), the CLE facility and jobsite may use various strategies to provide access within this time frame, such as identifying on site personnel with a current first aid certificate who is available and willing to provide first aid. The first aid certificate must be obtained from the American Red Cross or equivalent training that can be verified through documentation.

19.3. Scope

19.3.1. Applies to all CLE work sites, i.e., CLE offices, client job sites, etc., and includes visitors, vendors, and subcontractors.

19.4. Definitions

19.4.1. Established Medical Treatment Facility means the occupational medical treatment provider and/or emergency care center identified as being capable of, and established by a CLE location to initially treat employee injuries and illnesses.

19.4.2. First Aid means the following types of treatment;

19.4.2.1. Using non-prescription medications at non-prescription strength.

19.4.2.2. Cleaning, flushing, or soaking wounds on the skin surface

19.4.2.3. Using wound coverings, such as bandages, gauze pads, etc., or using “Steri-Strips” or butterfly bandages.
19.4.2.4. Using hot or cold therapy
19.4.2.5. Using any totally non-rigid means of support, such as elastic bandages, wraps, etc.
19.4.2.6. Using temporary immobilization devices while transporting an employee, such as splints, slings, neck collars, or back boards.
19.4.2.7. Drilling a fingernail or toenail to relieve pressure, or draining fluids from blisters.
19.4.2.8. Using eye patches
19.4.2.9. Using simple irrigation or a cotton swab to remove foreign bodies not embedded in or adhered to the eye.
19.4.2.10. Using irrigation, tweezers, cotton swab or other simple means to remove splinters or foreign material from areas OTHER than the eye.
19.4.2.11. Using finger guards
19.4.2.12. Using massages
19.4.2.13. Drinking fluids to relieve heat stress

19.4.3. Illness can be classified as a skin disease/disorder, respiratory condition, poisoning, or other illnesses resulting from an event in the work environment. Examples include, but are not limited to:
19.4.3.1. Contact dermatitis
19.4.3.2. Eczema
19.4.3.3. Silicosis
19.4.3.4. Asbestosis
19.4.3.5. Toxic inhalation
19.4.3.6. Poisonings by lead, mercury, or other metals
19.4.3.7. Poisonings by carbon monoxide, hydrogen sulfide, or other gases
19.4.3.8. Poisonings by organic solvents or by other chemicals
19.4.3.9. Heatstroke, sunstroke, heat exhaustion, or other heat-related factors
19.4.3.10. Freezing, frostbite, or other cold-related factors
19.4.3.11. Effects of Non-ionizing radiation (welder’s flash or lasers)
19.4.3.12. Bloodborne Pathenogenic diseases
19.4.3.13. Microbial Exposure
19.4.3.14. Ionizing Radiation

19.4.4. Injury means any wound or damage to the body resulting from an event in the work environment. Examples include:
19.4.4.1. Cut/Laceration
19.4.4.2. Puncture
19.4.4.3. Abrasion
19.4.4.4. Contusion/bruise
19.4.4.5. Fracture
19.4.4.6. Chipped tooth
19.4.4.7. Amputation

19.4.4.8. Insect bite
19.4.4.9. Electrocution
19.4.4.10. Thermal, chemical, electrical or radiation burn
19.4.4.11. And, sprain/strain injuries to muscles, joints and connective tissues when the result from a slip, trip, fall or other similar accident.

19.4.5. Medical treatment means the managing and caring for a patient for the purpose of combating disease or disorder. The following activities are NOT medical treatment;
19.4.5.1. First Aid
19.4.5.2. Visits to a doctor solely for observation or counseling
19.4.5.3. Diagnostic procedures, including the administering prescription medications that are used solely for diagnostic procedures.

19.4.6. Work-related Injury or Illness means an injury or illness resulting from an event or exposure in the work environment causing or contributing to the condition or significantly aggravating a preexisting condition.

19.4.7. Work Environment means includes work sites where one or more employees are present as a condition of their employment.

19.5. Requirements

19.5.1. Designated Medical Treatment Facility
19.5.1.1. CLE Associates will ensure that readily available medical personnel are available to employees to provide advice and consultation within reason regarding matters of employee occupational health.
19.5.1.2. Each fixed facility and fixed jobsite must identify and post the location of a designated medical treatment facility and/or emergency care center, including name, address, telephone number, and hours of operation. This information should be posted in a conspicuous location at each fixed facility or fixed job site. The designated medical treatment facility and be able to respond to a workplace emergency within a reasonable amount of time.
19.5.1.3. Appendix: CLE outlines the format of a posting that should be displayed inconspicuous location at each fixed facility or fixed job site. Many medical providers have and will provide their own posting. The Branch Safety Officer must determine if the posting has the necessary elements needed to inform employees regarding the designated medical treatment facility.

19.5.2. First Aid
19.5.2.1. ALL INJURIES, REGARDLESS OF HOW SMALL, MUST BE REPORTED TO THE EMPLOYEE'S IMMEDIATE SUPERVISOR AND TREATED AS SOON AS POSSIBLE AFTER AN ACCIDENT.

19.5.2.2. If an employee becomes injured or ill anywhere due to a work-related or non-work related problem and needs immediate medical aid, it must be reported to his/her Supervisor or the Safety Director. Failure to report minor injuries or to receive supervised medical treatment may result in serious infections or complications to the employee's health.

19.5.2.3. In the absence of a clinic or hospital near the workplace, OSHA regulations require that a person or persons be trained to render first aid and that first aid supplies be readily available. Although the term "readily available" has not been defined in the regulations, OSHA had indicated that 3-4 minutes is acceptable as the time frame within which to begin first aid.

19.5.2.4. OSHA's interpretation presents a challenge to a service company like CLE because our "workplace" is not always in a fixed location – it is a changing environment that follows that employee wherever they may be working. Accordingly, CLE will use various strategies to provide employees with access to First Aid. These may include training CLE personnel to self-administer First Aid; training CLE personnel who are willing to serve as "first responders" and render First Aid/CPR to others on a voluntary basis; providing access to trained individuals from other companies who work alongside CLE at job sites (especially construction sites); providing access to client medical clinics; or calling 9-1-1 or local emergency phone numbers as indicated in the Health and Safety Plan.

19.5.2.5. Because of the potential for exposure to bloodborne pathogens and significant liability concerns, there is no job in the Company that requires an employee to render First Aid or cardiopulmonary resuscitation (CPR) in the course and scope of their employment, unless such a requirement becomes necessary due to local, State or Federal Safety and Health Regulations.

19.5.2.6. Transportation of injured persons will be by ambulance unless a volunteer chooses to assist by driving the injured employee to a medical facility. If there is any question as to the best method of transportation an ambulance should be utilized.

19.5.2.7. When CLE's strategy for providing access to First Aid/CPR involves the use of "first responders", a First Responders Program should be established and administered at the local level. The Safety Officer is responsible for monitoring and maintaining this program, if implemented.

19.5.3. Elements of the First Responder Program should include:

19.5.3.1. Safety Officer must be certified in basic First Aid & CPR per a recognized certification source such as the Red Cross, local hospital, etc. The Red Cross first aid course and CPR course are approximately 8 hours in duration. CPR requires annual refreshers. First Aid requires refreshers every three (3) years.

19.5.3.2. Branch Safety Officer will seek employees who wish to volunteer to be trained and certified in basic First Aid & CPR per a recognized certification source as defined by local or State requirements. These employees must maintain "current" First Aid and CPR certification, appropriately documented, in their personnel file.

19.5.3.3. Basic First Aid & CPR will be administered by First Responders only to stabilize the employee until professional medical attention can be provided.

19.5.3.4. Due to the potential occupational exposure to First Responders, it is the responsibility of the Safety Officer or his/her designee to develop and follow an Exposure Control Program, where and to the extent such a program is required by OSHA 29CFR 1910.1030 – Bloodborne Pathogens Standard and Policy Section 9-Bloodborne Pathogens. (This program is not required unless First Aid/CPR response is a required part of an employee's job description and function at CLE. However, we will still encourage Voluntary Responders to learn and follow universal precautions.)

19.5.4. Employee First Aid/CPR

19.5.4.1. Employee training in basic First Aid and cardiopulmonary resuscitation (CPR) is encouraged because of its value and benefit to individuals, their families and the community.

19.5.4.2. The company also supports any employee who, while on the job, chooses to act as a "Good Samaritan" to assist a fellow employee or another person with First Aid or CPR. It is CLE's intent that first aid supplies and basic personal protective equipment against bloodborne pathogens be accessible to employees at every work site during all shifts.

19.5.4.3. If an employee makes the decision to provide first aid to someone, universal precautions shall be followed and it should be assumed that all blood and bodily fluids are contaminated with bloodborne pathogens. In addition, they should wear protective medical gloves found in the First Aid Kit and use any other personal protective equipment (such as protective glasses with side shields or a full face shield) to help avoid exposure to blood in the eyes or on the face.

19.5.4.4. First Aid providers should follow the example of emergency medical personnel, doctors and nurses who

wear personal protective equipment to prevent exposure to bloodborne pathogens.

19.5.4.5. If blood or potentially contaminated material gets on the skin, it must be washed off immediately using water and a non-abrasive soap. If available, an antiseptic soap or rinse must be used. If blood ever gets in the eyes, lips, mouth or nose, the employee must go to a sink, water fountain, eye wash or body wash station and flush the area with running water as quickly as he/she can.

19.5.4.6. The supervisor must always be aware of the potential exposure to a bloodborne pathogen after the employee has washed or flushed the exposed area. Decontamination of the exposed surfaces, tools and equipment should be conducted. This must be done immediately, and no later than the end of the shift or work period. Remember that there is a vaccine for Hepatitis B. This must be discussed with a physician as soon as possible after a potential exposure.

19.5.4.7. Refer to the requirements of OSHA 29CFR 1910.1030; Bloodborne Pathogens Standard and Policy Section 9 – Bloodborne Pathogens for more information.

19.5.5. First Aid Stations/First Aid Kits

19.5.5.1. An easily accesible First Aid Station or First Aid Kit is to be readily available to employees as described previously. For employees working off-premises, a first aid kit should be provided in each company vehicle, signed-out for use when traveling in personal vehicles and rental vehicles, or provided on the jobsite.

19.5.5.2. Whether within the facility or in a vehicle, each First Aid Kit must be stored in a properly labeled weather-proof container, stocked with the basic supplies specified in the inventory on Attachment B. The physician's approval of the inventory list is not required, but may be needed to address unusual exposure situations.

19.5.5.3. <u>IMPORTANT:</u> If an employee declines First Aid and/or medical treatment for a reported on-the-job injury after the supervisor recommends it, that employee should NOT be allowed to continue work. Supervisors should discuss each situation with the Safety Officer or Project Manager before allowing that employee to return to duty.

19.5.5.4. The Safety Officer, or someone he/she may designate is responsible for checking and maintaining the First Aid Cabinets. Supervisors on job sites are responsible for assuring suitable supplies are provided in the first aid kits on-site or in their vehicles. This person will take a weekly inventory of supplies and make sure the station or kit

remains adequately stocked. A basic inventory list for First Aid Kits is provided on Attachment 1 (one).

19.5.5.5. Because of the variety of operations that the Company is involved in, it is suggested that consultation with the Facility's designated medical treatment facility be arranged to determine if the First Aid Kits are adequate for the operational exposures of your particular workplace. Attachment B can be photocopied and used as a guide for re-ordering supplies.

19.5.6. Emergency Eye/Body Wash Stations

19.5.6.1. Where the eyes and/or body of any employee may be exposed to injurious chemical/corrosive materials, suitable eye and/or body drenching and/or flushing facilities shall be provided whether at an CLE facility or at a temporary worksite. Emergency eye and/or body wash stations can be either of temporary or permanent installation.

19.5.6.2. In areas where the extent of possible exposure to injurious chemical/corrosive materials is very low, a specially designated pressure controlled and identified water hose can be used when proper personal protective equipment also is used (e.g. full face shield). The hose system must be equipped with a proper face and body wash nozzle and provide copious amounts of low velocity potable water. An appropriate portable eye wash device containing not less than one gallon of potable water, would also be acceptable under these conditions.

19.5.6.3. At locations where hazardous chemical/corrosive materials are handled by employees (e.g. battery servicing facility), proper eyewash and body drenching equipment must be available. Although OSHA has not adopted specific requirements regarding flow rates for drenching/flushing facilities, ANSI Z358.1 provides detailed information regarding the installation and operation of emergency eyewash and shower equipment, including the requirements for flow rate.

