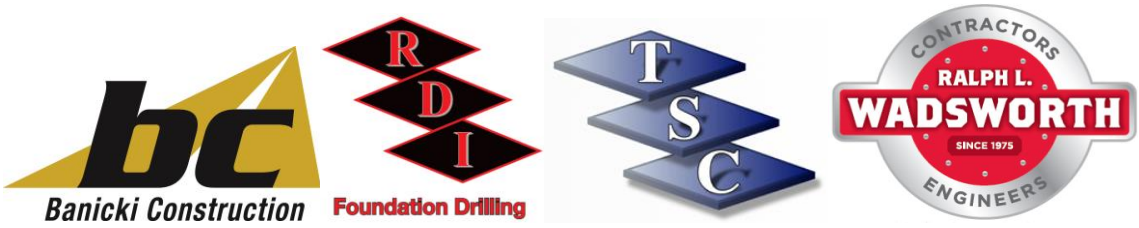
Sterling Construction Company

Safety Manual

2021



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Aerial Lifts/Elevated Work Platforms

1. Scope

This program applies to all employees or other individuals whose job duties require them to use aerial lifts and mobile scaffolding also referred to as scissor lifts.

2. Definitions

Functional definitions of aerial lift devices and elevated work platforms include, but are not limited to:

- Bucket trucks,
- Aerial ladders,
- Extendable and articulating boom platforms,
- Scissor

3. Training

Only employees authorized by the supervisor who have been trained may work in aerial lifts. Training shall be performed by a qualified instructor and shall be inclusive of all safe operation recommendations specified by the manufacturer.

4. Operation

a) Modification to an aerial lift in any manner is prohibited, except by written authorization from the manufacturer.
b) An aerial lift shall NOT be used as a crane.
c) Each piece of equipment shall be inspected prior to the start of shift to ensure proper operation and any defective safety sensitive part shall be repaired.
d) Lifts shall be operated in a manner that eliminates unintended movement. Areas of concern include:
   - Weight capacity;
   - Feet on the floor;
   - Slope restrictions and ground conditions;
   - Outrigger or extension use;
   - Wheel blocking or locking devices;
   - Setting the brakes;
   - Other specific manufacturer recommendations.
e) Refer to the operator's manual when working in extreme wind and weather conditions.
f) The basket of the work platform shall remain free of debris at all times.
g) Unless specifically designed for and allowed by the manufacturer, lifts shall not be moved while elevated when employees are in the platform or in the bucket.
h) The travel path shall be cleared of all debris and shall be free of surface defects.

i) It is mandatory that all persons working in an aerial lift wear a full body harness and lanyard. The lanyard shall be attached to the designated anchor point on, or in, the aerial lift.
j) Tie off to any point outside anchorage point is permitted when accessing the work area, basket, or per the manufacture's specifications.
k) Do NOT operate within a minimum of 15' from power lines.

5. Clearance Chart

Normal Voltage, kv	Minimum Required Clearance, ft. (m)
Over 200 to 350	20 (6.10)
Over 350 to 500	25 (7.62)
Over 500 to 750	35 (10.67)
Over 750 to 1,000	45 (13.72)

Code of Safe Work Practices

1. All persons shall follow these safe practice rules, render every possible aid to safe operations, and report all unsafe conditions or practices to the foreman or superintendent.
2. Supervisors shall insist on employees observing and obeying every rule and regulation as necessary to the safe conduct of the work, and shall take such action as is necessary to obtain observance.
3. All employees shall be given frequent accident prevention instructions. Instructions shall be given at least every 10 working days.
4. Anyone known to be under the influence of drugs or intoxicating substances that impair the employee's ability to safely perform the assigned duties shall not be allowed on the job while in that condition.
5. Horseplay, scuffling, and other acts that tend to have an adverse influence on the safety or well-being of the employees shall be prohibited.
6. Work shall be well planned and supervised to prevent injuries in the handling of materials and in working together with equipment.
7. No one shall knowingly be permitted or required to work while the employee's ability or alertness is so impaired by fatigue, illness, or other causes that it might unnecessarily expose the employee or others to injury.
8. Employees shall not enter manholes, underground vaults, chambers, tanks, or other similar places that receive little ventilation, unless it has been determined that is safe to enter.
9. Employees shall be instructed to ensure that all guards and other protective devices are in proper places and adjusted, and shall report deficiencies promptly to the foreman or superintendent.
10. Crowding or pushing when boarding or leaving any vehicle or other conveyance shall be prohibited.
11. Workers shall not handle or tamper with any electrical equipment, machinery, or air or water lines in a manner not within the scope of their duties, unless they have received instructions from their foreman.
12. All injuries shall be reported promptly to the Supervisor so that arrangements can be made for medical or first aid treatment.
13. When lifting heavy objects, the large muscles of the leg instead of the smaller muscles of the back shall be used.
14. Inappropriate footwear or shoes with thin or badly worn soles shall not be worn.

Cold Weather

1. Introduction

Working in a cold environment requires certain precautions to prevent cold injuries such as frostbite and freezing. The following cold weather safety and health practices are guidelines to assist project personnel to:

- Understand the physiological effects of cold on the human body.
- Improve and maintain good efficiency.
- Provide for safe working and living conditions.
- Develop adequate emergency and first aid procedures.

2. First Aid

a) Frostbite

- Characteristics - Frostbite results when crystals form, either superficially or deeply in the fluids and underlying soft tissues of the skin. Frostbite is the most common injury resulting from exposure to cold elements. The nose, cheeks, ears, fingers, and toes are most commonly affected.
- Signs and Symptoms - Just before frostbite occurs, the affected skin may be slightly flushed. As frostbite develops:
  - The skin changes to white or grayish yellow in appearance.
  - Pain is sometimes felt early but subsides later. (Often there is no pain).
  - Blisters may appear later.
  - The affected part feels intensely cold and numb.
- First Aid - Obtain medical attention as soon as possible. The objectives of first aid is to protect the frozen area from further injury.
  - Cover the frozen part.
  - Provide extra clothing and blankets.
  - Bring the victim indoors as soon as possible.
  - Give the victim a warm drink.

b) Cold Exposure

- Characteristics - Prolonged exposure to extreme cold produces the following manifestations:
  - Shivering
  - Numbness
  - Low body temperature
  - Drowsiness
  - Marked muscular weakness
  - Unconsciousness
- First Aid - Obtain professional emergency medical attention as soon as possible.
  - Give artificial respiration, if necessary.
  - Bring the victim into a warm room as quickly as possible.

- Remove wet or frozen clothing and anything that is constricting.
- Warm the victim rapidly by wrapping them in warm blankets.
- If the victim is conscious, give them warm liquids.

3. Physiological Effects of Cold

The body may be injured by exposure to freezing temperatures for a long time or to extreme cold for even a short time. Two factors have an important influence upon cold injury:

a) Thermal Conductivity of the Environment

- Most cloth fabrics are poor conductors, and a pair of thin, dry, silk or cotton gloves will prevent such an injury even though the gloves provide no appreciable insulation from the cold.

b) Wind

- Still air is a very poor thermal conductor, and a person in dry clothes standing still in a windless area can tolerate very low temperatures for some time. The combination of cold and wind is much more dangerous as a freezing factor.
- The chilling effect of low temperature combined with the wind is known as the wind-chill factor. This factor shall be considered when one is dealing with assessing the hazards of freezing conditions.

4. Physiological Reactions to Cold

When the human body is exposed to cold, blood vessels supplying the skin and extremities are constricted in order to reduce loss of heat to the environment and to ensure adequate thermal protection of the brain.

5. General Cooling of the Body

General body cooling is caused by exposure to low or rapidly dropping temperatures, cold moisture, or snow or ice. Contributing factors are hunger, fatigue, and exertion. Cooling makes itself manifest in five stages.

- Shivering, an attempt by the body to generate heat.
- Apathy, rapid cooling of the body, sleepiness, listlessness, and indifference.
- Unconsciousness, with a glassy stare, a very slow pulse and slow respiration rate (this stage follows the preceding one quite rapidly).
- Freezing of the extremities.
- Death.

6. Local Cooling of the Body

Local cooling is divided into two phases:

- Superficial frostbite, in which the frozen part feels doughy, and the color is white and does not change to red after pressure has been applied.

- Deep freezing of a part of the body--the more serious injury--in which the frozen part is white and feels hard throughout.

7. Precautions to Prevent Freezing and Cold Injuries

a) Cold Weather Safety Precautions

In order to prevent fire, failure of heating appliances, ruptured pipes, or other similar disasters during cold weather, the following safety practices should be adhered to:

- Unsafe conditions and deficiencies should be corrected.
- Check all fire extinguishers to ensure they are in safe operating condition. Fire extinguishers in unheated areas shall be of the non-freeze type.
- Test all combustion control and safety operating devices, including oil pre-heaters, for proper operation.
- Check steam lines to be certain they are properly insulated and labeled.
- Check electrical circuits to see if they are adequate for the use of portable electric space heaters in addition to normal loads.
- Do not use open burners or salamanders inside buildings or in unventilated spaces.
- Establish and post start-up and shutdown procedures for heat-producing appliances.
- Examine roofs and their supports to ensure they are in good repair and strong enough to support anticipated snow and ice accumulations.
- Plan for and establish an emergency organization equipped to handle anticipated emergencies. Standby generators, heating devices and other critical equipment or parts should be available.
- Adequate plans for sewage and waste disposal during cold weather periods should be made.
- Effective preventive maintenance of all equipment and vehicles shall be maintained. Exhaust systems shall be checked to prevent carbon monoxide poisoning.
- Test frequently for carbon monoxide in buildings and confined spaces.
- Plan for and establish an adequate snow removal program.

8. Emergency Situations

- Do not panic.
- Take steps to keep warm employee
- Contact Emergency Services

Confined Spaces

1. Scope

The confined space policy is in effect whenever workers are required to enter any space having limited access and egress which has the potential to contain toxic or flammable contaminants, or a space having an oxygen deficient atmosphere. Confined spaces include, but are not limited to:

- Barges
- Sewers
- Underground utility vaults
- Tunnels
- Pipelines
- Tanks
- Enclosed Beam
- Drilled Shafts
- Open top spaces more than 4 feet in depth such as pits, tubs, vaults, and vessels.
- Bag Houses
- Silos
- Concrete Piers

A work area classified as a confined space may contain a hazardous atmosphere which could expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from airborne contaminants or oxygen deficiency.

This policy covers all persons involved with confined space work, dealing with the issues of administration, supervision, entry and rescue.

2. Purpose

The purpose of this policy is to protect workers from the hazards including, but not limited to:

- Toxins
- Explosives
- Asphyxiating atmospheres
- Engulfment of small particles.
- Recognized serious health hazards
- Internal configuration entrant could be trapped or asphyxiated by inward converging walls

3. Definitions

Acceptable Entry Conditions – the conditions that must exist in a permit space, before an employee may enter that space, to ensure that employees can safely enter into, and safely work with the space.

Confined Space - A confined space is defined as an area which:

- Is large enough and configured so that an employee can bodily enter and perform assigned work;
- Has limited or restricted means for entry or exit; and
- Is not designed for continuous employee occupancy.

Controlling Contractor – The employer that has overall responsibility for construction at the worksite.

Entry – the action by which any part of a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space, whether or not such action is intentional or any work activities are taking place.

Entry Without Permit or Attendant - Entry into a confined space without a written permit or attendant is only permitted if:

- The space is determined not to be a permit-required confined space, or
- The space can be maintained in a safe condition for entry by mechanical ventilation alone.

Entry Employer – Any employer who decides that an employee it directs will enter the permit space.

Entry Permit – means a written or printed document that is used to designate the space to allow an control entry into a permit space.

Host Employer – The employer that owns or manages the property where the construction work is taking place.

Lower Flammable Limit or Lower Explosive Limit – the minimum concentration of a substance in the air needed for an ignition source to cause a flame or an explosion.

Permit Required Confined Space - A permit required confined space has one or more of the following characteristics:

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

Non-Permit Confined Space – Meets the definition of a confined space and does not meet the requirements for a permit required confined space.

- After classification as a non-permit confined space, the site supervisor shall complete the Confined Space Pre-Entry Checklist before entry into the space can be permitted. A copy of the checklist shall be retained at the worksite for the duration of the job. If circumstances dictate an interruption in the work, the permit space shall be re-evaluated and a new checklist shall be completed.

Hazardous Atmosphere –may expose the employee to the risk of death, incapacitation, impairment of the ability to self-rescue or acute illness from one or more of the following causes:

- 10% of the Lower Flammable Limit
- Airborne combustible dust at a concentration that meets or exceeds the LFL
- Oxygen concentration below 19.5% or above 23.5
- Atmospheric concentration of any substance for which a dose could result in employee exposure in excess of its does or permissible exposure limit.

4. General Requirements

- The project owner or Construction Manager must provide to us:
  a) Location of the confined spaces
  b) Potential hazards in each space
  c) Any precautions the host or previous employer has implemented for the protection of their employees
- The information received from the project owner or Construction Manager must be provided to any subcontractor who will be entering the confined spaces.
- Before work begins at the project site, the supervisor must identify all the confined spaces and permit entry confined spaces that employees may enter.
- After entry into the confined space any hazard that were created or identified must be shared with any subcontractor entering the confined space.
- The identified areas must be identified with signage reading "Danger – Permit Required Confined Space, Do Not Enter"
- Only authorized employees are allowed to enter a confined space.
- All confined spaces will be treated as a permit entry confined space, and can be reclassified to a non-permit entry space once all hazards are eliminated or isolated through engineering controls. Using forced air ventilation does not constitute eliminating the hazard(s).
- The entrance must be covered immediately, protected by a guardrail system, and have a temporary barrier that will not allow items to fall into the excavation.
- Before any employee enters the confined space air must be tested with a calibrated direct read instrument and continuously monitored. No hazardous atmosphere is ever allowed while an employee is working in the confined space.
- We shall take effective measures to prevent its employees from entering confined spaces when it is decided that employees will not enter permit spaces.
- Forced air ventilation must:
  a) Eliminate the hazard from the workspace
  b) Be from a clean source
  c) Removed once all the employees have left the space

5. Training

Confined space training shall be provided to employees working in or around confined spaces to ensure they acquire the understanding of the hazards in the permit space, methods used to isolate,

control and protect employee from the hazards, and no unauthorized entry rescue. Training shall be documented and records retained on site to verify that employees have received the appropriate confined space instruction. Training must be provided:

- To each employee in the language and vocabulary they understand
- Before they are assigned duties
- Before there is a change in their assigned duties.

Training documentation shall contain:

- The name and signature of each employee trained,
- The name and signature of each trainer, and
- The dates of the training sessions.
- Quiz showing proficiency in training material

Training documentation must be maintained showing:

- Name of each employee trained
- Date of training
- Name of instructor

6. Responsibilities

a) Supervisor

- Evaluate the workplace to determine if any spaces are permit-required confined spaces.
- Implement measures to prevent unauthorized entry
- Identify and evaluate the hazards before any employee enters the confined space
- Verify that all employees have the proper training

b) Entry Supervisors

- Know the hazards of confined spaces and they shall also perform the following duties:
- Verify that all tests have been conducted and all procedures and equipment are in place before endorsing a permit. 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;
- Terminate entry if necessary;
- Cancel permits;
- Verify that rescue services are available and the means for summoning them are operable;
- Remove unauthorized individuals who enter the confined space; and
- Determine that acceptable conditions as specified in the permit continue at least as often as shifts and entry supervisors change.

c) Confined Space Attendant

Know the hazards of confined spaces, including the mode, signs or symptoms, and consequences of the exposure and they shall also know how to perform the following duties:

- Be aware of behavioral effects of potential exposures;
- Maintain continuous count and identification of authorized attendants;
- Remain outside the space until relieved;
- Communicate with entrants as necessary to monitor entrant status;
- Monitor activities inside and outside the permit space and order exit if required;
- Summon rescuers if necessary;
- Prevent unauthorized entry into the confined space;
- Perform non-entry rescues if required; and
- Ensure that no other duties are performed which would interfere with the primary duty to monitor and protect the safety of authorized entrants.

d) Authorized Entrant

Anyone who enters a permit-required confined space shall:

- Know and understand potential hazards;
- Has the ability to recognize signs or symptoms of exposure;
- Possess an understanding of the consequences of exposure to hazards;
- Know how to use any needed equipment;
- Know how to communicate with attendants as necessary;
- Know how to alert attendants to the warning signs or the existence of a hazardous condition;
- Exit whenever there is detection of a prohibited condition; and
- Exit as quickly as possible whenever ordered or alerted to do so.

e) Subcontractors

Project management shall provide information to the subcontractors on permit spaces. The information shall include:

- Know the location of confined spaces and potential hazards
- The permit space program and procedures;
- The likely hazards that the subcontractor might encounter;
- Coordination between subcontractors when joint entries need to be performed; and
- A debriefing session at the conclusion of entry operations.

7. Atmospheric Testing

Atmospheric testing by a calibrated direct read instrument is required for all confined spaces to evaluate hazards and verify that acceptable entry conditions exist.

a) Evaluation Testing

The atmosphere shall be analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmosphere that may exist or arise. The order of testing is:

- First - test for oxygen,

- Second - test for combustible gases and vapors
- Third - test for toxic gases and vapors.

b) Verification Testing

The atmosphere shall be tested for residues of all contaminants identified by the evaluation testing, to determine that concentrations at the time of testing and entry are within the range of acceptable entry conditions.

c) Duration of Testing

Measurements shall be taken for at least the minimum response time of the test instrument in accordance with the manufacturer's specifications. Testing will be constant while any employee is working in the confined space.

d) Testing Stratified Atmospheres

The atmospheric envelope shall be tested a distance of approximately 4 feet in the direction of travel and to each side. If a sampling probe is used, the entrant's rate of progress shall be slowed to accommodate the sampling speed and detector response.

e) Results

All of the results will be documented using the confined space permit.

8. Confined Space Permit

Before entry is authorized, each entry employer must use the confined space permit to document the completion of the confined space requirements.

The entry supervisor must identified on the permit must sign the entry permit to authorize entry.

The completed permit must be available at the time of entry to all employees entering the confined space.

- The Confined Space Permit must match the time required to finish the task.
- The Confined Space Permit must be terminated when:
  - The operations covered by the permit are complete
  - A condition develops that is not allowed under the entry permit
  - Any problems or conditions must be noted on the permit and they shall be maintained for 1 year

9. Permit Required Confined Space Procedure

a) Procedures

- Identify and evaluate the hazards of permit spaces prior to employee entry and develop measures to prevent unauthorized entry.
- Develop and implement safe entry operations, including, but not limited to, the following:
  - Specify acceptable entry conditions for the space.
  - Isolate the permit space and physical hazards within the space.

- Purge, inert, flush, or ventilate the permit space as necessary.
- Provide barriers to protect entrants from external hazards.
- Verify that conditions are acceptable throughout the duration of an authorized entry.
- Determine in the event the ventilation system stops working the monitor will detect an increase in the atmospheric hazards in sufficient time for the workers to safely exit.

b) Provide equipment listed below at no cost to the employees, maintain the equipment properly, and ensure it is used correctly in accordance with manufacturer's and company specifications:
   - Testing and monitoring equipment;
   - Ventilating equipment;
   - Communications equipment;
   - Personal protective equipment;
   - Lighting equipment;
   - Barriers and shields for fall protection;
   - Equipment needed for safe entry and exit (i.e.;- ladders);
   - Necessary rescue and emergency response equipment;
   - Other equipment required to ensure safe entry into, and rescue from permit spaces.

c) When conducting entry operations, evaluate conditions as follows:
   - Pre-entry testing shall be performed and documented on the confined space air monitoring log and permit to the extent feasible before entry is authorized. If conditions are acceptable, monitoring will be continuous in the working areas.
   - Test or monitor as necessary to determine acceptable conditions during entry operations. and
   - Follow the procedures for testing for atmospheric hazards provide at least one standby person outside for the duration of entry operations.

d) If multiple spaces are to be monitored by a single standby person, procedures to respond accordingly will be included in the permit program.

e) Designate all those involved in the entry operations, identify their duties, and provide them with the required training.

f) Develop and implement procedures for:
   - Summoning rescue,
   - Performing rescue,
   - Requesting emergency services, and
   - Preventing unauthorized rescue attempts.

g) Develop and implement a system for the preparation, issuance, use, and cancellation of entry permits.

h) Develop and implement procedures to coordinate entry operations when two or more subcontractors are working simultaneously.

i) Develop and implement procedures to conclude entry after operations have been completed.

j) Review entry operations and correct any deficiencies.

10. Non-Permit Confined Spaces

a) Classification

A non-permit confined space is one that does not contain any hazard capable of causing death or serious physical harm, and does not have the potential to contain atmospheric hazards.

A space permitted by an employer as a permit-required confined space may only be reclassified to a non-permit space when the supervisor determines the following conditions have been met:

- Actual or potential atmospheric hazards within the space are eliminated or isolated without entry into the space.
- Using forced air ventilation to control the hazards does not constitute eliminator or isolation of the hazards.
- The Non-Permit Confined Space Checklist must be completed by the supervisor.
- If a hazard is identified then the confined space must be reclassified to a permit required space.

11. Rescue Services

a) Non-Entry Rescue

- Is required unless the retrieval equipment would increase the overall risk of entry or will not contribute to the rescue of the individual in the confined space.
- Whenever non-entry rescue is selected, we must confirm with emergency services they are available prior to entry is the non-entry rescue fails.
- The retrieval system must meet the following requirements:
  - Each entrant must wear a full body harness with a retrieval line attached at the center of the employees back.
  - The retrieval line must be attached to a mechanical device or fixed point outside the confined space in such a manner that rescue can begin as soon as necessary.
  - Due to the internal configuration, equipment that is unsuitable must not be used.

b) Rescue Service

- Shall effectively respond in a timely manner;
- Shall be equipped, trained and capable of functioning appropriately to perform permit space rescues;
- Shall be made aware of the hazards of the confined spaces;
- Informs us when they are not available for the rescue.
- Shall have access to all permit spaces to develop rescue plans; and
- Shall practice rescues.
- A Safety Data Sheets (SDS) or similar information shall be submitted to the medical facility treating an exposure victim.

c) Rescue Team

When non-entry rescue and a rescue team are not available the following items must be put in place.

- Each employee will be provided with the proper PPE required to conduct the confined space rescue safely.
- Each employee will be trained on the proficient use of the PPE.
- Train each employee in First Aid and CPR.
- Ensure the employees performing rescues practice making the rescues before actually attempting a rescue and at least once every 12 months be means of simulation.

Crane Safety

1. Scope

All personnel must be responsible for the safe operations of a crane. There are important considerations when performing a hoisting operation, such as the operator, proper crane set-up, and selecting the correct crane. These basic conditions must be evaluated by Project Management and Supervision to ensure that fundamental safe crane principles are attained on the project.

2. Responsibilities

a) Project Management and Supervision

The Project Management, Superintendent, and Foreman are responsible for the overall implementation of the Crane Safety Program and specifically the following duties and responsibilities:

- Selecting the proper crane for the job.
- Cranes are in safe operating condition with the annual inspection
- Verifying the operators are certified and qualified.
- Knowing and providing the operator with weights of loads.
- Ensuring communication between the operator and crewmembers is adequate to perform the anticipated functions safely.
- Developing and communicating critical lift plans in accordance with this program.
- Coordinating and scheduling periodic maintenance of the crane(s).

b) Crane Operators

Crane Operators are responsible for the crane and any load on the hook. If at any time the crane operator feel the pick is unsafe they must stop immediately. Crane Operators must meet the following requirements:

- Must be certified by an accredited organization and qualified by the company.
- Operators must have the physical ability to perform operating functions safely.
- Ability to read, write, comprehend, and exhibit arithmetic skills and load /capacity chart usage.
- Demonstrate an understanding of the crane regulations and the company polices.
- Conduct and document the required inspections.
- Complete routine maintenance.
- Shall not engage in any practice which will divert his / her attention while actually engaged in operating the crane.
- The operator shall not leave the controls while the load is suspended.
- When physically or mentally unfit the operator shall not engage in the operation of equipment.
- Each operator shall be held responsible for those operations under the operator's direct control.

During the operation of the crane the operators shall take action to ensure that:

- The crane is level and cribbed as needed.
- The load is well secured and balanced.
- The lift and swing path are clear of obstructions.
- All personnel are clear of the swing radius of the equipment, and that swing radius protection has been put into place and maintained.
- There is no sudden acceleration or deceleration of the load.
- That the load, boom, or other parts of the machine do not contact any obstruction.
- They never operate equipment or maneuver a load within the "absolute limit of approach" of overhead power lines as defined by this program.

3. Inspection & Maintenance

a) Inspections

- The crane will be inspected per the manufactures specifications and within the guidelines of this program.
- If an item is found defective and will affect the safe operation of the crane then the supervisor shall be notified immediately. The crane will not be placed back in service until the crane is deemed safe to operate.
- Inspections are required when the crane is initially set or placed in service, and after any major repairs or design modifications have been made. The initial inspection will ensure that the crane is capable of safe and reliable operation.
- Daily Inspections of all cranes and crane equipment shall be made at the start of each shift.

b) Repairs

- Before any repair is performed on the crane all sources of energy that could interfere with the safe maintenance and/or repairs of crane components must be positively locked and tagged (Zero Energy State) out at the energy source prior to performing maintenance or repairs.

4. Developing a Lift Plan

Complex or critical lifts that are made in congested areas warrant extensive planning prior to starting any crane work. A detailed work plan should be developed to identify any potential hazards and the preventative measures appropriate to eliminate them. Listed below are some items to consider when developing a Lift Plan that will involve the use of a crane:

- Crane location and swing area.
- Proper rigging equipment and inspection.
- Competent supervision and signal person.
- When traveling cranes around jobsites with restricted operator visibility a spotter, must be assigned to walk the crane from the point of origin to its destination. Boom sections lowered and proper distances from obstructions must be maintained.
- Evaluate stability of material crane will set on.
- Weight evaluation:
  - Crane/hoist capacity - load/list charts

- Combined weight of objects and rigging
- Sling and rope capacities as rigged
- Engineering/Critical Lift Plan (See Critical Lift Section)
- What other work is going on in the area.

5. Overhead Powerlines

Employee protection against electrical hazards:

- Before work begins verify voltage of overhead power lines.
- Shut off - tag out - ground lines, whenever possible.
- Large Overhead Power Lines identified with signs, flagging, etc.
- Avoid using areas under or in close proximity to power lines for lay down or storage areas.
- Any time we are required to operate a crane or lifting equipment within the Caution Zone or near the "Danger Zone a specific job hazard analysis shall be prepared.
- A competent signal person must be assigned to monitor distance while traveling and be in direct communication with the operator.

a) Caution Zone

The established area not less than 20 feet from energized power lines or it may be more than 150 feet depending on power line size.

The activity plan shall include at a minimum those considerations and steps listed in above plus:

- Identify "Caution Zone" area boundary at least 20 feet from energized power lines. Depending on line size (kv) distance may be more than 20 feet.
- Paint or use other visible methods to clearly designate Caution Zone area boundary along the ground from the power line to any portion of the equipment.
- A competent signal person assigned to ensure equipment/loads never breach the fifteen-foot distance from the power lines (more if line size is greater than 50kv). The signal person, whose only function will be monitoring the distance, shall be in direct communication with the operator.
- Request owner or a designated representative of the electrical utility to cover lines (rubber boots or sleeves). Applicable distance from lines still must be maintained.

b) Danger Zone

The immediate area around energized power lines, which is restricted from crane operations depending on power lines size (kv) and not less than 15 feet.

The following steps shall be taken to minimize the hazard of electrocution or serious injury as a result of contact between the energized power lines and the crane, load line, or load within the "Danger Zone".

- An on-site meeting between management and supervisory personnel and a representative of the owner of the lines or a competent representative of the electrical utility should take place to establish the procedures to safely complete the operations.

- Load control, when required, shall utilize tag lines of a non-conductive type.
- A qualified signal person, whose sole responsibility is to verify that the required clearance is maintained, shall be in constant contact with the crane operator.
- No one shall be permitted to touch the crane or the load unless the signal person indicates it is safe to do so.

6. Absolute Limit of Approach

For Normal Voltage in Operation Near High Voltage Power Lines & Operation Near High Voltage, KV

Normal Voltage, KV (Phase to Phase)	"Prohibited Zone" Minimum Required Clearance, FT (M)*
Up to 200	15 (4.60)
Over 200 to 350	20 (6.10)
Over 350 to 500	25 (7.62)
Over 500 to 750	35 (10.67)
Over 750 to 1000	45 (13.72)
Operations in Transit with No Load and Boom or Mast Lowered	
to 0.75	4 (1.22)
Over 0.75 to 50	6 (1.83)
Over 50 to 345	10 (3.05)
Over 345 to 750	16 (4.87)
Over 750 to 1000	20 (6.10)

*** Environmental conditions such as fog, smoke, or precipitation may require increased clearances.**

7. Site Preparation

Prior to mobilizing a crane into the work area, the following should be considered:

- Access roads are adequately prepared.
- There is room to erect and/or extend the boom.
- Blocking is available to support the boom while it is being assembled and dismantled.
- The maximum radius, maximum loads and maximum lift height of each lift are known.
- Maintain a swing clearance between the counterweight and any obstacles.
- Ropes or barricades are positioned to prevent entry into any part of the crane swing area.
- Operating locations are far enough away from shoring, excavations, trenches, buried utilities, foundations, etc., to eliminate risk of collapse.

- All operating locations are graded, leveled and compacted if required.

Public access to lift area is prohibited and barricades shall be installed when necessary.

Persistent wind direction and wind speed can exert unplanned dynamic loading. Extreme caution must be exercised when lifting as wind speed increases.

8. Proper leveling of crane.

- Hardwood mats or cribbing floats are available if the ground is soft or unstable.
- Visibility for making lifts, which could require tag person and/or radio communications.

9. Crane Set Up

- Locate the hoist line over the center of gravity of the load being hoisted. Be aware of boom sag and compensate appropriately by booming up.
- Know the weight of the load. When making lifts over 75% of the rated capacity reference the Critical Lift section.
- The maximum load radius the machine will be working at or required to move the load must be known.
- Set up on firm, level footing. If outriggers are used they shall be fully extended and properly cribbed, to provide support.
- Level the crane within the manufactures specifications.
- Outrigger beams must be set in accordance with manufacture recommendations.
- Identify conditions that exist underneath the surface (sewers, vaults, and other utilities).

10. Critical Lifts

Due to the potential magnitude of losses associated with cranes making heavy capacity lifts, and/or dual crane lifts the following procedures.

A critical lift is defined as any lift that is made by a single crane that exceeds 75% of its rated capacity, or when making a dual crane lift. All critical lifts shall include the following consideration in the Lift Plan.

- Annual, monthly, and daily inspections preformed and the crane(s) found to be in safe operating condition.
- The lift must be planned and supervised by a “competent person.”
- One person direct and control the operation. This person should be in position to view the total operation and should maintain contact (preferably radio) with the operator(s).
- Ground conditions must be stable, compacted and level, and if not then corrected by blocking, mats, or compaction.
- All cranes must be operated on level ground.
- The crane must be level per the manufactures specifications.
- The exact load weight must be determined.

- The longest load radius of the crane(s) must be measured exactly. It is strongly recommended that this measurement be marked as well.
- Boom angles and lengths if appropriated must be predetermined and noted.
- The rated capacity of the crane(s) shall be calculated for the entire operation (i.e., pick and carry).
- All crane and load movements should be made as smoothly as possible.
- For multiple crane lifts, no crane should exceed 75% of the manufactures rated capacity without the assistance of a load moment indicator or load cell. Additional consideration include:
    - Rigging should be arranged to divide the load as planned.
    - The line, swing and boom speeds of the cranes must be matched. If the hoist speeds are unequal, the leading crane can carry a greater share of the load. If the swing rates are not equal the cranes will sideload each other.
    - Swing and booming motions should be kept to a minimum.
    - Hoist lines must be kept vertical at all times.
    - Wherever possible the cranes should not travel with the load. If travel is necessary then cranes should have equal boom lengths.
    - Signal persons, riggers and operators must know exactly what they have to do and what movements will have to be made before the lift begins. If possible a pre-lift dry run should be made.

Once these guidelines have been taken into consideration a formal Work Activity Plan with a completed Critical Lift Plan shall be generated, reviewed and approved by the Project Manager or their designee.

11. Weather

For wind, rain, snow, lighting see the manufacture's specifications.

Electrical Safety

1. Purpose

On our construction projects we widely use temporary power and portable hand and power tools. Hazards are created when cord plug connected equipment is improperly used and maintained. Generally, flexible cords are more vulnerable to damage than other electrical equipment and deserve special attention.

2. Ground Fault Circuit Interrupters - GFCI

GFCI protection is required on all 120-volt single-phase 15 and 20 amp receptacle outlets. The GFCI must be plugged into the source before using a cord set, so that the cord set and all downstream loads are protected. GFCI's will provide employees with better protection from electrical shock.

GFCI's are to be tested each day before use by the person using the GFCI. The test maybe performed by pushing the test button on the GFCI or using a tester. If the GFCI is not functioning properly the generator must be tagged out and removed from service.

3. Portable Electric Generators / Welders / Temporary Lighting

Each day a wide variety of portable electrical generating equipment is used. We must take action to ensure that:

- They are equipped with GFCI or a portable plug in GFCI and it is working properly.
- Under the following conditions, the frame of the generator does not need to be grounded (i.e., via use of a grounding rod):
  - The generator supplies only equipment mounted on the generator such as light stands, arrow boards, welders, etc. and/or plug cord connected equipment.
  - When mounted on a vehicle or barge, the frame of the generator is bonded to the frame of the vehicle or barge, and the generator supplies only equipment on the vehicle and/or cord and plug connected equipment.
  - If required by the manufacturer.

a) Temporary Lighting

Portable electrical lighting used in wet conditions or other conductive locations (ex. excavations, trenches, etc.) shall be low voltage (12-volt or less) or 120-volts with a GFCI.

4. Special Conditions

Work with energized panels or equipment is prohibited unless a qualified electrician has been designated as the competent person. The qualified electrician when working on or around energized circuits where incidental contact could occur must use proper PPE and tools.