19.5.6.4. Section 4.1 of ANSI Z358.1 specifies that emergency shower heads shall be capable of delivering a minimum of 20 gallons per minute (gpm) of flushing fluid at a velocity low enough to be non-injurious to the user. A sufficient volume of flushing fluid shall be available to supply the flow rate for a minimum fifteen minute period. As such, both temporary and permanently installed eye/body wash stations must provide at least 20 gpm for 15 minutes.

19.5.6.5. Inspection and maintenance of eye wash systems should be provided at least weekly by assuring sanitary conditions and/or following the manufacturers requirements for maintenance. Plumbed systems should also be provided a

water flow test to minimize contaminants in the line. Inspection and maintenance should be properly documented.

19.5.7. Bloodborne Pathogens (Universal) Precautions Training

19.5.7.1. When an employee comes into direct contact with blood, bodily fluids or body tissues of another person, they are at risk of becoming infected with diseases that may be carried in the other person's body fluids. Accidental exposures can happen on or off the work site, in any number of day-to-day situations.

19.5.7.2. This is why the Company believes that each employee should have a basic understanding and awareness of the dangers of contracting a potentially deadly disease through such exposures. Communicating basic information about these hazards, including information contained in this policy, is part of the Company's safety and health program.

19.5.7.3. Therefore, employees should receive a basic awareness level training concerning "Universal Precautions" such that employees may follow Universal Precautions in the event of potential exposure to blood or other body fluids.

19.5.7.4. Training records must be maintained by the Branch Safety Officer containing the date of the training, a summary of the training session, names and qualifications of the instructors conducting the training and the names and job titles of the persons attending the training.

19.5.7.5. Training records must be maintained for a minimum of three (3) years from the date the training was conducted. Training must be conducted by a qualified and competent person knowledgeable in the subject matter.

19.5.8. First Responder Exposure

19.5.8.1. If an employee is a First Responder or decides to be a "Good Samaritan" and provides first aid on an injured victim involving blood or bodily fluids, personal protective equipment must be used and Universal Precautions followed treating all bodily fluids as infectious. Refer to OSHA 29CFR 1910.1030 – Bloodborne Pathogens Standard and Policy Section 9 – Bloodborne Pathogens for specific information.

19.5.8.2. In addition to those items listed in Appendix 20-B and/or possibly required by a consulting physician, First Aid Stations must at least include the following supplies:

19.5.8.2.1. Latex gloves

19.5.8.2.2. One-way valve CPR mask

19.5.8.2.3. Biohazard bags

19.5.8.2.4. Plastic baggies

19.5.8.2.5. Tongs

APPENDIX 1.0

FIRST AID KIT INVENTORY CHECKLIST & SUPPLY ORDER SHEET

The First Aid Kit should contain the following or similar items but commercially available Kits vary widely and need not be identical in every respect.

Item	**Quantity**	**Need**
Protective Rubber Gloves (Surgical Type)	2 pair	
Protective CPR mask w/One-Way valve	1 each	
Protective eyewear and face covering	1 each	
Antiseptic Soap	1 each	
Absorbent gauze, 24” x 72”	1 pkg.	
Spool of absorbent gauze	1 spool	
Large adhesive bandages, 1”	1 pkg.	
Small adhesive bandages, ½”	1 pkg.	
Bandage compresses, 4”, 1 per pkg.	1 pkg.	
Eye dressing	1 pkg.	
Bandage scissors	1 pair	
Tweezers	1 pair	
Triangular bandages, 1 per pkg.	3 pkgs.	
Antiseptic pads, 3 per pkg.	2 pkgs.	
Medical adhesive tape	1 roll	
Self-activating cool packs	2 each	
Burn ointment	4 pkg.	
Sterile eye wash, in bottle	1 each	
Heavy-duty sealable plastic bags	3 each	
Disposable splints	1 set	
Approved biohazard bags, red in color	4 each	
Large baggies	4 each	
Tongs		
American Red Cross Pocket First Aid Guide		
First Aid Kit inventory Checklist forms		
First Aid Report forms		

Date of order: By:

For Location:

Consulting Physician (if applicable):

Address:

Telephone Number:

APPENDIX 2.0

DESIGNATED MEDICAL TREATMENT FACILITY

IN CASE OF EMPLOYEE ACCIDENT OR INJURY, THE FOLLOWING DESIGNATED MEDICAL TREATMENT FACILITY HAS BEEN IDENTIFIED TO DIRECT THE INJURED EMPLOYEE FOR IMMEDIATE TREATMENT:

NAME OF FACILITY:

ADDRESS:

TELEPHONE NUMBER:

EMERGENCY TELEPHONE NUMBER:

HOURS OF OPERATION:

SUPERVISOR OR SAFETY OFFICER:

SUPERVISOR OR SAFETY OFFICER CELL/PAGER NUMBER:

ALL WORK RELATED INJURIES OR ILLNESSES MUST BE IMMEDIATELY REPORTED TO THE SUPERVISOR.

20. Fork Lift Safety Procedures and Requirements

20.1. Policy

20.1.1. Center Line Electric (CLE) requires that all Forklifts (powered industrial trucks) shall be operated, maintained, and controlled in a safe manner at all times.

20.2. Purpose

20.2.1. To define the procedures and standards that apply to the care, control, maintenance, inspection, and operation of forklifts (powered industrial trucks).

20.3. Scope

20.3.1. The Scope is inclusive of all CLE work sites and Company locations that require the use of Forklifts for the performance of work.

20.4. Definitions

20.4.1. Forklift means a mobile, power-propelled truck used to carry, push, pull, lift, stack, or tier materials. Powered industrial trucks (forklifts) are also commonly known as pallet trucks, rider trucks, fork trucks, or lift trucks.

20.5. Requirements

20.5.1. Training

20.5.1.1. Only trained and authorized persons are permitted to operate a forklift. No employee is allowed to operate a forklift without the proper training. The Corporate Safety Director or designee will administer the forklift operator certificate program and maintain training records.

20.5.1.2. Training shall occur prior to employee operation of any type of forklift, and at least every three years there after unless observed performance by the operator dictates the need for more frequent retraining.

20.5.1.2.1. Complete the educational requirement as stated above.

20.5.1.2.2. Perform the demonstrated capability requirement satisfactorily. Each trainee, who satisfactorily completes the qualifications as outlined above, shall be issued a written document as evidence of being a Qualified Forklift Operator.

20.5.2. Inspection and Maintenance

20.5.2.1. Prior to placing a forklift truck into service, the truck operator shall inspect their vehicle and document this inspection on the Associates Forklift Inspection Form (reference Appendix 19-2). This inspection is not necessary on days when the forklift will not be placed into service.

20.5.2.2. It is the responsibility of the department manager to submit the inspection checklists to the Safety Officer on a weekly basis. The Branch Safety Officer shall keep the last 30 days of inspection checklists for each forklift on file for review.

20.5.2.3. Any noted condition that affects the safe of the lift truck shall be reported to the operator's supervisor for corrective action.

20.5.2.4. Forklifts that are defective, in need of repair or are unsafe shall be tagged "Danger – Do Not Operate" and taken out of service until restored to safe operating condition.

20.5.2.5. A maintenance log shall be maintained for each forklift to determine when required maintenance is due. Only qualified personnel shall perform maintenance and repair. Maintenance records for each forklift shall be kept on file by the assigned department manager.

20.5.3. General Safe Operating Rules

20.5.3.1. The following safe operating rules apply to Associates employees who operate a forklift. Violations of safe operating rules can and will result in retraining and/or disciplinary action.

20.5.3.1.1. Only CLE employees trained as per the requirements of this manual training section and authorized by the department manager shall be allowed to operate forklifts.

20.5.3.1.2. CLE forklifts shall not be loaned or rented to others for use.

20.5.3.1.3. Stunt driving and horseplay shall not be permitted and will be strictly disciplined

20.5.3.1.4. Personnel are not permitted to ride on forklifts except in designated seats that are part of the equipment design

20.5.3.1.5. Forklifts shall be equipped with a portable fire extinguisher

20.5.3.1.6. Under travel conditions, the forklift shall be operated at a speed that will permit it to be brought to a stop in a safe manner

20.5.3.1.7. Traffic regulations shall be observed, including authorized work site speed limits. A safe distance shall be maintained approximately three forklift lengths from the forklift truck ahead, depending on the load

20.5.3.1.8. The driver shall be required to slow down and sound the horn at cross isles and other areas where vision is obstructed. If the load being carried obstructs forward view, the driver shall be required to travel with

20.5.3.1.9. The driver shall be required to look in the direction of, and keep a clear view of the path of travel.

20.5.3.1.10. Forklifts shall have a functional horn and back-up alarm with a distinctive sound, loud enough to be heard clearly above any noises.

20.5.3.1.11. Copies of the manufacturer's operating instructions for each type of forklift shall be readily available for review by operators and supervisory personnel.

20.5.3.1.12. Lift trucks, stackers, etc., shall have the rated capacity clearly posted on the vehicle so as to be clearly visible to the operator. When the manufacturer provides auxiliary removable counterweights, corresponding alternate rated capacities also shall be clearly shown on the vehicle. These ratings shall not be exceeded.

20.5.3.1.13. No modifications or additions, which affect the capacity or safe operation of the equipment, shall be made without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly. In no case shall the original safety factor of the equipment be reduced.

20.5.3.1.14. Steering or spinner knobs shall not be attached to the steering wheel unless the steering mechanism is of a type that prevents road reactions from causing the steering hand wheel to spin. The steering knob shall be mounted within the periphery of the wheel.

20.5.3.1.15. Forklifts shall have the manufacturer's nameplate showing its weight with attachments, lifting capacity, lift height maximum and other pertinent data. Nameplates or markings shall be maintained in a legible condition and remain in place.

20.5.3.1.16. Railroad tracks shall be crossed diagonally wherever possible. Parking closer than 8 feet from the center of railroad tracks is prohibited.

20.5.3.1.17. Grades shall be ascended or descended slowly.

20.5.3.1.18. When ascending or descending grades in excess of 10 percent, loaded forklifts shall be driven with the load upgrade.

20.5.3.1.19. Unloaded forklifts should be operated on all grades with the load engaging means downgrade.

20.5.3.1.20. On grades, the load and load engaging means shall be tilted back if applicable and raised only as far as necessary to clear the road surface.

20.5.3.1.21. No person shall be allowed to stand or pass under the elevated portion of any forklift, whether loaded or empty.

20.5.3.1.22. There shall be sufficient headroom under overhead installations, lights, pipes, sprinkler system, etc.

20.5.3.1.23. Arms or legs are prohibited from being placed between the uprights of the mast or outside the running lines of the forklift.

20.5.3.1.24. When a forklift is left unattended load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes set.

20.5.3.1.25. Wheels shall be blocked if parked on an incline

20.5.3.1.26. A safe distance shall be maintained from the edge of ramps or platforms while on any elevated dock, or platform, or freight car. Forklifts shall not be used for opening or closing freight doors.

6.0 REFERENCES

OSHA 29 CFR 1910.178 (Powered Industrial Trucks)

OSHA 29 CFR 1910.602© (Lifting and Hauling Equipment)

21. Emergency Action Plan

21.1. Purpose

21.1.1. To provide a systematic method of implementing an Emergency Action Plan for a mobile and seasonal workforce, so as to ensure a minimum of confusion and injury in an emergency.

21.2. Policy

21.2.1. Because our employees work in a variety of client facilities and in multiple locations within a location, an Emergency Action Plan needs to be adaptable to any situation. The project superintendent on a job is responsible for coordinating with the client on the evacuation route and emergency procedures for the job, and thereafter advising all employees of that information.

21.3. Procedures

21.3.1. The emergency evacuation plan for a temporary job trailers or office areas shall identify the safest most direct route to the client's gate.

21.3.2. Due to the dispersion of our personnel around a plant it is not practical to attempt to draw evacuation maps for every unit in the facility. In lieu of evacuation plans, all personnel have been instructed to have the senior representative on their job coordinate with the client contact person to ascertain the evacuation route to be taken by client's personnel in the unit being worked at the beginning of the project. Employees will follow the individual evacuation plans to be used by client in the various jobsites. After the safe rally point has been reached, the senior employee will ask a client representative to call the Company's site supervisor over the radio with an accurate head count location.

21.3.3. In the event that an employee is the first person to spot a fire or other emergency he/she is authorized to sound an alarm. Employees shall vacate the area as soon as sounded. The most important function of all employees is to report to the senior representative on site.

22. Accident Reporting and Investigation Plan

22.1. Purpose

22.1.1. This Accident Reporting and Investigation Plan prescribes methods and practices for reporting and investigating accidents. At Center Line Electric, we believe that all accidents can be prevented and we strive to maintain our goal of Zero Incidents. However, no matter how conscientious the safety effort at a company, accidents do happen occasionally due to human or system error. Therefore, this written plan is intended to provide a means to deal with all workplace accidents in a standardized way and demonstrate our company's compliance with the reporting requirements of 29 CFR 1904. In addition, it is the policy of the company to comply with all workers' compensation laws and regulations.

22.2. Administrative Duties

22.2.1. Center Line Electric's Safety Director is responsible for developing and maintaining this written Accident Reporting and Investigation Plan. This person is solely responsible for all facets of the plan and has full authority to make necessary decisions to ensure the success of this plan. The Safety Director is also qualified, by appropriate training and experience that is commensurate with the complexity of the plan, to administer or oversee our Accident Reporting and Investigation Plan and conduct investigations.

22.3. Accident Reporting Procedures

22.3.1. The site safety representative or supervisor is to immediately notify the company Safety Director; complete the company Accident Report Form (see the Appendices for a sample form) with the employee, any witnesses, and/or other relevant people; and send a copy of the written Accident Report Form to the Safety Director as soon as possible after the accident.

22.3.2. All injuries and near-miss incidents will be reported to the owner/client as soon as possible (within 24 hours of incident). Any incident that results in a fatality or hospitalization of three or more individuals will be immediately reported to OSHA (within 8 hours of incident).

22.4. Accident Investigation Procedures

22.4.2. Thorough accident investigations will help the company determine why accidents occur, where they happen, and any trends that might be developing. Such identification is critical to preventing and controlling hazards and potential accidents. The level of investigation will be proportional to the severity of the incident. For all accident investigations, the site safety representative or supervisor will perform the following duties:

22.4.2.1. Conduct the accident investigation at the scene of the injury as soon after the injury as safely possible.

22.4.2.2. Obtain statements from employee involved in the accident and any witnesses. Instruct them to describe in their own words exactly what happened. Conduct follow-up interviews.

22.4.2.3. Collect, preserve, record, and secure all available evidence (witness names/statements, environmental factors, equipment/material involved, photographs, etc.).

22.4.2.4. Determine cause of injury.

22.4.2.5. Determine how the accident could have been avoided. Review current procedures and improve them or implement new procedures to prevent similar incidents in the future. Document and communicate all findings.

22.4.2.6. The safety representative shall utilize the proper equipment to conduct a thorough investigation. These may include such items as:

22.4.2.6.1. Pen and notepad
22.4.2.6.2. Marking devices or flags
22.4.2.6.3. Camera
22.4.2.6.4. Audio Recorder
22.4.2.6.5. Tape Measure
22.4.2.6.6. Necessary personal protection equipment
22.4.2.6.7. Manuals and specifications of any equipment involved in incident.

22.5. Injury, Illness, and Medical Issues

22.5.1. If a workplace accident results in an injury or illness requiring hospitalization of three or more employees or a fatality of one or more employee, The Safety Director reports the incident within eight hours by phone or in person to the nearest OSHA office.

22.5.2. If the injury or illness is "recordable" according to OSHA regulation, 29 CFR 1904, then each recordable injury or illness is on logged on OSHA Form 300. A summary of injuries will be recorded and posted annually on OSHA Form 300A.

22.6. Recordkeeping

22.6.1. Records are kept for all injuries, illnesses, and fatalities that are work related, are a new case, and meet one or more of the general recording criteria. Records and forms are maintained for five years. Center Line Electric's Safety Director is responsible for maintaining the following records and documentation:

22.6.1.1. Accident Report Forms.
22.6.1.2. Accident Investigation Forms.
22.6.1.3. OSHA 300 Form, Log of Work-Related Injuries and Illnesses. Injuries and illnesses at the company are recorded on this form within seven calendar days of receiving information that a recordable injury or illness has occurred.

22.6.1.4. OSHA 301 Form, Injury and Illness Incident Report or equivalant. Injuries and illnesses at the company are recorded on this form within seven calendar days of receiving information that a recordable injury or illness has occurred.

22.6.1.5. OSHA 300-A Form, Summary of Work-Related Injuries and Illnesses. This form is completed by the end of the year, posted no later than February 1 of the year following the year covered by the form, and kept posted in a visible location until April 30. Prior to posting, the OSHA 300A form is evaluated and signed by the Safety Director.

22.6.1.6. Training records.

22.7. Employee Involvement and Training

22.7.1. This plan is an internal document guiding the action and behaviors of employees, so they need to know about it. Through new hire orientation and weekly safety talks we thoroughly explain to all employees why the Accident Reporting and Investigation Plan was prepared and how employees may be affected by it.

22.7.2. Employees are informed in how to report an injury or illness. Employees, and their representatives, are also provided limited access to our injury and illness records. Copies of relevant safety information are provided to all employees and representatives that request them. Our company does not discriminate against employees for:

22.7.2.1. Reporting a work-related fatality, injury, or illness;

22.7.2.2. Filing a safety and health complaint;

22.7.2.3. Asking for access to occupational injury and illness records; or

22.7.2.4. Exercising any rights afforded by the Occupational Safety and Health Act.

22.8. Program Evaluation

22.8.1. The Accident Reporting and Investigation Plan is evaluated and updated annually by our Safety Director to determine whether the plan is being followed and if further training may be necessary

23. Asbestos Awareness Program

23.1. The purpose of this program is to provide information about asbestos, the potential health effects associated with exposure, and safety procedures that should be followed to reduce exposure and protect the health of employees.

23.1.1. Asbestos is the generic term for a group of naturally occurring, fibrous minerals with high tensile strength, flexibility, and resistance to thermal, chemical, and electrical conditions.

23.1.2. Although exposure to asbestos is potentially hazardous, health risks can be minimized. In most cases the fibers are released only if the asbestos containing materials is disturbed. Intact and undisturbed asbestos materials do not pose a health risk. When asbestos containing materials are properly managed, release of fibers into the air is prevented or minimized, and the risk of asbestos related disease can be reduced to a negligible level. However, asbestos materials can become hazardous when they release fibers into the air due to damage, disturbance, or deterioration over time.

23.1.3. The ability to recognize the kinds of material that contain asbestos, knowing under what conditions they are dangerous, and understanding basic safety precautions, are all important in keeping exposures to a minimum.

23.1.4. ACM-asbestos containing material

23.1.5. PACM-presumed asbestos containing material

23.2. Administrative Duties

23.2.1. Center Line Electric's Safety Director is the program coordinator/manager and is responsible for its implementation. Copies of the written program may be obtained at the site safety management office.

23.3. Possible Asbestos Containing Materials

23.3.1. Before any work begins, an analysis of the job site or facility will be performed. Any areas or operations where there may exposure to suspected asbestos containing materials will be identified. Such materials include:

23.3.1.1. Floor tiles
23.3.1.2. Ceiling tiles
23.3.1.3. Fire resistant drywall
23.3.1.4. Brake linings
23.3.1.5. Clutch linings
23.3.1.6. Insulation
23.3.1.7. Sound proofing
23.3.1.8. Spray-on fireproofing
23.3.1.9. Pipe and boiler insulation
23.3.1.10. Roofing felts
23.3.1.11. Cement pipe and sheet

23.4. Operations Which May Lead to Exposure

23.4.1. Asbestos containing materials may readily release fibers into the air when certain mechanical operations are performed directly on it. For example, fiber release can occur when workers are drilling, cutting, sanding, breaking, or sawing vinyl asbestos floor tile. Maintenance or repair operations involving those actions should be eliminated or carefully controlled to prevent or minimize asbestos fiber release. Certain activities that occur near ACM can also cause damage which may result in asbestos fiber release. For example, maintenance and custodial staff may damage ACM accidentally with broom handles, ladders, and fork-lifts while performing other tasks. Activities performed near ACM should always be done in a way that minimizes fiber release.

23.5. Health Effects of Exposure

23.5.1. Asbestos fibers enter the body by the inhalation or ingestion of airborne particles that become embedded in the tissues of the respiratory or digestive systems. Exposure to asbestos can cause disabling or fatal diseases, such as asbestosis, an emphysema like condition; lung cancer; mesothelioma, a cancerous tumor that spreads rapidly in the cells of membranes covering the lungs and body organs; and gastrointestinal cancer. The symptoms of these diseases generally do not appear for 20 or more years after initial exposure.

23.6. Multi-Contractor Worksites

23.6.1. Where employees are working near a Class 1 asbestos activity (asbestos removal/abatement) workers shall be protected from exposure. In event workers are exposed to asbestos due to inadequate containment or breach of enclosure, employees will be removed from the area until the breach is repaired.

23.7. Hazard Identification/Signs

23.7.1. Areas in which asbestos containing material or presumed asbestos containing material exist, signs will be posted to notify workers of the danger present. The following will be listed:

23.7.1.1. type of asbestos containing material (floor tile, insulation, ceiling tile, etc…)

23.7.1.2. location of material

23.7.1.3. safe work practices to be followed to prevent disturbing the material and releasing fibers

23.7.1.4. appropriate PPE to be used

23.8 Training and information

23.8.1. When working in areas where suspected asbestos containing materials may be present, we will provide our workers with training that includes:

23.8.1.1. Health effects associated with asbestos exposure

23.8.1.2. Quantity, location, manner of use, release, and storage of asbestos, and the specific nature of the operations that could result in exposure to asbestos.

23.8.1.3. Specific procedures designed to protect employees from exposure including appropriate work practices, clean-up procedures, and PPE to be used.

23.9. Training will be provided before any work begins areas where exposure to asbestos is possible. Further training will be provided annually and retraining will be given if any unsafe act is noticed. Training will be documented, kept on site, and available for review.

24. Extreme Temperature Management Plan

24.1 Purpose

24.1.1. This written Temperature Extreme Management Plan is instituted by this company to protect employees subject to temperature extremes. The plan is accessible to all interested persons, including employees and enforcing agencies. The information here will facilitate implementation of measures necessary to prevent inadequate or no protection for employees subject to temperature extreme environments.

24.1.2 This plan has been developed to comply with OSHA's General Duty Clause which states, *Each employer shall furnish to each of his employees employment and a place of employment which is free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees.*

24.2 Administrative Duties

24.2.1. Center Line Electric's Safety Director is responsible for establishing and implementing the written plan. This person has full authority to make necessary decisions to ensure the success of this plan. He is also qualified by appropriate training and experience to coordinate and direct our plan and conduct the required evaluations of the plans effectiveness. Center Line Electric's Safety Director understands the factors of temperature extreme stress. These factors include:

- 24.2.1.1. Body clothing and covering
- 24.2.1.2. Body fat (more body fat insulates the person)
- 24.2.1.3. Exposed skin area(s)
- 24.2.1.4. Temperature
- 24.2.1.5. Wetness
- 24.2.1.6. Wind chill
- 24.2.1.7. Body movement
- 24.2.1.8. Duration of exposure
- 24.2.1.9. Metal or liquid contact
- 24.2.1.10. Physical health
- 24.2.1.11. Poor circulation
- 24.2.1.12. Diet
- 24.2.1.13. Alcohol or caffeine intake (more alcohol or caffeine means faster body heat loss)
- 24.2.1.14. Fatigue
- 24.2.1.15. Dehydration (reduces blood flow)
- 24.2.1.16. Nicotine (reduces blood flow)
- 24.2.1.17. Age (elderly generally have lower production of body heat)
- 24.2.1.18. Past cold injury/heat stress experiences
- 24.2.1.19. Use of medication (some medications reduce a person's ability to detect a change in body temperature)
- 24.2.1.20. Humidity

24.2.2 Copies of the written Temperature Extreme Management Plan may be obtained from Center Line Electric's Safety Director. If after reading this plan, you find that improvements can be made, please contact the Safety Director. We encourage all suggestions because we are committed to the success of our written plan. We strive for a comprehensive, integrated prevention system that obtains clear understanding, safe behavior, and involvement in the plan from every level of the company.

24.3 Hazard Assessment

24.3.1. The site safety representative performs our company's temperature extreme hazard assessment.

24.3.2. Those at risk for extreme temperature exposure include employees performing work:

24.3.2.1. Outdoors
24.3.2.2. In confined spaces
24.3.2.3. Poorly ventilated areas
24.3.2.4. Boiler rooms/equipment rooms
24.3.2.5. Areas where extreme temperatures are a result of a process or function (smelting, air handling units, refineries, refrigeration units)

24.4. Control Measures

24.4.1. We use the following engineering controls to reduce employee risk for temperature-related injury and illness:

24.4.1.1. COLD/WINDY/WET ENGINEERING CONTROLS

24.4.1.1.1. Heating devices
24.4.1.1.2. Wind barriers
24.4.1.1.3. Special air distribution system to minimize air movement within a refrigerated area
24.4.1.1.4. Job areas moved to warmer locations
24.4.1.1.5. Equipment modifications
24.4.1.1.6. Machines designed so that workers can operate them without taking off their gloves and metal handles wrapped with insulating material.