Equipment

1. Scope

The safe operation of material handling and/or personnel lifting equipment on and around the jobsite is

essential to the safety of our employees. To help prevent injury to workers and the public at large, only trained and authorized employees may operate equipment on our jobsites.

2. Responsibilities

a) Project Management/Superintendent

The Project Manager and Superintendent is responsible for the overall implementation of the program. Items listed below are essential duties of this program:

- Selecting the correct equipment for the job or project.
- Ensuring equipment is in a safe operating condition.
- Verifying operators are adequately trained and can safety operate the equipment.
- Ensuring adequate communication between the operator and crewmembers to perform the job safely
- Coordinating and scheduling periodic maintenance of mobile and heavy equipment with the Equipment Department or mechanics.

1. Operators

Operators are responsible for safe operation of the equipment, to include but not limited to the following items:

- Responsible for operations under their direct control.
- Have the physical ability to perform operating functions safely. When physically or mentally unfit the operator shall not engage in the operation of equipment.
- Shall not engage in any practice, which will divert their attention while actively engaged in operating equipment. (No cell phones!)
- They shall not operate equipment that they are unfamiliar with, or that they have not been trained on.
- Conducting and documenting daily inspections.
- Complete daily preventative maintenance.
- 100% seat belt use, unless otherwise instructed by the manufacturer.
- Securing equipment at the end of their work shift.

2. General Guidelines

- Equipment operators will document pre-shift safety inspections of their equipment. Any condition or item noted that could affect the safe operation of the equipment will be corrected prior to its continued use.

- All equipment shall be maintained in safe working condition as determined by the manufacturers recommended guidelines. Equipment maintenance is to be performed only by qualified mechanics. Prior to performing any service or repair work all equipment shall be:
- Stopped and positively secured against movement or operation,
- Locked and tagged out-of-service, unless it is designed to be serviced while running and safety procedures are followed.
- While equipment is being serviced or repaired, the operator shall dismount until the service or repair has been completed. A complete walk-around safety check must be done prior to remounting serviced equipment.
- Equipment shall not be operated unless all required safety devices (brakes, seat belt, horn, backup alarm, warning lights, etc.) are in place and functioning properly.
- All mobile equipment and vehicles operating in a lane closure or within 15 feet of a lane closure shall be equipped with operable warning lights.
- All equipment and motor vehicles with an obstructed view to the rear shall be equipped with an automatic back-up alarm that can be heard above and distinguished from associated background noise levels.
- All off-road earthmoving equipment such as loaders, dozers, scrapers, motor graders, rock trucks, tractors, rollers and compactors shall be equipped with seat belts and roll-over protective structures (ROPS).
- Mobile equipment shall not be left unattended (i.e. operator is +25-feet from the unit) unless it is parked with ground engaging tools lowered, and brakes set.
- Equipment parked at night next to roadway traffic shall be lighted, barricaded, clearly marked, or moved a clear distance from the roadway as prescribed by the DOT or local regulations.
- Personnel shall not be transported or ride on equipment or vehicles that are not equipped with seats and seatbelts for passengers.
- When fueling equipment or vehicles with gasoline or liquefied petroleum gas the engine shall be shut down.
- All equipment and vehicles shall be equipped with appropriate 5lbs fire extinguisher.
- Haul roads shall be designed, constructed and maintained for safe operation consistent with the type of haulage equipment in use. Standard traffic control signs shall be used where necessary.
- Equipment, pickups and passenger vehicles not necessary for performing the work should be parked well away from the work area to reduce congestion and incidents of loss.
- Careless, reckless or otherwise unsafe operation of equipment may result in disciplinary action up to an including discharge.

3. Inspections

Prior to using any piece of mobile and/or heavy equipment, the operator shall conduct and document a thorough daily safety and maintenance inspection. As each piece of equipment is unique, the operator will need to refer to the manufactures' operators' manual for specific requirements.

Deficiencies noted that could result in a condition endangering personnel or property, the operator shall immediately tag the equipment "out-of-service" and report it to the Project Manager or Supervisor. The equipment will be not be operated until the unsafe condition is corrected.

4. Communication

Communication between equipment operators, ground personnel, truck drivers and others is a significant element governing safe equipment operation. Where possible, it is recommends two-way radio communication in equipment. In some cases, where impractical or not feasible to use radio communications, ground personnel and operators will use standard construction hand signals.

It is imperative that all ground personnel make and maintain visual contact with the equipment operator, and ensure that the equipment operator acknowledges the intentions of ground personnel or other equipment operators when they come in close proximity with the equipment.

Where verbal or hand signals are used; only one person should be giving signals. If the equipment operator cannot hear or understand the signal or verbal direction, they are to stop the equipment immediately until he can determine the proper course of action.

5. Training

All Employees:

- Safe work practices for approaching operating equipment.
- Make yourself visible and conspicuous to operators.
- Always be aware of activities around you, communicate with co-workers.
- Respect operator work areas
- Understand the operator's blind spots of various pieces of equipment.
- Additional Hazards created by changing conditions.
- Report any unsafe acts or conditions
- Equipment Operators:
- Procedures for conducting daily equipment inspections.
- Pre-operational area condition inspections.
- Safe operating procedures of equipment.
- Safe operating procedures when working around adjacent utilities (overhead, and underground).

Fall Protection

1. Scope

The purpose of this Fall Protection Program is to establish guidelines to protect all employees engaged in work activities that expose them to potential falls from elevations greater than 6 feet above any walking or working surface. The program applies to all employees, subcontractors, and vendors who work on our projects.

2. Fall Protection Policy

The use of 100% fall protection is required whenever the potential exists for any employee to fall from a height of six feet (6') or greater.

Personnel working or walking six feet or more above a lower level shall be protected by:

- Personal Fall Arrest System (PFAS) that includes a full body harness, shock absorbent lanyard or self-retracting lifeline and an adequate anchor point,
- A guardrail system, or
- Other equivalent safety devices.

3. Responsibility / Disciplinary Action

- Each supervisor is responsible for implementing this policy and be immediately notified of any fall protection policy violations.
- The company maintains a zero tolerance for safety violations related to fall protection. Any violation will result in disciplinary action up to and including termination.
- Project management and supervision shall identify potential fall hazards and manage tasks in a manner that prevents incidents.

4. Training Requirements

Fall protection training shall provide employees with information on how to recognize and control fall hazards. Training points shall include:

- The nature of fall hazards in the work area and requirements for 100% fall protection compliance,
- Procedures for erecting, maintaining, disassembling and inspecting systems,
- Use and operation of guardrails, PFAS, and controlled access zones,
- Procedures for removal and replacement of defective or damaged devices,
- Suspension trauma hazards, post-fall rescue procedures, and self-rescue techniques.

5. Basic Devices

a) Full Body Harness

- Full body harnesses with a lanyard or self-retracting lifeline are the only acceptable forms of personal fall arrest systems.
- Always attach the lanyard to the D-ring in the middle of the back per manufactures specifications.
- All other D-rings are intended only for working adjacent to vertical surfaces, positioning or retrieval, and are prohibited as fall arrest protective equipment.

b) Shock Absorbing Lanyards

Shock absorbing lanyards will be constructed from nylon webbing, steel cable, and have a deceleration device is incorporated.

- Double locking snaps are required to prevent "roll-out" from the anchorage point.
- Double lanyards shall be used for 100% connection.
- Limit a free fall to less than six (6) feet.
- Never wrap a lanyard around an object and then back to the lanyard to connection unless it is specifically designed to do so.
- Knotting or tying of lanyards is not permitted.
- Lanyards shall not be attached to another snap hook or self-retracting reel.
- Flame resistant harness and lanyards with shock absorbers shall be used around cutting, welding or other flame producing operations.

c) Self-Retracting Lifelines

- SRLs are intended for vertical or horizontal work as specified by the manufacturer.
- The anchorage point shall be overhead to minimize the pendulum effect.
- Meet the requirements of Shock Absorbing lanyards.

6. Guardrail Systems

- Perimeter guard railing is required anywhere a potential fall of six feet (6) or more to the lower.
- Guardrails shall be constructed of wood or cable.
- Guardrail systems shall be free of surface projections such as nails or nail heads to protect workers from punctures or lacerations and to prevent clothing from snagging.
- The top edge height of top rails or (equivalent) guardrails shall be 42 inches above the walking/working level. The guardrail system shall be capable of withstanding a force of at least 200 pounds applied within 2 inches of the top edge in any outward or downward direction. When the 200-pound test is applied in a downward direction, the top edge of the guardrail shall not deflect to a height less than 42 inches above the walking/working level.
- Mid rails shall be installed at 19.5” – 22.5” inches. Mid rails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members shall be capable of withstanding a force of at least 150 pounds applied in any downward or outward direction at any point along the mid-rail or other member.
- Toe boards are required or the area is barricaded below and employees are not allowed to access the work area. To protect from falling objects, toe boards shall be erected along the

edges of the overhead walking/working surface. Toe boards shall be a minimum of 3.5 inches tall from their top edge to the level of the walking/working surface, have no more than 0.25 inches clearance above the walking/working surface.

- When screens and mesh are used, they shall extend from the top rail to the walking/working surface, and along the entire opening between top rail supports.
- Wire rope used for top rails shall be flagged every six feet with high visibility material.
- Where tools, equipment, or materials are piled higher than the top edge of a toe board, paneling or screening shall be erected from the walking/working surface or toe board to the top of a guardrail system's top rail or midtrial for a distance sufficient to protect employees below.

7. Equipment Requirements

a) Anchorage Points

- Anchorage Points shall be capable of supporting at least 5,000 pounds per attached employee, if designed as part of complete fall arrest system which maintains a safety factor of at least two.
- Horizontal Lifelines
- Shall be installed and used per manufactures specification or the engineers design.
- If cable guarding is used, connection to the cable is prohibited, unless it meets requirements of the horizontal lifeline specification.

b) Cable / Rope Grab Devices

- Cable / rope grab devices are utilized exclusively for vertical work. Work Operation Fall Protection Requirements

c) Floor Openings & Hole Covers

- Floor openings and hole covers shall be covered with materials capable of supporting two times the expected load and be clearly marked with the word "HOLE" or "COVER " All covers shall be secured to prevent unexpected displacement resulting from wind, equipment, or workers' activities and shall indicate "DO NOT REMOVE".

8. Rescue Operations

- Retrieval and rescue methods shall be identified in the Job Hazard Analysis (JHA) and TEAM Book planning and be communicated to employees prior to the start of any work activities where fall hazards are present.
- Rescue plans shall be communicated to other employees in the immediate vicinity of those workers who will be utilizing fall protection equipment.

Fire Prevention

1. Scope

The purpose of the Fire Prevention policy is to identify and provide controls for potential fire hazards during the construction of our projects. The Fire Prevention policy is necessary to provide a fire safe work environment and to prevent loss of property and injury to personnel due to a fire.

2. Responsibilities

- Project Manager is responsible for the overall implementation of the Site Fire Prevention Plan.
- Superintendents and Foremen are responsible for the field implementation of the Site Fire Prevention Plan. Furthermore, they are responsible for the proper storage and handling of materials, housekeeping, maintenance of equipment, and control procedures to prevent fires.
- Safety Department coordinates and interfaces with field operations personnel to ensure that safe work practices and necessary training are provided.

3. Combustible Materials Control Procedures

a) Lumber, Dunnage, or Cribbing

- Store in well organized stacks and groups.
- Store away from cutting and welding operations and from flammable liquids and gasses.
- Control plant vegetation in storage yards.
- When cutting or welding on cribbed equipment or materials, provide fire blankets, shields, or wet down cribbing if necessary.
- Provide fire extinguisher

b) Cleaning Rags, Cloths, and Spill Containment Materials

- Store clean rags in designated storage areas away from heat sources.
- Dispose of rags used with cleaning solvents or containing oils, grease, or flammable liquids in approved metal containers.
- No smoking in or around areas with oils, solvents, and grease.

c) Burlap and Curing Blankets

- Keep burlap and curing blankets wet when in use.
- Remove burlap and curing blankets at end of cure period.
- Store burlap and curing blankets in storage area away from heat sources.

4. Flammable Liquids

- As a general precaution all flammable liquids should be stored in an approved flammable liquid storage cabinet or containment system that is properly grounded to reduce the hazards of static electricity.
- Gasoline and diesel used for fuel in small gasoline equipment.

- Bulk storage of gasoline requires special containers and spill containment vessels that will contain 125% of the container contents, and in some cases a special permit is required from local Fire Departments.
- Store in approved safety cans in a well-ventilated area, away from all heat sources.
- No smoking in the area and "No Smoking" signs shall be posted. Provide a 20-lbs ABC fire extinguisher no closer than 25 feet and no farther than 75 feet from fuel storage tanks or as permitted per the local fire code.
- When fueling, shut off equipment and allow cooling down before fueling. Have fire extinguisher present.
- Maintain equipment to be free of fuel leaks. Immediately remove from use any equipment that exhibits a fuel leak.

a) Solvents

- Store in well ventilated area or storage cabinet away from all heat sources.
- Provide fire extinguisher at solvent storage site.
- No smoking when using or handling solvents or in storage area.
- Dispose of solvent soaked rags in a covered metal container.
- Use solvents only in a well-ventilated area or provide mechanical ventilation if necessary.

5. Motor Oil, Hydraulic Oil, Lubricating Oil, and Grease

- Store in well ventilated area away from all heat sources.
- Clean up small accidental spills immediately. Rags used to clean up spills will be placed in a covered metal container.
- Promptly repair equipment leaks.
- Used oil will be removed from site by a licensed waste disposal contractor.

6. Flammable Gases

a) Acetylene, Propane and other Fuel Gasses

- Store in upright and capped position, in a designated storage area. Bottles are to be secured and separated from oxygen bottles by 20 feet or more or with a ½ hr rated fire wall between them.
- Storage area will be well ventilated and free from heat sources, ignition sources, and combustibles.
- Storage shall be separated from flammable or combustible liquids and materials.
- Provide 10-lbs ABC fire extinguisher at storage site at a distance of 25' but no greater than 75'.
- No smoking within 25' of the fuel storage area.
- Defective or leaking hoses, gauges, or torches will not be used.
- Remove gauges and hoses when not in use and cap (hand-tight) bottles.
- Use carts designed for burning outfits to transport bottles. Bottles are to be in carts or storage areas at all times.
- The appropriate signs should be posted to warn others of the danger.

b) Welding/Cutting

- Welding is to be done by qualified persons who have been instructed in fire prevention measures.
- When required us a Hot Work Permit.
- Welding to be performed in areas free from trash and debris.
- In situations where extreme heat or drought is present, a water truck maybe required prior to the start of work to wet the immediate area.
- Following the Confined Space procedures before welding or cutting in a confined space.
- Fire blankets or shields will be used to protect combustibles that cannot readily be moved from the welding site.
- Welding shall be performed in a well-ventilated area. Provide mechanical ventilation if necessary.
- Provide 10-lbs ABC fire extinguishers at welding site.
- Welding machines will be turned off when not in use. Welding leads will be rolled back when not in use.
- A striker shall be used when lighting a torch.
- Tanks, gauges, and hoses are to be in good condition and free from leaks.

7. Grinding and Abrasive Cutting

- Only qualified persons who have been instructed in fire prevention measures will perform grinding and abrasive cutting.
- Fire blankets or shields will be used to protect combustibles that cannot be readily moved, and as always a 10-lbs ABC fire extinguisher should be present.
- Grinding and abrasive cutting to be performed in areas free from trash and debris.
- Perform grinding and abrasive cutting in a well-ventilated areas. Provide mechanical ventilation if necessary.
- Before any grinding or abrasive cutting in confined space the confined space procedures will be followed.

8. Temporary Heating

- Operate temporary heaters only in a well-ventilated area.
- Operate temporary heaters in areas free from trash and debris.
- Provide 10-lbs ABC fire extinguisher when using temporary heaters.
- Provide safe distance between temporary heaters and combustibles.
- Do not leave temporary heaters unattended.
- Maintain temporary heaters in good working order. Do not use defective heaters.
- Evaluate the need to conduct air monitoring for Carbon monoxide.

9. Fire Protection Equipment

If a fire is started sound the alarm immediately and take action to ensure that every employee potentially affected by the fire is aware of the hazard. For small fires, trained personnel may attempt to extinguish it by using an ABC Fire Extinguisher. To assist in providing a timely response to accidental fires, the following sizes of ABC Fire Extinguishers are required to be located in the following locations:

Minimum Fire Extinguisher Size	Location
2-1/2 lbs. ABC	Equipment and Company Pick-up trucks
5 lbs. ABC	Tool Trailers
5 lbs. ABC	Field Office Trailers
10 lbs. ABC	Cutting and Welding Operations
10 lbs. ABC	Cranes
20 lbs. ABC	Fuel Storage Area

a) Using an ABC Fire Extinguisher

- ABC Fire Extinguishers should be in plain sight, easy to obtain, and inspected monthly and annually. Procedures for use of an ABC Fire Extinguisher are as follows:
  - PULL the locking,
  - AIM the hose at the base of the fire, then
  - SQUEEZE the discharge handle.
  - SWEEP the extinguisher at the base of the fire in a side-to-side sweeping manner.
- The project supervisor is responsible for inspecting fire extinguishers in their area on a monthly basis and coordinating the annual inspection of ABC Fire Extinguishers. These procedures for monthly inspection are as follows:
- Ensure extinguisher is in its designated place and easily accessible.
- Operating instructions are legible and on the extinguisher.
- Ensure the retainer pin is in place and tamper plastic-wire is not broken.
- Check gauge to ensure that it reads in the green.
- Examine for obvious physical damage, corrosion, leakage or clogged nozzle.
- Check hose to ensure it is free of cracks and defects.
- Tip the extinguisher upside down and back upright and feel the chemical agent shift.
- Check the tag to ensure that it has had an annual inspection within the last year, if not remove it from service and replace it with one that does, and have an annual inspection performed.
- Date and initial to verify inspection on the back of the tag, and put the extinguisher back in place.

b) Fire Extinguishers – ABC Type Dry Chemical

- Fire extinguishers will be used only to fight fires in the incipient stage.
- Provide fire extinguishers about the site as required by codes and regulations.
- Maintain fire extinguishers in conspicuous open areas, which are easily accessed.
- Provide fire extinguishers for welding and burning operations, fueling of equipment, temporary heating, and in storage areas for flammables.
- Fire extinguishers will be added, moved, or changed continually during construction so as to provide coverage.
- Fire extinguishers will be inspected monthly for condition, discharge, defect, and location and inspection reports or audit verification will be maintained. Defective or discharged extinguishers will be replaced.

10. Training

Special training will be given for work assignments that pose a specific risk or hazard to fire, and employees will be trained in the operation of fire extinguishers to put out fires in the incipient stage. Furthermore, if a fire cannot be controlled, immediate action will be taken to control the scene to reduce potential damages and contact the local fire department.

Staff personnel will be made aware of the procedures for notifying the Fire Department in case of a fire, and as identified in the emergency action planning section of this manual all emergency response numbers will be posted next to the job phone in the main office trailer.

11. Reporting a Fire

- Fires will be reported to the Manager or Supervisor.

Flagger Safety

1. Policy

The information is to provide guidance for flagging operations. Flaggers, supervisors, crew members and project management all need to be familiar with work zone flagging requirements.

All flagging operations shall be designed and implemented to meet the project specifications outlined in the contract. Project management and supervision shall ensure appropriate traffic control devices are installed and maintained to meet the project specifications.

If a plan is not provided or required by the project owner then the following requirements should be used.

2. Training

All persons involved with flagging operations shall receive appropriate training.

a) Safe Flagging Procedures

- Use of flaggers shall be limited.
- When possible use flaggers only when other forms of traffic control are not appropriate or effective.
- Flagging from the center of an intersection (with or without a paddle) is PROHIBITED.
- When possible have law enforcement direct traffic from the center of an intersection.
- Appropriate lane closures or lane shifting traffic controls shall be in place if flaggers will be used in the centerline of a roadway.
- Flagging stations shall NOT be set up in close proximity to backing equipment.
- Flagging stations with no escape route are PROHIBITED unless positive protection is in place at the flagger station.
- Flagging stations shall be visible and not hidden by the background.
- Flagger stations shall be illuminated at night.
- Flagging at intersections where flagger direction and signal displays conflict is PROHIBITED. (Exception: during emergencies).
- Traffic signals shall be turned off for flagging operations.
- NEVER start flagging operations until all signs and flaggers are in place.
- If necessary to slow traffic on a freeway ALWAYS work from the closed lane or shoulder NEVER from a live traffic lane.
- Evaluate operations and utilize portable signal systems, automated flagging devices, intrusion alarms, warning devices, and other protective devices when possible.

b) Flagging Work Zone Layout and Equipment

Work zones where flaggers will be utilized shall include the following:

- Full advance warning area signage for flagging operations.

    - During the day advance warning signs shall be equipped with flags.
    - Remove or fold down advance warning signs when flaggers are not working.
- Transition area – to reduce the speed of vehicles before they reach the flagger's station.
- Active Area
    - Buffer space
    - Work Area
    - Traffic space
- Termination zone – Opposing traffic warning area
- Adequate equipment
    - "Stop / Slow" sign
    - Channeling devices such as cones.
    - Established communication method such as vocal communication, hand signals, line of sight, or 2-way radios
    - Water

c) Flagger Rules and Responsibilities

- Use the correct paddle and hand signals (Stop, Slow, Go)
- Take the proper position in the traffic lane;
- Be alert at all times;
- Be in good physical condition with the ability to stand for long periods of time.
- DO NOT leave your post;
- DO NOT turn your back to traffic;
- DO NOT sit down on the job;
- Wear the proper protective high visibility clothing;
- Hard hat and sturdy shoes or boots,
- Safety Glasses
- Bright colored vest, either a ANSI Class II or III depending on traffic speeds.
- Safety clothing with reflective stripes at night (ANSI Class III),
- Clothing that affords protection from the environment;
- Follow directions from the "lead" flagger;
- Be certain you are visible to traffic.
- Warn the crew if a vehicle runs the flagger's station!

In the event of a crash:

- Notify supervisory personnel; call for help,
- Continue to control traffic,
- Stay coordinated with lead flagger,
- Remain at station until directed to move by your supervision or the police.

Forklift Safety

1. Scope

Forklifts can be as hazardous as they are useful. They are a specialized, multi-use vehicle that can perform a variety of tasks requiring heavy lifting, moving, stacking, loading and unloading of materials of varying sizes, shapes, and weights that are typically difficult to handle without them.

2. Responsibilities

All employees operating a forklift must have sound principles of safety, training, inspection, maintenance, and operation consistent with the manufacturer. Each job site has direct control over the application and operation of forklifts, establishing proactive safety behavior is the responsibility of the Project Manager/Superintendent and their assigned operating personnel.

The operator is in direct control of the Forklift, and it is his/her responsibility to implement the safe work procedures and practices outlined in this program, and supplement them with good judgment, safe control, and caution in evaluating each situation. Simply, the safety of all job site personnel is dependent on safe use and operation of the forklift by the operator.

3. Operator Training Requirements

All employees must be certified by to operate a forklift prior to use. After successfully passing the written exam and driving course, the employee will be listed as certified.

This training will be conducted every three (3) years after the initial certification or if they are observed operating the forklift incorrectly.

4. Hazard Recognition

Forklift operators must avoid situations that could cause the forklift to tip and/or drop the load. When operating, identify the potential hazards of a specific job by considering the following:

- The forklift's capacity (refer to the Manufacture's Load Zone Chart)
- The characteristics of the load (i.e., height, width, balance, etc.)
- The condition of the forklift itself.
- The condition of roadways, and soils traveled.
- Lifting should always be performed on level ground regardless of the type of forklift.
- Construction operations combined with employees working with or around a forklift can create additional safety hazards for the operator.

5. Safe Operating Guidelines

There are several precautions that apply to both forklift operators and employees who work with and/or around forklifts, they include but are not limited to the following:

- Only one trained person, the operator, is allowed on a forklift at a time – NO RIDERS!
- Operate forklifts at a speed that permits the forklift to be brought to a stop in a safe manner.

- Slow down on wet or slippery surfaces.
- Slow down at blind intersections and whenever backing up.
- Slow down before making a turn, and always avoid sharp turns that could tip the forklift, or cause the load to fall off of the forks.
- Travel should be in the forward direction when going up inclines and reverse direction when traveling down an incline.
- When a load blocks or restricts the vision of the operator, travel should be accomplished in the reverse direction.
- Always maintain a safe distance behind other vehicles and equipment.
- Maintain a safe distance from the edge of elevated ramps, platforms, or excavations.
- Ensure sufficient headroom under overhead structures, lights, pipes, power lines, etc.
- All personnel shall keep hands, feet and all other body parts away from the mast; reach mechanism, and other pinch points.
- All employees or other personnel are to NEVER stand or pass under a forklift's elevated portion, even if the forks are empty.
- Lifting of personnel on the forks is prohibited unless a Professional Engineer certified personnel platform is used.
- Ensure adequate lighting for the safe operation of the forklift.

6. Safe Load Handling Procedures

Operators also have to be cautious of the safe work procedures for loading and unloading forklifts. Before loading, make sure the load is within the forklifts rated capacity and that the load is stable and centered. If a load is loose or uneven, stack and/or tie loose pieces to prevent them from shifting and/or falling off during transportation to the desired location. To pick up the load:

- Square up the forklift with the load resting position.
- Stop the forklift a safe distance away from the load resting location.
- Level the forks to a horizontal position.
- Raise the forks to the proper entry height.
- Enter the load and maintain clearance around the forks.
- Engage stabilizing outriggers as necessary.
- Raise the load from its resting platform.
- Visually inspect the rear area of the forklift to ensure no one is behind you.
- Back up 18” to 24” (or safe distance) and stop to lower the load to the proper travel height.
- When carrying the load, keep it tilted back with the forks as low as possible. The lower the forks and the load are during operation and driving, the greater the stability.

When unloading:

- Check how high the materials can be safely stacked,
- Then raise and position the load to the correct height & level the forks horizontally,
- Move it slowly into position. If need be, use a signal person near the point where the load is to be landed for assistance.
- Tilt the load forward and lower it into place,

- Pull the forks back slowly, backing out slowly, while using the mirrors and looking behind the forklift.

7. Parking Safety

A forklift is considered ATTENDED when the operator is less than 25 feet from the truck and it remains in user's view. The following shall occur:

- Load engaging means shall be fully lowered
- Controls shall be neutralized
- Brakes set

If the forklift is left unattended (25 feet or more), the following shall occur:

- Load engaging means shall be fully lowered
- Controls shall be shut off
- Brakes set
- Position at a right angle if parked in incline or chock the wheels.

Always remember to remove the ignition key at the end of the shift, and if the lift has to be parked on an incline, position the forklift at right angles to the slope.

8. Fuel Hazards

Because of the flammability of most fuels, observing the following practices will reduce the possibility of a serious accident:

- Shut off engine and ignition during refueling.
- Always ground the fuel nozzle against the filler neck to avoid sparks.
- Keep sparks and open flames away from fuel.
- Do not smoke while refueling or when handling fuel containers.
- Never cut or weld on or near fuel lines, tanks, or containers.
- Never overfill the tank or spill fuel. Clean up spilled fuel immediately.

9. Engine Coolant Hazards

Because liquid cooling systems build up pressure, as the engine gets hot, extreme caution should be used before removing the radiator cap. For your safety:

- Stop the engine and wait for the system to cool.
- Wear protective clothing and safety glasses.
- Turn the radiator cap slowly to the first stop to allow the pressure to escape before removing the cap completely.

10. Hydraulic System Hazards

The hydraulic system is under pressure whenever the engine is running and may hold pressure even after the engine is shut off. Cycle all hydraulic controls after the engine is shut down to relieve

trapped pressure in the lines after forks or attachments are resting on the ground. During inspection of the hydraulic system, the following safety precautions should be taken:

- Wear appropriate eye protection. Hydraulic fluid can cause permanent eye injury.
- Wait for fluid to cool down before disconnecting lines. Hot hydraulic fluid can cause severe burns.
- Use a piece of cardboard or paper to search for leaks. DO NOT use your hand to check for leaks.
- NEVER reset any relief valve in the hydraulic system to a pressure higher than that recommended by the manufacturer.
- When venting or filling the hydraulic system, loosen the filler cap slowly and remove it gradually.

11. Electrical System Hazards

Electrolyte liquid in a battery contains sulfuric acid, which is a poison and can cause severe chemical burns. To avoid personal injury, always wear safety goggles and/or face shield, and acid resistant gloves when handling batteries.

Before working on the electrical system, always disconnect the battery cable(s). To accomplish this, remove the battery ground cable first, and when reconnecting the battery, connect the battery ground cable last. It is also important to understand that there are extremely explosive gases present around batteries. To help protect personnel the follow guidelines should be implemented:

- DO NOT smoke near batteries.
- Keep arcs, sparks, and open flames away from batteries.
- Provide adequate ventilation.

12. Fork Extensions & Booms

Occasionally a need will arise to use fork extension or a fork boom to have greater control/balance when picking materials. While some manufactures make booms, most do not recommend the use of either fork extension and/or fork booms do to the drastic changes that they cause in the center of gravity of the lift truck, and subsequent tipping hazards.

Always follow the manufacturer's recommendations. In certain situation these items are designed to better control and balance loads, while keeping in mind and designing to prevent tipping hazards. In doing so, Fork Extensions and booms must be designed and stamped by a Professional Engineer and have their rated lifting capacity clearly marked on them.

13. Maintenance & Inspection Guidelines

Forklift malfunctions can often be attributed to improper or lack of regularly scheduled maintenance. The resulting reduction in forklift performance can cause accidents that may lead to fatal injury to yourself or those working with you. All powered trucks/forklifts shall be inspected before they are operated, using the designated daily inspection sheet. When defects are found on any forklift that will prevent its safe operation, notify your supervisor of the problem.

Hazard Assessment and Control

1. Scope

This procedure is for managers and supervisors to facilitate safety planning into the project. Managers and supervisors are required to conduct a Risk/Task Analysis, develop Job Hazard Analyses, and use the Total Efficiency Attainment Meeting (TEAM) to promote and improve workplace safety.

2. Definitions

Risk/Task Assessment – an evaluation technique of the work environment used to identify what could cause harm to the workers, public, equipment, or have a significant negative impact on the project.

Job Hazard Analysis (JHA) - a planning technique that identifies hazards before they occur. JHA's focus on the relationship of the workers, tasks, tools, and the work environment. As hazards are identified, steps are taken to eliminate or reduce hazards to an acceptable risk level.

Total Efficiency Attainment Meeting (TEAM) – is a group planning and communication tool developed to discuss safety, quality, and productivity on a daily basis.

3. Safety and Health Planning

Planning is an essential safety and health tool. All projects shall use safe work practices to ensure company and subcontractor employees remain injury free. In addition to ensuring the safety and health of employees, property, materials, and equipment is maintained in good condition and damage free.

Safe work practices on jobsites must comply with all applicable local, state, and federal regulations governing workplace safety and health. The safe work practices described in the Injury Prevention Plan are the minimum standard for our projects. The project owner, joint venture partner, may require more stringent standards to be followed on the project.

4. Preconstruction Planning

Once a contract has been awarded, the Project Manager, with support from the appropriate regional, divisional, district, or corporate Safety department is responsible for identifying all relevant safety and health regulations for his/her project during preconstruction planning.

In addition to local, state, and federal regulations, any additional owner requirements, or joint venture policies and procedures that may affect safe work practices must be identified and included in a project specific safety and health plan.

5. Project Specific Safety and Health Plan

Project specific safety and health plans must be approved by the appropriate divisional or corporate safety department. Once approved, project specific safety and health plans must be maintained to include new and updated regulatory requirements related to occupational safety and health.

Once a project specific safety plan has been developed, new hire orientation materials must be reviewed and updated to assure that all applicable project safety and health rules and regulations are communicated to all personnel working on the project.

6. Hazard Assessment and Control Process

a) Risk/Task Assessment

In the initial planning stages of the project a Risk/Task Assessment will be completed.

- All major risks and tasks will be identified
- Identify who, what, might be harmed or the impact on the project
- Evaluate the risk using the matrix below:

Consequence					
Likelihood	**Minor**	**Medium**	**Serious**	**Major**	**Catastrophic**
A – Almost Certain	**Moderate**	**High**	**Critical**	**Critical**	**Critical**
B-LikelyModerate	**Moderate**	**High**	**High**	**Critical**	**Critical**
C- Possible	**Low**	**Moderate**	**High**	**Critical**	**Critical**
D-Unlikely	**Low**	**Low**	**Moderate**	**High**	**Critical**
E-Rare	**Low**	**Low**	**Moderate**	**High**	**High**

- Any area in the category in the Low bracket requires the use of TEAM book meeting.
- Any area in the category of Moderate or High bracket requires a Job Hazard Analysis and TEAM book meeting.

7. Hazard Control

Select hazard controls based on their effectiveness in eliminating or reducing the risk. Administrative controls alone shall not be relied upon reduce risk from tasks that are in moderate or higher. See table below:

Hierarch of Effectiveness of Controls		
Effectiveness	Type of Control	Examples
Highest	Elimination	Remove the hazards for the workplace or replace the process with less hazardous one.

	Engineering Controls	Design modifications to equipment or process that remove the hazards.
	Administrative	Alter the way the work is completed, timing of work, limit exposures to hazards or work practices.
Lowest	Personal Protective Equipment	Safety Glasses, Hearing Protection, Harness and Lanyards

8. Job Hazard Analysis (JHA)

JHAs are developed from the Risk/Task Analysis and must be completed prior to beginning any operation. The JHA identifies the steps of the task, incorporates the safety and health hazards specific to the particular job site where the work will be performed, and identifies the controls to be used.