24.4.1.2. HOT ENGINEERING CONTROLS

24.4.1.2.1. Ventilation
24.4.1.2.2. Spot cooling
24.4.1.2.3. Cooling fans
24.4.1.2.4. Evaporative cooling and mechanical refrigeration
24.4.1.2.5. Air conditioning
24.4.1.2.6. Dehumidification
24.4.1.2.7. Insulation
24.4.1.2.8. Shelter (air conditioned or shaded areas)
24.4.1.2.9. Steam leak elimination

24.4.1.2.10. Use of power tools
24.4.1.2.11. Equipment modifications
24.4.1.2.12. Shielding or barriers that are radiant-reflecting or heat-absorbing between the radiant heat and the worker
24.4.1.2.13. Radiant heat source isolation
24.4.1.2.14. Hot process/operation modification

24.4.2. We use the following administrative controls to reduce employee risk for temperature-related injury and illness:

24.4.2.1. To minimize exposure to wind, cold, and wet areas, frequent warm up breaks can be scheduled.

24.4.2.2. Limit the time the worker spends each day in the hot environment by decreasing exposure time in the hot environment and/or increasing recovery time spent in a cool environment; and

24.4.2.3. Implement a buddy system in which workers are responsible for observing fellow workers for early signs and symptoms of heat intolerance/cold stress

24.4.3. We use the following work practice controls to reduce employee risk for temperature-related injury and illness:

24.4.3.1. COLD/WINDY/WET WORK PRACTICES

24.4.3.1.1. Examine the body frequently for signs of frostbite (especially hands, ears, face, and feet).
24.4.3.1.2. Wear proper clothing.
24.4.3.1.3. Eat proper foods.
24.4.3.1.4. Encourage exercise.
24.4.3.1.5. Drink enough liquids (especially water) for adequate blood circulation.
24.4.3.1.6. Avoid smoking or chewing tobacco.
24.4.3.1.7. Immediately report signs or symptoms of cold stress overexposure to a supervisor,
24.4.3.1.8. Stay dry (wet clothes can quickly draw heat from the body).
24.4.3.1.9. Avoid touching metal objects with bare or wet hands (hands may quickly freeze to the object).
24.4.3.1.10. Avoid touching gasoline, kerosene, or other liquids.
24.4.3.1.11. Use protective clothing and equipment properly.

24.4.3.2. HOT WORK PRACTICES:

24.4.3.2.1. Increase heat tolerance by increasing physical fitness.
24.4.3.2.2. Follow a buddy system in which workers observe fellow workers for early signs and

symptoms of heat intolerance such as weakness, unsteady gait, irritability, disorientation, changes in skin color, or general malaise.

24.4.3.2.3. Immediately report signs or symptoms of heat stress exposure to a supervisor.

24.4.3.2.4. Drink adequate amounts (about 150 to 200 ml or 5 to 7 ounces) of cool (10 to 15 degrees C or 50 to 59 degrees F) water every 15 to 20 minutes.

24.4 Protective Equipment and Clothing.

24.4.1. *All employer provided equipment and supplies will be inspected, maintained, and stocked regularly.*

24.4.1.1. COLD/WINDY/WET PPE

24.4.1.1.1. Proper clothing in cold environments is vital for protecting employees, therefore, clothing should:

24.4.1.1.1.1. Be insulated, loose, and at least three layers. Only the wicking layer should be worn tight. The outer layer should block wind and moisture while allowing ventilation.

24.4.1.1.1.2. Include a hat; a scarf; undergarments; gloves/mittens; socks; insulated, skid-resistant, and perhaps steel-toed boots/shoes;

24.4.1.1.1.3. Ventilate to allow sweat to escape (wool, nylon, or down ventilate well);

24.4.1.1.1.4. Have a waterproof and windproof outer layer; and

24.4.1.1.1.5. Not use rubber or vinyl materials next to the skin.

NOTE: Hand protection, scarves, or other clothing has the potential to get caught in machinery or moving parts. Employers must eliminate these hazards with machine guarding or other means.

24.4.1.1.1.6. Proper hand protection for cold temperatures is required by 1910.138.

24.4.1.1.1.7 Insulated boots

24.4.1.1.1.8. Keep a change of dry clothing available.

24.4.1.2. HOT PPE

24.4.1.2.1. Proper PPE for workers exposed to heat stress levels include:
24.4.1.2.1.1. Heat-reflective aprons or suits.

24.4.1.2.2. PPE worn for protection other than heat can reduce work tolerance and increase the risk or excessive heat stress because of its weight and bulk. When selecting PPE that will be worn in hot environments, employers should select the equipment based on the following:
24.4.1.2.2.1. Anticipated work rate;
24.4.1.2.2.2. Ambient temperature and other environmental factors;
24.4.1.2.2.3. Type of protective ensemble; and
24.4.1.2.2.4. Individual worker characteristics and fitness.

24.5 Signs/Symptoms of Overexposure-Cold Conditions

24.5.1. Hypothermia-occurs when body heat is lost faster than can be replaced
24.5.1.1. Shivering
24.5.1.2. Stomping of feet
24.5.1.3. Loss of coordination
24.5.1.4. Slurred speech
24.5.1.5. Pale, cold skin

24.5.2. Frostbite-typically affects the hands and feet
24.5.2.1. Body part will become cold, tingling, stinging, or aching followed by numbness
24.5.2.2. Skin color turns red, then purple, then white.
24.5.2.3. Blisters may form

24.5.3. Trench foot-occurs when feet are immersed in cold water at temperatures above freezing for long periods of time.
24.5.3.1. Tingling, itching, or burning sensation
24.5.3.2. Blisters may form

24.6. Signs/Symptoms of Overexposure-Hot Conditions

24.6.1. Heat Exhaustion-caused by loss of body salt
24.6.1.1. Dizziness
24.6.1.2. Headache
24.6.1.3. Blurred vision
24.6.1.4. Nausea
24.6.1.5. Staggering

24.6.2. Heatstroke (sunstroke)-occurs when body mechanism is not able to keep the system cool.
24.6.2.1. Headache
24.6.2.2. Face is red
24.6.2.3. Skin is hot and dry-there is no sweating

24.6.2.4. Strong and rapid pulse

24.7. Maintenance of work area

24.7.1. All walkways will be kept clear of snow and ice as soon as practical. Employees will be made aware if dangers posed by unstable buildup of snow and ice. If an immediate danger exists due to excessive build up, the area will be barricaded and kept clear of all personnel.

24.8. Training

24.8.1. Under no circumstances may an employee work under temperature extremes until he/she has successfully completed this company's training program under the Temperature Extreme Management Plan. This includes all new employees, regardless of claimed previous experience. Retraining will occur annually.

24.8.2. The Temperature Extreme Management Plan Administrator will identify trainees in each set of new employees and make arrangements with department management to schedule training. The Administrator will also identify those existing employees who need retraining.

24.8.3. Training will include the health effects of extreme temperature exposure, preventative controls and clothing, and emergency procedures as outlined in this program. Training will also cover first aid measures for injuries and illnesses caused by exposure to extreme temperatures.

24.8.4. Training Certification

24.8.4.1. After an employee has completed the training program, the instructor will determine whether the employee can safely perform the job. If an evaluation shows that the employee is lacking the appropriate skills and knowledge, the employee is retrained by our instructor(s). When an employee has an incident or some unsafe work practice is identified, we do retraining.

24.8.4.2. The Safety Director is responsible for keeping records certifying each employee who has successfully completed training. Each certificate includes the name of the employee, the date(s) of the training, and the signature of the person who did the training and evaluation.

25. Gases, Vapors, Fumes, Dusts, and Mists Compliance Program

25.1. The purpose of this program is to inform interested persons, including employees, that Center Line Electric is complying with OSHA's Gases, Vapors, Fumes, Dusts, and Mists standard, Title 29 Code of Federal Regulations 1926.55 and other OSHA rules as needed to ensure that no employee is exposed to inhalation, ingestion, skin absorption, or contact with any material or substance at a concentration above those specified in the "Threshold Limit Values of Airborne Contaminants for 1970" of the American Conference of Governmental Industrial Hygienists found in Appendix A of 29 CFR 1926.55.

25.2. To achieve compliance we must first implement all feasible administrative and engineering controls. However, when such controls are not feasible, we will use protective equipment or other protective measures to keep the exposure of employees to air contaminants within the limits prescribed in Appendix A of 29 CFR 1926.55. All equipment and technical measures used to achieve compliance will first be approved for each particular use by a competent industrial hygienist or other technically qualified person.

25.3. This program applies to all construction work (including alteration, repair, painting, and decorating) where one of our employees may be occupationally exposed to gases, vapors, fumes, dusts, and mists at concentrations above those specified in Appendix A of 29 CFR 1926.55.

25.4. Administrative Duties

25.4.1. Center Line Electric's Safety Director is the program coordinator/manager and is responsible for its implementation. Copies of the written program may be obtained at the site management office.

25.5. Exposure assessment and monitoring

25.5.1. We conduct personal or area sampling for gases, vapors, fumes, dusts, and mists to measure worker exposures. Air sampling is needed to measure worker exposures and select appropriate engineering controls and respiratory protection. Where data is collected it must be retained to support negative exposure assessments.

25.5.2. We will perform air monitoring as needed to measure the effectiveness of controls.

25.5.3. Where high gas hazards are present, we will use portable and fixed detection gas monitoring equipment. Employees will receive training in use and care of monitoring equipment following manufacturer’s guidelines. Bump tests will be performed for each monitor before use. All equipment will be calibrated as per manufacturer specifications and a current, dated calibration sticker or label will be placed on the unit.

25.6. Recordkeeping

25.6.1. We know recordkeeping is critical for our gases, vapors, fumes, dusts, and mists operations. Our recordkeeping tasks, at a minimum, include:

25.6.1.1. Employee exposure measurements according to chemical-specific regulations and 29 CFR 1926.33 and 29 CFR 1910.1020;
25.6.1.2. Medical surveillance records measurements according to chemical-specific regulations and 29 CFR 1926.33 and 29 CFR 1910.1020.
25.6.1.3. Training records.
25.6.1.4. Required notification records according to chemical-specific regulations.

25.7. Emergency Planning
25.7.1. Before performing any work in areas where hazards exist, the following steps will be taken to implement a plan for emergency procedures:
25.7.1.1. Identification of all chemicals, gases, dusts in area and their characteristics.
25.7.1.2. Evacuation routes must be identified and posted.
25.7.1.3. A post-evacuation meeting point must be designated.
25.7.1.4. Regular rescue and evacuation drills must be performed.
25.7.1.5. Emergency contact numbers must be posted

25.8. Training and information
25.8.1. We will provide our workers with training that includes:
25.8.1.1. Gas Hazards:
25.8.1.1.1. Information about safe handling, labeling, and storage of toxic materials.
25.8.1.1.2. Instruction about the use and care of appropriate protective equipment (including protective clothing and respiratory protection such as Self-Contained Breathing Apparatus).
25.8.1.1.3. Hazards associated with gases (oxygen displacement or deficiency, oxygen or nitrogen enrichment, carbon monoxide, hydrogen sulfide)
25.8.1.1.4. Identification of hazards and characteristics of gases specific to work site.
25.8.1.1.5. Signs and symptoms of overexposure
25.8.1.1.6. Instruction on the use and care of fixed and portable gas monitoring equipment.
25.8.1.1.7. Gas alarms and location of alarm stations.
25.8.1.1.8. Rescue procedures and equipment.
25.8.1.1.9. Evacuation procedures
25.8.1.2. Dust:
25.8.1.2.1. Information about the potential health effects of exposure to crystalline silica.
25.8.1.2.2. Material safety data sheets for silica,

masonry products, alternative abrasives, and other hazardous materials (29 CFR 1926.59).

25.8.1.2.3. Instruction about the purpose and set-up of regulated areas marking the boundaries of work areas containing crystalline silica.

25.8.1.2.4. Discussion about the importance of substitution, engineering controls, work practices, and personal hygiene in reducing crystalline silica exposure.