- The Project Managers, Superintendent, and when available the Safety Manager or Project Engineer/Coordinator will work together and create the job hazard analysis for each of the task identified.
- Completed JHAs shall be reviewed to ensure compliance with all applicable regulations and company policies.
- Any needed revisions shall be made to the JHA before and as work proceeds on a specific operation.
- The Superintendent will discuss the JHA with the crew before an operation begins and will ask for additional comments for the JHA and make revisions if needed.
- Following the initial operation, and as often as needed, JHAs shall be reviewed by the superintendent, engineer/project coordinator and safety representative to verify that all vital steps are included, all hazards are identified, and that all hazard controls are implemented.

9. Job Hazard Analysis (JHA) Training

To be able to create an effective JHA the individual must know the different elements of the work being performed, the job site environment in which the tasks are performed, and the tools/equipment needed to complete the different tasks. In order to document all of these different components employees need to be trained.

The training must be completed prior to the start of the project with the Superintendents, Foremen, and the Project Management staff. The training should contain the following topics, but not limited to:

- Review the importance and value of JHA's
- The company's policy and job site JHA requirements

- Express the company's expectations and the level details that are required like:
- List tools and equipment required
- Discuss hazardous materials
- Is training required
- Review how to use and read the Risk Assessment Matrix
- Review the Hazard Controls Table and the Hierarchy of Controls

10. Total Efficiency Attainment Meeting (TEAM)

To prevent injuries and incidents managers must ensure that "manageable risk" is considered in all areas of safety, production, quality, morale, and cost. Planning in each of these areas, prior to the start of any operation is necessary to succeed. Manageable risks that are not considered have proven to increase the potential for employee injury, equipment or property damage, and/or other inefficiencies in production.

a) The TEAM Principle

The TEAM principle is to identify and manage known and potential risks. When properly managed, risks become planned successes instead of unplanned failures. TEAM is a planning and communication tool that involves everyone.

b) TEAM Practices

Managing Supervisors (Project Managers, Superintendents, and Foremen) are responsible for ensuring that both TEAM Meetings are conducted.

c) TEAM Book Training

By completing the TEAM Book we believe that communication between a crew, their counterparts, and management will improve. Training our Foremen how to properly fill out the book will improve our workforce's ability to plan safety into our daily operations.

Superintendents and foremen need to be trained on this process prior to the start of the project and when a new superintendent or foremen is hired or assigned to a new project. The training shall contain these sections, but not limited to:

- The purpose and value of the book
- Review the company's policy
- The project's emergency control and notification procedures
- Emergency Contact Phone Numbers
- Clinic Locations
- Emergency gathering location
- Safe and Sound
- What that means to the company
- The company's expectations
- Review the different components of the book
- The purpose of the control checklist

- The review of the book
- The frequency of reviews
- Who reviews the books

Hazard Communication/Global Harmonization System

1. Purpose

The purpose of the Hazard Communication program/Global Harmonization System is to protect workers from hazardous materials in the workplace. This program is designed to assist all team members in understanding three key elements of the GHS: Hazard Classification, Container Labeling and Safety Data Sheets. Other topics in this program include: The Written Hazard Communication Plan, Physical and Health Hazard Classes, Pictograms, Signal Words and other information found on GHS Container Labels and Safety Data Sheets.

Hazardous materials are any substances or mixtures that may cause personal injury, illness, or threat to the public or environment during handling, use, discharge or disposal.

2. Objectives

After reviewing this program, the employee will be able to explain the following: What the written hazard communication plan and the Global Harmonizing System are; What health and physical hazard classes are; What information can be found on GHS chemical container labels; What a Safety Data Sheet is and when it should be consulted.

3. Responsibilities

a) Management and Supervisors

They are responsible for the overall implementation of the Hazard Communication Program and the following responsibilities:

- Ensure that any new chemical or substances brought on site are accompanied by a Safety Data Sheet (SDS). Check incoming SDS for completeness.
- Maintain a copy of the Manufacture's SDS and have them available to all personnel.
- Provide training regarding the employees "Right to Know" and safe work procedures associated with the hazardous materials they may encounter.
- Obtain replacement SDS's for those found incomplete or illegible.
- Distribute significant health/safety information to supervision and employees in a timely manner.
- When necessary select SDSs to be covered as part of TEAM Meetings for affected employees on the project.

b) Employees

They are responsible for the following items:

- To understand their legal rights to be informed of the hazardous materials in the workplace.
- To understand the Hazard Communication Program by attending all applicable safety meetings for training on this and other safety topics.
- Know where and how to get SDSs for jobsite hazardous substances.

- Know how to read and apply the information contained within a SDS.
- Follow proper safety procedures for using and handling hazardous materials including wearing necessary PPE as required by manufacturer or by the safety policy.
- Follow all safety requirements including the execution of administrative, engineering, and work practice controls.
- Perform work only under safe conditions in which hazards of chemicals are known and safe working conditions are understood and applied.
- Never dispose of hazardous materials or chemicals by placing or pouring them onto the ground or into the water.

c) Safety Department

Assist the Project Management, Superintendents, and employees to coordinate training to employees regarding the Hazard Communication Program. Additionally, the Safety Department will conduct regular inspections and audits to assure compliance with:

- SDSs are available on site for all hazardous chemicals.
- Training records are available and current for affected employees
- Container labeling and use.
- Chemical Inventory maintained.

The Safety Department will assist in determining company and/or project compliance and will provide advice or guidance for the training or use of specific products on the jobsite. In some circumstances the designated representative will conduct the training or he/she may utilize manufacturers' representatives.

4. Hazard Classification Definitions

Hazard Classification is the process of assigning a chemical or mixture to a hazard or danger category based on its health and physical hazards.

- Physical hazards are the properties of a gas, liquid or solid that could adversely affect you or the workplace in a physical way, such as a fire or explosion.
- Health hazards are determined by the properties of a substance or mixture that can cause illness or injury to the skin, eyes, lungs or other organs and body parts.

Because there are such a large variety of hazardous chemicals, there are also a large variety of physical and health hazards presented by these chemicals. To better communicate the specific information needed by chemical workers, the Global Harmonizing System has created multiple classes of hazards.

16 classes of physical hazards include: explosives, flammable gases, aerosols, oxidizing gases, gases under pressure, flammable liquids, flammable solids, self-reactive substances, pyrophoric liquids, pyrophoric solids, self-heating substances and mixtures, substances and mixtures emitting flammable gases when contacting water, oxidizing liquids, oxidizing solids, organic peroxides, and substances corrosive to metal.

10 classes of health hazards include: acute toxicity, skin corrosion and irritation, serious eye damage or eye irritation, respiratory or skin sensitization, germ cell mutagenicity, carcinogenicity, reproductive toxicology, specific target organ toxicity from a single exposure, specific target organ toxicity from repeated exposures, and aspiration.

5. Container Labels

Container labels will provide information on the relevant hazard classifications of the chemical. As part of the GHS System, chemical manufacturers and importers are required to provide a label that includes a pictogram, signal word, hazard statements, and precautionary statements for each hazard class and category.

6. Pictograms

The specific training will include an explanation of the pictograms associated with the chemicals in your work environment. This knowledge helps workers quickly identify a chemical's hazards and is the first step to taking proper precautions to work safely.

Pictograms are standardized graphics, sometimes called harmonized hazard symbols, which are assigned to a specific hazard class or category.

Pictograms on a GHS label may convey health, physical or environmental hazard information. Each pictogram is assigned to only one class of hazard. A pictogram will represent either a physical hazard, health hazard or environmental hazard. There is not a unique pictogram for each individual hazard within each class. In other words, one pictogram may be used to represent several hazards within a class.

a) Physical Hazard Pictograms

There are five pictograms displayed on GHS labels to represent physical hazards:

- **Exploding bomb pictogram** is used to signify a material as explosive, unstable explosive organic peroxide, or a self-reactive substance or mixture.
- **Flame pictogram** is used for flammable gases, liquids, solids and aerosols as well as self-reactive substances. It may also indicate a material is an organic peroxide, pyrophoric liquid or solid, a self-heating substance or mixture or emits flammable gases when it makes contact with water.
- **Flame over circle**, or oxidizer pictogram, appears on a label when a chemical is an oxidizing gas, liquid or solid.
- **Gas cylinder** pictogram is exhibited when a substance is a compressed, liquefied, refrigerated liquefied or dissolved gas.
- **Corrosion** pictogram indicates a material is corrosive to metal.

b) Health and Environmental Pictograms

There are five pictograms displayed on GHS labels to represent health hazards:

- **Corrosion pictogram** is used to denote the health hazards of skin corrosion and serious eye damage.

- **Skull and Crossbones** are used when a chemical is acutely toxic to the skin, lungs or digestive system.
- **Health Hazard** pictogram, sometimes called the chronic health hazard pictogram, denotes respiratory sensitization, cell mutagenicity, carcinogenicity, reproductive toxicity or an aspiration hazard. It is also used when a substance can cause specific target organ toxicity following a single or repeated exposure.
- **Exclamation Point** pictogram is used for the health hazards of acute toxicity, skin irritation, eye irritation, skin sensitization and specific target organ toxicity following a single exposure in the form of narcotic effects or a respiratory tract infection.
- **Environmental Hazard** pictogram is used when a substance poses acute or chronic hazards to the aquatic environment.

7. Signal Words

There are two signal words that appear on GHS container labels. The words "Danger" or "Warning" are used to emphasize hazards and indicate the relative level of severity of the hazard. "Danger" represents a more severe hazard than the signal word "Warning". Only one signal word, corresponding to the class of the most severe hazard, should be used on a chemical label.

8. Hazard and Precautionary Statements

Other standardized communication elements found on GHS container labels are Hazard Statements and Precautionary Statements. For products which pose more than one risk, an appropriate hazard statement for each GHS hazard will be included on the chemical label.

Hazard Statements are standard phrases assigned to a hazard class and category that concisely describe the nature of the hazard.

Precautionary Statements are standardized explanations of the measures to be taken to minimize or prevent adverse effects. There are four types of precautionary statements for each hazard class: prevention, response, storage and disposal.

- Examples of "Prevention" precautionary statements include "Do not allow contact with water" and "Wear protective gloves."
- Examples of "Response" precautionary statements include "If on skin wash with plenty of water" and "If inhaled remove person to fresh air."
- Examples of "Storage" precautionary statements include "Store in well ventilated place" and "Protect from sunlight."
- "Disposal" precautionary statements typically state to "Dispose in accordance to local regulations".

9. Safety Data Sheets

"Safety Data Sheets" and have a uniform 16 section format that allows employees to obtain concise, relevant and accurate information more easily:

Section 1: Identification of the substance or mixture and of the supplier. Includes GHS product identifier, recommended use and restrictions on use, supplier's details, and emergency phone number.

Section 2: Hazards identification. Includes GHS classification, GHS label elements, and other hazards not resulting in classification or not covered by GHS.

Section 3: Composition/information on ingredients. Includes information on chemical ingredients such as chemical identity and concentrations.

Section 4: First aid measures. Includes description of necessary measures, most important symptoms/effects, and indication of immediate medical attention and special treatment needed.

Section 5: Firefighting measures. Includes suitable extinguishing techniques, specific hazards from fire, and special protective equipment and precautions for firefighters.

Section 6: Accidental release measures. Includes precautions, protective equipment, emergency procedures, environmental precautions, and methods for containment and cleanup.

Section 7: Handling and storage. Includes precautions for safe handling, and conditions for safe storage, including any incompatibilities.

Section 8: Exposure controls/personal protection. Includes occupational exposure limits or biological exposure limits, appropriate engineering controls, and personal protective equipment (PPE).

Section 9: Physical and chemical properties. Includes the chemical's characteristics (appearance, odor, pH, flash point, vapor pressure, etc.).

Section 10: Stability and reactivity. Includes reactivity, chemical stability, possible hazardous reactions, conditions to avoid, incompatible materials, and hazardous decomposition products.

Section 11: Toxicological information. Includes routes of exposure, related symptoms, acute and chronic effects, and numerical measures of toxicity.

Section 12: Ecological information. Includes Eco toxicity, persistence and degradability, bio accumulative potential, mobility in soil, and other adverse effects.

Section 13: Disposal considerations. Includes description of waste residues, and information on their safe handling and methods of disposal.

Section 14: Transport information. Includes UN number, UN proper shipping name, transport hazard classes, packing group, environmental hazards, transport in bulk, and special precautions.

Section 15: Regulatory information. Includes safety, health and environmental regulations specific for the product in question.

Section 16: Other information. Includes information on the preparation and revision of the SDS.

10. Training

Employees will be trained regarding their potential exposure to hazardous chemicals or materials while working on a project. This information is to be provided at the time the new employee and

whenever a new chemical or material hazard is introduced into their work area. The following areas are:

- The basic requirements of the hazard communication standard.
- Any operations in the work area where hazardous materials or chemicals are present or used as part of the construction process.
- Location and availability of our written Hazard Communication program and SDSs.
- Location and availability of any hazardous chemical/material lists or other data.
- Methods and observations that may be used to detect the presence, release or exposure to a hazardous chemical or material in the work area. Examples of these activities include:
- The physical and health hazards of the chemical or material in the work area.
- Name(s) of project personnel to contact for questions or to give or receive additional information.

The measures employees can take to protect themselves, including:

- Follow specific procedures implemented by the Company.
- Appropriate work practices.
- Emergency procedures.
- Use of appropriate personal protective equipment.
- Follow specific procedures or practices as recommended by the manufacturer or supplier.
- Conduct a comparison of SDS and product labels to ensure that information is consistent.

Heat Illness

1. Scope

This policy addresses situations in which heat illness can occur and applies to all outdoor work environments. It is the employee's right to exercise any protection provisions offered under this policy.

2. Training

Employees exposed to hot environments shall be trained in heat awareness, not only as a means of knowing how to respond, but also as a means of establishing prevention protocols to protect employees from heat related illness.

a) Supervisors

Prior to supervising employees who will be working in hot environments, supervisor training shall include:

- Procedures the supervisor shall follow to implement applicable provisions of this policy.
- Procedures the supervisor shall follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures.
- Responsibility to provide water, shade, cool down rests, access to first aid and employee's rights.
- How to acclimate an employee to the work environment.
- Remind employees during the daily safety meetings to drink plenty of water and their right to take cool down breaks when necessary.

b) Employees

Training in the following topics shall be provided to the employees:

- Environmental and personal risk factors for heat illness;
- Procedures for complying with the requirements of this policy
- Importance of frequent consumption of small quantities of water, (up to 4 cups per hour) when the work environment is hot and employees are likely to be sweating more than usual while performing their duties;
- Importance of acclimatization;
- Different types of heat illness as well as common signs and symptoms of heat illness;
- Importance of immediately reporting to the employer, directly or through the employee's supervisor, symptoms or signs of heat illness in themselves, or in co-workers;
- Procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary;
- Procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider;
- Procedures for ensuring that, in the event of emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders.

3. Definitions

Acclimatization - gradual temporary adaptation of the body to work in heat during exposure. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.

Heat Illness - a serious medical condition resulting from the body's inability to cope with a particular heat load which can include heat cramps, heat exhaustion, heat stroke and loss of consciousness.

Heat Wave – Any day in which the prediction of high temperatures for the day will be at least 80F and at least 10 degrees higher than the average high daily temperature in the preceding 5 days.

Environmental Risk Factors for Heat Illness - working conditions that create the possibility of heat illness occurrence, including air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees.

Personal risk factors for heat illness - factors such as an individual's age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body's water retention or other physiological responses to heat.

Preventative recovery period - a time period needed to recover from heat exposure in order to prevent heat illness.

Shade - blockage of direct sunlight.

- Canopies, umbrellas and other temporary structures or devices may be used to provide shade.
- One indicator that blockage is sufficient is when objects cast a shadow in the area of blocked sunlight.
- Shade is inadequate when heat in the area of shade prevents the body from cooling.
- Easy for employees to access and use is not discouraged.

4. Required Provisions

- Adequate supplies of drinking water shall be on site to accommodate one quart of water per person per hour, or an effective method for replenishing drinking water shall be in place.

a) Provision of water.

- Employees shall have ready access to cool, potable drinking water.
- Water shall be provided free of charge to the employee.
- Where it is not plumbed or otherwise continuously supplied, it shall be provided in sufficient quantity at the beginning of the work shift to provide one quart per employee per hour for the duration of the shift.
- The shift may begin with smaller quantities of water if an effective means of replenishment is available during the shift to allow employees to drink one quart or more per hour.
- Frequent drinking of water shall be encouraged.
- Shall be located as close as practical to the area where the employees are working.

a) Access to shade.

- Employees suffering from heat illness or requesting a preventative recovery period shall be provided and allowed access to an area with shade that is either open to the air or provided with ventilation or cooling.
- Such access to shade shall be provided as necessary or available when required.
- Cooling measures other than shade (e.g., use of misting machines) may be provided in lieu of shade if these measures are demonstrated to be at least as effective as shade in allowing employees to cool.
- When the outdoor temp in the work area exceeds 80F or more the areas of shade shall be maintained.
- Enough shade shall be provided to accommodate the number of employees working in the area.

b) High Heat Procedures

- High heat procedures shall be implemented when the temperature exceeds 95 F. The procedures shall include the following to the extent possible.
- Observe the employees for signs and symptoms of heat illness
- Effective employee monitoring will be handled by supervisors monitoring fewer than 20 people.
- Designate one or more employee at each worksite to contact emergency services.

5. Body Reactions to Heat

- Blood vessels near the surface of the skin expand. This allows more blood to come to the skin's surface to permitting heat generated within the body to be released in the air. When more heat is produced than the system can handle, perspiration begins.
- Perspiration is the body's most important cooling process. As perspiration evaporates the body is cooled. Perspiration is released as needed to lower the body temperature. If these systems fail to regulate the body temperature during extreme heat, strenuous activity, or too much exposure, then dangerous conditions begin to exist because:
  - As more blood flows to the skin for cooling, less blood is available for the brain, internal organs, and working muscles.
  - Through perspiration the body loses large quantities of fluid and electrolytes (salt).
  - When high heat is accompanied by high humidity, the perspiration does not evaporate so the body is not cooled.
  - The body may be generating more heat than it is able to lose through perspiration.
  - In extreme circumstances, the body’s temperature regulating system can fail and perspiration stops completely.

6. Heat Illness Symptoms

If employees exhibit any of the following symptoms, appropriate action shall be taken to get the employee to a cooler area and get them rehydrated. If symptoms are serious, immediately call for emergency responders 911.

- Hot, thirsty, fatigued – Get out of the heat
- Hot, thirsty, fatigued and nauseous – Get attention
- Hot, thirsty, fatigued, nauseous, and confused – Call EMS

Any employee who takes a preventative cool down break rest shall be monitored and asked if they are experiencing symptoms of heat illness.

- They shall be encouraged to remain in the shade.
- Shall not be sent back to work until the signs have abated.

7. Heat Stress Disorders and Treatment

a) Dehydration

- A condition that occurs when there is not enough fluid in the body to carry on normal functions. Even mild dehydration can sap strength and cause fatigue. Excessive thirst, fatigue, headache, dry mouth, little or no urination, muscle weakness and dizziness or light headedness are all potential indicators of dehydration. If dehydration is suspected immediately:
- Move to a place of shade and begin substantial fluid intake. If symptoms fail to subside or become extreme (heat exhaustion) seek medical treatment.

b) Prickly Heat

A skin rash caused by clogging of the sweat glands. To treat:

- Rest in a place of shade apply soothing lotions and watch for possible infections caused from scratching.
- Cramps: Usually affecting the muscles doing the most work. When cramps occur:
- Move to a place of shade, and
- Massage the affected muscles.

c) Heat Exhaustion

This is a more serious problem caused by loss of body fluids (extreme dehydration) and failure to replenish them properly. Symptoms are weakness, dizziness, nausea, clammy skin and heavy sweating. Immediately:

- Move to a place of shade (not extreme cold).
- Provide lots of fluids.
- Should vomiting or loss of consciousness occur seek medical treatment immediately.

d) Heat Stroke:

This is a medical emergency. It can cause permanent damage to the brain and/or vital organs and can even result in death. This occurs when the body cannot cool itself due to the overload of its

normal temperature regulating systems. Symptoms are dry, hot skin, body temperature of 104 or more, confusion, delirious behavior, loss of consciousness, or coma. IMMEDIATELY:

- Seek professional medical attention
- Initiate cooling of the body by moving the victim to a place of shade,
- Soak the victim's clothing in cool water (not ice water), and
- Fan the body to encourage cooling.

8. Exposure Symptoms

- Other safety concerns regarding exposure include:
- Impaired coordination and manual dexterity,
- Decreased concentration,
- Reduced strength,
- Reduced alertness, and
- Increased irritability.

9. Susceptibility

People most likely to experience heat related symptoms are:

- New workers not acclimated or accustomed to performing physical work in a hot environment,
- Older persons,
- Overweight, ill, physically unfit, or persons on medication that can cause dehydration,
- People who have had previous heat disorders, and
- People who have been drinking alcohol or large amounts of caffeine

10. Precautions

To avoid heat stress disorders:

- Acclimatize: Allow person to adjust to heat naturally and gradually by increasing the time spent in the heat each day.
    - During a heat wave and with new employees, supervisors or a designated employee must be extra vigilant of the sign and symptoms of heat illness.
- Adopt habits: Persons should drink cool water every 15 to 20 minutes to make up for a loss of body fluid of up to 2 gallons per day; avoid alcohol prior to heat exposure; eat lightly; and rest often.
- Outdoor Clothing: Wear lightweight loose clothing. Cotton clothing allows more air circulation than synthetics such as nylon and polyester. Limit periods of exposure, adjusting work hours to take advantage of the coolest part of the day.

11. Heat Index

- The Heat Index (HI) is the temperature the body feels when heat and humidity are combined.

- Exposure to direct sunlight can increase the HI by up to 15°F.

12. Medical Facilities

- All projects shall post information, and otherwise communicate the name, address and phone number of approved medical clinics and emergency rooms close to the job site.

13. Emergency Response Planning

- The start-up of the project invite local emergency responders to view the project so they have familiarity with project access and landscape.
- Meet with local EMS every six months so to provide updates about project access and landscape.
- Ensure that clear and precise directions to the worksite can be provided to emergency responders. The following steps can help keep employees informed:
  - Post project area maps with labeled intersections,
  - Post copies of directions to and from the job site on job boards or at the front desk, and
  - Ensure that all employees on site are aware of the postings and understand their importance.

14. Emergency Response

In the event of an emergency situation:

- CALL 911
- For remote locations emergencies may require:
  - Transport of the injured or ill employee to a point where they can be reached by an emergency medical service provider, or
  - Stationing an employee(s) at the nearest easily accessible public intersection to meet emergency responders and lead them to the job site.
  - If emergency services can't be reached directly due to coverage. An employee must be designated who can immediately proceed to an area to contact emergency services.
  - Employees must be allowed to contact emergency services directly, without notifying their supervisor.

Housekeeping

1. Scope

This program applies to all employees working on our projects. Everyone is required to maintain a clean and organized project to minimize or eliminate the potential of injury from lifting or slips trips and falls.

2. Responsibilities

Manager and Supervisors are responsible for providing a clean and organized project, by providing a sufficient trash or debris receptacles, and ensuring employees are keeping the work areas clean and organized.

Employees are responsible for taking necessary action to keep the workplace free of recognized hazards associated with poor housekeeping practices.

3. Housekeeping Guidelines

The following general housekeeping and orderliness guidelines will be implemented:

- Scrap material and debris will be placed in the construction debris containers placed throughout the site and emptied as necessary to provide for their continued use.
- Stockpiles of materials will be kept neat and organized. Surplus materials will be returned to stockpile areas for reuse.
- Tools, power cords, hoses, and equipment not in use will be picked up and placed in a proper storage area. Tools and materials when not in use will be secured in such a manner as to deter theft.
- Lunch areas will be kept clean. Trash and debris should be collected daily. Parking areas will be cleaned of trash and debris as needed.
- Keep small items in boxes or bins.
- Maintain clear access to all work areas and take action to ensure that walking working surface are free of tools, cords, hoses, welding rod ends, metal shavings and other recognized hazards.
- Ensure that work tables and saw horses are occupied only by work at hand items and tools required to perform the work being done.
- Fire extinguishers will be kept conspicuously located, inspected monthly, tagged, and clear of materials, trash, and debris.
- Put aerosol cans away in proper storage containers when not in use.
- Keep all material, tools and equipment in a suitable position (tied, staked, or chocked) to prevent rolling or falling.
- Keep ladders and stairways clear of debris.
- Clean up liquid spills immediately.

Illumination

1. Scope

All construction areas, aisles, stairs, ramps, runways, corridors, offices, shops, and storage areas where work is in progress shall be lighted with either natural or artificial illumination.

2. Responsibilities

It is the responsibility of the Project Manager and Supervisor to take the necessary action to ensure that adequate lighting is provided in all work areas throughout the project, particularly passageways and stairways, and wherever necessary to avoid a hazard due to lack of light.

3. Planning

Each supervisor must use the Job Hazards Analysis and TEAM meeting to identify locations and times where illumination hazards may be present. This will help identify the illumination systems and equipment necessary to perform operations in a safe and productive manner. Supervisors must ensure that arrangements for the proper illumination are made well in advance to prevent unnecessary delays.

4. Illumination Table

Foot Candles	Area or Operation
5	General Construction Areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas.
5	Indoors: warehouses, corridors, hallways, and exit ways
10	General construction plant and shops (e.g. batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active store rooms, barracks or living quarters, locker or dressing rooms, mess halls and indoor toilets and workrooms).
30	Offices and other similar work environments

5. Illumination Systems and Equipment

Illumination systems and equipment include but are not limited to the following:

- Light Plants
- Portable Light Strings
- Portable Light Stands
- Flash Lights

6. General Requirements

a) Light Plants and Light Towers

Careful consideration is required when selecting location and positioning. The location should be carefully selected during daylight hours to ensure that there are no overhead power lines or other overhead obstructions. Keep any part of the light plant or tower a minimum of 15 feet in any direction from power lines, transformers or other obstructions.

Position the light plant so that light does not shine directly or in an unsafe manner into oncoming traffic or construction equipment.

Ensure firm ground conditions when placing light plants or light towers. Make sure that the outriggers are completely extended and the light plant or tower is level and stable.

The light plant and tower must be inspected by the operator prior to being used each shift. Inspections should include light covers, electrical cords and connections, attachments, and electrical breakers and panels. This inspection should be completed prior to starting the engine.

b) Portable Light Stringers

Require careful selection by a person familiar with construction lighting applications. Portable light bulbs must be protected from damage with insulated or grounded guards.

When light bulbs are changed, the cord set shall be disconnected from the power supply.

Low-voltage (12V) lighting shall be used in damp and/or other hazardous locations such as cofferdams, drums, tanks, and/or vessels.

Impalement Protection

1. **Scope**
   To establish the minimum requirements for the guarding of reinforcing steel, conduit, metal stakes, or other protruding objects to eliminate the hazard of impalement on the projects

2. **Definitions**
   Impalement – Is the penetration of an object either completely or partial into the body.

   Carnie Caps – A designed system, where a U-shaped cap fits onto a piece of rebar. A 2x4" or 4x4" depending on manufacturer or requirements is nailed to the cap. These are use to protect long straight runs of rebar.

   Rebar Caps (metal cap) – A steel reinforced rebar cap that is placed on impalement hazards to protect employees from injuries.

   Mushroom Caps – A plastic cap that is used to protect employees from lacerations or abrasions. These are not designed for impalement protection.

   Trough (Metal or Wood) – A long narrow 3-sided object that is typically constructed of metal or wood. The trough is used to cover long straight runs of rebar or other impalement hazards. It must be built per the drop test requirements.

3. **Requirements**

   a) Rebar or any material that could impose an impalement hazards shall be guarded to protected. Examples of impalement protection are, but not limited to - steel plated caps, metal or wood trough, Carnie caps installed per requirements, or alternative methods.

   b) Impalement protection shall be installed per manufacturer requirements.

   c) If impalement protection is built at the project, it shall be able to withstand the drop test requirements of drop 250lbs from a height of 10 feet.

   d) Mushroom caps shall not be used to impalement protection.

Incident Reporting and Investigation

1. Policy

All employees are required to comply with all incident response, reporting and investigation procedures. Failure to immediately report incidents to the appropriate supervisor shall result in disciplinary action up to and including termination.

- This list is not inclusive, but incidents can be any of the following:
- Injury to company employee(s), or subcontractor employee(s),
- Injury to a party not affiliated with the company,
- Any company vehicle, equipment, or property damage,
- Any vehicle or property damage to a non-company party,
- Any theft of company property, materials, or equipment,
- Any emergency or crisis situation,
- Near hits with the potential for loss of life, limb, or eyesight.

2. Responsibilities

a) Manager / Supervisor Responsibility

All site managers and supervisors shall ensure workers have been adequately trained about incident reporting and understand the steps to take should an incident occur.

Site managers and supervisors are responsible to ensure the appropriate incident reports are completed and communicated as required. The initial incident report must be completed within 24 hours.

The initial incident report with the facts at the time of the incident shall be sent to the appropriate managers, Risk Management Department, and V.P of Safety and Health.

b) Employee Responsibility

All employees shall immediately report any incidents incurred during their work shift to their direct supervisor.

3. Incident Response

All company offices, and each project site shall develop a site-specific emergency action plan and crisis management plan that outlines a method for reporting of emergencies and the effective management of incidents from the time of discovery to the ultimate resolution in order to comply with the applicable local, state, and federal legislation governing health and safety in the workplace.

The emergency action plan shall be posted in a conspicuous place; details of the site specific plan are covered during site orientation training. At a minimum, site specific plans should include information on the following:

- Identification of the potential emergency situations that may occur on the project.

- Response procedure for potential emergency situations.
- Identification of the needs of relevant interested parties, e.g. emergency services and neighbors.
- Planning, scheduling, and documentation of practice drills to test emergency action plan procedures.

Site specific emergency action plans are to be reviewed annually and updated as necessary per changing site conditions, personnel changes, other changes that may affect the successful implementation of the plan, or if deficiencies discovered during drills or actual emergencies.

4. Coordination with Emergency Responders and Medical Facilities

All projects shall establish contact with a project clinic and location emergency medical services (ems) prior to beginning work on the project. Projects shall post information and communicate the name, address, and phone number of the approved clinic(s) and emergency medical services in a conspicuous location.

- At the start-up of the project invite local emergency responders to view the project so they have familiarity with project access and landscape.
- Meet with local EMS to provide updates about project access and landscape.
- Ensure that clear and precise directions to the worksite can be provided to emergency responders. The following steps can help keep employees informed:
- Post project area maps with labeled intersections,
- Post copies of directions to and from the job site on job boards or at the front desk, and
- Ensure that all employees on site are aware of the postings and understand their importance.

5. Incident Response

In all serious incidents, the following procedures shall be followed:

- Activate the site specific emergency action plan;
- If the incident is a crisis, initiate the Crisis Management Plan;
- Take care of the injured;
- Protect people and property;
- Notify appropriate family persons and entities, and
- Complete and distribute the appropriate incident reports;

6. Injuries

The primary concern for any incident is the care of any injured party. IMMEDIATELY contact the appropriate Emergency Medical Services (EMS) System for all serious injuries.

A serious injury is any injury that will require hospitalization, long term recovery or one that is life threatening.

7. Crisis Management Plan

A crisis is any incident that could focus negative attention on the company and have an adverse effect on the company's overall financial condition, its relationships with key audiences, and/or its reputation within the marketplace.

If the event is a crisis situation, reference the Crisis Management Plan and First Hours Response documents and follow the CMP procedures. The local project office will need to distribute the responsibility assignment cards to the appropriate parties. The back of each assignment card contains a list of primary contacts to be notified in the event of a crisis.

8. Crisis Management Procedures

All managerial and supervisory employees and office personnel on every project shall be made aware of the location of the Crisis Management Plan (CMP) and shall be trained on the contents and procedures of the CMP so they know how to respond shall an incident be a crisis situation.

Project sites are required keep the contact information in the CMPs up to date.

For more details about responding in a crisis situation review the Crisis Management Plan and First Hour Response Kit documents which are located in the project office and available on the company intranet site. The documents are kept in a red binder for easy identification.

9. Notifications

a) Company

In the case of serious injury to an employee or subcontractor's employee, immediately notify the individuals in the order listed in flow chart below.

b) OSHA Notification

- Within a Federal OSHA state: Report the incident within 8 hours, any incident that results in a fatality. Within 24 hours any employee inpatient hospitalization, amputation, or the loss of any eye.
- For Cal/Osha: In California, report any serious injury, amputation, fatality, loss of consciousness, or hospitalization within 8 hours.

10. Prepare "Initial" Incident Report

Initial written reports shall be sent within 24 hours to the appropriate:

- Company President
- V.P of Safety and Health
- Regional manager or VP,
- Regional president,
- Regional, district, or Corporate Safety Manager,
- Risk Management Department
- Equipment Manager if company vehicles or equipment are involved in the incident.

Depending on the nature and seriousness of an incident, designated company legal counsel representatives and risk mitigation specialists from insurance carriers may be called to the scene to manage an incident investigation.

All managers and supervisors shall be trained and have a basic understanding of investigative techniques and understand the importance of thorough incident documentation.

Any incident report that involves injury, utility damage, or incidents involving the public must be reviewed and signed by the area Vice President or Manager.

11. Conducting the Investigation

While performing an investigation the following procedures shall be followed:

- Protect people and property

  Cordon off or barricade the site to prevent further injuries, property damage, or unauthorized persons from entering the area. The investigation shall only begin after the incident site has been secured and deemed safe to approach.

- Make a visual walkthrough of the incident site.
  - Conditions at an incident scene change rapidly. Record the location of all items of evidence as the walk through is made.
  - Identify all potential witnesses.
  - Record the names, addresses and phone numbers of all witnesses.

- Examine the evidence.
  - The items that will provide information about what happened, how it happened and why it happened shall be identified and examined.

- Photograph or Video all evidence.
  - Take photos/videos of the general area, major elements of the incident site, and articles of evidence as soon as possible. Take pictures/videos from different angles and perspectives, including wide angle and close-up shots whenever possible. Include common objects in the photograph to provide perspective and orientation of the incident scene. Keep a detailed description log of each photograph. The photographs/videos and log should sufficiently describe the incident even when viewed years later by people with no previous knowledge of the incident.