25.8.2. Training will be provided before any work begins in any areas where there are hazards from gases, mists, vapors, fumes, or dust. Further training will be provided annually and retraining will be given if any unsafe act is noticed. Training will be documented, kept on site, and available for review.

25.9 Methods of compliance

25.9.1. This section contains our description of the specific means that we will employ to achieve compliance with the requirements of 29 CFR 1926.27,.51,.55..95,.100 -.105, and.200.

25.9.2. Administrative procedures, engineering controls, and good work practices

25.9.2.1. Exposures to gases, vapors, fumes, dusts, and mists can be controlled through the use of engineering controls and work practices. Engineering controls are hazard controls designed into equipment and workplaces. Work practices are procedures followed by employers and workers to control hazards.

25.9.3. Hygiene facilities and practices

25.9.3.1. The following personal hygiene practices are essential for protecting our workers from gases, vapors, fumes, dusts, and mists:

25.9.3.1.1. Do not eat, drink, use tobacco products, chew gum, or apply cosmetics in dusty areas. Do not carry products associated with these activities or store such products in these dusty areas.

25.9.3.1.2. Wash your hands and faces before eating, drinking, or smoking outside dusty areas.

25.9.3.1.3. Park cars where you will not be contaminated with silica and other substances such as lead.

25.9.3.1.4. Practice good personal hygiene to avoid unnecessary exposure to other work site contaminants such as lead.

25.9.3.1.5. Shower (if possible) and change into clean clothes before leaving the work site to

prevent contamination of cars, homes, and other work areas.

25.9.4. Housekeeping

25.9.4.1. Our housekeeping practices include:

25.9.4.1.1. Housekeeping must be done often and it must be done properly. For example, don't dry sweep dust into a dust pan; this puts some of the dust back into the air. Use vacuums with high-efficiency particulate air (HEPA) filters, or use wet sweeping instead of dry sweeping. When removing dust from equipment, use a water hose rather than compressed air. Avoid dry shoveling, dry sweeping, and dry brushing. Do not blow, shake, or use other means to disperse chemical into the air or onto the body in order to remove chemical from protective clothing and equipment. Clean up spills promptly and keep surfaces as free as practical of accumulations of chemical. It may be required to dispose of contaminated waste, scrap, debris, or other materials in labeled, sealed, impermeable bags or other closed, impermeable containers.

25.9.5. Protective clothing

25.9.5.1. We will take the following steps to assure that gas, vapor, fume, dust, and mist work clothing do not contaminate cars, homes, or work sites outside the dusty area:

25.9.5.1.1. Change into disposable or washable work clothes at the work site.

25.9.5.1.2. Remove all contaminated protective clothing and equipment at the end of the work shift or at the completion of tasks involving the chemical exposure, whichever comes first.

25.9.5.1.3. Do not blow, shake, or use other means to disperse chemical into the air or onto the body in order to remove chemical from protective clothing and equipment.

25.9.5.1.4. Store contaminated protective clothing or equipment in labeled, sealed, impermeable bags or other closed, impermeable containers.

25.9.5.1.5. Shower and change into clean clothes before leaving the work site.

25.9.5.1.6. Do not remove contaminated protective clothing or equipment from the worksite

25.9.6. Respirators and the respiratory protection program

25.9.6.1. We know the OSHA regulation requires us to implement a respirator program when engineering, administrative, and good work practices are not enough to keep gases, vapors, fumes, dusts, and mists below their permissible exposure limit (PEL) as found in 29 CFR 1926.55. We will not use respirators as the primary means of preventing or minimizing exposures to airborne contaminants. Instead, we will use effective source controls such as:

25.9.6.1.1. Substitution,
25.9.6.1.2. Automation,
25.9.6.1.3. Enclosed systems,
25.9.6.1.4. Local exhaust ventilation,
25.9.6.1.5. Wet methods, and
25.9.6.1.6. Good work practices.

25.10. Such measures will be the primary means of protecting our workers. However, when source controls cannot keep exposures below the PEL, controls will be supplemented with the use of respirators or Self-Contained Breathing Apparatus (SCBA).

25.11. Communication of Hazards

25.11.1. We will post warning signs to mark the boundaries of work areas contaminated with gases, vapors, fumes, dusts, and/or mists at or above their PELs.

26. Hydrogen Sulfide Program for Construction

26.1. The purpose of this program is to inform interested persons, including employees, that Center Line Electric is complying with OSHA's Gases, Vapors, Fumes, Dusts, and Mists standard, Title 29 Code of Federal Regulations 1926.55 and other OSHA rules as needed to ensure that no employee is exposed to inhalation, ingestion, skin absorption, or contact with any material or substance at a concentration above those specified in the "Threshold Limit Values of Airborne Contaminants for 1970" of the American Conference of Governmental Industrial Hygienists found in Appendix A of 29 CFR 1926.55.

26.2. To achieve compliance we must first implement all feasible administrative and engineering controls. However, when such controls are not feasible, we will use protective equipment or other protective measures to keep the exposure of employees to air contaminants within the limits prescribed in Appendix A of 29 CFR 1926.55. All equipment and technical measures used to achieve compliance will first be approved for each particular use by a competent industrial hygienist or other technically qualified person.

26.3. This program applies to all construction or maintenance work where one of our employees may be occupationally exposed to gases, vapors, fumes, dusts, and mists at concentrations above those specified in Appendix A of 29 CFR 1926.55.

26.4. Administrative Duties

26.4.1. Center Line Electric's Safety Director is the program coordinator/manager and is responsible for its implementation. Copies of the written program may be obtained at the site management office.

26.5. Possible Exposure Locations

26.5.1. Before any work begins, an analysis of the job site or facility will be performed. Any areas or operations which may put employees at risk of Hydrogen Sulfide exposure will be identified. Such locations/operations may include:

26.5.1.1. Field maintenance
26.5.1.2. Drilling Operations
26.5.1.3. Tank Gauging
26.5.1.4. Confined Spaces

26.6. Characteristics of Hydrogen Sulfide

26.6.1. Also referred to as dihydrogen sulfide, sulfur hydride, H2S, and sewer gas. Characteristics include:

26.6.1.1. Colorless
26.6.1.2. Flammable
26.6.1.3. Distinctive “rotten egg” odor
26.6.1.4. Highly toxic
26.6.1.5. Soluble in water

26.7. Health Effects of Exposure

26.6.1. Irritation of the eyes, nose, and throat.
26.6.2. Loss of smell
26.6.3. Headaches
26.6.4. Dizziness
26.6.5. Upset stomach

26.8 High concentrations (as little as a single breath) may cause paralysis of the respiratory system causing loss of consciousness and death.

WARNING: Since exposure results in a temporary loss of smell, employees may incorrectly assume the gas is no longer present.

26.9. Exposure assessment and monitoring
26.9.1. We conduct personal or area sampling to measure worker exposures. Air sampling is needed to measure worker exposures and select appropriate engineering controls and respiratory protection. Where data is collected it must be retained to support negative exposure assessments.
26.9.2. We will perform air monitoring as needed to measure the effectiveness of controls.
26.9.3. Where high gas hazards are present, we will use portable and fixed detection gas monitoring equipment. Employees will receive training in use and care of monitoring equipment following manufacturer's guidelines. All equipment will be calibrated as per manufacturer specifications and a current, dated calibration sticker or label will be placed on the unit. Monitors will alarm when PEL exceeds the preset level of 20PPM for 1910 or 10 PPM for 1926.

26.10 Recordkeeping
26.10.1. We know recordkeeping is critical for our gases, vapors, fumes, dusts, and mists operations. Our recordkeeping tasks, at a minimum, include:
26.10.1.1. Employee exposure measurements according to chemical-specific regulations and 29 CFR 1926.33 and 29 CFR 1910.1020;
26.10.1.2. Medical surveillance records measurements according to chemical-specific regulations and 29 CFR 1926.33 and 29 CFR 1910.1020.
26.10.1.3. Training records.
26.10.1.4. Required notification records according to chemical-specific regulations.

26.11. Methods of compliance
26.11.1. This section contains our description of the specific means that we will employ to achieve compliance with the requirements of 29 CFR 1926.27,.51,.55..95,.100 -.105, and.200.

26.12. Administrative procedures, engineering controls, and good work practices

26.12.1. Exposures to Hydrogen Sulfide can be controlled through the use of engineering controls and work practices. Engineering controls are hazard controls designed into equipment and workplaces. Work practices are procedures followed by employers and workers to control hazards.

26.13. Respirators and the respiratory protection program

26.13.1. We know the OSHA regulation requires us to implement a respirator program when engineering, administrative, and good work practices are not enough to keep gases, vapors, fumes, dusts, and mists below their permissible exposure limit (PEL) as found in 29 CFR 1926.55. We will not use respirators as the primary means of preventing or minimizing exposures to airborne contaminants. Instead, we will use effective source controls such as

26.13.1.1. Substitution,
26.13.1.2. Automation,
26.13.1.3. Enclosed systems,
26.13.1.4. Local exhaust ventilation,
26.13.1.5. Good work practices.

26.13.2. Such measures will be the primary means of protecting our workers. However, when source controls cannot keep exposures below the PEL, controls will be supplemented with the use of Self-Contained Breathing Apparatus (SCBA) or airline respirators with escape SCBA.

26.14. Communication of Hazards

26.14.1. We will post warning signs to mark the boundaries of work areas contaminated with gases, vapors, fumes, dusts, and/or mists at or above their PELs.

26.15. Emergency Planning

26.15.1. Before performing any work in areas where hazards exist, the following steps will be taken to implement a plan for emergency procedures:

26.15.1.1. Employees will be made aware of owner/site contingency plan provisions
26.15.1.2. Evacuation routes must be identified and posted.
26.15.1.3. A post-evacuation meeting point must be designated.
26.15.1.4. Regular rescue and evacuation drills must be performed.
26.15.1.5. Emergency contact numbers must be posted

26.16. Training and information

26.16.1. We will provide our workers with training that includes:

26.16.1.1. Instruction about the use and care of appropriate protective equipment (including respiratory protection such as Self-Contained Breathing Apparatus).
26.16.1.2. Hazards associated with Hydrogen Sulfide
26.16.1.3. Characteristics and properties of Hydrogen Sulfide

26.16.1.4. Signs and symptoms of overexposure
26.16.1.5. Instruction on the use and care of fixed and portable gas monitoring equipment.
26.16.1.6. Gas alarms and location of alarm stations.
26.16.1.7. Rescue procedures and equipment.
26.16.1.8. Evacuation procedures

26.16.2. Training will be provided before any work begins in any areas where hazard may be present. Further training will be provided annually and retraining will be given if any unsafe act is noticed. Training will be documented, kept on site, and available for review.

27. In Plant Rail Safety

27.1. Purpose

27.1.1. The purpose of this program is to:

27.2.1.1. Demonstrate Center Line Electric 's compliance with OSHA rail safety requirements necessary for the practical safeguarding of employees involved in construction work near rail systems, governed by 29 CFR 1910; and

27.2.1.2. Establish specific written procedures to protect the health and safety of all employees.

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

27.2. Administrative Duties

27.2.1. Center Line Electric's Safety Director is responsible for developing and maintaining this written plan. This individual is qualified, by appropriate training and experience that is commensurate with the complexity of the plan, to administer and oversee our rail safety plan and conduct the required evaluations of plan effectiveness.

27.3. Required Personal Protective Equipment

27.3.1. The following personal protective equipment must be worn by all employees at any given time when performing work on sites where a railroad system is present.

27.3.1.1. Hard hat

27.3.1.2. High visibility vest or clothing

27.3.1.3. Cut resistant gloves

27.3.1.4. Safety glasses with side shields. Prescription glasses must be ANSI rated.

27.3.1.5. Metatarsal work boots

27.4. Vehicle Parking and Equipment

27.4.1. No vehicles or equipment should be parked within 8 feet of the center of the tracks. This assures that moving rail equipment will not strike any other objects.

27.5. Walking Beside and Crossing Tracks

27.5.1. Pedestrians should never walk inside the rails.

27.5.2. A safe distance for walking is at least 6 feet from the outside of the rail.

27.5.3. Pedestrians, equipment, and vehicles should cross only at designated crossings.

27.5.4. No crossing is allowed if alarms ore signals are activated or if there is railcar movement in sight.

27.5.5. If a designated crossing is not available:

27.5.5.1. Never cross between uncoupled rail cars

27.5.5.2. Never cross within 10 feet of the end of a parked rail car

27.5.5.3. Never step on the rails, they may be slippery
27.5.5.4. Never cross before stopping, looking and listening for any railcar movement

27.6 Work On or Near Tracks

27.6.1. No work is to be performed within six feet of railroad tracks without obtaining prior permission.

27.6.2. When repair or maintenance is performed on or near tracks, some form of positive track protection shall be utilized (such as a switch that has been diverted and locked-out). In addition, warning signs, flags, or lights should be placed in the work area.

27.6.3. Never crawl under or climb over moving rail equipment.

27.6.4. Avoid potential pinch points. Equipment can move at any moment.

27.7. Training

27.7.1. Training is provided to ensure that employees are familiar with the requirements of this plan. This training is provided to employees at time of site orientation after a safety assessment has been made by qualified personnel. An assessment will be made to insure all employees understand the procedures and acknowledge the hazards involved. All training will be logged and documented. If any unsafe work performance is observed, employees must be retrained and retested before resuming work.

28. Corporate Safety Discipline Policy

28.1. Center Line Electric Safety Commitment

28.1.1. Center Line Electric, Inc. (CLE) is fully committed to providing a safe and healthy workplace and is responsible for the safety and health of our employees, those of our subcontractors and those of our Customer at any tier of work and at all times at any job site and the adjacent Customer propriety. In addition, CLE and our subcontractors will take all precautionary measures to protect other persons from injury and to protect all Customer property. This commitment also includes a firm and positive pro-active disciplinary policy. For any concerns or questions, please contact the CLE Project Manager or Safety Director.

28.2. Job-Site Safety Management and Administration

28.2.1. Responsibilities: CLE's site superintendent will have the overall responsibility for managing, implementing, directing, monitoring and enforcing the Job-Site Safety Plan and CLE's Corporate Safety Plan and all Customer safety requirements or policies. All sub-contractor supervisors will have the same responsibilities. The CLE site superintendent is the individual trained and knowledgeable in the health and safety aspects appropriate to the nature of the work being performed on this project. They will be assisted and backed up by the subcontractor supervisors whom are also responsible and properly qualified. He and they have the authority to stop work and take prompt measures to correct and abate all hazards. CLE hear by authorizes all of their superintendents, supervisors and foremen and those of their subcontractors at any tier to stop work that places or could place people in imminent danger or would result in major loss or damage to equipment, property, or the environment until the condition is corrected. All management employees from all companies involved at a given job site have the same responsibilities as their job site superintendents and are just as liable and responsible as they are. They will stand firm with the subject "Discipline Policy". The person(s) designated as the Site Safety Representative shall conduct periodic inspections of the job site to insure safe work practices are being followed and employees adhere to safety rules and policies set by CLE and the project owner.

29. Return-To-Work Program

Purpose: It is the intent of Center Line Electric's Return-To-Work (RTW) Program to provide temporary modified-duty for employees who are partially disabled due to illness or injuries. Each department will attempt to accommodate employees who cannot perform the basic duties of their job. This policy provides guidelines for administering a modified duty program to limit the number of lost workdays an injured or ill employee may incur by providing meaningful work of a restricted or limited nature.

Center Line Electric shall make every effort to bring ill or injured employees back to work as long as this will not cause any harm to the employee, others, or company property. Center Line Electric shall strive to assist the employee to return to his or her former position, and to cooperate in the employee's rehabilitation.

Objectives: The objectives of Center Line Electric's Return-To-Work Program are to:

-Allow the employee to remain in the work force and resume productive employment as soon as possible.
-Enable the worker to gradually overcome medical restrictions through a transitional period of modified-duty, work reconditioning assignments.
-Improve morale by providing support to employees with alternate assignments during recuperation
-Comply with all applicable parts of the Americans with Disabilities Act (ADA) and with all appropriate parts of the Family and Medical Leave Act (FMLA).
-Comply with all applicable state laws.

Job Description: Typically an electrician will spend at least 90% of the work day standing. Each task is different, but most tasks require work to be performed overhead. A majority of the work requires the constant climbing up and down ladders. Some tasks involve the occasional lifting of materials up to a weight of 25 pounds.

Modified Duty Tasks: Center Line Electric will provide temporary transitional duty whenever possible and practical, and will cooperate in every way possible to provide regular duties on a limited basis, modified duty, and/or special assignments for the recovering employee. Whenever possible, attempts will be made to allow the employee to remain in his or her original classification or job function with modified duties in the same work environment.

Special assignments and/or modified duties in addition to regular duties will be determined by the safety director and by the supervisor of the project in which the employee will be working after taking into consideration the employee's medical restrictions.

Also, the appropriate labor representative will review all special assignments and/or modified duty assignments.

Center Line Electric maintains the right to assign employees on modified duty to any job that will not exceed their restrictions and they are capable of doing. Job availability for work related injuries will take precedence over non-work related injuries.

Center Line Electric will supervise all employees undergoing rehabilitation and/or modified duty. When these employees are assigned to their regular project, they will report to the supervisor on that project.

Examples of Modified Duty Tasks to accommodate such restrictions as lifting, pulling, and standing:

-Installation of small devices (switches, receptacles, night lights)
-Wire terminations in panels, switch boards, and junction boxes
-Pre-fabrication of conduit and equipment supports
-Printing device labels and panel schedules
-Equipment testing
-Pre-fabrication of cable whips
-Luminaire assembly

The treating physician shall make the final decision, with input from the injured employee's supervisor and Human Resources Manager, as to when an employee returns to work in either his/her original capacity.

Medically Unable to Report: Any person who is unable to report for work due to an injury or illness, whether that injury or illness occurred in the workplace or not, must check in with their supervisor. The injured employee may be asked to produce appropriate medical documentation on his or her condition to verify there has or has not been a change in their physical status as it affects returning to work. At the discretion of Center Line Electric the employee may be asked to see a physician that Center Line Electric designates.

Employee's Responsibilities: The employee shall be responsible to report all job-related injuries and any medical restrictions to the safety director and to their immediate Supervisor. The employee shall keep the Supervisor informed of any change in job-related restrictions.

The employee shall adhere to all medical advice and directives as prescribed by the treating physician, nurse, or other medically qualified professional. The employer should question any medical directives which may not be clearly understood. Failure to adhere to any medical restrictions may result in disciplinary action

The employee shall not perform any activity which is not in accord with job-related restrictions, both on and off the job. If the employee feels that tasks have been assigned which violate these restrictions, he or she should immediately inform his or her Supervisor. Failure to adhere to any work-related medical restrictions may result in disciplinary action.

Failure to Participate: Employees who are assigned to modified duty are expected to keep medical appointments and participate in follow-up rehabilitation treatment as necessary. Failure

of the employee to participate in medical and rehabilitation treatment may be considered a violation of work rules and may result in disciplinary action.

Methods of Communication: Project Management staff shall maintain constant communication with the project owner and primary contractor to provide continual updates on the status of the injured employee.

Prior to starting work, The Return to Work Policy will be reviewed with the injured employee so he/she will have an understanding of the process and be reassured that every effort will be made to comfortably reintroduce them back into the workplace.

Daily communication will be made with employee to monitor progress and ensure there are no signs of aggravation to his/her condition.

Continuous updates on employee condition and modified duties will be provided between Center Line Electric project management, the Workers Compensation administrator, and medical professionals.

Recovery Monitoring: Every employee should be entered into the Return to Work Program upon medical certification that the employee may return to some type of work duty. Written return to work authorization must be obtained from the preferred medical provider. Every attempt should be made to modify the employee's current job to meet restrictions.

Injured employees shall be under the direct supervision of the supervisor in the area in which he/she is working. Supervisors will be informed of the nature of the restrictions and ensure the employee is capable of performing the task without further risk of aggravating the condition.

The Workers' Compensation Administrator and the treating physician shall make the final decision, with input from the injured employee's supervisor and Human Resources Manager, as to when an employee returns to work in his/her regular capacity.

Maintain Culture: Center Line Electric will educate fellow workers on the emotional and financial distress following an injury. Workers will be encouraged to offer support when one of their co-workers is injured and returning to work on restricted duty.

Communication with employee and monitoring will continue to help prevent possibility of re-injury.

Supervisor/Site Safety Manager Responsibilities: The Supervisor for the area that the injured employee is assigned for modified duty shall ensure that the employee is complying with job-related restrictions as noted on the modified duty form.

Supervisors directing modified duty employees shall assign those employees to jobs which can accommodate their restrictions.

Each supervisor should compile and maintain a list of job duties that meet light duty requirements.

Project Management staff shall maintain constant communication with the project owner and primary contractor to provide continual updates on the status of the injured employee.

Program Coordination: The Safety Director will coordinate the Return-To-Work Program.

Responsibilities of the Safety Director include:

- Review and update the program as needed to ensure that it meets the needs of Center Line Electric and its employees.

- Make decisions regarding the appropriateness of modified duty and contacts with the affected employee, the employee's supervisor, labor representatives, and medical personnel.

- Arrange for temporary work assignment for modified duty employees where no appropriate work is available within the employee's regular department.

- Maintain contact with all Workers Compensation representatives, physicians, and medical professionals, and shall provide information on an injured employees current job description, the modified duty policy, and the types of modified duty which are available.

- Provide physicians with periodic updates and any change of status relating to the modified duty program and additional information as requested by medical professionals, such as job descriptions for a specific ill or injured employee.

Arc Flash and Electrical Shock Protection Program

Center Line Electric's Arc Flash and Shock Protection Program applies to all our work operations.
It is the policy of Center Line Electric (CLE) to protect all employees and other personnel from potential electrical hazards. This will be accomplished through compliance with the work practices described in this policy along with effective application of engineering controls, administrative controls, and the use of personal protective equipment. Safety programs used by sub-contractors on facility jobsites must meet or exceed all applicable guidelines of this Safety Program.

PURPOSE

This program has been established in order to:

• Ensure the safety of employees who may work on or near electrical systems.

• Ensure that employees understand and comply with safety standards related to electrical safety.

• Ensure that employees follow uniform practices during the completion of electrical work.

RESPONSIBILITIES

Safety Manager

- Provide or assist in task specific training for electrical work qualifications.
- Periodically review and update this written program.
- Evaluate overall effectiveness of the Arc Flash Safety Program on a periodic basis.
- Assure implementation of this policy.

Supervisors/Foremen

- Determine the applicability of the Arc Flash Safety Program to activities conducted within their respective locations.
- Responsible for the implementation of Arc Flash Safety Program within their areas.
- Ensure employees comply with all provisions of the Arc Flash Safety Program.
- Ensure employees receive training appropriate to their assigned electrical tasks and maintain documentation of such training.
- Develop and maintain a listing of all qualified employees in their areas.
- Ensure employees are provided with and use appropriate protective equipment.

Employees

- Follow the work practices described in this document, including the use of appropriate protective equipment and tools.
- Attend all training required relative to this program.
- Immediately report any concerns related to electrical safety to supervision.

Training

Employees who are exposed to an electrical hazard that is not reduced to a safe level by the installation must be trained. Training must be provided before the employee is assigned duties that involve work near or on electrical systems. The level of electrical safety training provided is dependent on the risk to the employee and whether the employee is classified as a qualified person or unqualified person. A person can be considered qualified with respect to certain equipment and methods but unqualified for others.

All training must be documented. Documentation must be maintained for the duration of the worker's employment. The documentation must consist of the training content, employee name, and dates of training.

A qualified person shall be trained and knowledgeable in all of the following topics:

- Arc Flash program PPE requirements, what PPE must be worn, when, and by whom.
- Construction and operation of equipment on which work is assigned.
- Skills and techniques necessary to distinguish exposed energized parts from other parts of electrical equipment.
- Skills and techniques necessary to determine the nominal voltage of exposed live parts.
- The approach distances specified in this document and the corresponding voltages to which the qualified employee will be exposed.
- The process necessary to determine the degree and extent of electrical hazards along with the PPE and job planning necessary to perform the task safely.
- The procedure for testing for the absence of voltage.
- The safe operation, maintenance, and limitations of the specific voltage testing equipment to be used.

An unqualified person shall be trained in the inherent hazards of electricity and any related work practices that are necessary for their safety.

All employees exposed to shock hazards and employees responsible for taking action in event of an emergency shall be trained in the following emergency procedures:

- Method of release of victims in contact with energized electrical conductors or circuit parts.
- First aid, CPR, and AED use
- Procedure and method for contacting emergency assistance
- Location and proper function of disconnect devices
- Fire extinguisher use and selection

An employee will be retrained in any of the following circumstances:

- If the employee must utilize safe work practices that are not normally used during regular job duties.
- If there are indications the employee is not complying with safety-related work practices

- If changes in technology, types of equipment, work environment, or procedures require the use of safety-related work practices different than those normally used.
- At intervals not to exceed 3 years.