- Make a diagram of the incident scene.
  - Make a sketch of the incident scene showing the locations of all evidence essential to understanding the incident. Distances involved shall be measured and recorded on the sketch. At a later time, information from the sketch can be used to prepare a scaled diagram for inclusion in the incident report. Plans and drawings should be included when appropriate.

- Interview and obtain statements from all witnesses.
  - Interview and record witness statements with as much detail as possible immediately following the incident.
- **Check background information.**
  - Check all maintenance logs, inspection reports, training logs, and any other relevant documentation to determine if company policies and procedures were in place during the incident in question.

12. Incident Reporting/RCA Completion

a) Reporting Guidelines

All safety representatives, project managers, and field supervisors shall be trained on how to complete "initial" written incident forms, where to distribute completed forms, and what the timeline is for completion of follow-up incident paperwork.

Written incident reports shall consist of only known facts regarding the physical cause of the incident and shall not reference any placement of liability regarding any party. No part of the report shall be given to any other party, including the injured employee without a company President's approval.

b) Reporting Timelines

Within 24 hours – send initial reports to the appropriate manager and supervisor. All initial written reports shall contain the facts known at present. This includes reports for:

- Recordable and lost time injuries as well as initial reports for any damage to company or third party equipment, materials or property, or utility damage.
- Reports for any incident involving a company vehicle or involving a 3rd party vehicle.

Within 5 days – all follow up information and "root cause" analysis reports shall be distributed to corporate safety and appropriate parties.

Any incident report or RCA that involves injury, utility damage, or incident involving the public must be reviewed and signed by the area Vice President or Manager.

A thorough root cause analysis (RCA) shall be conducted for the following:

- Recordable or Lost Time Incident
- Equipment damage with repair costs greater than $5000
- Any incident that meets a category 3 on the severity index.
  - Severity Index 1 – minor incident or no impact
  - Severity Index 2 – Minor incident resulting in first aid treatment either onsite or from a medical provider, equipment damage, near hit, or property damage
  - Severity Index 3 – Recordable or Lost Time Incident, equipment or property damage with repair cost greater than $5000, any near hit that would meet these requirements.

The Root Cause Analysis team will include at a minimum at Safety Manager, Operations Manager, Project Manager, and Superintendent.

13. Root Cause Analysis (RCA) Guidelines

RCA is focused on determining all the contributing causes of incident and why it occurred. With a quality RCA, management issues can be identified and resolved, which will lead to continuous improvement in the safety and health management program. RCA is not concerned with finding fault and blame. The primary concern with any RCA must always be to uncover all factors that contributed to the occurrence of an incident in order to correct and prevent reoccurrence. With that goal in mind, a thorough RCA includes the successful completion of the following 5 steps.

a) Data Collection

The first step in the RCA is to gather data. Without complete information and an understanding of the incident, the causal factors and root causes associated with the incident cannot be identified. The majority of time spent analyzing an event is spent in gathering data.

b) Cause and Effect Charting

Charting provides a means to organize and analyze the information gathered during the investigation and identify gaps and deficiencies in knowledge as the investigation progresses. The cause and effect chart is simply a sequence diagram with logic tests that describes the causes and effects leading up to an incident, plus the conditions surrounding these events. Preparation of the cause and effect chart should begin as soon as investigators start to collect data about the incident. The causal factor chart should drive the data collection process by identifying data needs. During the course of the cause and effect charting, it may be noted that some information is missing, or lacking. When this occurs, identify the missing information and assign a team member responsibility and deadline for collecting the missing data. Data collection continues until the investigators are satisfied with the thoroughness of the chart (and hence are satisfied with the thoroughness of the investigation). A thorough chart should explain to the uninformed observer exactly what happened, how it happened, and why it happened.

c) Root Cause Identification

When the entire incident has been charted out, the investigators are in a good position to identify the root causes of the incident. Root causes are those contributing factors that, if eliminated, would have either prevented the incident or reduced its severity. Rarely is there just one root cause; incidents are usually the result of a combination of factors. When only the obvious root causes are addressed is addressed, the list of recommendations will likely not be complete. Consequently, the occurrence may repeat itself because the organization did not learn all that it could from the incident.

d) Solution Generation and Implementation

The next step is the generation of solutions. After identifying all causes that, if eliminated, would have either prevented or reduced the severity of the incident, solutions are brainstormed to control or eliminate those root causes. Once solutions are agreed upon by the investigation

team, responsibility for the implementation of each solution, along with a deadline for implementation must be assigned. If the solutions are not implemented, the effort expended in performing the analysis is wasted. In addition, the events that triggered the analysis should be expected to recur.

e) Communication and Follow-up

After solutions have been implemented, site management is responsible for communicating root cause analysis outcomes to appropriate the appropriate management. Sharing information about root causes and the solutions generated to solve problems on projects to develop and share best practices for safe production. In addition to communicating root cause analysis outcomes, site management is responsible for following up on all implemented solutions to assure that they are not causing additional problems and are truly effective.

14. Follow Up Report

Immediately following a lost time incident, an incident investigation team led by the project manager shall determine the actual root causes that contributed to the incident and advise of any corrective or disciplinary actions that may be administered.

Results will be communicated via a Root Cause Analysis report to the following individuals within 5 days of the incident.

- Company President
- Chief Operation Officer
- Company President
- Regional manager or VP,
- V.P of Safety and Health
- Regional, district, or Corporate Safety Manager

15. Incident Report Alerts

Incident report distribution is used to raise awareness of potential hazards so that corrective measures can be implemented to prevent future incidents similar in nature. Incident reports are sent from the appropriate Safety Manager or his/her designee within 24 hours of incident notification, to all employees of the company.

Ladder Safety

1. Scope

The purpose of this program is to provide our employees with the necessary information in creating a safe workplace that is free of recognized hazards that is associated with using ladders.

2. Ladders

Except where either permanent or temporary stairways, suitable ramps, or runways are provided on the project, ladders shall be used for safe access to all elevations. Employees shall be trained in the safe use of ladders and to hazards that are associated with them.

3. General Requirements

- All ladders should be inspected by the user daily.
- The use of ladders with broken or missing rungs or steps, broken or split side rails, or other faulty or defective construction is prohibited.
- Ladders with deficiencies should be repaired per the manufactures recommendations, or destroyed.
- Ladders to be repaired or destroyed must be tagged "Do Not Use" until the necessary corrective action has been taken.
- Portable ladders shall be placed on a substantial base at a 4:1 pitch, and have a clear access at the top and bottom. Rails of ladders used for access to a floor, platform or other elevated point must extend at least three (3) feet above the landing unless an adequate handhold is available.
- Ladders must not be placed against a movable object.
- Straight or extension ladders in use must be tied, blocked, or otherwise secured to prevent them from being displaced.
- Portable metal ladders shall not be used for work where they may contact electrical conductors.
- Do not carry objects up a ladder. Keep both hands free for climbing, and always maintain three-points of contact. Tools and other objects are to be carried on a tool belt or raised and lowered with a rope.
- Face the ladder at all times when ascending, descending or working from it. When reaching from a ladder, keep the trunk of your body between the rails and always maintain at least three points of contact.
- Stepladders must be opened completely with the spreader securely locked.
- Employees should never stand above the second step from the top of a stepladder.
- Employees should never stand above the third rung from the top of a straight ladder.
- Floor openings for ladders must have guardrails on three sides.
- The area around the top and base of ladders must be free of stored flammables and tripping hazards.
- Ladders in aisles or walkways should be protected from impact.
- Ladders shall be inspected prior to each use to determine that they are in safe operating condition.

4. **Job-Made Ladders**
    - Job-made ladders are intended to be used for access and not as a temporary work platform ladder.
    - Rails are made of either 2x4 or 2x6 nominal lumber, depending on the pitch and working length of the finished ladder.

Minimum Rail Size for Single-Cleat Ladders	
Working Length	**Rail Size**
14	2 x 4
16	2 x 4
20	2 x 6
24 (max length)	2 x 6

- Cleats must be made of 1x4, or 2x4 materials that have been inspected for knots and other defects.
- Filler blocks must be the same thickness as the cleats should be butted tightly against the underside of each cleat.
- Job-made ladders must be tied off by the rails at the top and secured at the base with a pitch of 8:1.
- Ladders shall not be painted with opaque coatings.
- Additional ladders or 2x6 double-cleated ladders are needed for 25 or more workers.

Lockout/Tag Out

1. Scope

Hazardous energy may be found in many sources. The hazard may be hidden inside equipment, electrical conductors, or machinery. Other hazards may include: high or low temperatures, high-pressure pipelines, or containers with hazardous materials. Protection from these hazards is achieved through energy isolation and a comprehensive lock-out/tag-out program.

2. Policy

Work will not be performed on, in or near equipment, piping systems, and/or circuits which could cause bodily injury by contact with electrically energized components / parts, accidental start-up of machinery, release of fluid pressure (air, steam, hydraulic, etc.) or contact with flammables or other hazardous materials.

Electrical circuits shall be de-energized, valves shall be closed, pressures shall be bled off, and hazardous materials shall be drained from lines and/or vessels as necessary. Lines and/or vessels containing acids, corrosives, flammables or other hazardous materials shall be flushed or purged according to existing procedures.

3. Responsibilities

a) Project Manager

The Project Manager has overall responsibility for implementation, changes, administration and enforcement of the Lock Out/Tag Out. They will ensure that craft personnel are trained to carry out all provisions of this program. This includes checking for the proper identification of hazardous energy sources, proper and sufficient locks and tags, and ensuring that a test has been performed on the isolated equipment.

b) Superintendents and Foremen

Superintendents and Foremen are responsible for identifying work, which must be isolated from a hazardous energy source. They will initiate the Lock Out/Tag Out program and ensure that all components of the program are executed.

c) Safety Department

The Safety Department is responsible for working with the managers and supervisors to ensure that all the necessary training is completed and to assist safely planning the operation.

d) Employees

Employees have the responsibility of ensuring that equipment or component being worked on has been isolated from all possible hazardous energy sources, and that the proper lock and tag has been installed.

Employees shall never work on equipment or components locked and tagged by another, unless they have installed their own lock and tag on the equipment or component. It is recommended that all employees walk through the lockout sequence with their supervisor before commencing work.

Each employee working on equipment will be issued a lock, key and tags by the manager or supervisor, and be required to log their use in the Lock Out / Tag Out log.

4. Training Requirements

Affected employees shall be instructed and trained in the lockout / tagout procedures contained in this section prior to the start of any work activity in which they may be exposed to the hazards of unexpected startup or released of stored energy. All training will be documented and filed in the project safety office. All affected employees shall be trained in the following items:

- Recognition of Hazardous Energy Sources.
- The types and magnitude of energy in the work area.
- The necessary means for energy isolation and control.

5. Typical Stored Energy Hazards

- Electrical Energy: 120V, 240V and 480V examples are: welding machines, transformers, compressors and various electric motors. Much higher voltages are often encountered on construction sites in motor control centers, system controls, transformers, transmission lines, etc. (Potential hazard is electrical shock.)
- Compressed Air: 120 PSI. Examples are: compressors and pressure vessels. (Potential hazards from rapid air loss such as ruptured lines causing particles to get into the employee's eyes.)
- Natural Gas, LPG: Gas lines. (Potential hazard is asphyxiation or explosion/fire from gas leakage, especially in a confined space.)
- Kinetic Energy: Rotating flywheels in equipment such as press brakes, and or spring-loaded mechanisms. (Potential hazard could result in personal injury if struck by flywheel or accidental release of spring tension).
- Stored Energy: Hydraulic, gas, air, water, gravity, etc. (Personal injury could result from release of stored energy).

6. Procedures

a) General

The Project Manager or Superintendent will maintain a log in the project office of equipment or machinery, which has been subject to this policy. Other general guidelines include:

- Notify all affected employees that a Lockout / Tagout system will be utilized and the reasons for the Lockout / Tagout. The authorized employee shall know the type and magnitude of energy that the machine or equipment utilizes and shall understand the hazards thereof.
- If the machine or equipment is operating, shut it down by the normal stopping procedures.

- Operate the switch so that the equipment or machine is isolated from its energy source(s). Stored energy (such as air, gas or water pressure) must be dissipated or restrained by methods such as repositioning, blocking or bleeding the line.
- Lock and Tag the energy isolating devices with assigned individual tags and locks.
- After verifying that no personnel are exposed, operate the push button or other normal operating controls to make certain the equipment will not operate. Caution: Return operating control(s) to "neutral" or "OFF" position after the test.

b) Multiple Employee Energy Isolations

In the preceding steps, if more than one individual is required to Lock Out/Tag out the equipment, each individual shall place his/her own lock device and tag on the energy isolating device(s). When an energy-isolating device cannot accept multiple locks or tags, a multiple Lock Out/Tag Out device shall be used.

If Lockout is used, a single lock may be used to Lock Out the machine or equipment with the key being placed in a Lock Out box or cabinet, which allows the use of multiple locks to secure it. Each employee will then use his/her own lock to secure the box or cabinet. As each person no longer needs to maintain his/her Lockout protection, that person will remove his/her lock from the equipment or from the box or cabinet.

c) Restoring Equipment to Normal Operation

- After the servicing and/or maintenance of equipment has been completed, the equipment is ready for normal operation.
- Check the area around the machines or equipment to ensure that no one is exposed to operating hazards.
- Each lock and tag shall be removed only by the employee who applied it. Locks and tags SHALL NOT be removed by anyone except the person who applied the lock. In the event that the person who applied the lock cannot be located, at work or at home, despite every reasonable effort, The Lock Removal Authorization form will be used.
- Reconnect all energy sources, and then operate the start button or other normal starting controls.

Pile Driving

1. Policy

Pile Driving is a fundamental process to build any structure in the construction industry. It is essential for anyone involved with pile driving to be aware of all potential situations that may arise. Incidents associated with pile driving are usually severe, due to the tremendous amount of force and weights involved. This program identifies safe work practices to be followed when driving pile.

2. Responsibilities

It is the responsibility of the Project Manager or Superintendent to ensure that potential hazards are identified and managed to prevent incident.

The Safety Department will provide assistance in training employees and auditing overall conformance with this program.

3. General Requirements

- Park in a location that provides safe entrance to and exit from the work area. This area should not create potential conflicts with other vehicles or operating equipment in the work area. In addition, it must provide protection for employees getting in and out of vehicles.
- Wear appropriate PPE to include: hard hats, safety-toed/steel-toed boots, safety glasses, high visibility vests (class II) and hearing protection.
- Do not work or walk under suspended loads.
- Employees in work area must use caution to stay clear of operating equipment. Remember to always maintain eye contact with the operator before approaching any equipment.
- Always use proper lifting techniques to prevent muscle strains and sprains and prevent back injury.
- Pay attention to job site layout to determine an escape route in case of an emergency.
- An emergency eyewash station or bottles shall be on site.
- Ensure proper access to the job site; be aware of loose materials, excavations, tripping hazards etc.
- Locate all utilities in or near your work area prior to commencing work.
- Review all Safety Data Sheets (SDS's) prior to work or when any new product is introduced to the operation or crew.
- Dispose of all materials properly, use gloves and long sleeved shirts when handling treated timber, sheets or steel pile.
- Always stay clear from pinch points and crushing hazards. If an employee is jockeying a pile in the leads a timber or cheater bar should be used versus placing hands and arms into a pinch point.
- Take precaution to prevent heat and cold stress when working in extreme temperatures.
- Employees shall wash hands before eating, drinking or smoking.
- Designate only one employee to communicate with the crane operator and review proper hand signals prior to work beginning.
- Dogs that automatically disengage are prohibited on pile driver hoist drums.

- Hydraulic hammer hoses can be under high pressure and heat. Take caution to inspect and protect these lines. Any leak of hydraulic oil shall be immediately cleaned up to reduce the risk of injury to employees and contamination to the environment.
- Safety cables shall be attached at each hose connection to prevent the line from “whipping” if the coupling becomes disconnected.
- Hanging or swinging pile driver leads must have fixed ladders for access. Fixed ladders shall be provided with fall protection anchor points or other suitable means, i.e. retractable lifeline. When employees are required to climb ladders to perform maintenance, repairs or refuel, etc. they shall utilize a full body harness and be connected directly to the retractable lifeline.
- Employees will not work from the lead or ladder when piles are being driven
- Inspect wire rope and straps regularly. Defective equipment shall be removed from service and tagged “Do Not Use”.
- Guards must be in place across the top of the head block to prevent the cable form jumping out of the sheaves.
- Hoisting equipment for pile driving must support the weight of the pile, pile shell, and mandrel, the weight of the hammer, the weight of the leads and any attachments at the end of the boom each time the pile is driven. The capacity of the hoisting equipment must be sufficient to support the maximum load at the operating radius.
- Assemble the leads to allow enough room for the longest pile length to be driven as well as room for the length of the hammer and hoist line termination, to prevent two blocking the heads of the leads.
- Stop blocks shall be provided for the leads to prevent the hammer form being raised against the head block.
- Make sure the gate at the bottom of the leads is the right size and style for the piles to be driven. Ensure all retaining pins are in place.
- When the pile driver is being moved, the hammer must be lowered to the bottom of the leads.
- Operator should always keep the hammer in the lower position except when positioning the hammer to the pile. A blocking device, capable of safely supporting the weight of the hammer, shall be provided for placement in the leads under the hammer at all times while employees are working under the hammer.
- All employees shall be kept clear when piling is being hoisted into the leads.
- To hoist an H beam pile, cut a hole in the beam flange several feet below the top of the pile to allow it to fit under the hammers drive head. Attach the hoist line with the shackle directly to the beam using the hole in the flange. The driving end should be nearest the operation and in such a position that it will not swing or whip while being raised.
- The hammer must be inspected at least once a day, or each shift. If hard driving is encountered, more frequent inspections are required. Check all bolts, cable clamps, cables, cushion blocks, fuel lines, rail bolts, cocking and trip mechanisms, fuel pumps, injectors and drive head retaining pins. Diesel hammers may require fueling. Check the oil reservoir each time the fuel is added and grease fittings as needed.
- When it is necessary to cut off the tops of driven piles, pile driving operations shall be suspended except where cutting operations are located at least twice the length of the longest pile from the driver.

- During pile cut off, make sure the area is clear before the cutting begins. Remove all combustibles from the area. Barricade the area to keep other craft out of the work area.
- Raising and lowering pile leads is one of the most dangerous operations associated with pile driving. For this reason leads are left to be suspended from the crane as long as the leads and hammer are attached/supported by a driven pile. Additionally the hammer shall be in the lowest position possible inside the leads and the crane shall be dogged off.

4. Job Hazard Analysis (JHA)

Prior to the start of any pile driving operation it is the responsibility of the Project Manager and/or Engineer to develop a Job Hazard Analysis for all Pile Driving and sheeting activities. The following hazards shall be considered:

a) Trenching and Excavation

Typically piling are driven in trenches or excavations. The Trenching and Excavation Program will need to be consulted to ensure that or piling operations are in conformance with these procedures. As a general outline the following must be considered:

- Soil analysis and determination.
- Need for protective systems (i.e., sloping, trench box, cofferdam, or sheeting).
- Access and egress (i.e., a safe means of foot travel)
- Setback of spoil piles.
- Location of vehicular and pedestrian traffic.
- Potential for water accumulation.

b) Crack and Damage survey and Seismographic Monitoring

The Project Manager is responsible for performing a pre-job survey, obtaining vibration monitoring equipment , documenting, and/or contracting outside services to document sheeting, pile driving, and/or blasting operations within 500 feet of an existing structure.

c) Traffic Control

Determine the traffic control needs from the Traffic Control plan, and exposure to the traveling public, vehicular and pedestrian.

5. Overhead and Underground Utility Locates

All overhead and underground utilities are to be located prior to driving any pile driving or sheeting operations. When working around Overhead Power Lines we must verify the exact voltage of overhead power lines. Should voltage be less than 50 kv (50,000 v), a minimum of 15 feet shall be maintained. These safe operating distances are referred to as the “absolute limit of approach” and are defined in the following table:

For Normal Voltage in Operation Near High Voltage Power Lines & Operation Near High Voltage, KV

Normal Voltage, KV (Phase to Phase)	"Prohibited Zone" Minimum Required Clearance, FT (M)*
Up to 200	15 (4.60)
Over 200 to 350	20 (6.10)
Over 350 to 500	25 (7.62)
Over 500 to 750	35 (10.67)
Over 750 to 1000	45 (13.72)
Operations in Transit with No Load and Boom or Mast Lowered	
to 0.75	4 (1.22)
Over 0.75 to 50	6 (1.83)
Over 50 to 345	10 (3.05)
Over 345 to 750	16 (4.87)
Over 750 to 1000	20 (6.10)

*** Environmental conditions such as fog, smoke, or precipitation may require increased clearances.**

In addition to minimum requirements of the above table, the following requirements shall also be satisfied:

a) Caution Zone

A safe work zone not less than 20 feet as identified in the above table depending on power line size (Kv) shall be established. Paint or use other visible methods of clearly designate "Caution Zone Area" along the ground measured horizontally from the overhead power line hazard shall be used. Furthermore any time we are required to operate a crane or lifting equipment within the "Caution Zone", the hazard analysis section shall address the control measures to prevent contact.

b) Danger Zone

A restricted access area of not less than 15 feet depending on power lines size (Kv) as identified in the above table shall be established. Paint and/or use of danger signs to clearly designate the Danger Zone shall be implemented.

An on-site meeting between a manager or supervisor and a representative of the owner of the lines or a competent representative of the electrical utility should take place to establish the procedures to safely complete the operations.

Devices such as ribbons, balls, etc. should be attached by a qualified person to the power lines to improve visibility, or equivalent means employed to aid in location of the absolute limit of approach.

Operation of boom and load over electric power lines is extremely dangerous, due to perception of distance and multiple contact points as viewed from the position of the operator and/or position of the signal person. The operator should avoid operating the crane, with or without a load, in this area.

Load control, when required, shall utilize tag lines of a non-conductive type (dry polyester/nylon rope).

A qualified signal person, whose sole responsibility is to verify that the required clearance is maintained, shall be in constant contact with the crane operator. No one shall be permitted to touch the crane or the load unless the signal person indicates it is safe to do so.

6. Confined Space Hazards

It is important to note that confined space hazards can and do exist in most trenches, excavations, and coffer dams where piling and sheeting are driving. Therefore we must conduct and document atmospheric monitoring in accordance with the Confined Safety Program.

Personal Protective Equipment (PPE)

1. Scope

The purpose of the Personal Protective Equipment Policies (PPE) is to protect the employees of from exposure to work place hazards and the risk of injury by using Personal Protective Equipment (PPE).

2. Policy

The Company shall supply, and employees shall use all required and appropriate Personal Protective Equipment (PPE). Any violation of this policy shall result in disciplinary action, up to, and including termination of employment.

3. Standard Issue New Hire PPE

The following Personal Protective Equipment (PPE) shall be issued at the time an employee is hired:

- Hard Hat
- Gloves
- ANSI approved Safety Glasses
- High Visibility Vests – Type II Minimum

4. PPE Training

Upon distribution of all PPE, employees shall be trained on proper use, maintenance, and care of equipment.

5. PPE Minimum Requirements

At a minimum, all persons on the project will wear:

- An approved hard hat (metal and bump caps are not approved head protection)
- Eye protection – Z.87.1
- T-shirt with a standard 4-inch sleeve (tank tops and/or cut-offs are not approved).
- Reflective vest - ANSI Class II type vest or t-shirt is the minimum requirement while working on the projects; when required ANSI Class III will be used.
- Durable long pants (sweat or jogging pants are not approved).
- Task specific PPE as prescribed by Job Hazard Analysis (JHA) or TEAM Book.

6. Specific PPE Requirements

a) Personal Flotation Devices

Employees working over water where a potential drowning could occur, or within six (6) feet of the water, shall be provided and properly wear (zipped up and clipped) a Coast Guard approved personal flotation device (PFD). Additional PFDs and support equipment may be required.

b) Hearing Protection

Earplugs or earmuffs shall be used when a reasonable potential exists for exposure to injurious noise levels (a 90 db time weighted average over an 8 hour period).

c) Eye Protection

It is Company policy to observe 100% eye protection. Suitable eye protection shall be worn at all times when on the project. Only ANSI approved eye protection, or prescription eye shields specific for the employee shall be worn.

When reasonable potential exists for eye injury from bright light, or physical or chemical hazards, supplemental eye protection such as face shields, approved cutting goggles and protective goggles shall be issued and used.

d) Face Protection

Face shields shall be worn over normal eye protection for operations including but not limited to:

- Chipping,
- Grinding,
- Powder actuated tool use,
- Jack-hammering,
- Compressed air blowpipe or high-pressure water use,
- Cut-off saw operations, or
- Other operations as mandated by the Job Hazard Analysis or TEAM book meeting
- Hand Protection

e) Hand Protection

Appropriate gloves shall be used during construction work activities on all projects. Such operations shall be identified in the Job Hazard Analysis and TEAM book planning and proper protection shall be issued as required.

f) Leg Protection

Leg chaps (at a minimum) shall be worn when operating chain saws.

g) Foot Protection

All employees shall have leather, above the ankle work boots. Employees are encouraged to wear good quality safety-toed boots.

In the event that an employee is performing tasks where foot injuries exist such as operating a jackhammer, pneumatic drilling, or walking behind compaction equipment, supplemental metatarsal guards shall be issued and worn.

Rubber boots shall be worn when required.

7. PPE Annual Review

- PPE equipment shall be reviewed annually as to its effectiveness and usefulness.

Recordkeeping

1. Policy

Recordkeeping protocols are required in order to facilitate training, provide discipline, and to initiate preventative/corrective measures for behaviors, site conditions and operational practices. All such documentation shall adhere to company guidelines as well as local, state or federal regulations regarding reporting, distribution and retention.

2. Records to Retain

Records that shall be maintained include but are not be limited to the following activities:

- TEAM Book, JHA
- Job Site Safety Inspection
- Machinery, tools inspections
- Personal protective equipment
- New Hire training
- On-going health and safety training
- Incident Reports
- Vehicle incidents
- Property
- General Liability
- Hazardous exposures to persons or the environment
- Work zone incidents whether or not they are directly connected to site operation
- Applicable local, state or federal forms or reports as required
- OSHA Logs, etc.

3. Documentation

All records shall be documented in writing and must clearly identify: subject matter or description of incident; employee or claimant names; time and date of the training or activity; location of occurrence. instructor or training provider.

4. Distribution and Review

Records are to be distributed in hard copy or electronic format according to company guidelines, and as required by applicable regulatory agencies. Distribution and review of records may also include but is not limited to:

- Job site personnel
- Project management
- Safety – IIPP representatives
- District or regional management

- Regional presidents
- Executive officers
- Executive safety committee
- Human resources
- Local, state or federal agency offices
- Insurance providers

5. Retention

- Records governed by regulatory agencies shall be retained a minimum of five year unless otherwise specified.
- Documents not governed by regulatory agencies shall be retained a minimum of at least on year.

Respirator

1. Policy

The use of respiratory protection equipment poses physiological and psychological hazards to employees; therefore our first obligation as an employer is to avoid situations where our employees are required to use this equipment. When applicable this can be accomplished by using engineering or administrative controls.

In most situations, atmospheric hazards associated with construction work can be controlled through engineering or administrative controls. Following our best effort to control atmospheric hazards and if they remain at levels at or above established limits this Respiratory Protection Program will ensure employees are kept safe while working on our projects.

2. Scope

The Respiratory Protection Program is to ensure that all employees are protected from all recognized respiratory hazards in the workplace. This program provides managers, supervisors, and employees information necessary for planning work in accordance with our company policies.

3. Responsibilities

Responsibility for implementation of this program begins with top management.

a) Managers/Supervisors

- Managers and supervisors shall be familiar with the requirements of this program and provide adequate resources for performing required duties.

b) Safety Manager or Safety Coordinator

- The Safety Manager or designee will serve as Program Administrator with the authority and responsibility to oversee the management and administration of the Respiratory Protection Program.
- When a respirator program is appropriate, the Safety Manager will appoint an operation-specific Respirator Program Administrator. This individual shall be knowledgeable about the requirements of the program and shall be provided with the resources necessary to perform the duties associated with their position.

c) Assigned Program Administrator

- A Program Administrator shall be responsibility for the overall management and administration of the program.
- The Program Administrator can utilize industrial hygienists, safety professionals, or other respirator experts to help implement the respirator program.

- The Program Administrator can work with a committee or assign responsibility for portions of the program to other personnel, but the overall responsibility for management and administration of the program shall remain with the Program Administrator.
- The Program Administrator can delegate responsibility for the day-to-day operation of the program at a specific site to a qualified person. However, implementation of the overall respirator program remains the duty and responsibility of the Program Administrator.
- The Program Administrator (primary and job-assigned delegate) will review each subcontractor's submissions and verify the minimum program compliance requirements are met.

4. Hazard Analysis

A Hazard Analysis for each operation will be necessary to ascertain the degree to which this program will affect the operation.

Operations which may require the use of respiratory protection include, but are not limited to:

- Grinding, chipping, sawing, or drilling concrete,
- Abrasive blasting,
- Use of chemicals/solvents, or
- Work within confined areas.

Subcontractors who anticipate the use of respiratory protection equipment in their scope of work shall submit a written program to the Program Administrator (PA). The plan shall address each element of the regulatory requirements and components of this program prior to commencing any operations.

5. Voluntary Respirator Use

Managers and supervisors should anticipate that employees would, at times, request to use respirators even though control measures have reduced the specific contaminant levels below permissible limits. The standard allows for the voluntary use of filtering face piece type respirators in these cases, without requiring a written program.

- Voluntary use of tight fitting, air-purifying respirators require at least the Medical Evaluation and Cleaning and Disinfecting portions of a written program to be implemented.
- Employees voluntarily using filtering face piece respirators shall be provided with the relevant respirator information.
- Selection of filtering face piece type respirators depends upon the type of airborne contaminant present.
- Filtering face piece respirators should not be used beyond one work shift.
- Employees voluntarily using filtering face piece respirators are required to be clean and shaven at all times to assure proper fit and seal.

6. Respirator Selection

Respirator selection is determined by the:

- Type and quantity of the respiratory hazard present,
- The degree of protection required, and
- The tolerance of the employee as determined from the Medical Questionnaire and/or Physician/Licensed Health Care Professional (PLHCP).
- The degree of hazard may be determined by historical data in the case of distinctly similar operations in the past, or through atmospheric testing.
- Information regarding the appropriate protection for an operation is outlined in the Safety Data Sheets (SDS) for the substance.
- Before use in the field, all respirator types listed below require employee medical evaluation, fit testing and training. Cleaning and maintenance programs are also required as addressed later in this program.

a) Air Purifying Respirators

- Air purifying respirators are NOT for use in oxygen deficient or toxic gas atmospheres.
- Air purifying, half mask respirators, covering the nose and mouth only, are the most common from of tight fitting respirator used in construction. These respirators come in a variety of sizes with filter cartridge selections to address most dust, mist, vapor, and fume hazards found in construction work; up to approximately 10 times the permissible exposure limit.
- Air purifying (negative pressure) full-face respirators protects the nose, mouth and eyes affording a greater degree of protection from infiltration of contaminants up to approximately 50 times the permissible exposure limit.
- Powered air-purifying respirators provide filtered air to the facemask through a belt-mounted air pump fitted with the appropriate filters. Employers are required to formulate a change schedule, which will prevent employee exposure to contaminants due to filter saturation, until respirator manufacturers perfect End of Service Life Indicators (ESLIs) for respirator filter cartridges.
- Manufacturers issue guideline information for this purpose. This information should be requested when purchasing filters and shall be included in the site plan.

b) Atmosphere Supplying Respirators

- Airline respirators are required in situations where filtering the air does not provide enough protection.
- Atmospheres that are Immediately Dangerous to Life or Health, “IDLH,” require the most sophisticated atmosphere supplying respirators.
- Situations where construction employees may be exposed to IDLH atmospheres are extremely rare and should necessarily remain such.
- The Project Manager shall consult with the Safety Manager (Respirator Program Administrator) before planning an operation in a potentially IDLH atmosphere.
- When contemplating any airline respirator use, the Project Manager, Superintendent, Safety Manager, and/or Safety Coordinator shall develop a plan to comply with the appropriate regulatory standards.

7. Medical Evaluation

The use of respiratory protection equipment imposes physical burdens on the user due to the:

- Weight of the equipment,
- Increased effort of breathing through a filter,
- Temperature and humidity, and
- Carbon dioxide buildup in the mask.
- Because of these stresses each employee is required to complete a medical evaluation or examination prior to a fit test for each employee who will be required to use a respirator.
- When the use of the respiratory protection equipment is anticipated, the Project Manager or a designee shall either:
    - Administer the required Medical Questionnaire
    - Obtain the services of a Physician or Licensed Health Care Professional, (PLHCP) who shall be familiar with, and be able to fulfill the requirements of the standard.
    - The PLHCP shall be identified in the site specific plan and be accessible to employees,
    - The PLHCP will evaluate the employee during regular working hours, or at another time convenient to the employee, and prepare an evaluation of each employee's ability to use the type of respirator prescribed in the site plan.
    - The PLHCP employee evaluations shall be provided in writing to the Project Manager or designee and a copy forwarded to the site Respirator Program Administrator.
    - Medical evaluations provided by the PLHCP shall be treated as confidential and stored in a locked file cabinet.

8. Additional Medical Evaluations

Medical evaluations are not required annually under the new standard, but changing conditions in the workplace and/or in employee health, such as the following, may indicate the need for re-evaluation:

- The employee reports medical symptoms related to the use of a respirator.
- The PLHCP, Program Administrator, or supervisor recommends re-evaluation.
- A change is noted in the employee's ability to wear a respirator during recurrent fit testing.
- Changes in workplace conditions which place additional burden on employees that may increase stress and breathing effort could include, but are not limited to:
- Following a re-evaluation a different respirator classification approved by the PLHCP will be employed.

9. Fit Testing

- Every employee required to use a tight-fitting respirator, shall pass a fit test using the respirator type approved by the PLHCP. Although several test methods are available, the Qualitative Fit Testing protocol (QLFT).

- Project Managers shall ensure all-necessary personnel, facilities, and supplies are available for performance of fit testing as required.
- Obtain the services of an individual trained and certified to perform respirator fit testing.
- Assure availability of a selection of appropriate respirators. Employees shall be "afforded a selection of respirators of various sizes and models from which to pick the most acceptable." This requirement includes accommodating those employees who use corrective eyewear.
- Provide a ventilated room or space in which to conduct fit testing. There are health hazards associated with over-exposure to the irritant smoke used in the test procedure.
- Assure that a fit test is performed, at least annually, for each employee who is required to use a respirator.
- Assure availability of testing equipment and respirator cleaning supplies as appropriate to comply with the program.

a) Personnel Conducting Fit Testing

- Respirator manufacturers and/or suppliers will often perform this function, or will train and certify a company employee to provide fit testing at the project level.
- Perform fit testing in compliance with the mandatory protocols.
- Do not perform fit tests when facial hair is evident that may affect the face seal of the respirator.
- Assure that all respirators worn by employees are clean and disinfected before used for additional testing.
- Complete the Quantitative Fit Protocol for each employee tested and record in the employee's file.

b) Quantitative Fit Testing Protocol

Exercises	Procedure	Measurement
Facing Forward	Stand and breathe normally, without talking, for 30 seconds.	Face forward, while holding breath for 10 seconds.
Bending Over	Bend at the waist, as if going to touch his or her toes, for 30 seconds.	Face parallel to the floor, while holding breath for 10 seconds.
Head Shaking	For about three seconds, shake head back and forth vigorously several times while shouting.	Face forward, while holding breath for 10 seconds.
Redon 1	Remove the respirator mask, loosen all face piece straps, and then redon (put on) the respirator mask.	Face forward, while holding breath for 10 seconds.

Redon 2	Remove the respirator mask, loosen all face piece straps, and then redon (put on) the respirator mask.	Face forward, while holding breath for 10 seconds.

10. Training and Information

Employees who do not comply with the program elements may expose themselves to significant health hazards and subject to the company disciplinary procedure.

These can be avoided or eliminated by:

- Imparting clear and understandable instructions,
- Demonstrating proper procedures, and

All the following items shall be included in the training session:

- Discuss the nature of the hazard - expected exposure levels vs. permissible exposure levels "PEL's" immediately dangerous to life or health ("IDLH," etc.) for which the respirator is necessary. Explain the possible health effects if the protection is compromised. Reference the MSDS for information.
- Explain how improper fit, usage, and maintenance can compromise protection.
- Explain the capabilities and limitations of the respirator to be used.
- Demonstrate the proper methods for inspecting, wearing the respirator, and how to perform a user seal check.
- Demonstrate proper methods of cleaning and storing respirators.
- Explain how to recognize medical signs and symptoms that might limit or prevent the effectiveness of respirators.
- Explain how to recognize the signs of filter saturation.
- Instruct personnel to immediately leave the work area and report the situation to a supervisor. In the event of filter saturation.
- Re-training shall be conducted if an employee fails to comprehend or understand the information.
- A system of pre and post testing can be used to document knowledge of the requirements.

11. Respirator Use

Once employees and direct supervisors have been evaluated, fit tested and trained in the use of respirators, supervision become responsible for respirator use on the job site. The following conditions must be monitored to ensure such activities are not performed within the hazardous work area.

- Respirators may become uncomfortable for employees due to heat, humidity, dirt, or grit and will require cleaning.
- Filters may become saturated or clogged (to be avoided by effective filter change schedule) and require changing, or the respirator could malfunction.

- Program Administrator and Supervisor shall:
- NOT PERMIT AN EMPLOYEE who has facial hair which comes between the sealing surface of the face piece and the face, or which may interfere with respirator valve operation, to wear a tight-fitting respirator.
- Ensure that if an employee uses corrective or protective eyewear, that the respirator is worn in a manner that does not compromise the respirator face piece seal. (To be resolved at time of fit test).
- Ensure that each employee inspects his/her respirator before each use to determine the condition of the face piece, valves, head-straps, and filter cartridges.
- Collect respirators with defective components for repair, replacement, or cleaning as needed.
- Ensure each employee performs a user seal check at the start of the shift and at any time following temporary removal of the respirator.
- Ensure each employee has filter cartridges available and is using the appropriate filter cartridges for the hazard involved.

12. Respirator Maintenance and Care

Respirators in normal use become contaminated with dirt, perspiration, or bacteria. Careful storage and maintenance at the worksite will extend the operational life of the equipment and will ensure that employees are afforded the greatest degree of protection.

a) Respirator Cleaning Procedures (Mandatory)

- All necessary facilities and supplies are available to employees for the proper cleaning, disinfecting and storage of respirators.
- Program Administrator, Superintendents, and Foremen shall ensure all respirators are used exclusively by one employee, and are maintained in a clean and sanitary condition through daily cleaning and disinfecting.
- When cleaning respirators, ensure employees follow the mandatory procedures.
- At the end of each use, following cleaning and disinfecting, and drying, the employee shall place his/her respirator in a personally labeled sealed plastic bag.
- A respirator, if stored inside a toolbox, should be in its own rigid box or compartment so that it cannot be crushed or deformed by the contents of the toolbox.
- Respirators must not be exposed to excess heat and cold.

b) Respirator Repairs

A qualified person can replace smaller parts such as valve seats and membranes inexpensively with manufacturer-supplied parts. The manufacturer shall perform repairs to the more sophisticated atmosphere supplying respirators.

Program Administrator, Superintendents, and Foremen shall:

- Determine the extent of damage to the respirator and authorize repairs or replacement as appropriate.

- Assure that the individual performing the repair has been appropriately trained.
- Where required, replacement respirators must be of the same model and size unless the employee has also been fit tested for the new model of respirator within the past year.

13. Breathing Air Quality

There are a number of inherent hazards, however, in using this equipment to supply breathing air such as:

- Internal combustion engines may introduce exhaust gases into the air supply.
- The compressor side is also lubricated with oil, potentially introducing carbon monoxide directly into the breathing air if the compressor overheats. (Filters are required to remove oil, moisture and odors from the air).
- Carbon monoxide must be monitored closely and maintained below established limits (10ppm). Therefore Respirators for IDLH atmospheres will be required.

Program Administrator, Superintendents, and Foremen shall ensure that:

- Compressed oxygen is never used as a substitute for breathing air.
- Air compressors are situated so as to prevent contaminated air from entering into the air supply system, especially engine exhaust.
- Suitable, in-line, air-purifying filters are in place and in satisfactory condition.
- Filters are properly tagged to identify the most recent filter change date and signature of the technician.
- If there is no information available to indicate the most recent filter change, the filters shall be replaced by a person authorized by the manufacturer to perform the change.
- An operable carbon monoxide alarm, set at 10 ppm or less, shall be installed on compressors used to supply breathing air for employees.

14. Identification of Filters, Cartridges and Canisters

Government standards prescribe certain colors to be associated with a filter designed to protect against a particular hazard.

- Purple is associated with particulates (dust, mists),
- Black is associated with organic vapors (paint, solvents, etc.), and
- Combined particulate/organic vapor filters will display both purple and black.

Direct labeling of each cartridge identifying the type and degree of protection and the NIOSH approval number of the cartridge.

- Program Administrator, Superintendents, and Foremen shall:
- Purchase and distribute properly colored and labeled NIOSH approved respirator filters only.
- Ensure through frequent and direct observation that labels are neither removed nor have become illegible during use.

15. Program Evaluation

- Conduct an evaluation of the program to measure the effectiveness of this program and sites to be evaluated to assure proper administration and implementation.
- The Program Administrator shall supervise the initial implementation of the program at the work site.
- An open dialog must be maintained with employees using respirators.
- Project Managers and Superintendents shall be responsive to any problems that employees may perceive with respirator use.
- The Program Administrator shall be notified of the time period within which the site plan is in practice to facilitate the required evaluation.
- The Program Administrator, Project Manager, Superintendent, and Site Safety Manager shall:
- Examine the work in progress and review employee work practices to ensure that the equipment is used, maintained, and stored according to the written program elements.
- Consult regularly with employees, inquiring about respirator fit, comfort and practicality.
- Implement applicable changes to improve or maintain program effectiveness as necessary.
- Conduct periodic reviews on the effectiveness of the Respiratory Protection Program, but in no case shall the time between evaluations be greater than annually.

16. Record Keeping

The Program Administrator shall maintain a file for each employee using respirators which must contain the following records:

- Written Medical Evaluation from PLHCP.
- Original Respirator Fit Test Record Form.
- Subsequent “Personnel Fit Test Record” Forms.
- Training documentation.
- The employee’s fit testing records are confidential but shall be made available to:
- The employee,
- The employee’s “designated representative” as per the employee’s authorization, and
- Compliance representatives.

Rigging

1. Scope

Rigging is a common practice on most of our projects. Every lift holds the potential for employee injury or property damage, the importance of proper rigging techniques must be followed and the guidelines of this policy adhered to.

2. Responsibilities

It is the responsibility of the Project Manager and Superintendent to take the necessary steps to ensure that adequate rigging is provided, and that the guidelines of this program are implemented into the daily operations.

3. Competent Person

Identification of Competent Rigging Person(s): It shall be the responsibility of each Project Manager/Superintendent to ensure every work location/project activity has identified a competent rigging person(s).

The competent rigging person will have the authority to take prompt corrective measures to eliminate any unsafe condition.

a) Competent Person Qualifications

- Must have knowledge of companies rigging requirements.
- Must be able to understand and follow specific manufacturer's guidelines.
- Have a well-rounded rigging background and experience with different types of rigging applications.
- Have the ability and authority to take prompt corrective action to eliminate a hazardous condition.

Competent rigging person must be able to:

- Determine the weight of a load to be picked.
- Decide the proper hitch to use.
- Determine best positive attachment points to the load.
- Recognize possible physical damage to load or rigging.
- Select the proper sling(s) to use.
- Select the proper lifting device to use.
- Read and understand rated capacity charts for all associated rigging components.
- Evaluate environmental conditions
- Evaluate structural condition of members to be rigged or know whom to reference.

4. General Inspection & Use Requirements

- All rigging equipment must be stored (covered) and off the ground when not in use.

- A registered professional engineer must certify any below the hook lifting device or similar lifting device that does not have the manufacturer's certification and it must be proof tested to 125% of its rated capacity.
- Use of pelican (shake-out) hooks to rig loads is prohibited except when sorting sheets and like materials in a lay down yard area. Use of pelican/shake-out hooks is prohibited for all overhead lifting. All other lifts must use safety latches on the hooks.
- A competent rigging person must supervise every rigging activity.
- All heavy or complex rigging activities should be planned prior to the lift.
- Any rigging incident or near-miss must reported and analyzed to identify appropriate corrective actions necessary to prevent reoccurrence.
- All rigging components found to be in a defective or otherwise non-compliant condition SHALL be taken out of service and destroyed. At no time will defective or otherwise noncompliant rigging devices be taken home, given away, or passed onto a secondary user.
- Rigging components shall be inspected prior to each use to verify they are in safe operating condition.

5. Wire Rope Slings

Wire Rope Slings must be inspected prior to each use and removed from service if any of the following conditions exist:

- Ten randomly distributed broken wires in one rope lay, or five broken wires in one strand in one rope lay.
- Wear or scraping of one-third the original diameter of outside individual wires.
- Kinking, crushing, bird caging or any other damage resulting in distortion of the wire rope structure.
- Evidence of heat damage; remove from service if exposed to temperatures greater than 500°F. (Fiber core wire rope slings shall be removed from service if exposed to temperatures greater 200 than 'F).
- End attachments that are cracked, deformed or worn.
- Hooks that have been opened more than 15 percent of the normal throat opening measured at the narrowest point or twisted more than 10 degrees from the plane of the unbent hook.
- Corrosion of the rope or end attachments.

6. Synthetic Web Slings

Synthetic Web Slings must be inspected prior to each use following the manufacturer's established guidelines and those outlined in this policy. Synthetic Web Slings shall be removed from service if any of the following conditions exist:

- Missing or illegible manufacturer's tags. Note that each sling shall be marked or coded to show manufacturer's name or trademark, the rated capacities for each type of hitch and the type of synthetic web material.
- Synthetic web slings of polyester and nylon shall not be used at temperatures in excess of 180°F. Polypropylene web slings shall not be used at temperatures in excess of 200°F.

- Acid or caustic burns are visible.
- Melting or charring of any part of the sling surface.
- Broken or worn stitches snags, punctures, tears or cuts.
- Never use a synthetic sling that is frozen.
- Sound synthetic web slings rigging practice should include the following items:
- Double wrap slings whenever possible.
- Use only manufactured sleeving / softeners or cut up synthetic web slings that have been damaged or determined no longer good for the intended use.
- Never use synthetic slings rigged around a load that has a sharp surface with potential cutting points or when there is a possibility the sling could slide/slip on a surface that is not circular and cut the sling.

7. Welded Allow Steel Chains

- All alloy steel chain slings have a permanent durable affixed identification tag stating size, grade, rated capacity, and manufacture.
- For overhead lifting, Grade 8 alloy steel chain is to be used. Frequent inspection of the following items shall be conducted prior to each use to ensure the following:
- Ensure identification marking (tag) is affixed and shows size, grade, rated capacity, reach and sling manufacturer's name.
- Look for elongated or stretched links. Use a chain gauge with "pass/fail" criteria. Chains not "passing" will be immediately removed from service, tagged "Do Not Use" or "Dispose Of".
- Inspect chain hook retaining nuts, collars and pins, and welds or riveting used to secure the retaining member.
- Look for gouges, chips, scores or cuts in each link. If the depth of these defects or damage is such that the link size is reduced below that listed in the table of wear, then the chain is to be removed from service.
- Look for severe corrosion or pitting resulting in measurable material loss.
- Look for weld splatter or discoloration from excessive temperatures.
- Examine the throat opening of the hooks.
- Makeshift links or fasteners formed from bolts, cords, or other such attachments, shall not be used.
- Ensure that before using each new, repaired or reconditioned chain sling, including all welded components in the sling assembly, proof testing has been conducted by the sling manufacturer or equivalent entity. Always request and retain a certificate of the proof test.
- Remove chains from service if any of the following occur:
- Chains are heated above 1000°F.
- The chain size at any point of any link is less than that required by the manufacturer.
- Chain links that are twisted, broken, cracked or otherwise damaged.

a) Periodic Inspections

- A thorough inspection shall be performed at least once every 12 months, or more frequently, based on chain usage.

- Excessive wear of chain, chain stretch and whenever wear at any point of any link exceeds the manufactures specifications, the assembly shall be removed from service.
- Crack detecting inspection should be performed on chain hooks suspected of cracks or where other visible defects have been identified.
- Attention should be directed to the frequency of sling use, the severity of service conditions and the nature of lifts being made.
- Equipment inspected shall be tagged. Inspections shall be documented on a log. Records of the most recent month in which each sling was thoroughly inspected shall be available for examination.

When inspecting chains which are components of chain falls, come-a-longs or hoists, it is necessary to follow manufacturer's instructions for maintenance and inspection, plus:

- Check braking mechanism for evidence of slippage under load.
- Hooks damaged from chemicals, deformations, cracks or having more than 15 percent in excess of normal throat opening, or more than 10-degree twist from the plane of the unbent hook. Free to rotate 360 degrees.
- All load bearing components of a hoist should be inspected for damage.
- Frequent and periodic inspections are required.

Roles and Responsibilities

1. Communication and Meeting Requirements

Managers and supervisors, on all sites are responsible for communicating with all workers regarding safety policies and procedures outlined in the Injury and Illness Prevention Program (IIPP) documents.

Information can be distributed through videos, presentations, written communications, posted notices, and through various safety meetings. All managers and supervisors shall ensure that meeting requirements are met.

a) Manager/Supervisor Monthly Safety and Health Meeting

- Safety meetings for manager and supervisors shall be conducted a minimum of once a month.
- The project manager or designated representative shall preside at the manager/supervisors' safety meetings and shall be assisted by the project's safety manager or safety designee.
- Minutes of these meetings shall be recorded and retained.

These meetings will be conducted in order to:

- Review and implement safety and health procedures and policies applicable to the project.
- Review noted and anticipated safety and health hazards and plan methods to eliminate or control them.
- Analyze incident experience and discuss major events to determine causes and steps necessary to prevent recurrence.
- Discuss suggestions and ideas for improving the project's safety program.

b) Toolbox Safety and Health Meetings

All employees on each project shall attend weekly toolbox meetings. These meetings focus on designated safety related topics chosen by the project or district. Employees in attendance shall sign the toolbox meeting form to acknowledge their understanding of the safety material that was presented. The sign in sheets shall be retained on the project.

c) Monthly “Mass” Meetings

A designated training topic will be delivered to all field employees throughout the company once each month to ensure all workers are receiving standardized training on a wide range of safety topics.

2. Life Safety Rules

Failure to comply with any one of these Life Safety Rules shall result in disciplinary action, up to and including termination.

- Failure to follow “Fall Protection” standards and requirements

- Using a Cell Phone or other communication device while operating a piece of equipment on the jobsite.
- Using or allowing the use of rigging materials this is in poor condition. .
- Unauthorized Work (disabling / tampering) on Energized Systems or failure to comply with Lock-Out/Tag-Out Procedures.
- Defeat of any Safety, Health, or Environmental critical devices; or Disabling, removing, or modifying manufacturer's safety guards and devices.
- Unauthorized Entry into a Confined Space or Trench/Excavation
- Theft, Harassment, Horseplay, Intimidation, or Fighting
- Any violation of the Alcohol, Drug, & Firearm Policy

3. Responsibility Assignments and Compliance Expectations

a) General Responsibilities

Procedures outlined in this document pertain to employee, administrative, supervisory, and managerial obligations related to the following areas of the company Injury Illness Prevention Program (IIPP):

- Responsibility,
- Compliance, and
- Communication.

b) CEO and COO

The company CEO shall:

- Begin all meetings with a safety review or safety topic discussion.
- Be engaged in, abide by, and actively support all Safety and Health initiatives and policies and comply with all local, state or federal regulations.
- Ensure safety accountability measurements for executive management is included in performance reviews, and shall consider these measurements for promotions, raises or bonuses.
- Complete at least one documented site safety self-assessment inspection per quarter.
- Ensure implementation of all company health and safety policies.

c) Vice President of Health and Safety

The Vice President of Health, Safety, and Environment, or his/her designee, is responsible for the comprehensive establishment, implementation, and maintenance of this IIPP.. In addition, the Vice President of Health, Safety, and Environment shall:

- Begin all meetings with a safety review or safety topic discussion;
- Actively support all Safety and Health initiatives and policies and comply with all local, state or federal regulations;
- Ensure that reports on the performance of the IIPP are reported to top management for review;

- Assist with inspections and safety and health audits as appropriate;
- Be a resource able to monitor company compliance with all regulatory and governmental safety standards, policies and procedures;
- Assist with investigation of any lost-time and serious incident investigations and provide the appropriate notifications.
- Ensure all safety communications are adequately distributed to all appropriate persons. Communications may include but are not limited to, changes in regulations, policies or procedures, incident alerts, near miss information, and statistical safety data;
- Collect and track pertinent safety data as required and assigned by the executive management;
- Ensure that appropriate accountability is in place to promote safety as a value throughout all levels of the company;
- Ensure implementation and execution of all injury and illness prevention polices;

d) President and Vice President(s)

The Regional President and Vice President(s) shall:

- Begin all meetings with a safety review or safety topic discussion.
- Be engaged in, abide by, and actively support all Safety and Health initiatives, policies, and comply with all local, state or federal regulations.
- Actively participate in divisional, regional, or project safety meetings and safety training endeavors.
- Ensure each project under his/her control plans for safety in accordance with all policies and procedures.
- Ensure safety accountability measurements for direct reports are included in performance reviews, and shall consider these measurements for promotions, raises or bonuses.
- Complete at least one documented site safety self-assessment inspection per month.
- Ensure implementation and execution of all injury and illness prevention polices within his/her region.
- Allocate resources to support safety initiatives and policies.

e) Area/Operations Manager

The Area/Operations Manager shall:

- Begin all meetings with a safety review or safety topic discussion.
- Be engaged in, abide by, and actively support all Safety and Health initiatives and policies and comply with all local, state or federal regulations.
- Actively participate in division, regional, or project safety meetings and safety training endeavors.
- Ensure each project under his/her control plans for safety in accordance with all policies and procedures.
- Ensure safety accountability measurements for direct reports are included in performance reviews, and shall consider these measurements for promotions, raises or bonuses.
- Complete at least one documented site safety inspection per month.

- Ensure implementation and execution of all injury and illness prevention polices within his/her region.
- Actively participate in lost-time, recordable, and serious incident investigations and provide appropriate notifications.
- Take active role in all positive safety recognition and disciplinary safety actions.

f) Safety and Health Representative (Directors, Managers, and Coordinators)

Safety and Health Representatives shall:

- Ensure that the IIPP is established, implemented and maintained
- Begin all meetings with a safety review or safety topic discussion.
- Be engaged in, abide by, and actively support all Safety and Health initiatives and policies and comply with all local, state or federal regulations;
- Assist in the development and delivery of safety forms, presentations, manuals, guides, and training materials.
- Develop and provide safety training when required.
- Ensure all safety communications are correct, distributed, and accessible to the field via written communications, videos, emails, direct mail, and through access of the company intranet site;
- Ensure all IIPP polices are implemented, and that all such materials are updated and functional displaying the appropriate company branding.
- Be an active participant on assigned safety committees and support / contribute to all other safety committee efforts and weekly toolbox meetings within his/her area of authority.
- Ensure each project under his/her control plans for safety in accordance with all policies and procedures.
- Schedule, assign and assist with site inspections and safety and health audits as appropriate.
- Participate in new hire orientation, ensure new safety supervisors receive company policy and procedure instruction, and verify that on-going employee safety training satisfies safety training matrix and applicable certification requirements.
- Be a valuable resource able to monitor company compliance with all regulatory and governmental safety standards, policies and procedures.
- Assist with investigation of any lost-time and serious incident investigations, completing initial report within 24 hours and completing reports within five days of incident.
- Ensure all safety communications are adequately distributed to all appropriate persons within his/her district or region. Communications may include but are not limited to, changes in regulations, policies or procedures, incident alerts, near miss information and statistical safety data.
- Collect and track pertinent safety data as required and assigned by area presidents and executive management.
- Take active role in all positive safety recognition and disciplinary safety actions.

g) Project Manager

The Project/Construction Manager shall:

- Begin all meetings with a safety review or safety topic discussion.
- Be engaged in, abide by, and actively support all safety initiatives and policies, and comply with local, state or federal regulations.
- Attend toolbox safety meetings and actively participate in subcontractor and project safety meetings and safety training endeavors.
- Ensure each project under his/her control plans for safety in accordance with all policies and procedures.
- Ensure safety accountability measurements for direct reports are included in performance reviews, and shall consider these measurements for promotions, raises or bonuses.
- Schedule and complete at least one documented site safety audit per month.
- Ensure implementation and execution of all injury and illness prevention polices.
- Investigate lost-time, recordable, and serious incident investigations, completing initial notifications within 24 hours and completing root cause analysis report within five days of incident.
- Take active role in all positive safety recognition and disciplinary safety actions.

h) Superintendent

The Superintendent shall:

- Begin all meetings with a safety review or safety topic discussion.
- Be engaged in, abide by, and actively support all Safety and Health initiatives and policies and comply with all local, state or federal regulations.
- Attend and participate in weekly toolbox meetings, project safety meetings, and safety training.
- Ensure each operation he/she works with plans for safety in accordance with all policies and procedures.
- Accurately document safety performance workers which shall be reviewed prior to consideration of promotions, raises or bonuses.
- Inspect jobsites daily to correct deficiencies, and complete at least one documented site safety inspection per week or submit 1 safety observation per day.
- Assist with investigation of any lost-time and serious incident investigations, completing initial report within 24 hours and completing reports within five days of incident.
- Be familiar with and ensure compliance with all regulatory and governmental safety standards, policies, procedures applicable to each operation under his/her authority.
- Actively participate or assist with any lost-time, recordable or serious incident investigations.
- Review all recordable incidents and near miss reports/alerts upon receipt to ensure preventative/corrective measures are in place on projects under his/her authority.
- Take active role in all positive safety recognition and disciplinary safety actions.
- Ensure the contents of the Safety – IPP Manual and are communicated and made accessible to all direct reports.

i) Project Engineer or Project Coordinator

The Engineer shall:

- Begin all meetings with a safety review or safety topic discussion.
- Be engaged in, abide by, and actively support all Safety and Health initiatives and policies and comply with all local, state or federal regulations.
- Attend and participate in weekly toolbox meetings, project safety meetings, and safety training.
- Design and/or assist with the safety planning on projects in accordance with all policies, procedures and engineering requirements.
- Ensure safety measures are incorporated into all engineering designs and ensure that all applicable regulatory, governmental or company standards are met.
- Monitor work conditions and practices while on jobsite to identify deficiencies so that corrective measures can be implemented.
- Have primary responsibility, when assigned, for critical crane lift calculations, power line clearance distances and designing rigging devices for lifting materials.
- Actively participate in any lost-time, recordable, or serious incident investigations.

j) Foreman

The Foreman shall:

- Lead each work shift in Stretch and Flex exercises.
- Conduct or attend weekly toolbox meetings and begin all other meetings with a focus on safety.
- Be engaged in, abide by, and actively support all Safety and Health initiatives and policies and comply with all local, state or federal regulations.
- Actively participate in project safety meetings and safety training.
- Ensure each operation he/she works with plans for safety in accordance with all policies and procedures, and shall be specifically involved in development of the TEAM (Total Efficiency Attainment Meeting) for all assigned tasks.
- Accurately document safe/unsafe performance history of workers.
- Monitor work conditions and practices by performing daily jobsite inspections to identify deficiencies so that corrective measures can be implemented. Complete either one documented safety inspection per week or one safety observation per day.
- Be familiar with and ensure compliance with all regulatory and governmental safety standards, policies and procedures applicable to each operation under his/her authority.
- Have primary responsibility for ensuring all types of incidents (injury, near miss, vehicle, property, etc.) are reported regardless of seriousness, and are documented in writing using the correct form within the proper time frame and through appropriate channels.
- Actively participate in any lost-time, recordable, or serious incident investigations, completing initial report within 24 hours.
- Review all recordable incidents and near miss reports/alerts upon receipt to ensure preventative/corrective measures are in place on operations under his/her authority.
- Take active role in all positive safety recognition and disciplinary safety actions.
- Provide continuous reinforcement of safety practices and procedures for all employees on the jobsite and ensure that additional hands-on training and education are provided to workers as needed.

k) All Employees

The employee shall:

- Be engaged in, abide by, and actively support all Safety and Health initiatives and policies and comply with all local, state or federal regulations.
- Attend and participate in toolbox and safety meetings as required.
- Protect themselves and co-workers from hazards by being familiar with and understanding the operation JHAs and daily TEAM Book meetings.
- Immediately report to his/her supervisor any near miss/near hit incident, any unsafe act or condition, or any other workplace incident without fear of reprisal.
- Seek assistance or training in unfamiliar situations.
- Have the right to refuse work if conditions are deemed to be unsafe or hazardous.
- Be active participant of any safety committee upon request.
- Be fully aware of and abide by all company ”Life Safety Rules”.
- Will NOT engage in cell phone use while on any job site with the exception of business communications via company issued devices, with every consideration given to safety precautions.

Scaffolding

1. Scope

All scaffolding must be erected and maintained to conform to established standards. Everyone's safety depends upon the proper erection, dismantling, inspection, and safe use of scaffolding.

2. Definitions

- Competent Person
  - Capable of identifying existing and predictable hazards, and
  - Has authorization to take prompt corrective measures to eliminate them.
- Qualified Person
  - Has a recognized degree, certificate or professional standing, or
  - Has extensive knowledge, training and experience.
- Weather
  - Work on or from scaffolds is prohibited during severe storms or high winds.

3. Training Requirements

Each employee who performs work while on a scaffold must be trained by a qualified person in the subject matter 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 shall include the following areas, as applicable:

- The nature of any electrical hazards, fall hazards and falling object hazards in the work area.
- The correct procedures for dealing with electrical hazards and for erecting, maintaining, and disassembling the fall protection systems and falling object protection systems being used.
- The proper use of the scaffold, and the proper handling of materials on the scaffold.
- The maximum intended load and the load carrying capacities of the scaffolds used.

Employees involved in erecting, disassembling, moving, operating, repairing, maintaining, or inspecting a scaffold shall be trained by a competent person to recognize any hazards associated with the work in question. The training shall include the following topics, as applicable:

- The nature of scaffold hazards.
- The correct procedures for erecting, disassembling, moving, operating, repairing, inspecting, and maintaining the type of scaffold being used.
- The design criteria, maximum intended load carrying capacity and intended use of the scaffold.

Each employee shall be retrained when there is reason to believe that an employee lacks the skill or understanding needed for safe work involving the erection, use or dismantling of scaffolds. Retraining is required in at least the following situations:

- Where changes at the worksite present a hazard about which the employee has not been previously trained.

- Where changes in the types of scaffolds, fall protection, or other equipment present a hazard about which and employee had not been previously trained.
- Where inadequacies in an affected employee's work involving scaffolds indicate that the employee has not retained the information required.

4. General Requirements for all Scaffolds

a) Capacity

- Each scaffold and scaffold component shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.
- Scaffolds shall be designed by a qualified person and shall be constructed and loaded in accordance with that design.

b) Scaffold Platform Construction

- The scaffold must be designed by a qualified person and constructed and loaded in accordance with that design. A competent person must supervise the erection, movement, alteration, and disassembly of the scaffold. Scaffold manufacturer's recommendations must be reviewed. All aspects of scaffolding, supervision and inspection by a competent person are crucial.
- Scaffold components manufactured by different manufacturers shall not be intermixed unless components fit together and the procedure is approved by a competent person.
- Scaffolds and scaffold components shall be inspected for visible defects by a competent person before each shift, and after any occurrence which could affect a scaffold's structural integrity.
- Each platform on all working levels of scaffolds shall be fully planked or decked between the front uprights and the guardrail supports as follows:
    - Each platform unit (scaffold plank, fabricated plank, fabricated deck, or fabricated platform) shall be installed so that the space between adjacent units is no more than 1 inch wide, except where it can demonstrate that a wider space is necessary.
    - Platforms shall be planked or decked as fully as possible and the remaining open space between the platform and the uprights shall not exceed 9-1/2 inches.
- Platforms used solely as walkways or solely by employees performing scaffold erection or dismantling are not required to be fully planked or decked as long as it will provide safe working conditions.
- Each scaffold platform and walkway shall be at least 18 inches wide.
- Each ladder jack scaffold, top plate bracket scaffold, roof bracket scaffold, and pump jack scaffold shall be at least 12 inches wide. There is no minimum width requirement for boatswains' chairs.
- Where scaffolds must be in areas where platforms and walkways cannot at least be 18 inches wide, such platforms and walkways shall be as wide as feasible, and employees on those platforms and walkways shall be protected from fall hazards by the use of guardrails and/or personal fall arrest systems.

- The front edge of all platforms shall not be more than 14 inches from the face of the work, unless guardrail systems are erected along the front edge and/or personal fall arrest systems are used.
- The maximum distance from the face for outrigger scaffolds shall be 3 inches.
- The maximum distance from the face for plastering and lathing operations shall be 18 inches.
- Each end of a platform, unless cleated or otherwise restrained by hooks or equivalent means, shall extend over the centerline of its support at least 6 inches.
- Each end of a platform 10 feet or less in length shall not extend over its support more than 12 inches, unless the platform is designed and installed so that the cantilevered portion of the platform is able to support employees and/or materials without tipping, or has guardrails which block employees access to the cantilevered end.
- Each end of a platform greater than 10 feet in length shall not extend over its support more than 18 inches unless it is designed and installed so that the cantilevered portion of the platform is able to support employees without tipping, or has guardrails which block employee access to the cantilevered end.
- On scaffolds where scaffold planks are abutted to create a long platform, each abutted end shall rest on a separate support surface. This provision does not preclude the use of common support members, such as "T" sections, to support abutting planks, or hook on platforms designed to rest on common supports.
- 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 unless the platforms are nailed together or otherwise restrained to prevent movement.
- At all points of a scaffold where the platform changes direction, such as turning a corner, any platform that's 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.
- 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.
- 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 scaffolds structurally sound.
- 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 component.

5. Specific Scaffold Requirements

a) Criteria for Supported (Frame) Scaffolds

Supported scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (three to one in California) shall be restrained from tipping by guying, tying, bracing, or equivalent means, as follows:

- Guys, ties, and braces shall be installed at locations where horizontal members support both inner and outer legs.
- Guys, ties, and braces shall be installed according to the scaffold manufacturer's recommendations or at the closet horizontal member to the 4:1 height and be repeated vertically at locations of horizontal members every 20 feet or less thereafter for scaffolds 3 feet wide or less, and every 26 feet or less thereafter for scaffolds greater than 3 feet wide. The top guy, tie or brace of completed scaffolds shall be placed no further than 4:1 height from the top. Such guys, ties and braces shall be installed at each end of the scaffold and at the horizontal intervals not to exceed 30 feet (measured from one end [not both] towards the other).
- Ties, guys, braces, or outriggers shall be used to prevent the tipping of supported scaffolds in all circumstances where an eccentric load, such as a cantilevered work platform, is applied or is transmitted to the scaffold.
- Supported scaffold poles, legs, posts, frames, and uprights shall bear on base plates and mudsills or other adequate firm foundation.
- Adequate mudsills or other rigid footing, capable of withstanding the maximum intended load, must be used. All stationary metal scaffold legs, including those of outriggers, shall rest upon base plates available from the manufacturer for this service. When the scaffold or outrigger is resting on earth or soft material, the base plates shall rest on and be secured to the equivalent of a 2-inch by 10-inch by 10-inch wooden base.
- Unstable objects shall not be used to support scaffolds or platform units.
- Unstable objects shall not be used as working platforms.
- Supported scaffold legs, poles, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement.

b) Criteria for Suspension Scaffolds

- Support devices shall be capable of supporting at least four times the load imposed.
- Outrigger beams, when used, shall be structural metal or equivalent and restrained against movement.
- Inboard ends of suspension beams shall be stabilized by bolts or other direct connections to the floor or roof deck and evaluated by a competent person.
- Suspension rope on winding drum hoists shall not contain less than four wraps of rope at the lowest point of scaffold travel. Suspension ropes used with other types of hoists shall have a designed/provided means to prevent the rope end from passing through the hoist.
- The use of repaired or damaged rope is prohibited.
- A competent person prior to each work shift, and after any occurrence that could have possibly adversely affected any components shall inspect ropes, anchor points, and connections.
- Gasoline-powered equipment and hoists shall not be used.
- Braking devices shall be automatic when an instantaneous change in momentum, or accelerated overspeed occurs.