Establishing an Electrically Safe Work Condition

This program is founded on the principle of avoiding energized work unless it is absolutely necessary. Live parts will be de-energized before an employee works on or near them unless one of the conditions applies:

- De-energizing introduces additional or increased hazards. Examples of additional or increased hazards would include deactivation of emergency alarm systems or shutdown of hazardous location ventilation systems.
- De-energizing is not possible due to equipment design or operational limitations. Examples of this situation would include testing and troubleshooting of electrical circuits that can only be performed with the circuit energized and work on circuits that form an integral part of a continuous process that would otherwise need to be completely shut down in order to permit work on one circuit or piece of equipment.
- Live parts are operating at less than 50 volts to ground and there is no increased exposure to electrical burns or to explosion due to electrical arcs.

In the event when one or more of these conditions exist and working on or near energized components or equipment is necessary, all employees must follow the procedures and safe work practices covered in this program.

An electrically safe work condition does not exist until all of the following steps have been completed. Until that point, all employees must wear appropriate PPE and treat the equipment as though it is energized.

1. Determine all possible sources of electrical supply to the equipment. Use all possible sources of information such as updated drawings, diagrams, and identification tags.
2. After properly interrupting the load current, open the disconnecting devices for each source.
3. When possible, visually verify that all blades of the disconnecting devices are fully open.
4. Apply lockout/tagout devices in accordance with Northern Electrical Testing's Lockout/Tagout Program.
5. Use a properly rated voltage detector to test each phase conductor or circuit part to verify the de-energized state. Test each phase conductor or circuit part both phase-to-phase and phase-to-ground. Before each test, determine the voltage detector is operating properly by testing a known live source.
6. Ground the phase conductors before touching them where the possibility of induced voltages or stored electrical energy exists. When there is a danger of an induced voltage or when the de-energized conductor can come in contact with a live conductor, apply ground devices rated for the available fault duty.

Energized Electrical Work Permit

An energized electrical work permit is required when performing work within the limited approach boundary or arc flash boundary of exposed energized electrical conductors. The permit provides employees, supervisors, managers, and owners with an opportunity to examine the increased risk involved with exposure to energized electrical conductors. By signing the permit, the individual authorizing the work accepts responsibility for that exposure. All workers involved in the task sign the

permit acknowledging they are qualified to perform the task, are aware of the hazards, and agree the work described can be performed safely.

If appropriate safe work practices and PPE are utilized, an energized electrical work permit is not required for the following diagnostic work:

- Testing
- Troubleshooting
- Voltage measuring
- Crossing the limited approach boundary for visual inspection without entering into the restricted boundary.

The energized electrical work permit may be Center Line Electric's form or one supplied by the host contractor/owner as long as it contains, at minimum, the following information:

1. Description and location of the circuit or equipment on which work is to be performed
2. Justification for why the work must be performed in an energized condition
3. Description of the safe work practices to be employed
4. Results of the shock hazard analysis:
   -Limited approach boundary
   -Restricted approach boundary
   -Prohibited approach boundary
   -Necessary PPE
5. Results of the arc flash hazard analysis:
   -Available incident energy or hazard/risk category
   -Necessary arc flash PPE
   -Arc flash boundary
6. Methods used to restrict access of unqualified persons
7. Evidence of job briefing with discussion of task specific hazards
8. Approval signatures

Approach Boundaries to Energized Components for Shock Protection

Observing a safe approach distance from exposed energized parts is an effective means of maintaining electrical safety. As the distance between an individual and live parts increases, the potential for an electrical injury decreases. Safe approach distances will be determined for all tasks in which approaching personnel are exposed to live parts operating at 50 volts or more.

Safe approach distances to fixed live parts can be determined by referring to NFPA 70E - Tables 130.4(C)(a) and Table 130.4(C)(b) (Appendix A and B of this document). This table can be used to identify the Limited, Restricted, and Prohibited Approach Boundaries associated with various system voltages.

Limited Approach Boundary
Unqualified persons may only cross the Limited Approach Boundary when they are under the direct supervision of a qualified person.

Restricted Approach Boundary
Qualified persons may not cross or take any conductive object closer than the Restricted Approach Boundary unless one of the following conditions applies:

-The qualified person is insulated or guarded from the live parts and no un-insulated part of the qualified person's body crosses the Prohibited Approach Boundary.

-The live parts are insulated from the qualified person and from any other conductive object at a different potential.

Prohibited Approach Boundary
Crossing the Prohibited Approach Boundary is considered the same as making contact with energized parts. Only qualified persons may work on energized components. Qualified persons may only cross this boundary when all of the following precautions have been taken:

-The qualified person has specific training to work on energized parts.

-The qualified person uses PPE appropriate for working on energized parts, which are rated for the voltage and energy level involved.

Arc Flash Boundary

Personal protective equipment shall be provided by CLE and used by all employees working within the Arc Flash Boundary. The specific protective equipment to be worn within the Arc Flash Boundary can be determined by either of the following two methods:

- Use of information provided by a flash hazard analysis determining the incident exposure energy of each employee. Appropriate protective clothing can then be selected based on the calculated exposure level.

- Determine the hazard level of the task by referring to NFPA 70E Table 130.7(C)(15)(a) and Table 130.7(C)(15)(b), “Hazard/Risk Category Classifications”. This table also indicates whether voltage-rated gloves and/or tools need to be used. Once the hazard level of the task has been determined, the required PPE can then be ascertained from NFPA 70E Table 130.7(C)(16), “Protective Clothing and PPE”. (Appendix C of this document).

Personal Protective Equipment

All protective equipment shall be maintained in a safe, reliable condition by the employee to whom it is issued.

Employees shall wear nonconductive head protection whenever there is a danger of a head injury from electric shock or burns due to contact with live parts or from flying objects resulting from an electrical explosion.

Employees shall wear protective equipment for the eyes and face whenever there is a danger of injury from electric arcs, flashes, or from flying objects resulting from an electrical explosion.

Face shields without an arc rating will not be used for electrical work. Safety glasses or goggles must always be worn underneath face shields.

Employees shall wear rubber-insulating gloves where there is a danger of hand and arm injury due to contact with live parts or possible exposure to arc flash burn.

Arc Rated Clothing

• AR Clothing shall be visually inspected before each use. AR clothing that is contaminated or damaged shall not be used. Protective items that become contaminated with grease, oil, flammable liquids, or combustible liquids shall not be used.

• The garment manufacturer's instructions for care and maintenance of AR apparel shall be followed.

• When AR apparel is worn to protect an employee, it shall cover all ignitable clothing and allow for movement and visibility.

• AR apparel must cover potentially exposed areas as completely as possible. AR shirtsleeves must be fastened and AR shirts/jackets must be closed at the neck.

• Non-melting, flammable garments (i.e. cotton, wool, rayon, silk, or blends of these materials) may be used as under layers beneath AR apparel.

• Meltable fibers such as acetate, nylon, polyester, polypropylene, and spandex shall not be permitted in fabric under layers next to the skin.

• Garments worn as outer layers over AR apparel (i.e. jackets or rainwear) must also be made from AR material.

• Flash suits must permit easy and rapid removal by the user.

Rubber Insulating Equipment

• Rubber insulating equipment includes protective devices such as gloves, sleeves, blankets, and matting.

• Insulating equipment must be inspected for damage before each day's use and immediately following any incident that could have caused damage.

• An air test must be performed on rubber insulating gloves before each use.

• Insulating equipment found to have defects that might affect its insulating properties must be removed from service until testing indicates that it is acceptable for continued use.

• Where the insulating capability of protective equipment is subject to damage during the use, the insulating material shall be protected by an outer covering of leather or other appropriate material.

• Rubber insulating equipment must be tested according to the schedule contained in Appendix D.

• Rubber insulating equipment must be stored in an area protected from light, temperature extremes, excessive humidity, ozone, and other substances and conditions that may cause damage.

Insulated Tools and Materials

• Only insulated tools and equipment shall be used within the Limited Approach Boundary of exposed energized parts.

• Insulated tools shall be rated for the voltages on which they are used.

• Insulated tools shall be designed and constructed for the environment to which they are exposed and the manner in which they are used.

• Insulated tools shall be protected from damage and degradation of the integrity of the insulation.

• Fuse or fuse holder handling equipment, insulated for the circuit voltage, shall be used to remove or install a fuse if the fuse terminals are energized.

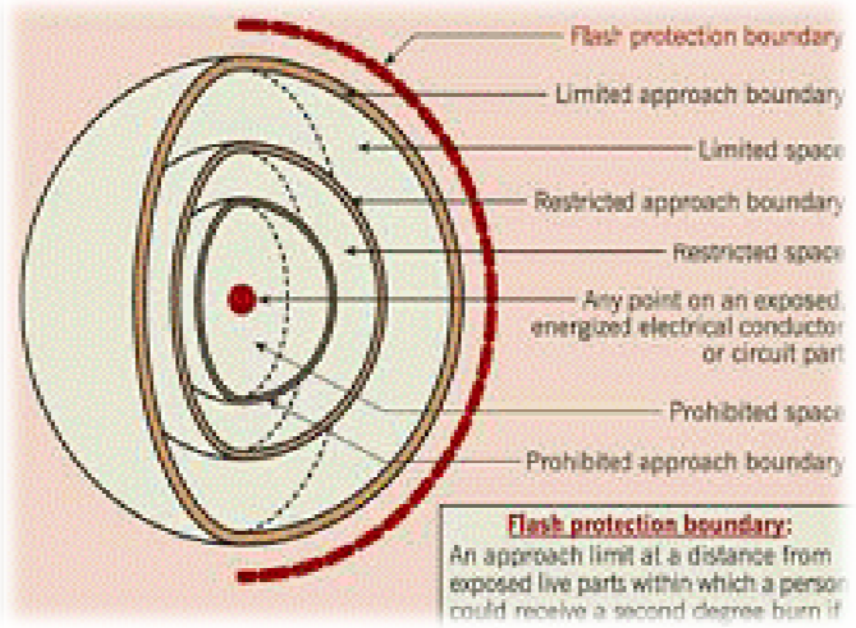
• Ropes and hand lines used near exposed energized parts shall be nonconductive.

• Portable ladders used for electrical work shall have nonconductive side rails.

Appendix A

Approach Boundaries to Energized Electrical Conductors or Circuit Parts for Shock Protection for Alternating Current Systems

1	2	3	4	5
Nominal System Voltage, Phase to Phase	***Limited Approach Boundary***		***Restricted Approach Boundary***	***Prohibited Approach Boundary***
	Exposed Movable Conductor	*Exposed Fixed Circuit Part*		
<50 V	Not Specified	Not Specified	Not Specified	Not Specified
50 V-300 V	3.0 m (10 ft 0 in)	1.0 m (3 ft 6 in)	Avoid Contact	Avoid Contact
301V-750V	3.0 m (10 ft 0 in)	1.0 m (3 ft 6 in)	0.3 m (1 ft 0 in)	25 mm (0 ft 1 in)
751 V-15 kV	3.0 m (10 ft 0 in)	1.5 m (5 ft 0 in)	0.7 m (2 ft 2 in)	0.2 m (0 ft 7 in)
15.1 kV-36kV	3.0 m (10 ft 0 in)	1.8 m (6 ft 0 in)	0.8 m (2 ft 7 in)	0.3 m (0 ft 10 in)
36.1 kV-46 kV	3.0 m (10 ft 0 in)	2.5 m (8 ft 0 in)	0.8 m (2 ft 9 in)	0.4 m (1 ft 5 in)
46.1 kV-72.5 kV	3.0 m (10 ft 0 in)	2.5 m (8 ft 0 in)	1.0 m (3 ft 3 in)	0.1 m (2 ft 2 in)
72.6 kV-121kV	3.3 m (10 ft 8 in)	2.5 m (8 ft 0 in)	1.0 m (3 ft 4 in)	0.8 m (2 ft 9 in)
138 kV-145 kV	3.4 m (11 ft 0 in)	3.0 m (10 ft 0 in)	1.2 m (3 ft 10 in)	1.0 m (3 ft 4 in)
161 kV-169 kV	3.6 m (11 ft 8 in)	3.6 m (11 ft 8 in)	1.3 m (4 ft 3 in)	1.1 m (3 ft 9 in)
230 kV-242 kV	4.0 m (13 ft 0 in)	4.0 m (13 ft 0 in)	1.7 m (5 ft 8 in)	1.6 m (5 ft 2 in)
345 kV-362 kV	4.7 m (15 ft 4 in)	4.7 m (15 ft 4 in)	2.8 m (9 ft 2 in)	2.6 m (8 ft 8 in)
500 kV-550 kV	5.8 m (19 ft 0 in)	5.8 m (19 ft 0 in)	3.6 m (11 ft 10 in)	3.5 m (11 ft 4 in)
765 kV-800 kV	7.2 m (23 ft 9 in)	7.2 m (23 ft 9 in)	4.9 m (15 ft 11 in)	4.7 m (15 ft 5 in)