- Two-point and multi-point scaffolds shall be tied or secured otherwise to prevent from swaying and inspected by a competent person.
- Devices whose sole function is to provide emergency escape and rescue shall not be used as working platforms.

6. Mobile Scaffolds

- Shall be braced by cross, horizontal or diagonal braces to prevent racking or collapse and vertical members squared and aligned.
- Shall have all brace connections secured and shall be plumb, level and square.
- Scaffold casters/wheels shall be equipped with positive locking devices to prevent movement while in use.
- Manual force used to move the scaffold shall be applied as close to the base as possible and no higher than five feet.
- Only power systems designed to move mobile scaffolds should be used. Do not use forklifts, trucks, etc.
- Employees shall not be allowed to ride on scaffolds.
- Platforms shall not extend outward beyond the base supports unless outrigger frames or equivalent devices are used.
- Caster stems and wheel stems shall be pinned or positively secured into scaffold legs.

7. Scaffold Access & Ladders

A safe means of access shall be provided for each employee erecting or dismantling a scaffold where the provision of safe access is feasible and does not create a greater hazard. A competent person shall 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 type of scaffold being erected or dismantled.

When scaffold platforms are more than 2-feet above or below a point of access, portable ladders, hook-on ladders, attachable ladders, stair towers, stairway-type ladders, ramps, walkways, integral prefabricated scaffold access, or direct access from another scaffold, structure, personnel hoist, or similar surface shall be used. Do not use cross braces or framed corners as means of access. Access must be provided to all working levels of a scaffold.

a) Hook-on and Attachable Ladders

- Shall be positioned as not to tip scaffold.
- The ladder bottom rung shall not be more than 24 inches above the scaffold supporting level.
- Ladders extending more than 24-feet high shall have rest platforms at 24-foot maximum vertical intervals.
- Ladders shall be specifically designed for use with the type of scaffold used.
- Minimum rung length of 11-1/2 inches uniformly spaced with a maximum spacing between rungs of 16-3/4 inches.

b) Stairway-type Ladders

- The bottom step shall not be more than 24 inches above the scaffold supporting level.
- Rest platforms shall be provided at 12 foot maximum vertical intervals.
- Minimum step width of 16 inches (mobile stairway-type ladders may have minimum step width of 11.5 inches).
- Treads and landings must to be slip resistant.

c) Stair Towers

- The bottom step shall not be more than 24 inches above scaffold supporting level.
- Handrails shall be provided at all levels with adequate hand hold for employee grasping, surface smooth (free of objects which could puncture), at least three inches from other objects, and at least 28 to 37 inches high from the surface of the tread.
- Landing platforms at least 18 inches wide by 18 inches long at each level.
- Stairway between stair rails shall be at least 18 inches wide.
- Treads and landings have slip resistant surfaces.
- Stairways shall be installed between 40 and 60 degrees from horizontal.
- Riser height and tread depth shall be uniform within 1/4 inch.
- Stair towers are preferred over ladders for access to different levels.

d) Ramps and Walk Ways

- 6 feet or more above lower levels shall have guardrail systems.
- Slope of ramp or walkway shall not be inclined more than one (1) vertical to three (3) horizontal (or 20 degrees above the horizontal).
- Slopes more than 20 degrees shall have cleats not more than 14 inches apart securely fastened.

e) Prefabricated End Frame Access

- Must be specifically designed and constructed for use as ladder rungs.
- Ladder rung length must be at least 8 inches wide, maximum spacing between rungs not to exceed 16 3/4 inches and uniformly spaced.
- Rest platforms provided every 24 feet.
- Access for employees erecting or dismantling supported scaffolds
- A safe means of access shall be provided for each employee erecting or dismantling a scaffold.
- Hook on attachable ladders shall be installed as soon as scaffold erection has progressed to a point that permits safe installation and use.
- Tubular welded from a scaffold and frames with horizontal members that are parallel, level and not more than 22 inches apart vertically, may be used for access.
- Cross-braces on tubular welded frame scaffolds shall not be used for access.

8. Scaffold Use

- Scaffolds and scaffold components shall be inspected and tagged by a competent person before each work shift and after any occurrence. A scaffold rung at the established point of access shall be used.
- The use of shore or lean-to scaffolds is prohibited.
- Never overload scaffold components beyond their rated capacity.
- Scaffolds shall not be moved horizontally with employees on them.
- Clearance between power lines:

Normal Voltage, KV (Phase to Phase)	"Prohibited Zone" Minimum Required Clearance, FT (M)*
Operation Near High Voltage, Kv	
Up to 200	15 (4.60)
Over 200 to 350	20 (6.10)
Over 350 to 500	25 (7.62)
Over 500 to 750	35 (10.67)
Over 750 to 1000	45 (13.72)

- Clearance closer than the above requirements is possible if a qualified individual coordinates the accomplishment of the following:
  - Lines are de-energized and grounded.
  - Lines are relocated.
  - Lines have installed insulated protective covers.
  - Lines are of the insulated, armored, shielded cable type.
- Scaffolds shall be erected, moved, dismantled or altered only under the supervision and direction of a competent person and only experienced and trained employees selected for such work by the competent person shall perform these activities.
- Employees are prohibited from working on scaffolds covered with slippery materials line ice, snow, oils, except as necessary for removal of such materials.
- Suspension ropes shall be protected from heat sources or corrosive substances.
- Scaffold work is prohibited during storms or high winds unless a competent person determines it is safe. The practice of covering scaffolds with plastic, etc. Increases the wind load on a scaffold dramatically and must be evaluated by a competent person.
- Debris cannot accumulate on platform. Regular housekeeping/clean up is required.
- Makeshift devices shall not be used on top of scaffold platform to increase height for employees.

9. Fall Protection

- Each employee on a scaffold more than 6 feet above a lower level shall be protected from falling to that lower level. Listed below are the types of fall protection provided to employees on each type of scaffold.
    - Each employee on a boatswain's chair, catenary scaffold, float scaffold, needle beam scaffold, or ladder jack scaffold shall be protected by a fall arrest system.
    - Each employee on a single-point or two-point adjustable suspension scaffold shall be protected by both a personal fall arrest system and guardrail system.
    - Each employee on a crawling board (chicken ladder) shall be protected by a personal fall arrest system, a guardrail system (with minimum 200 pound toprail capacity), or by a three-quarter inch diameter grabline or equivalent handhold securely fastened beside each crawling board.
    - Each employee on a self-contained adjustable scaffold shall be protected by a guardrail system (with minimum 200 pound toprail capacity) when the platform is supported by the frame structure, and by both a personal fall arrest system and a guardrail system (with minimum 200 pound toprail capacity) when ropes support the platform.
    - Each employee on a walkway located within a scaffold shall be protected by a guardrail system (with minimum 200 pound toprail capacity) installed within 9 1/2 inches of and along at least one side of the walkway.
- Each employee performing overhand bricklaying operations from a supported scaffold shall be protected from falling from all open sides and ends of the scaffold (except at the side next to the wall being laid) by the use of a personal fall arrest system or guardrail system (with minimum 200 pound toprail capacity).
- For other scaffolds not mentioned above, the use of all arrest systems or guardrail systems shall be used.
- A competent person shall determine the feasibility and safety of providing fall protection for employees erecting or dismantling supported scaffolds. Fall protection is required for employees erecting or dismantling supported scaffolds where the installation and use of such protection is feasible and does not create a greater hazard.
- Personal fall arrest systems used on scaffolds shall be attached by lanyard to a vertical lifeline, horizontal lifeline, or scaffold structure member. 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.
    - 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 abrasions. Safe points of anchorage include structural members of buildings, but do not include standpipes, vents, other piping systems, electrical conduit, outrigger beams, or counterweights.
    - 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.
    - 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.
    - 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.
- 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.
    - The top edge height of toprails on supported scaffolds and on all suspended scaffolds where both a guardrail and a personal fall arrest system are required to be between 36 and 45 inches.
    - When midrails, 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.
    - When mid rails are used, they shall be installed at a height approximately midway between the top edge of the guardrail system and the platform surface.
    - 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.
    - When intermediate members are used, they shall not be more than 19 inches apart.
- Each top rail 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 for guardrail systems installed on single-point adjustable suspension scaffolds are two-point adjustable suspension scaffolds, and at least 200 pounds for guardrail systems installed on all other scaffolds.
- 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 applies in any downward or horizontal direction at any point along the midrail or other member or at least 75 pounds for guardrail systems with a minimum 100 pound toprail capacity, and at least 150 pounds for guardrail systems with minimum 200 pound toprail capacity.
- 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.
- Guardrails shall be surfaced to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.
- The ends of guardrails shall not overhang the terminal posts except when such overhang does not constitute a projection hazard to employees.
- Steel or plastic banding shall not be used as a toprail or mid rail.
- Cross bracing is acceptable in place of a midrail when the crossing point of two braces is between 20 inches and 30 inches above the work platform or as a toprail when crossing points of two braces is between 38 inches and 48 inches above the work platform. The end points at each upright shall be no more than 48 inches apart.

10. Protection from Falling Objects

- In addition to wearing hard hats, each employee on a scaffold shall be provided with additional protection from falling hand tools, debris, and other small objects through the installation of toeboards, screens, or guardrails systems, or through the erection of debris nets, catch platforms, or canopy structures that contain or deflect the falling objects. When the falling objects are too large, heavy or massive to be contained or deflected by any of the above listed measures, such potential falling objects shall be placed away from the edge of the surface from which they could fall and secured as necessary to prevent their falling.
- Where there is danger of tools, materials, or equipment falling from a scaffold and striking employees below, the following provisions shall apply:
    - The area below the scaffold to which objects can fall shall be barricaded, and employees shall not be permitted to enter the hazard area, or
- A toe board shall be erected along the edge of platforms more than 10 feet above lower levels for a distance sufficient to protect employees below, except on float (ship) scaffolds where an edging of 3/4 X 1 1/2 inch wood or equivalent may be used in lieu of toe boards.
- Where tools, material 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 over the employees below. Canopies when used for falling object protection, shall comply with the following criteria.
    - Canopies shall be installed between the falling object hazard and the employees.
    - When canopies are used on suspension scaffolds for falling object protection, the scaffold shall be equipped with additional suspension ropes.
    - Independent support lines and suspension ropes shall not be attached to the same points of anchorage.
- Where used, toeboards shall be:
    - Capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or horizontal direction at any point along the toe board.
    - At least three and one-half inches high from the top edge of the toeboard to the level of the walking/working surface. Toeboards shall be surely fastened in place at the outermost edge of the platform and have not more than 1/4 inch clearance above the walking/working surface. Toe boards shall be solid or with openings not over one inch in the greatest dimension.

11. Scaffold Tagging Procedures

- All scaffolding erected, moved, dismantled and altered shall utilize the following tagging system. All scaffolds shall have one of three types of tags.

Green Tag - Scaffold meets and/or exceeds all applicable regulations.

Yellow Tag - WARNING - This scaffold does not comply with the applicable regulations. Scaffold has limitation placed on it by the competent person. Fall arrest protection is required.

Red Tag - DANGER- This scaffold is not to be used. Scaffolding that is unstable or is being torn down must be marked with a red tag.

- All scaffolding shall have an approved tag at the point of access, be marked legibly and signed by the competent person. The tagging system shall not be used as a method of circumventing safety requirements. Only scaffold displaying a signed scaffold tag may be used.
- All scaffolds erected by subcontractors must utilize this scaffold tagging procedure.

Silica

1. Purpose

The Respirable Crystalline Silica Program was developed to prevent employee exposure to hazardous levels of Respirable Crystalline Silica. All work involving chipping, cutting, drilling, grinding, or similar activities on materials containing Crystalline Silica.

2. Scope

This applies to all employees who have the potential to be exposed to Respirable Crystalline Silica. The OSHA Respirable Crystalline Silica program applies to all occupational exposures to construction work, except where employee exposure will remain below 25 micrograms of Respirable Crystalline Silica per cubic meter of air (25 µg/m3) as an 8-hour time-weighted average (TWA) under any foreseeable conditions.

3. Definitions

Action Level means a concentration of airborne Respirable Crystalline Silica of 25 µg/m3, calculated as an 8-hour TWA.

Competent Person means an individual who is capable of identifying existing and foreseeable Respirable Crystalline Silica hazards in the workplace and who has authorization to take prompt corrective measures to eliminate or minimize them.

Exposure Control Plan (ECP)describes how to eliminate or minimize exposures of the employees to Respirable Crystalline Silica.

Employee Exposure means the exposure to airborne Respirable Crystalline Silica that would occur if the employee were not using a respirator.

High-Efficiency Particulate Air (HEPA) Filter means a filter that is at least 99.97 percent efficient in removing monodispersed particles of 0.3 micrometers in diameter.

Objective Data means information, such as air monitoring data from industry-wide surveys or calculations based on the composition of a substance, demonstrating employee exposure to Respirable Crystalline Silica associated with a particular product or material or a specific process, task, or activity. The data must reflect workplace conditions closely resembling or with a higher exposure potential than the processes, types of material, control methods, work practices, and environmental conditions in the employer's current operations.

Permissible Exposure Limit (PEL) means the employer shall ensure that no employee is exposed to an airborne concentration of Respirable Crystalline Silica in excess of 50 µg/m3, calculated as an 8-hour TWA.

Physician or Other Licensed Health Care Professional (PLHCP) means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all of the particular

health care services required by the Medical Surveillance Section of the OSHA Respirable Crystalline Silica Standard.

Respirable Crystalline Silica means Quartz, Cristobalite, and/or Tridymite contained in airborne particles that are determined to be respirable by a sampling device designed to meet the characteristics for respirable-particle size.

4. Responsibilities

a) Safety Department

- Assist the project management and supervision team in conducting employee Respirable Crystalline Silica hazard assessments in order to determine if an employee's exposure will be above the action level of 25 µg/m3 as an 8-hour TWA under any foreseeable conditions
- Assist the project management and supervision team in selecting and implement the project's Exposure Control Plan (ECP) the appropriate control measures in accordance with Table 1; and potentially including (but not limited to) - ECP, exposure monitoring, Hazard Communication training, medical surveillance, housekeeping and other requirements.
- Ensure that Project Managers, supervisors, and employees are trained to work safely with Silica and the company's hazard communication standard.
- Maintain written records of training , ECPs, inspections, medical surveillance, respirator medical clearances, and fit-test results.
- Assist in conducting reviews annual reviews or more often if conditions change of the effectiveness of this program and any active project ECP's that extend beyond a year. This includes a review of available dust control technologies to ensure these are selected and used when practical.

b) Project Manager

- Ensure all applicable elements of this Respirable Crystalline Silica Program are implemented on the project including the selection of a Competent Person.
- Conduct job site assessments for Silica containing materials and perform employee Respirable Crystalline Silica hazard assessments in order to determine if an ECP, exposure monitoring, and medical surveillance is necessary.
- Assist in the selection and implementation of the appropriate control measures in accordance with Table 1; and potentially including (but not limited to) - a written Exposure Control Plan (ECP), Job Hazard Analysis exposure monitoring, Hazard Communication training, medical surveillance, housekeeping and others.
- Ensure that employees using respirators have been properly trained, medically cleared, and fit-tested in accordance with the company's Respiratory Protection Program.
- Ensure that work is conducted in a manner that minimizes and adequately controls the risk to workers and others. This includes ensuring that workers use appropriate engineering controls, work practices, and wear the necessary PPE.

- Where there is risk of exposure to Silica dust, verify employees are properly trained on the applicable contents of this program, the project-specific ECP, and the applicable company policies. Ensure employees are provided appropriate PPE when conducting such work.

c) Superintendent and Foreman

- Make frequent and regular inspections of job sites, materials, and equipment to implement the written ECP.
- Assist in the selection and implementation of the appropriate control measures in accordance with Table 1; and potentially including (but not limited to) - a written Exposure Control Plan (ECP), Job Hazard Analysis exposure monitoring, Hazard Communication training, medical surveillance, housekeeping and others.
- Ensure that training, materials, tools, equipment, personal protective equipment (PPE), and other resources required to fully implement and maintain this Respirable Crystalline Silica Program are in place and readily available if needed.
- Identify existing and foreseeable Respirable Crystalline Silica hazards in the workplace and take prompt corrective measures to eliminate or minimize them.
- Conducting job site assessments for Silica containing materials and perform employee Respirable Crystalline Silica hazard assessments in order to determine if an ECP, exposure monitoring, and medical surveillance is necessary.
- Coordinate work with other employers and contractors to ensure a safe work environment relative to Silica exposure.

d) Employees

- Follow recognized work procedures as established in the project's ECP and this program.
- Use the assigned PPE in an effective and safe manner.
- Participate in Respirable Crystalline Silica exposure monitoring and the medical surveillance program.
- Report any unsafe conditions or acts to the Site Manager and/or Competent Person.
- Report any exposure incidents or any signs or symptoms of Silica illness.

5. Requirements

a) Specified Exposure Control Methods

When applicable, activities performed with potential Silica exposure will consistent with Table 1 of this policy. Supervisors will ensure each employee under their supervision and engaged in a task identified on Table 1 have fully and properly implemented the engineering controls, work practices, and respiratory protection specified for the task. Unless an assessment has be performed and limiting the limited the exposure of the employee to Silica in accordance with the Alternative Exposure Control Methods Section of this program.

When implementing the control measures specified in Table 1:

- For tasks performed indoors or in enclosed areas, provide a means of exhaust as needed to minimize the accumulation of visible airborne dust;
- For tasks performed using wet methods, apply water at flow rates sufficient to minimize release of visible dust;

b) Alternative Exposure Control Methods

Alternative Exposure Control Methods apply for tasks not listed in Table 1, or that cannot not be fully and properly implement the engineering controls, work practices, and respiratory protection described in Table 1.

An exposure assessment of each employee who is or may reasonably be expected to be exposed to Respirable Crystalline Silica at or above the Action Level in accordance with either the Performance Option or the Scheduled Monitoring Option.

All Respirable Crystalline Silica samples taken to satisfy the monitoring requirements of this program will be collected by a qualified individual and the samples are evaluated by a qualified laboratory.

Performance Option –assess the 8-hour TWA exposure for each employee on the basis of any combination of air monitoring data or objective data sufficient to accurately characterize employee exposures to Respirable Crystalline Silica.

6. Scheduled Monitoring Option

- Initial monitoring will be performed to assess the 8-hour TWA exposure for each employee on the basis of one or more personal breathing zone air samples that reflect the exposures of employees on each shift, for each job classification, and in each work area. Where several employees perform the same tasks on the same shift and in the same work area, a representative fraction of the employees will be monitored. When using representative monitoring, sampling will be conducted on the employee(s) who are expected to have the highest exposure to Respirable Crystalline Silica.
- If initial monitoring indicates that employee exposures are below the Action Level, further monitoring will be discontinue monitoring for those employees whose exposures are represented by such monitoring.
- Where the most recent exposure monitoring indicates that employee exposures are at or above the Action Level but at or below the PEL. Repeat monitoring will be conducted within six months of the most recent monitoring.
- Where the most recent exposure monitoring indicates that employee exposures are above the PEL. Repeat monitoring will be conducted within three months of the most recent monitoring.
- Where the most recent (non-initial) exposure monitoring indicates that employee exposures are below the Action Level, repeat monitoring will be conducted within six months of the most recent monitoring until two consecutive measurements, taken seven or more days apart, are below the Action Level. At that time, further monitoring for those employees whose exposures are represented by such monitoring, except when a reassessment is required. A reassessment will be conducted when exposures change in the production, process, control equipment, personnel, or work practices may reasonably be expected to result in new or additional

exposures at or above the Action Level, or when a supervisor or managers has any reason to believe that new or additional exposures at or above the Action Level have occurred.

7. Results

Within five working days after completing an exposure assessment, each affected employee will be notified in writing of the results of that assessment or post the results in an appropriate location accessible to all affected employees.

Whenever an exposure assessment indicates that employee exposure is above the PEL, a written notification of the corrective action being taken to reduce employee exposure to or below the PEL.

8. Designated Representative or Effected Employee

Where air monitoring is performed, affected employees or their designated representatives will be provided with an opportunity to observe any monitoring of employee exposure to Respirable Crystalline Silica. When observation of monitoring requires entry into an area where the use of protective clothing or equipment is required for any workplace hazard, the observer will be provided with protective clothing and equipment at no cost and shall ensure that the observer uses such clothing and equipment.

9. Control Method

Once air monitoring has been performed, a determination will be made on its methods of controls. Engineering and work practice controls will be used to reduce and maintain employee exposure to Respirable Crystalline Silica to or below the PEL, unless it can be demonstrate that such controls are not feasible. Wherever such feasible engineering and work practice controls are not sufficient to reduce employee exposure to or below the PEL a combination of engineering controls and respiratory protection will be used to reduce the level to the lowest feasible.

Appropriate control measure consistent with Table 1 or otherwise minimize worker exposures to Silica. These exposure control methods can include engineering controls, work practices, and respiratory protection. Listed below are control methods to be used when Table 1 is not followed:

10. Respiratory Protection

Where respiratory protection is required, each employee will be provided with an appropriate respirator that complies with the requirements of the Respiratory Protection Program.

Respiratory protection is required where specified by Table 1, for tasks not listed in Table 1, or when it is not feasible to implemented engineering controls. Situations requiring respiratory protection include:

- Where exposures exceed the PEL during periods necessary to install or implement feasible engineering and work practice controls;
- Where exposures exceed the PEL during tasks, such as certain maintenance and repair tasks, for which engineering and work practice controls are not feasible; and
- During tasks for which an employer has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce exposures to or below the PEL.

11. Housekeeping

Dry sweeping or dry brushing cannot be conducted where such activity could contribute to employee exposure to Respirable Crystalline Silica unless wet sweeping, HEPA-filtered vacuuming, or other methods that minimize the likelihood of exposure are not feasible.

Compressed air cannot be used to clean surfaces where such activity could contribute to employee exposure to Respirable Crystalline Silica unless:

- The compressed air is used in conjunction with a ventilation system that effectively captures the dust cloud created by the compressed air; or
- No alternative method is feasible.

12. Written Exposure Control Plan

When employee exposure on a is expected to be at or above the Action Level, a Written Exposure Control Plan (ECP) will be established and implemented. This ECP will contain at least the following elements:

- A description of the tasks in the workplace that involve exposure to Respirable Crystalline Silica;
- A description of the engineering controls, work practices, and respiratory protection used to limit employee exposure to Respirable Crystalline Silica for each task;
- A description of the housekeeping measures used to limit employee exposure to Respirable Crystalline Silica; and
- A description of the procedures used to restrict access to work areas, when necessary, to minimize the number of employees exposed to Respirable Crystalline Silica and their level of exposure, including exposures generated by other employers or sole proprietors.

The written ECP will designate a Competent Person to make frequent and regular inspections of job sites, materials, and equipment to ensure the ECP is implemented.

The written ECP will be reviewed at least annually to evaluate the effectiveness of it and update it as necessary. The written ECP will be readily available for examination and copying, upon request, to each employee covered by this program and/or ECP, and their designated representatives.

13. Medical Surveillance

Medical surveillance will be made available for each employee who will be required to use a respirator for 30 or more days per year due to their Respirable Crystalline Silica exposure. Medical surveillance (i.e. medical examinations and procedures) will be performed by a PLHCP and provided at no cost to the employee at a reasonable time and place.

An initial baseline evaluation will be made available medical examination within 30 days after initial assignment, unless the employee has received a medical examination that meets the requirements of the OSHA Respirable Crystalline Silica Construction Standard within the last three years. The examination shall consist of:

- A medical and work history, with emphasis on past, present, and anticipated exposure to Respirable Crystalline Silica, dust, and other agents affecting the respiratory system in addition to any history of respiratory system dysfunction.
- A physical examination with special emphasis on the respiratory system;
- A chest X-ray reviewed by a doctor or his designee.
- A pulmonary function test to include forced vital capacity.
- Testing for latent tuberculosis infection; and
- Any other tests deemed appropriate by the PLHCP.

Medical examinations will be made available that include the aforementioned procedures (except testing for latent tuberculosis infection) at least every three years. If recommended by the PLHCP, periodic examinations can be more frequently than every three years.

Ensure that the examining PLHCP has a copy of the OSHA Respirable Crystalline Silica Construction Standard, this program, and the following information:

A description of the employee's former, current, and anticipated duties as they relate to the employee's occupational exposure to Respirable Crystalline Silica;

- The employee's former, current, and anticipated levels of occupational exposure to Respirable Crystalline Silica;
- A description of any personal protective equipment (PPE) used or to be used by the employee, including when and for how long the employee has used or will use that equipment; and
- Information from records of employment-related medical examinations previously provided to the employee and currently within the companies control.

Ensure that the PLHCP explains to the employee the results of the medical examination and provides each employee with a written medical report within 30 days of each medical examination performed. The written report shall contain:

- A statement indicating the results of the medical examination, including any medical condition(s) that would place the employee at increased risk of material impairment to health from exposure to Respirable Crystalline Silica and any medical conditions that require further evaluation or treatment;
- Any recommended limitations on the employee's use of respirators;
- Any recommended limitations on the employee's exposure to Respirable Crystalline Silica; and;
- A statement that the employee should be examined by a Specialist if the chest X-ray is classified as 1/0 or higher by the B Reader, or if referral to a Specialist is otherwise deemed appropriate by the PLHCP.

A written medical opinion shall be provided from the PLHCP within 30 days of the medical examination. The written opinion shall contain only the following in order to protect the employee’s privacy:

- The date of the examination;

- A statement that the examination has met the requirements of the OSHA Respirable Crystalline Silica Construction Standard; and
- Any recommended limitations on the employee's use of respirators.

If the employee provides written authorization, the written opinion shall also contain either or both of the following:

- Any recommended limitations on the employee's exposure to Respirable Crystalline Silica; and/or
- A statement that the employee should be examined by a Specialist if the chest X-ray is classified as 1/0 or higher by the B Reader, or if referral to a Specialist is otherwise deemed appropriate by the PLHCP.

If the PLHCP's written medical opinion indicates that an employee should be examined by a Specialist, a medical examination will be made available by a Specialist within 30 days after receiving the PLHCP's written opinion. The supervisor or manager will ensure that the examining Specialist is provided with all of the information that the employer is obligated to provide to the PLHCP.

The Specialist needs to explain to the employee the results of the medical examination and provides each employee with a written medical report within 30 days of the examination. The written report will contain:

- A statement indicating the results of the medical examination, including any medical condition(s) that would place the employee at increased risk of material impairment to health from exposure to Respirable Crystalline Silica and any medical conditions that require further evaluation or treatment;
- Any recommended limitations on the employee's use of respirators; and
- Any recommended limitations on the employee's exposure to respirable crystalline Silica.

In addition, we will obtain a written opinion from the Specialist within 30 days of the medical examination. The written opinion shall contain the following:

- The date of the examination;
- Any recommended limitations on the employee's use of respirators; and
- If the employee provides written authorization, the written opinion shall also contain any recommended limitations on the employee's exposure to Respirable Crystalline Silica.

14. Training

All affected employees will be trained in accordance with the provisions of the GHS/Hazard Communication program and this program. This training will cover concerns relating to cancer, lung effects, immune system effects, and kidney effects.

Each employee with the potential to be exposed at or above the Action Level for Respirable Crystalline Silica can demonstrate knowledge and understanding of at least the following:

- The health hazards associated with exposure to Respirable Crystalline Silica;
- Specific tasks in the workplace that could result in exposure to Respirable Crystalline Silica;

- Specific measures that have been implemented to protect employees from exposure to Respirable Crystalline Silica, including engineering controls, work practices, and respirators to be used;
- The contents of the Silica program;
- The identity of the Competent Person; and
- The purpose and a description of the company's Medical Surveillance Program.

A copy of the OSHA Respirable Crystalline Silica Construction Standard shall be readily available without cost to any employee who requests it.

15. Recordkeeping

Accurate record will be maintained of all exposure measurements taken to assess employee exposure to Respirable Crystalline Silica. This record will include at least the following information:

- The date of measurement for each sample taken;
- The task monitored;
- Sampling and analytical methods used;
- Number, duration, and results of samples taken;
- Identity of the laboratory that performed the analysis;
- Type of personal protective equipment (PPE), such as respirators, worn by the employees monitored; and
- Name, social security number, and job classification of all employees represented by the monitoring, indicating which employees were actually monitored.

Exposure records will be kept for at least 30 years.

The employer shall make and maintain an accurate record of all objective data relied upon to comply with the requirements of the OSHA Respirable Crystalline Silica Construction Standard. This record shall include at least the following information:

- The Crystalline Silica-containing material in question;
- The source of the objective data;
- The testing protocol and results of testing;
- A description of the process, task, or activity on which the objective data were based; and
- Other data relevant to the process, task, activity, material, or exposures on which the objective data were based.

Objective data are maintained and made available for least 30 years.

Accurate record for each employee enrolled in the Medical Surveillance portion of this program. The record shall include the following information about the employee:

- Name and social security number;
- A copy of the PLHCPs' and/or Specialists' written medical opinions; and
- A copy of the information provided to the PLHCPs and Specialists.

Medical records must be maintained and made available. Medical records will be kept in the employees Personnel File for at least the duration of employment plus 30 years. It is necessary to keep these records for extended periods because Silica-related diseases such as cancer often cannot be detected until several decades after exposure. However, if an employee works for an employer for less than one year, the employer does not have to keep the medical records after employment ends, as long as the employer gives those records to the employee.

16. Program Evaluation

This program will be reviewed and evaluated on an annual basis by the Safety Department unless changes to operations, or other regulations require immediate re-evaluation.

17. Table 1

	Construction Task or Equipment Operation	Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
1	Stationary masonry saws	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
2a	Handheld power saws (any blade diameter) when used outdoors	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
2b	Handheld power saws (any blade diameter) when used indoors or in an enclosed area	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
3	Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less) for tasks performed outdoors only	• Use saw equipped with commercially available dust collection system. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide the air flow recommended by the tool manufacturer, or	None	None

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
		greater, and have a filter with 99% or greater efficiency.		
4a	Walk-behind saws when used outdoors	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
4b	Walk-behind saws when used indoors or in an enclosed area	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
5	Drivable saws for tasks performed outdoors only	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
6	Rig-mounted core saws or drills	• Use tool equipped with integrated water delivery system that supplies water to cutting surface. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
7	Handheld and stand-mounted drills (including impact and rotary hammer drills)	• Use drill equipped with commercially available shroud or cowling with dust collection system. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. • Use a HEPA-filtered vacuum when cleaning holes.	None	None

	Construction Task or Equipment Operation	Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
8	Dowel drilling rigs for concrete for tasks performed outdoors only	• Use shroud around drill bit with a dust collection system. • Dust collector must have a filter with 99% or greater efficiency and a filter cleaning mechanism. • Use a HEPA-filtered vacuum when cleaning holes.	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
9a	Vehicle-mounted drilling rigs for rock and concrete	• Use dust collection system with close capture hood or shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector.	None	None
9b	Vehicle-mounted drilling rigs for rock and concrete	• Operate from within an enclosed cab and use water for dust suppression on drill bit.	None	None
10a	Jackhammers and handheld powered chipping tools when used outdoors	• Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact.	None	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
10b	Jackhammers and handheld powered chipping tools when used indoors or in an enclosed area	• Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact.	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
10c	Jackhammers and handheld powered chipping tools when used outdoors	• Use tool equipped with commercially available shroud and dust collection system. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide the air flow recommended by the tool manufacturer, or	None	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
		greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.		
10d	Jackhammers and handheld powered chipping tools when used indoors or in an enclosed area	• Use tool equipped with commercially available shroud and dust collection system. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
11	Handheld grinders for mortar removal (i.e., tuckpointing)	• Use grinder equipped with commercially available shroud and dust collection system. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask	Powered Air-Purifying Respirator (PAPR) with P100 Filters
12a	Handheld grinders for uses other than mortar removal for tasks performed outdoors only	• Use grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
12c	Handheld grinders for uses other than mortar removal when used indoors or in an enclosed area	• Use grinder equipped with commercially available shroud and dust collection system. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.	None	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
13a	Walk-behind milling machines and floor grinders	• Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
13b	Walk-behind milling machines and floor grinders	• Use machine equipped with dust collection system recommended by the manufacturer. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide the air flow recommended by the manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. • When used indoors or in an enclosed area, use a HEPA-filtered vacuum to remove loose dust in between passes.	None	None
14	Small drivable milling machines (less than half-lane)	• Use a machine equipped with supplemental water sprays designed to suppress dust. • Water must be combined with a surfactant. • Operate and maintain machine to minimize dust emissions.	None	None
15a	Large drivable milling machines (half-lane and larger) for cuts of any depth on asphalt only	• Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust. • Operate and maintain machine to minimize dust emissions.	None	None
15b	Large drivable milling machines (half-lane and larger) for cuts of four inches in depth or less on any substrate	• Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust. • Operate and maintain machine to minimize dust emissions.	None	None

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
15c	Large drivable milling machines (half-lane and larger) for cuts of four inches in depth or less on any substrate	• Use a machine equipped with supplemental water spray designed to suppress dust. • Water must be combined with a surfactant. • Operate and maintain machine to minimize dust emissions.	None	None
16	Crushing machines	• Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated (e.g., hoppers, conveyers, sieves/sizing or vibrating components, and discharge points). • Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions. • Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote control station.	None	None
17a	Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (e.g., hoe-ramming, rock ripping) or used during demolition activities involving silica-containing materials	• Operate equipment from within an enclosed cab.	None	None
17b	Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (e.g., hoe-ramming, rock ripping) or used during demolition activities involving silica-containing materials	• When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions.	None	None
18a	Heavy equipment and utility vehicles for tasks such as grading and excavating but not including demolishing, abrading, or fracturing	• Apply water and/or dust suppressants as necessary to minimize dust emissions.	None	None

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
	silica-containing materials			
18b	Heavy equipment and utility vehicles for tasks such as grading and excavating but not including demolishing, abrading, or fracturing silica-containing materials	• When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab.	None	None

Subcontractor Safety Management

1. **Scope**
   It is the obligation of all subcontractors to comply with applicable company, Federal, State and local safety and health regulations and standards. The purpose of this program is to maintain a safe working environment for the employees, subcontractor employees, owners' representatives, visitors, and the general public by managing subcontractors successfully.

2. **Pre-Bid Requirements**
   The Subcontractor Performance Questionnaire, any special provisions or requirements that are above and beyond the standard safety and health laws and regulations shall be sent to the subcontractor prior to bidding.

   The Subcontractor Performance Questionnaire shall be completed and sent back with the bid. If the subcontractor bids on multiple projects during the year, they shall update the form on an annual basis.

3. **Post-Bid Requirements**
   When a contract is awarded, we will identify with each subcontractor if they have their own Safety and Health program that meets or exceeds our standards or they will adopt our program.

   If the subcontractor chooses adopt our program they shall acknowledge this in writing from their Project Manager or a senior manager of the company. If they choose to adhere their own program, they must submit the following documents before mobilizing and starting work on the project. These documents will be reviewed by a member of the Safety Department.

   - A copy of the Subcontractors written Safety and Health Program, or Injury and Illness Prevention plan and Emergency Response Plan. This shall meet or exceed our company safety requirements.

   - A completed and current Job Hazards Analysis or Work Plan that address hazards and corrective actions.

   - Any company Safety and Health policies that are required or pertain to the work being performed.

   - The Subcontractor's Drug & Alcohol Testing Policy and that all subcontractor employees have been tested and meet the company criteria.

   - Identifying the Competent Person(s), individuals trained in First Aid and CPR, and their training records.

   - Acknowledgment of the subcontractor's responsibility to immediately report of any OSHA or government agency inspections, all incidents, and investigate as required by our policy.

- Subcontractor's training records for the employees who will be working on the project.

- Subcontractor's responsibility to conduct and document weekly safety and health training meetings for all employees and furnish the documentation to the project upon request.

4. Pre-Job Planning Meeting

Prior to the start of work, all subcontractors must participate in a pre-job planning meeting. The subcontractor's Project Manager or senior manager or supervisor on site should attend this meeting. The meeting must be documented with minutes or on the Subcontractor Pre-Job Safety Meeting form with the attendance sheet. Prior to the time that this meeting is held, the following information must be received from the Post Bids Requirements section.

5. Subcontractor Safety Conformance Auditing

It is expected that all subcontractors will abide by their safety and health program along with all applicable Federal, State and local safety and health regulations and standards.

We reserve the right to stop any part of the work, which we deem to be unsafe until satisfactory corrective action has been taken. Furthermore, we reserve right to remove subcontractor employees for safety violations.

If the subcontractor does not adhere to our safety and health program, their safety and health program or violates applicable Federal, State and local safety and health regulations and standards, we have the right, to take appropriate action as outlined in our contract.

Traffic Control

1. Policy

All traffic control plans shall be designed and implemented to meet the project specifications outlined in the contract. Project management and supervision shall ensure appropriate traffic control devices are installed and maintained to meet the project specifications.

If a traffic control plan is not provided or required by the project owner then the following requirements should apply.

2. The Method for Handling Traffic Plan (MHT)

The Method for Handling Traffic Plan (MHT) shall include as a minimum:

- The identification of the trained personnel responsible for establishing and maintaining the traffic control devices.
- A detailed diagram showing locations of all traffic control devices;
- Proposed date of MHT plan implementation and anticipated duration;
- Procedures for the placing the traffic control devices.
- The method, length and duration time of all lane closers;
- Flagger locations and duration time of flagging operations;
- Process for photographed or videotaped at time of setup and when changes are implemented.

Traffic control plans and documentation shall be archived at the end of the project.

3. Traffic Control Supervisor Responsibilities

The designated Traffic Control Supervisor (TCS) is responsible for implementation of the traffic control plan and shall also document all traffic incidents that occur within or near the project limits whether or not there is apparent project involvement in the incident. This documentation shall include:

- Photographs of the incident scene,
- Police reports,
- Witness statements, and
- A detailed description of the traffic control in place at the time of the incident.

4. Daily Reports

A written Traffic Control Plan (TCP) shall:

- Be prepared by the Traffic Control Supervisor in cooperation with the project engineer and/or the designer.

5. Night Operations and Working within the Closures

At a minimum the plan shall address the following:

a) Reflectivity

- All reflective surfaces shall be cleaned as required so that the reflectivity of the material is not degraded.
- Any areas of reflective surface that is damaged or obscured will be replaced.
- Personnel working at night shall have reflective tape on their hardhats shall wear Class III retro-reflective vests at a minimum.
- The reflective bands on vests shall be vertical and horizontal around the entire upper body.
- Additional safety measures may be used including white disposable coveralls, reflective bands, and personal battery operated strobe lights.

b) Illumination

- Whenever feasible and practical, light plants shall be used to illuminate the work area.
- Additional lighting on equipment may be used to illuminate the work area during mobile operations.
- All equipment shall have working warning lights, at a minimum.
- All flag persons shall be placed in illuminated areas only.
- All lighting is to be checked during setup to ensure that approaching traffic, or other equipment in the work zone, will not blinded by the light source.

c) Attenuator Vehicles

- When in use, attenuator vehicles shall:
- Be stationed behind workers in a work zone.
- Be placed in a manner to provide maximum protection for workers.
- Be placed with tires turned in such a way that if the attenuator vehicle is struck, it will turn away from workers and live traffic.

Trench, Excavation, and Shoring

1. Scope

This standard has been developed to provide guidance for the protection of our employees and the public from the hazards that may be encountered or associated with work that requires trench or excavations techniques.

2. General Definitions

Benching - A method of protecting employees from cave-ins by excavating the side of an excavation to form one or a series of steps, usually with vertical and horizontal surfaces between levels.

Competent Person- One who has had specific training in and is knowledgeable about soil classification, the use of protective systems and requirements of the standard. He/she must also be capable of identifying existing and predictable hazards in the surroundings or working conditions, which are hazardous, unsanitary or dangerous to employees, and must have the authority to take prompt corrective measures to eliminate them.

Excavation- Any man-made cavity or depression in the earth's surface formed by earth removal which produces unsupported earth conditions by reason of the excavation work.

Faces/Sides - means the vertical inclined earth surface formed by an excavation.

Hazardous Atmosphere- An atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful may cause death, illness, or injury.

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

Sloping- Excavating to form sides of an excavation that are inclined away from the excavation. The angle of the incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions, and application of surcharged loads.

Trench- A narrow excavation below the surface of the ground, with its width at the lowest level below ground surface not greater than 15 feet wide.

3. Roles & Responsibilities

Prior to commencing any work associated with trenching or excavations, the Project Manager, Superintendent or Foreman will coordinate with the appropriate utility companies to determine the location of all underground utilities. Reference the 811 – Ground Disturbance policy for additional procedures. Overhead hazards are to be identified at this time.

4. Structures

If the stability of buildings or walls is endangered by an excavation or trench, shoring, bracing, or underpinning will be provided. Excavations and trenching that are adjacent to vibrations from

railroad traffic, highway traffic, or the operation of machinery (e.g., shovels, derricks, cranes, trucks) will be secured by support system, shield system or other protective systems.

5. Soil Classification

When using protective systems requiring soil classification each soil and rock deposit shall be classified by a competent person as "Stable Rock, Type A, Type B or Type C." The classification shall be made based on the results of at least one (1) visual and at least one (1) manual analysis. The analysis shall be conducted by a competent person using an acceptable visual, manual test or other recognized methods.

If a soil test is not performed, then the soil will be classified as Type C.

Soil classification will be documented by the competent person.

6. Protective Systems

Excavations expose employees to many hazards, including cave-ins. For this reason it is required that in all excavations where employees may be exposed to potential cave-ins must be protected by sloping, or benching the sides of the excavation; supporting the sides of the excavation, or placing a shield between the side of the excavation and the work area.

Designing a protective system can be complex because of the number of factors involved including: soil classification, depth of cut, existing utilities, water content of soil, changes due to weather and climate, or other operations in the vicinity.

A Registered Professional Engineer shall design and approve and protecting system that is greater than 20’ deep.

In addition, excavating 2 feet or less below the bottom of the members of a support or shield system of a trench is feasible if the system is designed to resist the forces calculated for the full depth of the trench.

a) Sloping

The slopes and configurations of sloping for excavations 5 feet to 20 feet in depth must be selected and constructed by the employer or his/her designee and shall be in accordance will the following requirements.

A slope of 34 degrees or less (Type C), in lieu of soil classification is considered safe for any type of soil.

Soil Analysis Table

Soil or Rock Type	Maximum Allowable Slope (Horizontal Allowable Slope)
Stable Rock	Vertical or 90 Degrees
Type A	¾:1 or 53 Degrees

Soil Analysis Table

Soil or Rock Type	Maximum Allowable Slope (Horizontal Allowable Slope)
Type B	1:1 or 45 Degrees
Type C	1-½:1 or 34 Degrees

Simple slope excavation in Type A soil, which are open 24 hours or less (short term) and which are greater than 12 feet in depth shall be 3/4:1 (54 degrees).

b) Benching

There are two basic types of benching, simple and multiple. The type of soil determines the horizontal to vertical ratio of the benched side.

The bottom vertical height of the trench must not exceed 4 ft (1.2 m) for the first bench. Subsequent benches may be up to a maximum of 5 ft (1.5 m) vertical in Type A soil and 4 ft (1.2 m) in Type B soil to a total trench depth of 20 ft (6.0 m). All subsequent benches must be below the maximum allowable slope for that soil type. For Type B soil the trench excavation is permitted in cohesive soil only.

c) Shoring Systems

Tabulated data is information such as tables and charts that has been approved by a registered professional engineer. These data must be in writing and must include sufficient explanatory information to enable the user to make a selection, including the criteria for determining the selection and the limits on the use of the data.

At least one copy of the information, including the identity of the registered professional engineer who approved the data, must be kept at the worksite during construction of the protective system. Upon completion of the system, the data may be stored away from the job site.

A trench box or shield must be either designed or approved by a registered professional engineer or is based on tabulated data prepared or approved by a registered professional engineer.

The installation and use of a protective system when an excavation (1) is made entirely in stable rock, or (2) is less than 5 feet deep and a competent person has examined the ground and found no indication of a potential cave-in.

The following procedures is required for the protection of employees when installing support systems:

- Securely connect members of support systems,
- Safely install support systems,
- Never overload members of support systems, and
- Install other structural members to carry loads imposed on the support system when temporary removal of individual members is necessary.

7. Access and Egress

In trenches four (4) feet or more in depth, ladders, steps, ramps or other safe means of access and egress shall be provided and located at intervals not to exceed 25 feet of lateral travel. Where employees are required or permitted to use crossover walkways or ramps over excavations and trenches in excess of six (6) feet in depth, the walkway or ramp will be equipped with standard guardrails.

8. Spoils and Set Backs

Employees shall be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavation. Protection shall be provided by placing and keeping:

- Such materials or equipment at least two (2) feet from the edge of the excavation,
- Use of retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations or by combination of both.
- Or extending the shield a minimum of 18 inches above the top of the excavation.

9. Confined Space

In locations where employees may be subjected to hazardous dusts, gases, fumes, or an oxygen deficient atmosphere the Confined Space Entry Procedure will be followed.

10. Equipment and Personnel Safety Issues

In addition to cave-in hazards, there are other hazards from which workers must be protected during excavation-related work. These hazards include exposure to falls, falling loads, and mobile equipment. To protect employees from these hazards, following precautions are required to be taken:

Provide warning systems such as mobile equipment, barricades, hand or mechanical signals, or stop logs, to alert operators of the edge of an excavation. If possible, keep the grade away from the excavation.

Prohibit employees from working on faces of sloped or benched excavations at levels above other employees unless employees at lower levels are adequately protected from the hazard of falling, rolling, or sliding material or equipment.

Prohibit employees under loads that are handled by lifting or excavating equipment. To avoid being struck by any spillage or falling materials, require employees to stand away from vehicles being loaded or unloaded. If cabs of vehicles provide adequate protection from falling loads during loading and unloading operations, the operators may remain in them.

When mobile equipment of any type is utilized or permitted to operate adjacent to excavations or trenching, barricades or "stop" logs will be provided. All wells, pits, shafts, trenches, or other similar ground fall hazards will be barricaded or covered.

All unoccupied excavations shall be identified with a barricade system to keep others away from the edge.

11. Water Accumulation

Employees are prohibited from working in excavations where water has accumulated or is accumulating unless adequate protection has been taken. If water removal equipment is used to control or prevent water from accumulating, the equipment and operations of the equipment must be continuously monitored by a competent person any time workers are present.

12. Recordkeeping

A copy of a completed Excavation and Trenching Permit Daily Excavation Inspection Form, and trench/excavation designs by the registered professional engineer, shall be maintained with the project files until the completion of the project.

Project Set-Up

1. Bulletin Board Postings

- Federal, state, and provincial posters can be obtained through the Human Resources department. Project management should verify that the site is in compliance with any additional city or county posting requirements.
- Project management should also contact the respective owner to determine if other postings are stipulated in the special provisions section of the contract.

2. Required Company Postings

- Affirmative Action Policy
- EEO/Anti-Harassment Policy
- Equal Opportunity Procedure for Monitoring Subcontractors
- Complaint Procedure
- Non-Segregated Facility Policy
- Anti-Violence Policy
- Disciplinary Policy
- Emergency Contact List and Phone Numbers
- Dress Code Policy
- Company Ethics Hotline
- Emergency Action posters (Seek shelter, muster points, etc.)
- Spill Prevention

3. Warning Signs

Signs should be posted in or around the job site to convey hazardous zones or restricted areas or to provide contact information for special situations. Such signs may include but are not limited to:

- "No Trespassing" signs - to be posted in areas where the public might enter the site.
- "Authorized Personnel Only" – to be posted to restrict access to areas where hazards may exist.
- "No Smoking" – to be posted around fueling areas and flammable storage areas, and any other area designated as a non-smoking area.

If the construction site has limited access areas or is near public traffic, area designation signs should depict personal protective equipment that must be worn to enter the space.

Examples:

- Hard Hat
- Safety Glasses
- Work Boots
- Work Gloves
- High Visibility Vests

In project areas where hazards exist such as loud noises, fall hazards, or confined space issues, visible signage shall be in place to warn of the hazard.

4. Emergency Contact Information

- Emergency contact numbers shall be posted near the phones in the construction trailers including a list of persons trained in first aid and CPR response.
- Crisis Management Plan (CMP) documents and kits are required for each project site and shall be displayed in a highly visible, prominent area in the project office.
- The First Hour Response Kit contact list needs to be kept updated with current names and phone numbers for key positions associated with the project. The office manager or receptionist is responsible for maintaining the contact list.

5. Reference Materials

- A copy of the company IPP Manual shall be available on site.

6. Medical Facilities

Medical facilities must be established at the beginning of the project. If the established clinic does not provide after-hours care, an additional after-hours clinic must be established. The medical center's philosophy on how to administer injured worker care is more important than how close it is to the job site. Contact the respective workers compensation insurance provider for medical center recommendations.

Power and Hand Tools

1. Scope

In the process of creating a safe work environment, we must recognize the hazards associated with different types of tools and the safety precautions necessary to prevent injuries in the workplace. This policy outlines methods for accomplishing these objectives.

2. General Safety Precautions

All hazards involved in the use of power tools can be prevented or minimized following the basic safety rules:

- Keep all tools in good condition by performing regular maintenance.
- Use the right tool for the job.
- Inspect each tool for damage before use.
- Operate tools according to the manufacturer's instructions.
- Provide and use the proper protective equipment.
- GFCI receptacles are required.

Supervision and craft personnel alike have the responsibility to work together to ensure safe working procedures outlined in this section are followed. If a hazardous situation is encountered, it should be brought to the attention of the appropriate supervisor.

3. Training

Employees shall be trained in the use of tools. They should understand the potential hazards and safety precautions necessary to prevent injury. In general, power tool users should observe the following guidelines:

- No Free Cutting with any tool. A stable platform shall be used.
- Never carry a tool by the cord or hose.
- Never yank the cord or the hose to disconnect it from the receptacle.
- Keep cords and hoses away from heat, oil, and sharp edges.
- Disconnect tools when not in use, before servicing, and when changing accessories such as blades, bits and cutters.
- All observers should be kept at a safe distance away from the work area.
- Secure work with clamps or a vise, freeing both hands to operate the tool.
- Be sure to keep good footing and maintain good balance.
- The proper apparel should be worn. Loose clothing, ties, or jewelry are NOT ALLOWED as they can become caught in moving parts.
- All portable electric tools that are damaged shall be immediately removed from service and tagged “Do Not Use.”

4. Hand Tools

Hand tools are non-powered tools, they include: axes, chisels, hammers, wrenches, etc.

- Supervisors are responsible for providing and monitoring the safe condition of hand tools and equipment used by employees. Employees have the responsibility for inspecting, and properly using and maintaining tools in a safe and operable condition.
- Caution should be taken by employees using saws, knives, or other "sharp tools" by directing their use away from themselves, walkways, or areas where other employees are working in close proximity.
- Knives and scissors must be kept sharp.
- Appropriate personal protective equipment, e. g., safety goggles, gloves, etc., shall be worn to protect from hazards encountered while using hand tools.
- Around flammable substances, sparks produced by iron and steel hand tools can be a dangerous ignition source. Where this hazard exists, spark-resistant tools made from brass, plastic, aluminum, or wood will be provided for safety.

5. Guards

Hazardous moving parts of a power tool need to be safeguarded. Guards, as necessary, should be provided to protect the operator and others from the following:

- Point of operation,
- In-running nip points,
- Rotating parts, and
- Flying chips and sparks.

6. Safety Switches

The following hand-held power tools must be equipped with a momentary contact "on – off" control switch: drills, tappers, fastener drivers, horizontal or vertical angle grinders with wheels larger than 2 inches in diameter, disc and belt sanders, reciprocating saws, saber saws, and similar tools. These tools may be equipped with a lock-on control provided that a single motion of the same finger or fingers that turn it on can accomplish turnoff.

The following hand-held power tools may be equipped with only a positive "on - off" control switch: platen sanders, disc sanders with discs 2 inches or less in diameter; grinders with wheels 2 inches or less in diameter; routers, planers, laminate trimmers, nibblers, shears, scroll saws and jigsaws with blade shanks ¼ -inch wide or less.

Other hand-held power tools such as circular saws having a blade diameter greater than 2 inches, chain saws, and percussion tools without positive accessory holding means must be equipped with a constant pressure switch that will shut off the power when the pressure is released.

7. Electric Tools

To protect the user from shock, tools must either have a three-wire cord with ground. Anytime an adapter is used to accommodate a two-hole receptacle, the adapter wire must be attached to a known ground. The third prong should never be removed from the plug.

These general practices should be followed when using electric tools:

- Electric tools should be operated within their design limitations.
- When not in use, tools should be stored in a dry place.
- Electric tools should not be used in damp or wet locations.
- Verify GFCI are working.

8. Powered Abrasive Wheel Tools

Before an abrasive wheel is mounted, it should be inspected closely and sound or ring-tested to be sure that it is free from cracks or defects. To prevent the wheel from cracking, the user should be sure it fits freely on the spindle. The spindle nut must be tightened enough to hold the wheel in place, without distorting the flange. Follow the manufacturer's recommendations. Care must be taken to assure that the spindle wheel will not exceed the abrasive wheel specifications.

Due to the possibility of a wheel disintegrating (exploding) during start-up, the employee should never stand directly in front of the wheel as it accelerates to full operating speed.

Portable grinding tools need to be equipped with safety guards to protect workers not only from the moving wheel surface, but also from flying fragments in case of breakage.

In addition, when using a powered grinder:

- Safety glasses and full-face shields are required 100% of the time.
- Turn off the power when not in use.
- Never clamp a hand-held grinder in a vise.

9. Pneumatic Tools

When using pneumatic tools, employees must check to see that they are fastened securely to the hose by using a required safety clip to prevent them from becoming disconnected.

A short wire or positive locking device attaching the air hose to the tool will serve as an added safeguard. A safety clip or retainer must be installed to prevent attachments from being unintentionally disconnected from the barrel.

Compressed air guns should never be pointed toward anyone. Users should never "dead-end" it against themselves or anyone else. Additionally users of air guns should be trained on the selection of the proper nails or fasteners, and the procedures for proper loading and unloading of the tool.

Compressed air shall not be used for cleaning purposes except where reduced to less than 30 p.s.i. and then only with effective chip guarding and personal protective equipment. The 30 p.s.i. requirement does not apply for concrete form, mill scale and similar cleaning purposes.

10. Powder-Actuated Tools

Only trained employees are allowed to operate them. Employees must carry a certification card and have in their possession when using a powder-actuated tool.

Safety precautions to remember include the following:

- Do NOT use in an explosive or flammable atmosphere.
- Before using the tool, the worker should inspect it to determine that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions.
- The tool should never be pointed at yourself or another employee.
- The tool should not be loaded unless it is to be used immediately. A loaded tool should not be left unattended.
- The tool should be secured when not in use so that it is not available to unauthorized personnel.
- Hands should be kept clear of the barrel end. To prevent the tool from firing accidentally, two separate motions are required for firing: one to bring the tool into position, and another to pull the trigger. The tools must not be able to operate until they are pressed against the work surface with a force of at least 5 pounds greater than the total weight of the tool.
- If a powder-actuated tool misfires, the employee should wait at least 30 seconds, rotate the load and then try firing it again. If it still will not fire, the user should wait another 30 seconds so that the faulty cartridge is less likely to explode, and then carefully remove the load. The used cartridge should be placed in an appropriate storage location until it can be properly disposed of.
- The muzzle end of the tool must have a protective shield or guard centered perpendicularly on the barrel to confine any flying fragments or particles that might otherwise create a hazard when the tool is fired. The tool must be designed so that it will not fire unless it has this kind of safety device.
- All powder-actuated tools must be designed for varying powder charges so the user can select a powder level necessary to do the work without excessive force.
- If the tool develops a defect during use it should be tagged and taken out of service immediately until it is properly repaired.
- When using powder-actuated tools to apply fasteners, there are some precautions to consider.
- Fasteners must not be fired into material that would let them pass through to the other side. The fastener must not be driven into materials like brick or concrete any closer than 3 inches to an edge or corner. In steel, the fastener must not come any closer than one-half inch from a corner or edge. Fasteners must not be driven into very hard or brittle materials that might chip or splatter, or cause the fastener to ricochet.
- An alignment guide must be used when shooting a fastener into an existing hole. A fastener must not be driven into a spalled area caused by an unsatisfactory fastening.

11. Jacks

All jacks-lever and ratchet jacks, screw jacks, and hydraulic jacks must have a device that stops them from jacking up too high. Also, the manufacturer's load limit must be permanently marked in a prominent place on the jack and should not be exceeded.

Use wooden blocking under the base if necessary to level and secure the jack.

If the lift surface is metal, place a 1-inch thick hardwood block or equivalent between it and the metal jack head to reduce the danger of slippage.

To set up a jack, make certain of the following:

- The base rests on a firm level surface,
- The jack is correctly centered,
- The jack head bears against a level surface, and
- The lift force is applied evenly.

Proper maintenance of jacks is essential for safety. All jacks must be inspected before each use and lubricated regularly. If a jack is subjected to an abnormal load or shock, it should be thoroughly examined to make sure it has not been damaged.

Weather Extremes

1. Violent Weather Conditions

Depending on a project's geographic location, workers could be exposed to various types of violent weather conditions including, but not limited to:

- Earthquakes,
- Hurricanes,
- Flooding,
- Electrical storms/lightning,
- Severe winds or tornadoes.

Project management shall remain informed about any impending weather conditions that could endanger the job site and are responsible for shutting down the site as needed to prevent serious injuries. Projects shall effectively communicate their plan of action for dealing with sudden weather changes that could pose a threat to employees.

2. Muster Points

A muster point is a pre-designated area where all employees are to gather as a group in times of serious danger. The safest muster point will vary depending on the type of impending violent weather. The project site shall communicate to employees the appropriate muster point locations for violent weather conditions typical in their area. Emergency action posters may be placed in restrooms or break rooms as reminders for the employees to seek shelter.

3. Crisis Management Plan

If a project site is struck by violent weather during work hours where injuries are likely to have occurred it may be necessary to invoke the Crisis Management Plan. All project management shall be trained in the crisis procedures in order to mitigate damage to person or property and ensure quick medical response to injurious situations.

Crisis Management Plans and First Hour Response Kits are available in project offices.

Welding, Cutting & Hot Work

1. Scope

Hot work is any process based on the type of work or function that can cause ignition of a gaseous or vaporous atmosphere due to direct or indirect contact. Examples include welding, cutting, burning, soldering, grinding, etc. The following program identifies the safe work practices to be followed.

2. Responsibilities

The Site Management and Supervision shall plan for and supervise all hot work activities to ensure the following safe work procedures are met. They will assist in the development of JHA's, TEAM Books, and any formwork that must be completed.

3. General Requirements

- Each hot work task requires a fire extinguisher to be placed within 25-feet of the work area. A preliminary survey of the work area for combustible materials conducted must be conducted. Whenever possible, all noted combustible materials shall be removed from the work area.
- No tasks that produce heat, sparks, or energy sufficient to serve as an ignition source may begin in any location that could potentially have ignitable atmospheres.
- All Hot Work permits must be reissued at the beginning of each day, each work shift, or if the area has not been monitored within 1 hour. Copies of permits must be kept on file and available.
- If proper controls are in place, Routine Hot Work operations may be provided a "Blanket" Hot Work Permit if deemed appropriate by the Project Manager.
- Employees using welding equipment shall be instructed in the safe of such equipment.
- All welding equipment shall be inspected daily. Defective equipment shall be removed from service, replaced, or repaired and re-inspected before again being placed in service.
- Proper precautions (isolating welding and cutting, removing fire hazards from the vicinity, providing a Hot Work Attendant, etc.) for fire prevention shall be taken in areas where welding or other "hot work" is being done.
- Objects to be welded, cut, or heated shall be moved to a safe location or, if they cannot be moved, all moveable fire hazards in the vicinity shall be taken to a safe place or the combustible material and construction shall be protected from the heat, sparks, and slag of welding by suitable screens.
- The areas where the floor, walls, or ground cover are combustible should be protected by spraying the area with water, spreading damp sand, laying sheet metal, or by an equivalent means of protection.
- Workers and the public shall be shielded from welding rays, heat, flashes, sparks, molten metal, toxic gases, toxic fumes, and slag.
- Cable, hoses, and other equipment shall be kept clear of passageways, ladders, and stairways.

- All hollow spaces, cavities, or containers shall be vented to permit the escape of air or gases before preheating, cutting, or welding.
- Pipelines containing gases or flammable liquids or conduits containing electrical circuits shall not be used as a ground return.
- When welding or cutting must be done in a location where combustible or flammable materials are located, inspection, and written authorization by the designated authority shall be required before such operations are begun. The location shall be checked for latent fires after the work is completed.
- Cylinders shall be kept beyond the range of sparks, hot slag, or flame.
- Fuel gas and oxygen cylinders must be stored at least 20 feet apart or on opposite sides of a non-combustible fire wall (with a NFPA fire resistant rating of one half hour 1/8 –inch plate) at least five feet in height, outside the range of falling debris and away from heavy traffic areas when not in use.
- Cylinders must be kept upright and secured. Preferably in a torch cage, or to a structural component with a minimum of number-9 wire.
- Cylinder storage areas must be clear of combustibles, including fuels, and be designated as "no smoking" areas. Proper signage, “NO SMOKING, NO OPEN FLAME” shall be posted.
- Cylinders should never be dropped, dragged, or struck in any way.
- Positive mechanical and/or personal protective measures shall be taken when welding, cutting, or heating metals of toxic significance in enclosed spaces.
- Pure oxygen shall not be used for ventilation, comfort cooling, blowing dust from clothing for pneumatic tool use, to start internal combustion engines, to blow out pipelines, to create pressure, to fill tires or for cleaning the work area.
- Fuel gases such as propane and acetylene can be as dangerous as oxygen at pressures above 15 psi; in certain mixtures with oxygen acetylene can spontaneously explode. Propane, which is heavier than air, can accumulate below grade level and be ignited by sparks, pilot lights, and other sources of combustion.
- Welding, cutting, or heating on any surface covered by a preservative coating shall be considered highly flammable. Appropriate precautions and fire prevention shall be taken.
- In the open air, workers shall be protected against toxic preservative coatings by a respirator that meets requirements of NIOSH.
- Preservative coatings shall be removed a sufficient distance from the area to be heated to ensure the temperature of the unstripped metal is not appreciably raised.
- When the welding, cutting, or heating operation is such that normal fire prevention precautions are not sufficient, additional personnel shall be assigned to guard against fire and instructed in anticipated fire hazards and how fire-fighting equipment is to be used.
- Flash arrestors must be installed within the fuel and oxygen lines on all gas cutting cylinders. A flash arrestor, in the case of a flashback, will stop the flame from reaching the fuel source. Flash arrestors should be inspected every six months or after a flashback, whichever comes first. If flash arrestors appear clogged with carbon soot or discolored by heat they should be replaced.
- Hose that has been subject to flashback, or shows severe wear or damage, shall be tested to twice the normal pressure to which it is subject, but in no case less than 300 psi. Defective hose shall not be used.

- No welding, cutting, or heating shall be done where the application of flammable paints or the presence of other flammable compounds, or heavy dust concentration creates a hazard.
- When burning or welding, employees must wear approved eye protection with suitable filter lenses, minimum of shade 4 or 5 for cutting, and shade 10 for arc welding. If employees' eyes are exposed to flying objects from chipping slag or other weld-cleaning activity, employees must wear approved eye protection. When arc welding is done near other workers, all employees must be protected from the arc rays by non-combustible screens or adequate eye protection.
- When welding, cutting, heating, burning metals have toxic significance, (such as zinc, lead, cadmium, or chromium-bearing metals); the Respiratory Protection Program is to be referenced.
- Never weld or burn on barrels, tanks, piping, or other systems, which may have contained either combustible or unknown products without first properly purging and venting the container and obtaining approval from the appropriate Supervisor.
- All structural welding accomplished by the contractor on critical items such as scaffolding, shoring, forms, ladders, piling, etc., shall be performed by certified welders using qualified welding procedures.

4. **Fumes & Gases**

Hazardous fumes and gases can be released into the air during welding and cutting. As seen in the table below, some of these are released regardless of the material being cut, while other fumes and gasses depend on the type of coating. The two hazards, which are considered most dangerous, are cutting through lead-based paint and cutting in the presence of degreasers. Cutting materials, which have been cleaned with a degreaser, or even in the vicinity of a degreasing operation, can produce deadly phosgene gas. Mechanical removal such as sandblasting or chemical removal such as paint stripping may be necessary to remove hazardous coatings before cutting.

Adequate ventilation must be ensured before starting any cutting job. Cutting in enclosed spaces, such as tanks, tunnels, or small, closed rooms, demands particular attention to worker safety. A hazardous situation can develop because oxygen can easily be replaced by gases or toxic fumes. If adequate mechanical ventilation cannot be provided, workers must be equipped with air supplied respirators and a lifeline which is constantly watched by an outside observer.

Cylinders must be kept outside the enclosed space and gases should be shut off at the cylinders when work stops for more than a few minutes. A leaky hose or fitting in an enclosed space can easily result in an explosive or oxygen-deficient atmosphere.

Welding and cutting work on containers that have held combustible solids, liquids, gases or dusts can result in fire or explosion if the containers are not entirely free of these materials. It is important that a rigorous cleaning process be undertaken and that instructions for cleaning are rigidly followed. Containers that have held any of the following materials are considered dangerous, and hot work should not be started before they are properly cleaned and tested.

Chemicals That Can Result in Combustible and/or Explosive Atmospheres
Gasoline, kerosene, solvents, or light oil
Acids which react with metal and produce explosive hydrogen gas

Chemicals That Can Result in Combustible and/or Explosive Atmospheres
Heavy oils, tars, or solids
Combustible solids
Residue from combustible metals such as magnesium

Any container that has held combustibles should be considered unsafe until proven otherwise by a qualified person. When in doubt, the container should be cold cut by mechanical means.

Toxic Fumes & Gases Produced by Cutting Torches	
Source	**Chemical Produced**
Cutting	Carbon Monoxide
Cutting & Welding	Ozone
Welding on Stainless Steel	Hexavalent Chromium
Welding Rods	Fluorides
Acids	Hydrogen Gas
Chrome-Coated Fixtures	Chromates
Cadmium	Cadmium
Lead Pipe	Lead Oxide
Zinc (galvanized metals)	Zinc Oxide
Any Material Painted with Lead-Based Paint	Lead Oxide
Any Material Which was Cleaned with Degreasers	Hydrochloric Acid and/or Phosgene Gas

5. Gas Equipment

- Keep all welding leads and hoses up off floors, walkways, and stairways, or appropriately protect such leads and hoses.
- Fuel gas and oxygen hoses shall be easily distinguishable and shall not be interchangeable. Hoses shall be inspected at the beginning of each shift and be repaired or replaced if defective.
- Do not use matches or lighters to light torches. Spark igniters must be used. Wear appropriate PPE.
- When a crescent or special wrench is required to operate an acetylene cylinder valve, the wrench must be kept in position on the valve.
- After removing the valve protection cap, the worker should stand to the side of the cylinder valve opening and "crack" the valve. "Cracking" refers to quickly opening and closing the valve to remove dust particles from the opening.
- Cracking should not be done near other welders, cutters, or ignition sources. The regulator must be attached according to the procedure outlined by the manufacturer.

- Torch valves shall be closed and gas supply shut off whenever work is suspended. The torch and hose shall be removed from confined spaces whenever work is suspended.
- Only torches and gas mixers approved by Factory Mutual or Underwriters Laboratories may be used. Torch valves and fittings shall not be oiled or greased.
- All oxy-acetylene or other fuel gas-oxygen combinations used in cutting or welding equipment shall have reverse-flow check valves between torch and regulator. Manifold systems shall have the reverse - flow valves installed at the manifold connections. All arrestors must be installed at the regulator of each cylinder. Acetylene regulators shall not be adjusted to permit a discharge greater than 15 psig.
- Oxygen regulators and fittings should never be oiled, greased, or cleaned with oily rags.
- Connection of multiple sets of oxy-acetylene hoses to a single regulator on a single set of oxy-acetylene tanks may only be accomplished by installing a commercially available fitting approved by Compressed Gas Association (CGA) Standards and UL listed. The fitting shall be installed on the output side of the regulator and shall have a built-in shut-off valve and reverse-flow check valve on each branch.

6. Electric Arc Welding

The hazards encountered in electric arc welding are similar to those encountered in gas cutting and welding except gas related hazards are replaced by electrical hazards. General guidelines for safe work practice to be followed include:

- The dangers of flying sparks must be guarded against, particularly near floor and wall openings where other works or combustibles may be hidden from view. PPE requirements are identical except that arc welders are required to wear a welding helmet. Screens or curtains to protect others working in the vicinity must shield arc-welding operations.
- Switching equipment for shutting down the welding machine shall be provided on or near the welding machine.
- The non-current carrying metal parts of electrically powered welding machines shall be grounded. Grounding circuits, other than by means of the structure, shall be checked to ensure that the circuit between the ground and the equipment to be grounded has resistance low enough to permit sufficient current to flow to cause the over current device to interrupt the circuit.
- Neither terminal of the welding generator shall be bonded to the frame of the welder.
- When electrode holders are to be left unattended, the electrodes shall be removed and the holder shall be placed or protected so they cannot make electrical contact with employees or conducting objects.
- The equipment shall be shut down when the leads are unattended.
- Cables should be inspected regularly for damage. Damaged insulation, conductors, or connections should be repaired or replaced to achieve the conductivity and water-tightness of the original cable.
- Cables with splices or repaired insulation within 10 feet of the holder shall not be used.
- Welding leads should always be kept dry and free of oil and grease.

- Lengths of cable produce heat when in use, so cables should be neatly uncoiled before using to prevent damage to the insulation.
- When the distance from the machine to the work varies considerable, the cable can be broken into lengths using connectors intended for this purpose.
- Cables laid on the ground and must protected from damage or the likelihood of causing an accident.
- When in use, cables should be kept away from other power supplies or high voltage conductors.
- Welding supply cables shall not be placed near power supply cables or other high-tension wires.
- Welding leads shall not be permitted to contact metal parts supporting suspended scaffolds.
- Lug covers shall be installed to protect both the positive/negative connections from accidental contact.
- To minimize the danger of electric shock, suitable guards must be placed so as to prevent persons from accidentally contacting live electric circuits.
- Whenever the machine is moved, the welder leaves the equipment or the work is stopped for an appreciable length of time, the power supply shall be disconnected.
- Electrode holders must never be dipped in water for cooling purposes.
- The welder shall protect himself from electrical contact with his work or other grounding structures at all times. This is particularly important when welder is in the prone or sitting positions when the potential for large area contacts is high.
- The welder should never permit the live metal parts of an electrode or its holder to touch bare skin or damp clothes. Cables that are draped over or wrapped around a worker's body can transmit dangerous amounts of current.
- Circuits from welding machines used for other than welding tools shall be grounded.

7. Inert Gas Metal Arc Welding

- All arc welding and cutting cables shall be completely insulated and be capable of handling the maximum current requirements for the job. There shall be no repairs or splices within 10 feet of the electrode holder, except where splices are insulated equal to the insulation of the cable. Defective cable shall be repaired or replaced.
- Persons in the area not protected from the arc by screening shall be protected by filter lenses. When two or more welders are exposed to each other's arc, filter lens goggles shall be worn under welding helmets. Hand shields to protect the welders against flashes and radiant energy shall be used when either the helmet is lifted or the shield is removed.
- Welders and other persons who are exposed to radiation shall be protected so that the skin is covered to prevent burns and other damage by ultraviolet rays. Welding helmets and hand shields shall be free of leaks, openings, and highly reflective surfaces.
- When inert gas metal-arc welding is performed on stainless steel, persons shall be protected against dangerous concentrations of nitrogen dioxide by local exhaust ventilation or airline respirators.

8. Hot Work Permit Procedures

- The superintendent and foreman are responsible for inspecting the project to determine the need for a Hot Work Permit program.
- A Hot Work Attendant is required for every activity where hot work could result in other than a minor fire due to ignition of combustibles.
- Fire extinguishing equipment appropriate for work activities to be performed, and the potential hazards identified, must be immediately available (within 25-feet) at the hot work location.

9. Hot Work Attendant Procedures

Because of the important role hot work attendants assume, each attendant needs to be trained in the following responsibilities and duties:

- Protect the employees engaged in the hot work activities.
- Before work begins, verify you have the necessary fire-fighting equipment, and it is functional.
- Test and verify radio communication, and alarms systems are functioning properly.
- Prevent ignition of any flammable materials. Should a fire occur, help employees get out of the area and sound the alarm for a fire.
- If the fire is small, take steps to immediately extinguish it.
- Do not leave the jobsite while the hot work is underway unless relieved by another qualified hot work attendant. If you must leave without relief, all hot work operations must be suspended.
- Stop the work operations if you observe any condition, which you consider to be hazardous.

811 – Ground Disturbance

1. Purpose

The purpose to this policy is to establish the minimum requirements to following when performing any type of excavation work or other ground disturbance activities. This policy only applies to the work area and this is defined as the location where the work is performed.

2. Role of Supervisor and Foreman

The Project Manager, Project Superintendent, Project Engineer/Project Coordinator, and Foreman must all be involved in the utility location process. Project managers, with the support and assistance of the project superintendents, are expected to lead project planning efforts wherein utility locating efforts are discussed and planned prior to executing work. Ideally, our foremen should lead the contact/meeting/coordinating of utility marking by location services and our location efforts in the field; however, in many cases this is not possible, for a variety of reasons. Therefore, project superintendents are responsible, with the assistance and support of the project manager, for leading the utility location efforts in the field as outline below. Our foremen must participate in these efforts when available.

3. Job Hazard Analysis

A Job Hazard Analysis will be written for any operation requiring a dig permit. Each crewmember shall sign off that they understand the work operation and the hazard analysis plan. For additional information on creating a Job Hazard Analysis reference the company Risk/Task Hazard Analysis procedure.

4. 811 – Utility Locates

Locating of underground utilities is to be done in advance of the excavation work – not done in haste during the excavation work. Locating utilities as part of an advanced planning process will give us clear understanding of where known utilities are, how they impact the work to be accomplished, and should give us the ability to perform our work with better confidence. It will also give us time to approach the project owner or utility owner with conflicts between the utility location and the work.

811 is the national call number for utility locates and must be called before the start of any task that disturbs the ground. Many states have established timelines for calling in locates and the timeframe which they expire. Always reference the state requirements before proceeding disturbing the ground.

The locate company may require the following information.

- Location of the work, be descriptive.
- Type of work being performed?
- What area is to be marked? When possible identify the area with white paint.

The locate company will provide you with a utility locate number. This number is used to track when a requested was provided. The utility owner is required by law to notify us within two working days

if utilities are present or not. This can be accomplished by marking the utilities within the excavation area or by notifying us through email, telephone, or fax that the area is clear.

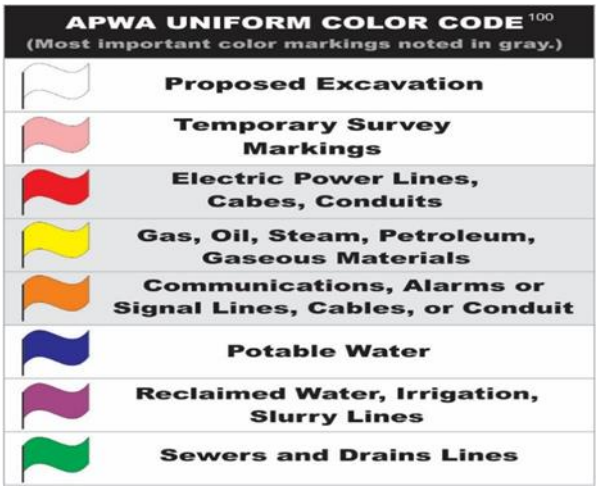
When utilities are present they will mark utility routes with stakes, flags, paint, or other suitable materials or in varying combinations depending upon the type of surface to be marked. These marks will be in sufficient quantity to clearly identify the routes of the utility. The markings should also include the symbols of the underground utility owner.

When it is expected that the surface covering the underground utility will be destroyed, supplemental offset markings may be added at the discretion of the utility owner.

The locate request will be valid from the date the call was placed to the time frame determined by state law. If the operation requires more time to complete, then the locate number must be updated 2 (two) working days prior to the expiration of the current staking request. In addition, if an operation is to be suspended for a period of time, the locate number should be kept updated until the completion of the operation.

The following are color codes for marking underground utilities:

- BLUE - Water
- ORANGE - Telephone, Railroad, Cable TV
- Green – Sewer, Storm Drain
- RED - Street Lighting, Electric, Traffic Signals (traffic signals may be orange)
- YELLOW - Gas
- PINK - Survey
- WHITE - Proposed Excavation



In some cases, the underground utilities belong to the owner of the property rather than the utility. The locate companies will not mark the utilities beyond where they own them.

For traffic signal wires, contact the municipality.

New constructed work is not covered. The plans will be referred to for locations of this work. Contact the engineer, foreman, or superintendent responsible for this work to verify what has been constructed.

5. Field Visit and Verification

After the locate number has been activated and the 48-hour period has passed, a field verification visit must take place. The following is a guideline to be used prior to beginning excavation work:

- Layout area for utility locates
  - Review area during layout for signs of existing utilities/facilities
  - Review plans and compare to site conditions
- Call for utility locates – document call date/time, "Dig Number", and subsequent up-date efforts for excavations longer than two weeks
- Meet with Utility Locator during marking of utilities
  - To the greatest extent possible, a supervisor from should meet with locator
  - Review the area with Utility Locator of signs of existing utilities/facilities
  - Take pictures of utility markings
  - If necessary, provide off-set markings/stakes for reference during excavation work
- Compare project plans to utility location marks in the field – note any discrepancies
- Contact Utility Owner and/or Utility Locator to discuss discrepancies between plans and field markings
  - Mark project plans to reflect resolution of discrepancies, if any
- Physically locate the exact location of all utilities marked and/or shown on plans by Potholing Methods as described below
  - Exact location of existing utilities to be accomplished prior to beginning excavation work – take pictures of any discrepancies with utility markings
  - Review site for signs of existing utilities/facilities
  - Mark in the field and record the exact location of all utilities
  - Mark exact location of utilities on the plans / discuss discrepancies with Utility Owner, Utility Locator, and Project Owner's representative
- Contact Utility Owner and/or Utility Locator to discuss and resolve discrepancies between field markings and exact location of utilities determined during potholing
  - This must be accomplished prior to beginning excavation work
  - Mark project plans with any changes
- Site Team meeting with foreman/crew to discuss location of impacted utilities, means and methods for excavation, installation, and backfill work, and mitigation measures to be taken to protect and avoid striking existing utilities

6. Utility Locate Permit

The Utility Locate Permit (ULP) is required for all underground, grading operations and any task that requires equipment or hand tools to disturb the ground.

The ULP identifies the work area for the task to be performed. The area where the work will take place should be delineated allowing the individual conducting the utility locates to identify the area where the work is being performed.

Once all locates have been completed the Engineer, Foreman, Superintendent, Operators, and any crew members involved in the work will review and sign the permit.

The following documents must accompany the ULP before it is distributed to the operator and the foreman:

- A copy of the Job Hazard Analysis.
- The first page in the Topography & Utility Plan and/or relevant plan sheets. This sheet should contain contact numbers for the utilities in the area.
- A copy of the Topography & Utility Plan sheets and/or relevant plan sheets for the work area. Any utility relocations that have been completed before the start of the operation will be clearly noted on these drawings. Existing utilities should be highlighted on the plan sheet with the color appropriate to the type of utility.
- A copy of the Drainage or Utility Plan sheets for the work area. Notes and highlights will be made on these drawings to indicate which drainage items (i.e. catch basins, pipe runs, etc.) are installed.
- A copy of the plans identifying the work area that the ULP covers.

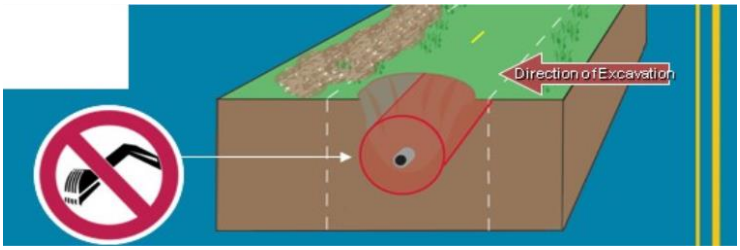
7. Potholing

Before any ground is disturbed the utilities will be potholed. Potholing is positive verification of the location and depth of the utility lines. Potholing will be done using hand labor, a VAC truck or trailer (if available), or with a small mechanical back-hoe. Mechanical excavation equipment can be used in conjunction with hand labor to accomplish potholing the utility when a VAC truck or trailer is not available. Careful adherence to safe mechanical potholing procedure must be followed at all times when using mechanical excavation equipment.

Potholing must be done in a manner that will prevent damage to the utility line(s) being investigated because the exact location of the utility line(s) is unknown until it has been uncovered and determined.

Utilities located have a two-foot safe area and the utility should be within the markings plus or minus two feet. If utility is NOT within the two-foot safety area, DO NOT proceed to disturb the ground until the utility has been positively located, or positively verified as not in the work area. Contact the Utility Owner, Utility Locator (811), and the Project Owner's representative to alert them to a mis-located utility line or a utility line that cannot be found.

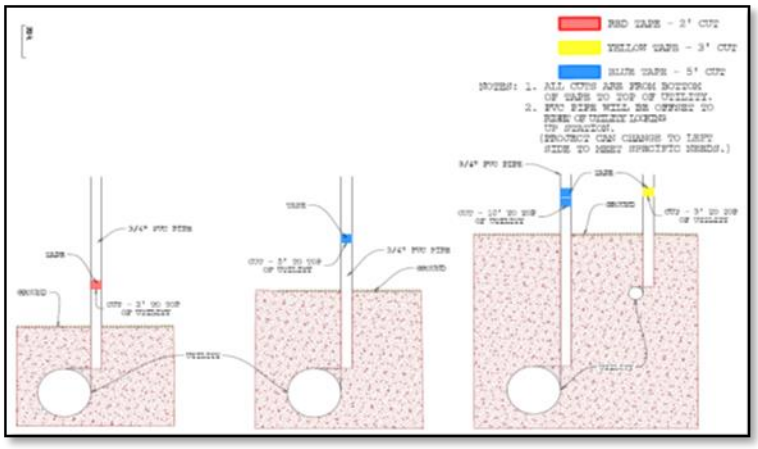
A minimum clearance of 24 inches will be maintained between a marked and unexposed underground utility and the cutting edge or point of any power operated excavating or earth moving equipment. If excavation is required within 24 inches horizontally of any marking, the excavation will be performed utilizing hand tools or vacuum excavation techniques. Utility owners will not guarantee the depth of a utility. Therefore, we will utilize the same excavation techniques vertically as we do horizontally, unless a utility owner informs us we can use a different technique.



8. Potholing Procedure

You will pothole to find the utility and if it is not found, do not assume the utility is not there. The utility must be located prior to the start of the excavation operations.

- For potholing utilizing hand excavation and mechanical excavation combination, the soil must be excavated in 6" lifts by hand to verify that no utilities are present. Then equipment can be used to clear the material in that lift so that further hand excavation can be done. If utilities are located, then the utilities must be exposed by hand only. The proper tools that can be used for handwork are shovels and pry bars (or other tools of this nature). At no time should a pickaxe or other similar tools be used. Extra care must be used with potholing electrical lines. Some electrical lines are direct burial and bars should not be used. Use of fiberglass handled tool and shovels should be used.
- Mark all utilities with stakes and ribbon and offset the marking where necessary. Make sure all personnel are aware of the location of the utilities in the area.
- When potholed utility cannot be left open and visible, a thin-walled PVC conduit (1/2 or 3/4 inch dia.) should be used to mark and provide a positive lead to the buried utility. Additional marking such as pea gravel or sand can be used to backfill pothole locations so it is easy to expose then the excavation crew is excavating the location. Be careful not to place the end of the conduit directly on the utility to avoid accidently puncturing the utility. Alternative methods for marking the utilities are shown below. Painting of the conduit with red and yellow paint, at 12 inch increments, as shown on drawing below, can help avoid accidental utility strikes when excavating above utility at a later date.



[*** consider using the color coding scheme per the attached diagram (Color Code for Utility Depth)to indicated the depth of the utility line once the exact location of the utility line has been determined by potholing.]

- Do not assume that the utility will continue on the same line and grade.
- During the field visit, the area will be inspected for any unknown utilities (i.e. landscape irrigation lines). If any unknown utilities are suspected, they will also be potholed and located.

Pothole Spacing for different utilities will be as follows:

a) Gas and Electric

- For the locations that the gas and electric lines are within 25 feet of your work area, you must pothole every 10 feet to verify that the line has not changed directions.
- Locations outside the 25 foot work area will be potholed at least one time to verify locates and the utility plans.

b) Cable TV

- Lines should be potholed every ten (10) feet within you work area.

c) Other utilities:

- pothole every 25 feet for lines less 12" in diameter or less
- pothole every 50 feet for lines greater than 12" in diameter
- potholes every 25 feet for excavations within 3 feet of a utility line, regardless of pipe diameter size

At least two (2) potholes for each utility within the work area must be obtained regardless.

d) Utilities in roadway:

- Utilities that are located within the roadway will be potholed.
- Street plates will be used to cover a pothole when there is live traffic on the roadway.
- If the roadway is not scheduled to be excavated in the current phase, then an asphalt patch will be placed over the potholed area. This will be done after, all pothole information has been recorded and the pothole has been offset using stakes and ribbon.

Once all potholing has been completed, then you can begin excavation operations. Always proceed with caution for unknown utilities.

9. Unknown or Abandoned Utilities

Any excavation into the ground brings with it the possibility of discovering an unknown or abandoned utility. For this reason, the Foreman, Operator, and other crew members must remain alert and focused on their work to the possibility of encountering such a utility line. Look for signs of an unknown utility such as an old trench line, bedding and/or backfill material, and a utility line that appears.

If an unknown or abandoned utility line is encountered, DO NOT ASSUME THE LINE IS DEAD OR OUT OF SERVICE. ALL UTILITIES LINES ENCOUNTERED MUST BE CONSIDERED LIVE AND IN SERVICE, WHETHER MARKED/NOT MARKED BY THE UTILITY LOCATOR OR SHOWN/NOT SHOWN ON THE PLANS. Contact your supervisor, utility owner, and utility locator for assistance in determining the status of the utility line.

10. Utilities Not Typically Marked by the Utility Company

Utilities/facilities such as traffic signals, highway communications, ITS, highway lighting, recently relocated utilities, and new utilities are not typically marked/located by utility location services. It is essential that our work be discussed with utility and project owners as part of our utility location efforts to determine the location of these types of utilities/facilities prior to beginning work. Review the project plans as many of these utilities may be shown on the plans. Once the presence of these utilities has been determined, the utilities must potholed and located as discussed herein.

11. Private Utilities/Utilities on Private Property

Private utilities and utilities on private property, irrigation lines, waterlines, electrical lines, are typically not marked by utility location services. It is essential that our work be discussed with property and project owners as part of our utility location efforts to determine the location of the utilities/facilities prior to beginning work. Review the project plans as many of these utilities may be shown on the plans. Once the presence of these utilities has been determined, the utilities must potholed and located as discussed herein. Request any records and plans from the property owner.

12. New Installed Utilities Under Our Contract

New utilities installed as part of our contract scope of work will not be marked by Utility Locators. As part of the project planning efforts, the installation status of new utilities installed as part of our project scope of work must be reviewed by the project team and foreman/crew before starting excavation work in the same area. The superintendent and foreman must be fully knowledgeable of the location of new utilities installed during this project and to plan and execute follow-on work so as to avoid conflict or striking these newly install utilities.

13. Utility Strike – What to Do?

- First things that must be done are:
  - Stop work and stabilize the situation
  - Provide first aid to injured employees and members of the public and call 911 when appropriate
  - Notify emergency services when applicable
  - Protect employees and public from harm – move away from excavation site
  - Secure affected area
  - Protect property and equipment from damage

- Second things that must be done are:
  - Notify your supervisor
  - Notify Utility Owner and Utility Locator
  - Notify Project Owner's representative
  - Notify Regulatory Agencies

14. Excavation Work

- Create or review the "JHA" for the excavation work – discuss with foreman and crew

- At the beginning of each shift, prior to beginning work, foreman and crew (and project manager, superintendent, engineer/coordinator when available) are to review the immediate site for the day's work to review the location of existing utilities/facilities such as vaults, pull-boxes, gas/water meters, guy wires, control cabinets, etc.
- Take pictures of all utility lines (known, unknown, or abandoned) that have been uncovered, location markings prior to excavation, and specifically take pictures of any existing or new damage to the utility line
- Care must be taken to protect and support all utilities lines uncovered during excavation
- Stop work immediately if there is a conflict between and existing utility line and our work – notify your supervisor of the conflict and take pictures of the conflict
- When an unknown or abandoned utility is discovered, care must be taken to protect/support utility until the status of the line is cleared – notify supervisor, utility owner, and utility locator and take pictures of the utility line
- Mark any differences between the utility marking/location efforts and the actual location of uncovered utilities on the plans – notify Utility Owner and Utility Locator of differences

Any deviation or change to the above potholing procedure must be approved in writing by the Project Manager.

15. Reporting Requirements

If a utility hit does occur follow these steps:

- Verify if any employees or people have been injured
- Notify the Superintendent and Project Manager immediately.
- The Superintendent will contact 911 if necessary.
- The Project Manager or Superintendent will contact the appropriate utility owner to notify them of the utility damage.

Reference the company incident reporting procedure to document the incident.

16. Training

Before any work begins Dig Safe Operator training will be performed with all Operators, Foreman, Superintendents, and Engineers. The training will cover:

- Roles and Responsibilities
- Components of the Utility Locate Policy
- Utility Locate Permit
- Reporting Requirements

17. Disciplinary Action

Violations of this policy will not be tolerated and the company disciplinary action policy will be followed. Each incident will be evaluated and treated on an individual basis and all final disciplinary actions will be at the discretion of company management.

Appendix – Forms

Non-Permit Confined Space Pre-Entry Checklist

Non-Permit Confined Space Pre-Entry Checklist	YES	NO
Did your survey of the surrounding area show it to be free of hazards such as drifting vapors from tanks, piping or sewers?		
Does your knowledge of work being performed, indicate this area is likely to remain free of dangerous air contaminants while occupied?		
Are you trained in the operation of the gas monitor being used?		
Has a gas monitor functional test (Bump Test) been performed this shift on the gas monitor to be used?		
Did you test the atmosphere of the confined space prior to entry?		
Did the atmosphere check as acceptable?		
Will the atmosphere be continuously monitored while the space is occupied?		
Are the proper control measures installed to eliminate a potential hazards?		
Have the applicable MSDS sheets for products being used, been reviewed by all those occupying the space?		

NOTICE: If any of the above questions are answered "**NO**", then **DO NOT ENTER!**
Contact your immediate supervisor.

In case of EMERGENCY, call this number:			
Job Site Location:			
Supervisor Signature:		Date / Time:	

Confined Space Entry Permit

Confined Space Entry Permit	
Project:	Supervisor:
Location:	Foreman:
Confined Space Supervisor:	
Date Issued: Time Issued:	
Date Expires:	Time Expires:
Confined Space Attendant:	
Purpose of Entry:	
Description of Hazards:	
Emergency Medical Services Phone Number:	
Emergency Services Contacted Before Entry :	Yes No
Monitor Brand:	
Air Monitor Calibration Date:	
Communication System:	

Requirements	Yes	N/A	Requirements	Yes	N/A
Team Book/JHA			Full Body Harness		
Lockout/Tag Out			Retrieval System		
Ventilation			Tripod		
Supplied Air Respirator			Fire Extinguisher		
Air-Purifying Respirator			Lighting		
Secure Area Above			Protective Clothing		
Hot Work Permit			Fall Protection for Access		

Air Monitoring Log

Time Sampled:

Sampled By:

Oxygen – 19.5-23.5%

LEL – <10%

CO – 35 ppm

H2S – 10 ppm

Authorized Entrants	Time In	Time Out	Time In	Time Out

Continuous Air Monitoring Log

Company: _____

Location/Facility: _____ Date: _____

Person(s) Conducting Tests: _____

Equipment/Instrument(s) Used: _____

Make: _____Model: _____Date of Annual Certification: _____

Suspected Explosive and/or Toxic Contaminants: _____

Time	% Oxygen (19.5 to 23.5%)	Lower Explosive Level (<10%)	Hydrogen Sulfide (10 ppm)

Lockout Tagout Log

Lock No.	Equip/Machine	Requested By	Date Out	Date In	Supervisor	Remarks

Lockout/Tagout - Lock Removal Form

Date: _____ Project:_____

Lock Owner's Name:_____

Employee Number:_____ Lock Number: _____

Employee Requesting Removal:

_____

Reason For Request:

_____

_____

_____

Alternatives Considered:

_____

_____

_____

Attempted to contact Lock Owner by phone: Date:_____ Time:_____

Superintendent:_____ Project Manager:_____

Lock Owner's Foreman:

Lock Owner's Foreman:

Time Keeper / Security:

Lock Owner Upon Return:

Forklift Inspection Checklist – Weekly

FORKLIFT INSPECTION CHECKLIST - WEEKLY	
Equipment Type / Model:	
Unit Number:	Operator:
Date Week Ending:	Supervisor:

INSPECTION ITEMS	MON	TUE	WED	THU	FRI	SAT	COMMENTS	OP–INT
1. Steering								
2. Wheels - Tires and Rims								
3. Glass surfaces - Windows Mirrors								
4. Electrical System – Lights, Alternator, Wiring, Etc.								
5. Safety Equipment (backup alarm, horn, seatbelt, lap bar, flashing beacon, etc.)								
6. No overall damages noted								
7. Fluid levels adequate, and no leaks noted								
8. Moisture Drained from air tanks (if equipped)								
9. Check for loose bolts, hose chafing, and coupling devices								
10. Check intake and exhaust systems – free of Obstructions								
11. Fire Extinguisher – fully charged								
12. Carriage Mast								
13. Forks								

Operator Signature:	Date Completed / Turned In:

Personal Fall Protection Equipment Inspection Log

Qualified Inspection:	Date:
Qualified Inspector Signature:	
Job Title:	
Company:	Project:

Instructions:

1. Check all parts of Personal Fall Protection Equipment for excessive wear and damage.
2. Evaluate each item: “P” is for a pass inspection and “F” failed inspection.
3. Submit completed report to the Safety Department

Employee Name	**Harness ID Number**	Harness Webbing	Harness D Ring	Harness Back Pad	Tongue/Grommet Buckles	Friction Matting	Lanyard	Self – Retracting Lifeline	Position Device	Other

Subcontractor Pre-job Safety Meeting Agenda & Checklist

Subcontractor:
Scope of Work:
Project Name & Number:
Date:

Required Items for Approval	*Initial*
1. Completed Subcontractor Safety Questionnaire.	
2. Written acknowledgment they are following our safety program or the have provided a copy of their Safety Manual or Injury and Illness Prevention Plan (IIPP) that has been	
3. Provided a copy of their Emergency Action Plan.	
4. A current Job Hazards Analysis or Work Plan that address hazards and corrective actions.	
5. Any company Safety and Health policies that are required or pertain to the work being performed that are not outlined in the Safety Manual or IIPP.	
6. The Subcontractor's Drug & Alcohol Testing Policy and that all subcontractor employees working on the project have been tested and meet the jobsite criteria.	
7. Identifying the Competent Person(s), individuals trained in First Aid and CPR, and their training records.	
8. Subcontractor's training records for the employees who will be working on the project.	

Items to be Discussed	*Comments or Action Items*
1. Company and project specific safety requirements.	
2. Subcontractor chain of command.	
3. Subcontractors responsibility to report incidents or an OSHA inspection on the project.	
4. Subcontractors responsibility to conduct and document weekly safety training meetings and provide documentation when requested.	
5. Conducting regular jobsite safety inspections.	
6. Unsafe acts, conditions, correcting hazards or behavior, stopping work.	

Printed Name	*Signature*	*Representing*	*Date*

Safety Performance Questionnaire

Company Name:_Click here to enter text.

Address: Click here to enter text.

Individual Completing this Questionnaire: Click here to enter text.

Position within the company: Click here to enter text.

Phone Number & Email: Click here to enter text.

Safety Program

1. Do you have a written safety program is it updated regularly? ☐Yes ☐No
2. When was it last updated? Click here to enter text.
3. Does your company have a written Drug & Alcohol Program? ☐Yes ☐No
4. Do you employ full a time safety representative(s)? ☐Yes ☐No
5. If yes, provide the Name, Phone Number, of the individual. Click here to enter text.
6. Are your employees properly trained for their tasks? ☐Yes ☐No
7. Will you have a competent person on the project when required by the task? ☐Yes ☐No
8. Are weekly safety meetings conducted? ☐Yes ☐No
9. Does your company have a procedure for identifying hazards and implementing corrective actions? Such as JHA's, AHA's, JTA's. ☐Yes ☐No
10. Are jobsite safety inspections conducted? ☐Yes ☐No
11. If yes, how often? ☐Daily ☐Weekly ☐Bi-Weekly ☐Monthly ☐Quarterly ☐Other
12. Who performs the inspections?

Safety Statistics

1. In the last 5 years, has your company been cited by Federal and/or State OSHA? ☐Yes ☐No
2. If yes, please provide a description(s) of the citation(s), final outcomes, and corrective actions that were implemented? Use an additional sheet if necessary.
   Click here to enter text.

List the last 5 previous years.

Year	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.
Hours Worked					
Recordable Incident Rate					
Days Away, Restricted, Transferred, Case Rate					
Lost Time Incident Rate					
EMR					

If the EMR is greater that 1.0 please provide an explanation.

Trench, Excavation, Shoring – Inspection Form

Inspections shall be conducted before each shift, as needed during shift, and after a rain event.

Date:	Competent Person:
Project:	Location:
Blue Stake/Utility Locate Number:	

Visual Inspection

	Yes	No		Yes	No
Subject to Vibration			Cohesive		
Fissured/Cracks Present			Granular		
Caved In			Moist, not wet		
Layers tilting into trench			Dry		
Previously Disturbed Soil			**"Yes" below mean Type C soil**		
Excavated Soil Crumbles Easily			Saturated or submerged		
"Yes" above soil is not Type A			Water is seeping freely		

Manual Tests

Plasticity (Ribbon Test)	Cohesive		Non-Cohesive
Thumb Penetration	¼" or Less (Type A)	¼" to 1" (Type B)	1" or More (Type C)
Penetrometer	t/sq.ft	t/sq.ft	t/sq.ft

Soil Classification

Soil Type	Stable Rock	Type A	Type B	Type C
Protection	Sloping	Trench Box	Shoring	Other
Slope Angle	3/4H:1V (Type A)		1H:1V(Type B)	1 1/2H:1V(Type C)
Depth of Trench:	Width at Bottom:		Overall Width:	

Daily Inspection

Inspection Items	Check if acceptable or **N** note deficiency

A.	All utilities located, supported or protected.	Y/N
B.	No fissures, cracks, sluffing, undermining, or cave-ins present.	Y/N
C.	No water problems that affect integrity of trench or excavation.	Y/N
D.	No atmospheric hazards or substances	Y/N
E.	Surface encumbrances, lose rock, soil removed or supported.	Y/N
F.	Spoils, materials, and equipment set back a minimum of 2 feet from the edge.	Y/N
G.	Berms, flagging, or barricades used to warn others of excavation.	Y/N
H.	Access: ladders, ramps provided within 25 feet of worker if over 4 feet deep.	Y/N
I.	Trench box installed correctly - 18” above soil, backfilled, & rating	Y/N
J.	Shoring inspected for deflection, condition, backfill, and undermining.	Y/N
K.	As a competent person, I certify the excavation or trench to be safe for employees to work in and occupy.	Y/N

811 Ground Disturbance Permit

General Information			
Location of Excavation (attach plans):			
Purpose of the Excavation:			
Start Date:			
Expected Completion Date:			
Depth:	Width:	Length:	
Utility Locate Number/Blue Stakes			
Ticket Number:			
Date Requested:			
Requested By:			
Pre-Work Checklist			
		Initialed By:	Comments (If "N", required explanation)
Preconstruction meeting held with the Utility Owner	Y/N/NA		
Plans verified against locate markings	Y/N		
Locate marking offset	Y/N/NA		
Visual inspection for unmarked utilities	Y/N/NA		
A utilities potholed within Maximum Limits	Y/N		
Equipment Analyzed for Size, Wt, and Speed. (for minimum vibration or shot to utility)	Y/N/NA		
Adequate Lighting	Y/N/NA		
Hazard Analysis Prepared and Reviewed	Y/N/NA		
Signatures (All signatures required. All must be "Dig Safe Operator" certified			
	Location of Blue Stakes Marking Known	Signature	
Engineer:	Y/N		
Operator:	Y/N		
Foreman:	Y/N		
Superintendent:	Y/N		