Appendix B

Approach Boundaries to Energized Electrical Conductors or Circuit Parts for Shock Protection for Direct Current Systems

1	2	3	4	5
Nominal Potential Difference	***Limited Approach Boundary***		***Restricted Approach Boundary***	***Prohibited Approach Boundary***
	Exposed Movable Conductor	*Exposed Fixed Circuit Part*		
<100 V	Not Specified	Not Specified	Not Specified	Not Specified
100 V-300 V	3.0 m (10 ft 0 in)	1.0 m (3 ft 6 in)	Avoid Contact	Avoid Contact
301 V-1 kV	3.0 m (10 ft 0 in)	1.0 m (3 ft 6 in)	0.3 m (1 ft 0 in)	25 mm (0 ft 1 in)
1.1 V-5 kV	3.0 m (10 ft 0 in)	1.5 m (5 ft 0 in)	0.5 m (1 ft 5 in)	0.1 m (0 ft 4 in)
5 kV-15 kV	3.0 m (10 ft 0 in)	1.5 m (5 ft 0 in)	0.7 m (2 ft 2 in)	0.2 m (0 ft 7 in)
15.1 kV-45 kV	3.0 m (10 ft 0 in)	2.5 m (8 ft 0 in)	0.8 m (2 ft 9 in)	0.4 m (1 ft 5 in)
45.1 kV-75 kV	3.0 m (10 ft 0 in)	2.5 m (8 ft 0 in)	1.0 m (3 ft 2 in)	0.7 m (2 ft 1 in)
75.1 kV-150 kV	3.3 m (10 ft 8 in)	3.0 m (10 ft 0 in)	1.2 m (4 ft 10 in)	1.0 m (3 ft 2 in)
150.1 kV-250 kV	3.6 m (11 ft 8 in)	3.6 m (11 ft 8 in)	1.6 m (5 ft 3 in)	1.5 m (5 ft 0 in)
250.1 kV-500 kV	6.0 m (20 ft 0 in)	6.0 m (20 ft 0 in)	3.5 m (11 ft 6 in)	3.3 m (10 ft 10 in)
500.1 kV-800 kV	8.0 m (26 ft 0 in)	8.0 m (26 ft 0 in)	5.0 m (16 ft 5 in)	5.0 m (16 ft 5 in)

Appendix C

Protective Clothing and Personal Protective Equipment Selection Chart

Hazard/Risk Category	*Protective Clothing and PPE*
0	**Protective Clothing, Nonmelting or Untreated Natural Fiber (untreated cotton, wool, rayon, silk, or blends of these materials) with a Fabric Weight of at Least 4.5 oz/yd^2** Long sleeve shirt Long pants **Protective equipment** Hard Hat Safety Glasses or safety goggles Hearing protection Heavy Duty Leather Gloves or rubber insulating gloves with leather protectors Leather work shoes
1	**Arc Rated Clothing, Minimum Arc Rating of 4 cal/cm^2** Arc-rated long sleeve shirt and pants or arc-rated coverall Arc-rated face shield or arc flash suit hood Arc rated jacket, parka, rainwear, or hard hat liner (as needed) **Protective equipment** Hard Hat Safety Glasses or safety goggles Hearing protection Heavy Duty Leather Gloves or rubber insulating gloves with leather protectors Leather work shoes
2	**Arc Rated Clothing, Minimum Arc Rating of 8 cal/cm^2** Arc-rated long sleeve shirt and pants or arc-rated coverall Arc-rated flash suit hood or arc-rated face shield and arc-rated balaclava Arc rated jacket, parka, rainwear, or hard hat liner (as needed) **Protective equipment** Hard Hat Safety Glasses or safety goggles Hearing protection Heavy Duty Leather Gloves or rubber insulating gloves with leather protectors Leather work shoes

Appendix C

Protective Clothing and Personal Protective Equipment Selection Chart (Continued)

3	**Arc-Rated Clothing Selected so That the System Arc Rating Meets the Required Minimum Arc Rating of 25 cal/cm^2** Arc-rated long sleeve shirt Arc-rated long pants Arc-rated coverall Arc-rated arc flash suit jacket Arc-rated arc flash suit pants Arc-rated arc flash suit hood Arc-rated gloves with leather protectors Arc rated jacket, parka, rainwear, or hard hat liner (as needed) **Protective equipment** Hard Hat Safety Glasses or safety goggles Hearing protection Leather work shoes
4	**Arc-Rated Clothing Selected so That the System Arc Rating Meets the Required Minimum Arc Rating of 40 cal/cm^2** Arc-rated long sleeve shirt Arc-rated long pants Arc-rated coverall Arc-rated arc flash suit jacket Arc-rated arc flash suit pants Arc-rated arc flash suit hood Arc-rated gloves with leather protectors Arc rated jacket, parka, rainwear, or hard hat liner (as needed) **Protective equipment** Hard Hat Safety Glasses or safety goggles Hearing protection Leather work shoes

Appendix D

Rubber Insulating Equipment-Maximum Test Intervals

Rubber Insulating Equipment	*When to Test*	*Governing Standard for Test Voltage*
Blankets	Before first issue; every 12 months thereafter	ASTM F 479
Covers	If insulating value is suspect	ASTM F 478
Gloves	Before first issue; every 6 months thereafter	ASTM F 496
Line Hose	If insulating value is suspect	ASTM F 478
Sleeves	Before first issue; every 12 months thereafter	ASTM F 496

Note: If a blanket, glove, or sleeve has been electrically tested but not issued for service, it is not permitted to be placed into service unless it has been electrically tested within the previous 12 months.

CONTRACTOR
HOT WORK/CONFINED SPACE WORK PERMIT
(For use by approved self-permitting contractors only)

SECTION I

LOCATION NAME _____

CONTRACTOR _____

EQUIP. NAME/NUMBER _____

EQUIPMENT LAST CONTAINED _____

MSDS LOCATION _____

DESCRIPTION OF WORK TO BE PERFORMED

_____

_____

_____

_____

PERMIT(S) ISSUED (CHECK ALL THAT APPLY)

- ☐ Hot Work
- ☐ Hot Tap (Refer to Hot Tap Checklist)
- ☐ Cold Work
- ☐ Confined Space Entry
  - → ☐ Non-Hazardous
  - → ☐ Hazardous

SECTION II

EMERGENCY CONTACTS

PHONE NO.: _____

RADIO CHANNEL: _____

RESCUE PROVISIONS
(Required only for Hazardous Confined Space Entry)

YES NO

- ☐ ☐ Lifeline and harness
  - → ☐ Entanglement hazard
  - → ☐ Would not aid in rescue
- ☐ ☐ Retrieval system (describe below)

Retrieval system description: _____

FIRE WATCH REQUIRED ☐ YES ☐ NO

- ☐ Charged Fire Hose ☐ Other: _____
- ☐ Portable Fire Extinguisher (Type) _____

SECTION III

SITE PREPARATION

YES	NO	N/A	
☐	☐	☐	Surrounding conditions OK
☐	☐	☐	Equipment steamed
☐	☐	☐	Equipment ventilated
☐	☐	☐	Equipment flushed
☐	☐	☐	Equipment clean, oil-free (If no, explain in Special Provisions, Section VII)

OTHER: _____

OTHER: _____

OTHER: _____

SECTION IV

PERSONAL PROTECTIVE CLOTHING

YES	NO	N/A	
☐	☐	☐	Fire resistant clothing
☐	☐	☐	Goggles
☐	☐	☐	Face shield
☐	☐	☐	Gloves (specify type below)
☐	☐	☐	Boots (specify type below)
☐	☐	☐	Chemical protective clothing (specify type below)

Glove Type: _____ Boot Type: _____

Chem. Protective Clothing: _____ Other: _____

SECTION V

PERSONAL PROTECTIVE EQUIPMENT

YES	NO	N/A	
☐	☐	☐	Hearing protection
☐	☐	☐	Fall protection
☐	☐	☐	Half-mask respirator
☐	☐	☐	Full-face respirator
☐	☐	☐	Airline respirator (with 5-minute Escape Pack)
☐	☐	☐	SCBA
☐	☐	☐	Other: _____
☐	☐	☐	Other: _____
☐	☐	☐	Other: _____

Respirator Cartridge Type: _____

SECTION VI

ISOLATION

YES	NO	N/A	
☐	☐	☐	Lockout/Tagout complete
☐	☐	☐	Blinds: Checked and installed
☐	☐	☐	Double block and bleed
☐	☐	☐	Spool piece removed
☐	☐	☐	Line removed/open
☐	☐	☐	Valves closed, locked/tagged
☐	☐	☐	Pressure relief lines isolated
☐	☐	☐	Electrical equipment locked/tagged
☐	☐	☐	Radiation sources locked/removed

SECTION VII

SPECIAL PROVISIONS/CONSIDERATIONS

YES	NO	N/A	
☐	☐	☐	Low voltage lighting
☐	☐	☐	110-volt lighting
☐	☐	☐	GFCI required
☐	☐	☐	Explosion-proof lighting
☐	☐	☐	Audio/voice communications
☐	☐	☐	Visual communications
☐	☐	☐	Personal monitors
☐	☐	☐	Inert atmosphere
☐	☐	☐	Continuous atmospheric monitoring

OTHER: _____

SECTION VIII

VENTILATION

YES	NO	N/A	
☐	☐	☐	Natural
☐	☐	☐	COPUS air mover
☐	☐	☐	Horn air mover
☐	☐	☐	Air mover-bonded/grounded
☐	☐	☐	Airflow - Pull out
☐	☐	☐	Airflow - Push in
☐	☐	☐	Exhaust - Top
☐	☐	☐	Exhaust-Bottom

OTHER: _____

SECTION IX

Instrument Calibration:

Instrument Type: _____

Instrument Number: _____

Calibration Date: _____

Safe Limits:

- % Oxygen: 19.5% to 23.5%
- % LEL: <10% LEL
- Hydrogen Sulfide (H_2S): <10 ppm
- Benzene: <1 ppm
- Carbon Monoxide (CO): <35 ppm

INITIAL READINGS

Time:	
% Oxygen:	
% LEL:	
H_2S Level:	
Benzene Level:	
CO Level:	
Other: _____:	
Initials:	

SECTION X

REVIEW / APPROVALS

Maximum issue period is one shift

PERMIT ISSUED: Date _____ Time _____ AM PM

PERMIT EXPIRES: Date _____ Time _____ AM PM

Conditions personally checked and permit issued by:

_____ SIGNATURE

_____ TITLE

Permit Recovation

This permit has been revoked prior to completion of work for the following reasons: _____

_____

_____

_____

Contractor Debriefing Debriefed by: _____ Date: _____

THIS SHEET MUST BE POSTED AT JOBSITE

SECTION XI (SEE REVERSE SIDE FOR INITIAL MONITORING RESULTS)

Minimum Requirements:		RECHECK RESULTS						
• % Oxygen: 19.5% to 23.5% • % LEL: <10% LEL • Hydrogen Sulfide (H_2S): <10 ppm • Benzene: <1 ppm • Carbon Monoxide (CO): < 35 ppm • Note rechecks must be done every 1-2 hours, when conditions change or the confined space is vacated for more than15 minutes.	Time:	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
	% Oxygen:							
	% LEL:							
	H_2S Level:							
	Benzene Level:							
	CO Level:							
	Other: _________ :							
	Initials:							

NOTE: YOU MUST SIGN IN/OUT EACH TIME YOU ENTER OR LEAVE

SECTION XII CONFINED SPACE ENTRY SIGN IN/OUT

NOTE: THE SECTION BELOW IS REQUIRED FOR ALL CONFINED SPACES

NAME OF AUTHORIZED ENTRANT	COMPANY	TIME IN	TIME OUT	TIME IN	TIME OUT	TIME IN	TIME OUT	TIME IN	TIME OUT
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM

NOTE: THIS SECTION BELOW IS REQUIRED FOR ALL PERMIT-REQUIRED CONFINED SPACES

NAME OF QUALIFIED OUTSIDE ATTENDANT	COMPANY	TIME IN	TIME OUT	TIME IN	TIME OUT	TIME IN	TIME OUT	TIME IN	TIME OUT
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
		AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM