Health and Safety Program
State of Texas

CHESMAR HOMES

Setting a Higher Standard

Chesmar Homes DFW

1600 N. Collins Blvd., Ste. 1400
Richardson, TX 77094

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1 SAFETY POLICY

1.1 Policy

We recognize that the safety of our employees is of the utmost importance. The Safety Program is designed to aid employees and management in adhering to safe standards in our work place. The ultimate company objective is to prevent accidents and injuries to all employees.

While it is the responsibility of management to maintain an effective level of compliance to safety standards, it is also the responsibility of all our employees to perform their jobs and conduct themselves in accordance with such standards. Working together, we can insure safe and healthy conditions for all employees. Therefore, each and every employee must be aware of, understand and participate in the Safety Program.

Our management is dedicated to the health and safety of all its employees. To this end, we will respond to unsafe conditions or practices. The successful operation of our company will depend not only on sales and service, but also on how safely each job is performed. There is no job so important, nor any service so urgent, that we cannot take time to work safely.

We consider the safety of our personnel to be of prime importance, and we expect your full cooperation in making our program effective.

All employees have a duty to maintain vigilance and foresight in identifying and correcting hazards to health, safety or the environment. When necessary, they are to contact their Supervisor to take the appropriate steps to eliminate or reduce mitigate hazards at work. The Safety Director and Management will be contacted where doubt or uncertainty may exist with respect to appropriate actions to be taken.

Signature: _____ Date: _____

2 INJURY AND ILLNESS PREVENTION PROGRAM

2.1 Responsibilities

Safety Director:

Chesmar Homes DFW has designated Eric Smith as the Safety Director. The Safety Director has been given the authority and responsibility over this Health and Safety Program and for implementing all the provisions contained within.

The Safety Director's responsibilities include:

- The primary purpose is to create and maintain environmental, health, and safety interest at all levels of employment.
- Continually monitoring and evaluating overall Chesmar Homes DFW loss prevention efforts.
- Reviewing all accident investigation reports and implementing needed controls to prevent recurrence.
- Monitoring and evaluating employees and supervisory safety training activities. Permanent records, including minutes of all meetings, will be maintained by the Safety Director to permit a fair assessment of the effectiveness of the Safety Program.
- Commit to implement an effective Injury and Illness Prevention Program and integrate it into the entire business operations.
- Oversee the program in its entirety and implement the Program into day-to-day business operations.
- Ensure there is a means of communication concerning environmental, health, and safety between management and employees. Management will communicate safety information to employees in the form of postings, safety meetings, and written documentation on company safety policies, company safety goals, office and safety guidelines, hazard communication guidelines and safety practices with outside contractors.

Managers and Supervisors:

All managers and supervisors are responsible for implementing and maintaining this program in their facilities and work areas, and for answering workers questions about it. A copy of this program is to be made available to any employee and who requests it.

We recognize that the responsibility for safety and health is a shared responsibility. Chesmar Homes DFW accepts the responsibility for leadership of this program and for its effectiveness and improvement, and for providing the safeguards to ensure safe working conditions. Our supervisors and management personnel are responsible for developing appropriate attitudes toward safety and for ensuring that all operations are performed with the utmost regard for the safety of all personnel involved. Management is also responsible for ensuring that all safety and health policies and procedures are clearly communicated and understood by all employees. Managers and supervisors are expected to enforce the rules fairly and uniformly. In addition, managers and supervisors are to:

- Familiarize themselves with company safety policies, programs, and procedures.
- Provide complete safety training to employees prior to the assignment of duties.
- Be aware of all safety considerations when introducing a new process, procedure, machine or material to the worker.
- Consistently and fairly enforce all company safety rules.
- Give maximum support to all programs and committees whose function is to promote safety and health.
- Investigate injuries to determine cause, then take action to prevent repetition.
- See that all injuries, no matter how minor, are treated immediately and referred to the Safety Director to ensure prompt reporting to the insurance carrier.
- Review serious accidents to ensure that proper reports are completed, and appropriate action is taken to prevent repetition.
- Inspect work areas often to detect unsafe conditions and work practices
- Attend all company safety meetings

Employees

Employees are expected to follow all policies and procedures, participate in training, meetings, and other safety coordinated events. Employees are responsible for cooperating with all aspects of this program, including complying with all rules and regulations, and continuously practicing safety while performing their duties. To ensure the effective implementation of our program, employee's responsibilities include the following:

- Work in a safe manner by following rules and instructions.
- Be considerate of others in the workplace.
- Report to work rested and physically able to perform the work.
- No employee is to undertake a job until he or she has received instructions on how to perform it properly and safely, and has been authorized to perform the job.
- No employee is to use chemicals without fully understanding their toxic properties, and without the knowledge required to work with them safely.
- Mechanical safeguards must always be in place and be kept in place.
- Employees must report to a supervisor or designated individual all hazards and unsafe conditions encountered during work without fear of reprisal.
- Any work-related injury or illness must be reported to your supervisor immediately.

2.2 Compliance / Disciplinary Policy

All supervisors and employees are responsible for using safe work practices, for following all directives, policies and procedures, and for assisting in maintaining a safe work environment.

Our system of ensuring that all workers comply with the rules and maintain a safe work environment includes:

- Informing workers of the provisions of our program.
- Providing training to workers whose safety performance is deficient.
- Failure to follow company health and safety rules, safe work procedures and safety policies and any violation of these rules, procedures and policies may result in the following disciplinary action:
    - **First Offense:** Will result in a verbal warning which still must be logged in the employee's personal file.
    - **Second Offense:** Will result in a written warning from the Supervisor. This letter (written warning) will be put into your employment file.
    - **Third Offense:** Will result in suspension (without pay) from work. The amount of "days suspended" from work will depend on the nature of the safety infraction.
    - **Fourth Offense:** Will result in immediate termination from employment.

The level of disciplinary action to be taken by Chesmar Homes DFW can be decided depending on the seriousness of the safety infraction.

2.3 Communications

We recognize that open, two-way communication between management and staff on health and safety issues is essential to an injury-free, productive workplace. The following system of communication is designed to facilitate a continuous flow of safety and health information between management and staff in a form that is readily understandable and consists of the following items:

- New employee orientation including a discussion of safety and health policies and procedures.
- Review of this program.
- Regularly scheduled safety meetings.
- Effective communication of safety and health concerns between employees and supervisors, including translation where appropriate.
- Posted or distributed safety information.

We encourage employee participation and involvement by notifying managers and supervisors either in writing or verbally of any helpful suggestion, recommendation, or observation regarding safety without fear of reprisal.

For each project, there will be communication with each employee and subcontractor before being allowed to work on the project.

2.4 Training

All employees, including managers and supervisors, will have training and instruction on general and job-specific safety and health practices. Training and instruction will be provided as follows:

- To all new employees.
- To all employees given new job assignments for which training has not been previously provided.
- Whenever new substances, processes, procedures or equipment are introduced to the workplace and represent a new hazard.
- Whenever Chesmar Homes DFW is made aware of a new or previously unrecognized hazard.
- To supervisors to familiarize them with the safety and health hazards to which workers under their immediate direction and control may be exposed.
- To all employees with respect to hazards specific to each employee's job assignment.

Workplace safety and health training practices include, but are not limited to, the following:

- Explanation of Chesmar Homes DFW Injury and Illness Prevention Program, emergency action plan, and fire prevention plan, and measures for reporting any unsafe conditions, work practices, and injuries.
- Uses of appropriate clothing, including gloves, footwear, and Personal Protective Equipment
- Information about chemical hazards to which employees could be exposed and other hazard communication program information.
- Availability of toilet, hand-washing and drinking water facilities.
- Provisions for medical services and first aid, including emergency procedures.

In addition, the Company provides specific instructions to all employees regarding hazards unique to their job assignment, to the extent that such information was not already covered in other training.

- The Safety Director or designee shall ensure that supervisors receive training to familiarize them with the safety and health hazards to which employees under their immediate direction and control may be exposed.

- New employee training is to be done by the Foreman/Supervisor. All employees are to be oriented on the checklist in the Orientation section of this manual. This checklist must be signed by a supervisor. Where further training is needed or requested, the training form in the Training section of this manual shall be used.
- No employee is allowed to work before training is completed. This includes completion of the new employee checklist, which is to be signed by the Supervisor/Foreman.
- All new employees are to be provided an employee handout describing their rights and disciplinary action procedures if necessary.
- A competent supervisor/foreman shall instruct all personnel assigned a new job on the possible hazards of the new assignment before the task is begun. If the new work involves any new substances, equipment, processes, or procedures, it is the responsibility of management or the Supervisor/Foreman to train all employees on the new hazards, substances, equipment, processes, or procedures.
- New hazards are to be reviewed by management and the Supervisor/Foreman procedures developed to protect against those hazards.. Training in this new hazard will be completed before an employee is involved in the task. All employees are to have full knowledge of the safety procedures of the task.
- Management and the Supervisor/Foreman are responsible for all training on the new hazard.
- Supervisors are responsible to see that those under their direction receive training on general workplace safety as well as specific instructions with regard to hazards unique to any job assignment.
- No employee is to perform a task or operate a piece of equipment unless they have been trained in the task or operation of the equipment.

2.5 Hazard Assessments / Inspections

A competent person at our facility will conduct periodic inspections. The company safety director, facility supervision, or another person designated by the safety director may perform the inspections. Periodic inspections are performed according to the following schedule:

- Daily inspections when required for equipment.
- Monthly workplace inspection of buildings, structures and grounds must be conducted depending on the work process and the type of hazard(s) involved and/or might develop. Findings of all inspections must be recorded on the **Inspection Checklist Form**. The Safety Inspection Checklist forms must be kept and filed for due diligence purposes.
- When new substances, processes, procedures or equipment, which present potential new hazards, are introduced into our workplace.
- When new, previously unidentified hazards are recognized.
- When occupational injuries and illnesses occur.

- When we hire and/or reassign permanent or intermittent employees to processes, operations, or tasks for which a hazard evaluation has not been previously conducted.
- Whenever workplace conditions warrant an inspection.

Competent Person(s) and Facility Name
Superintendent on each job

2.6 Hazard Correction

Unsafe or unhealthy work conditions, practices or procedures are to be corrected in a timely manner based on the severity of the hazards. Hazards shall be corrected according to the following procedures:

- When observed or discovered.
- When an imminent hazard exists, which cannot be immediately abated without endangering employee(s) and/or property, we will remove all exposed workers from the area except those necessary to correct the existing condition. Workers necessary to correct the hazardous condition will be provided with the necessary protection.
- All such actions taken and dates they are completed shall be documented.
- When a hazard is discovered, no unauthorized employee is to correct the hazard. It should be reported at once to supervision.
- Imminent hazards are to be reported at once to management. No individual is to take it upon himself or herself to correct an imminent hazard unless trained to do so and it can be done safely.

2.7 Accident Investigation (Including Incidents and Near Misses)

See the Accident / Incident Investigation section of this progam.

2.8 Recordkeeping

The Safety Director will maintain the following documentation:

- Records of hazard assessment inspections, including the person(s) or persons conducting the inspection, the unsafe conditions and work practices that have been identified and the action taken to correct the identified unsafe conditions and work practices. This documentation shall be maintained for a period of at least (1) year.
- Documentation of safety and health training for each worker, including the worker's name, training dates, types of training, and training providers. This documentation shall be maintained for a period of at least (3) years.
- The Log of Work-Related Injuries and Illnesses (Forms 300 and 300A, and form 301 or equivalent) will be maintained to classify work-related injuries and illnesses and to note the extent and severity of each case. The Form 300A (Summary) will be posted by February 1 of the year following the year covered by the form and keep it posted until April 30 of that year. This documentation shall be maintained for a period of at least (5) years.
- Any ventilation system records, air monitoring and/or sampling records shall me maintained for a period of at least (5) years.
- Any medical and occupational exposure records shall be maintained for a period of at least (30) years.
- Any accident reports and follow up investigations shall be maintained for a period of at least (5) years.

3 ACCIDENT / INCIDENT INVESTIGATIONS POLICY

3.1 Purpose

The purpose of this policy and investigating accidents and incidents is to prevent a recurrence of the hazardous condition causing the event. This policy presents a practicable approach to investigating workplace accidents and incidents by emphasizing how to find the root cause(s), conduct an investigation, and make effective recommendations to prevent similar occurrences from ever happening again.

Chesmar Homes DFW will investigate serious accidents as well as any incidents that:

a. Result in an injury or illness to a worker requiring medical treatment;

b. Did not involve injury or illness to a worker, or involved only minor injury not requiring medical treatment, but had a potential for causing serious injury or illness to a worker;

c. Occur resulting in loss or damage sustained to material, equipment or property.

Accident and Incidents in the workplace will be investigated for the following purposes:

a. To fulfill legal requirements;

b. Determine the cause of accidents and incidents;

c. To ascertain compliance with applicable safety regulations;

d. To determine the cost of an accident, and

e. To determine what happened and why, so the steps can be taken to prevent a recurrence.

3.2 Definitions

"Accident" means an unplanned event that interrupts the completion of an activity, and that may (or may not) include injury or property damage.

"Incident" means an unexpected event that did not cause injury or damage this time but had the potential. "Near miss" and "dangerous occurrence" are also terms for an event that could have caused harm but did not.

3.3 Policy

1. The Supervisor, employees, management and/or the Safety Representative with appropriate training in conducting accident investigations must complete an accident / incident investigation.

2. The following steps shall be taken to adequately complete an incident investigation:

    a) Report the accident and/or incident occurrence to the Supervisor immediately;

    b) Provide first aid and medical care to injured person(s) and prevent further injuries or damage;

    c) Investigate the accident / incident;

    d) Identify the causes of the accident / incident;

    e) Report the findings of the investigation;

    f) Develop a plan and recommendations for corrective action;

    g) Implement the plan and recommendations for corrective action;

    h) Evaluate the effectiveness of the corrective action; and

    i) Make changes for continuous improvement.

3. The personnel conducting the investigation must prepare and complete a Chesmar Homes DFW Accident & Incident Investigation Report.

4. The incident report must include the following information:

    j) The place, date, and time of the accident/incident;

    k) The names and job titles of persons involved and/or injured in the accident/incident;

    l) The names of witnesses;

    m) A brief description of the accident/incident;

    n) A statement of the sequence of events that led up to the accident/incident;

    o) Identification of any unsafe conditions, acts, or procedures that contributed to the accident/incident;

    p) Recommended corrective actions to prevent similar accidents/incidents;

q) The name of persons who investigated the accident/incident

5. The Supervisor, Management team and/or the Safety Representative shall implement recommendations for corrective action immediately.

6. Management and/or Joint Occupational Health and Safety Committee shall review and evaluate the Chesmar Homes DFW Incident Investigation Report.

7. When conducting an incident investigation, Chesmar Homes DFW will ensure:

   a) A preliminary investigation and accompanying report are completed within 48 hours of an incident;

   b) A full investigation and final investigation report are completed within 30 days of the incident; and

   c) Management shall review and evaluate the Chesmar Homes DFW Incident Investigation Report.

3.4 Reporting Injuries to OSHA

REPORTING REQUIREMENTS

Employers are required to notify OSHA within 8 hours of occurrence of all fatalities. In addition a worker related incident that results in an in-patient hospitilation, amputation, or eye loss must be reported within 24 hours.

4 CODES OF SAFE PRACTICE

4.1 General Codes of Safe Practice

- Report all accidents, injuries and illnesses to their supervisor or safety coordinator immediately.
- Anyone known to be under the influence of intoxicating liquor or drugs shall not be allowed on the job while in that condition.
- Horseplay, scuffling, and other acts which tend to have an adverse influence on the safety or well-being of the employees are prohibited.
- Means of egress shall be kept unblocked, well lighted and unlocked during work hours.
- In the event of fire, call for supervisor or sound alarm and evacuate.
- Upon hearing the alarm, stop work safely, turn off machines and evacuate to the designated emergency staging area immediately.
- Only trained workers may attempt to respond to a fire or other emergency.
- Exit doors must comply with fire safety regulations during business hours.
- Stairways should be kept clear of items that can be tripped over and all areas under stairways that are egress routes should not be used to store combustibles.
- Materials and equipment will not be stored against doors or exits, fire ladders or fire extinguisher stations.
- Aisles must be kept clear at all times.
- Work areas should be maintained in a neat, orderly manner. Trash and refuse are to be thrown in proper waste containers.
- All spills must be cleaned up promptly. For large spills beyond an employee's training to handle, 911 and/or a trained clean up team must be called.
- Always use the proper lifting technique. Never attempt to lift or push an object that is too heavy.
- You must contact your supervisor when help is needed to move a heavy object.
- Do not stack material in an unstable manner.

- When carrying material, caution should be exercised in watching for and avoiding obstructions, loose material, etc.
- Report exposed wiring and cords that are frayed or have deteriorated insulation so that they can be repaired promptly.
- Never use a metal ladder where it could come in contact with energized parts of equipment, fixtures or circuit conductors.
- Maintain sufficient access and working space around all electrical equipment to permit ready and safe operations and maintenance.
- Do not use any portable electrical tools and equipment that are not grounded or double insulated.
- All electrical equipment should be plugged into appropriate wall receptacles or into an extension of only one cord of similar size and capacity.
- Inspect motorized vehicles and other mechanized equipment daily or prior to use.
- Shut off engine, set brakes and block wheels prior to loading or unloading vehicles.
- Inspect pallets and their loads for integrity and stability before loading or moving.
- Do not store compressed gas cylinders in areas which are exposed to heat sources, electric arcs or high temperature lines.
- Do not use compressed air for cleaning off clothing unless the pressure is less than 10 psi.
- Identify contents of pipelines prior to initiating any work that affects the integrity of the pipe.
- Wear hearing protection in all areas identified as having high noise exposure.
- Face Shields must be worn when grinding.
- Do not use any faulty or worn hand tools.
- Guard floor openings by a cover, guardrail, or equivalent.
- Always keep flammable or toxic chemicals in closed containers when not in use.
- Do not eat in areas where hazardous chemicals are present.
- Be aware of the potential hazards involving various chemicals stored or used in the workplace.

- Cleaning supplies should be stored away from edible items on kitchen shelves.
- Cleaning solvents and flammable liquids should be stored in appropriate containers and properly labeled.

4.2 Construction Codes of Safe Practice

- All conditions from construction, alteration, demolition and/or repair including painting and decorating that no contractor or sub-contractor for any part of contract work shall require any laborer or mechanic employed in the performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his/her health or safety.
- All equipment, materials and, job sites should be regularly inspected for safety.
- All employees must be competently trained and/or have experience to operate equipment or machinery.
- All employees should be aware of hazards presented by materials, equipment, and job sites.
- Personal protective equipment: All employees must wear the proper equipment for the job site and task at hand.
- Head protection (hard hats) are required when overhead work is being conducted (risk of flying or falling objects), risk of electrical shock and burns and/or when required by posting at the jobsite.
- All employees must wear hearing protection on job sites exceeding 90 DBAS. (Decibel level.)
- All employees must wear respiratory protection when dust exceeds limits specified by the Safety Data Sheet.
- All employees should be aware of occupational hazards in construction industry.
- First Aid kits shall be provided on all job sites.
- All job sites must supply potable drinking water and adequate washing facilities.
- One toilet is required for every 20 employees where there is no transportation. Toilets must be cleaned and supplied with toilet paper.
- Fire protection materials must be portable and located 75 feet from all working areas: fire extinguisher must meet specifications for job at hand.
- Construction site must have person certified in First Aid. CPR certification is also required when there is confined space work.

5 COMPRESSED AIR AND EQUIPMENT

5.1 Purpose

Chesmar Homes DFW has established this program to ensure compressed air is used safely and in accordance with manufacturer instructions.

5.2 Policy

The following precautions pertain to the use of compressed air at Chesmar Homes DFW facilities.

1. All pipes, hoses, and fittings must have a rating of the maximum pressure of the compressor. Compressed air pipelines should be identified (psi) as to maximum working pressure.
2. Air supply shutoff valves should be located (as near as possible) at the point-of-operation.
3. Air hoses should be kept free of grease and oil to reduce the possibility of deterioration.
4. Hoses should not be strung across floors or aisles where they are liable to cause personnel to trip and fall. When possible, air supply hoses should be suspended overhead, or otherwise located to afford efficient access and protection against damage.
5. Hose ends must be secured to prevent whipping if an accidental cut or break occurs.
6. Pneumatic impact tools, such as riveting guns, should never be pointed at a person.
7. Before a pneumatic tool is disconnected (unless it has quick-disconnect plugs), the air supply must be turned off at the control valve and the tool bled.
8. Compressed air must not be used under any circumstances to clean dirt and dust from clothing or off a person's skin. Shop air used for cleaning must be regulated to under 30 psi.
9. Goggles, face shields or other eye protection must be worn by personnel using compressed air for cleaning equipment.
10. Static electricity can be generated through the use of pneumatic tools. This type of equipment must be grounded or bonded if it is used where fuel, flammable vapors or explosive atmospheres are present.

5.3 Requirements for Operating & Maintaining Compressed Air Machinery

All components of compressed air systems including the cylinders must be visually inspected regularly by qualified and trained employees.

Maintenance superintendents should check with state and/or insurance companies to determine if they require their own inspection of this equipment. Operators need to be aware of the following:

Air receivers:

1. The maximum allowable working pressures of air receivers should never be exceeded except when being tested. Only hydrostatically tested and approved tanks shall be used as air receivers.
2. Air tanks and receivers should be equipped with inspection openings, and tanks over 36 inches in diameter should have a manhole. Pipe lug openings should be provided on tanks with volumes of less than five cubic feet. Air receivers shall be equipped with an indicating pressure gauge.
3. The intake and exhaust pipes of small tanks, similar to those used in garages, should be made removable for interior inspections.
4. No tank or receiver should be altered or modified by unauthorized persons.
5. Air receivers should be fitted with a drain cock that is located at the bottom of the receiver.
6. Receivers should be drained frequently to prevent accumulation of liquid inside the unit.
7. Air tanks should be located so that the entire outside surfaces can be easily inspected. Air tanks should not be buried or placed where they cannot be seen for frequent inspection.
8. Each air receiver shall be equipped with at least one pressure gauge and an ASME safety valve of the proper design.
9. A safety (spring loaded) release valve shall be installed to prevent the receiver from exceeding the maximum allowable working pressure. The safety valves must be tested.
10. Only qualified personnel should be permitted to repair air tanks, and all work must be done according to established safety standards.

Air Distribution Lines:

1. Air lines should be made of high-quality materials, fitted with secure connections.
2. Only standard fittings should be used on air lines.
3. Operators should avoid bending or kinking air hoses.
4. Air hoses should not be placed where they will create tripping hazards.
5. Hoses should be checked to make sure they are properly connected to pipe outlets before use.
6. Air lines should be inspected frequently for defects, and any defective equipment repaired or replaced immediately.
7. Compressed air lines should be identified as to maximum working pressures (psi), by tagging or marking pipeline outlets.

Pressure regulation Devices:

1. Only qualified personnel should be allowed to repair or adjust pressure regulating equipment.
2. Valves, gauges and other regulating devices should be installed on compressor equipment in such a way that cannot be made inoperative.
3. Air tank safety valves should be set no less than 15 psi or 10 percent (whichever is greater) above the operating pressure of the compressor but never higher than the maximum allowable working pressure of the air receiver.
4. Air lines between the compressor and receiver should usually not be equipped with stop valves. Where stop valves are necessary and authorized, ASME safety valves should be installed between the stop valves and the compressor.
5. The Safety valves should be set to blow at pressures slightly above those necessary to pop the receiver safety valves.
6. Blowoff valves should be located on the equipment and shielded so sudden blowoffs will not cause personnel injuries or equipment damage.
7. Case iron seat or disk safety valves should be ASME approved and stamped for intended service application.
8. If the design of a safety or a relief valve is such that liquid can collect on the discharge side of the disk, the valve should be equipped with a drain at the lowest point where liquid can collect.
9. Safety valves exposed to freezing temperatures should be located so water cannot collect in the valves. Frozen valves must be thawed and drained before operating the compressor.

Air Compressor Operation:

1. Air compressor equipment should be operated only by authorized and trained personnel.
2. The air intake should be from a clean, outside, fresh air source. Screens or filters can be used to clean the air.
3. Air compressors should Never be operated at speeds faster than the manufacturers recommendation.
4. Equipment should not become overheated.
5. Moving parts, such as compressor flywheels, pulleys, and belts that could be hazardous should be effectively guarded.

Compressed Air Equipment Maintenance:

1. Only authorized and trained personnel should service and maintain air compressor equipment.
2. Exposed, non-current-carrying, metal parts of compressor should be effectively grounded.
3. Low flash point lubricants should not be used on compressors because of its high operating temperatures that could cause a fire or explosion.
4. Equipment should not be over lubricated.
5. Gasoline or diesel fuel powered compressors shall not be used indoors.
6. Equipment placed outside but near buildings should have the exhausts directed away from doors, windows and fresh air intakes.
7. Soapy water of lye solutions can be used to clean compressor parts of carbon deposits, but kerosene or other flammable substances should not be used. Frequent cleaning is necessary to keep compressors in good working condition.
8. The air systems should be completely purged after each cleaning.
9. During maintenance work, the switches of electrically operated compressors should be locked open and tagged to prevent accidental starting.
10. Portable electric compressors should be disconnected from the power supply before performing maintenance.

6 COMPRESSED GAS AND EQUIPMENT

6.1 Purpose

The purpose of this program is to prevent injury from failing or failure of compressed gas cylinders and to establish requirements for handling, lifting and storing compressed gas cylinders safely.

6.2 Scope

This program covers all employees and contractors who handle, transport and/or use compressed gas cylinders.

6.3 Key Responsibilities

Managers/Supervisors

- Must ensure that all employees are aware and trained on the proper handling, storage and use requirements for compressed gas cylinders.
- Must ensure that initial training is conducted for all new employees and that retraining is conducted when employee behaviors suggest that retraining is warranted.

Employees

- Must follow all requirements regarding the safe handling, storage and use of compressed gas cylinders.

6.4 Procedure

General

Cylinders must not be accepted, stored or used if evidence of denting, bulging, pitting, cuts, neck or valve damage is observed. If damage is observed:

- The cylinder must be taken out of service.
- The cylinder's owner shall be notified to remove the cylinder from the premises.
- If owned, the cylinder shall be de-pressured and inspected as required by this program.

Cylinder Identification

Gas identification shall be stenciled or stamped on the cylinder or a label used. No compressed gas cylinder shall be accepted for use that does not legibly identify its content by name.

Handling

- Valve caps must be secured onto each cylinder before moving or storage.
- Compressed gas cylinders must not be allowed to strike each other.
- Secure the cylinder in a blanket when being lifted by mechanical means. Slings, ropes or electromagnets are prohibited to be used for lifting compressed gas cylinders.
- The preferred means to move compressed gas cylinders is with a cart, carrier or with a helper.
- When a cylinder cap cannot be removed by hand the cylinder must be tagged "Do Not Use" and returned to the designated storage area for return to vendor.

Storing

- All cylinders must be secured upright in a safe, dry, well-ventilated area that limits corrosion and deterioration.
- Cylinders must be secured by means that will prevent the cylinder from falling.
- When securing the cylinder, the restraints shall not be attached to electrical conduit or process piping.
- Empty and non-empty cylinders shall be stored separately. All stored cylinders shall be capped.
- Oxygen cylinders must be stored a minimum of 20 feet from combustible gas cylinders or areas where there may be open flame or arcing. Cylinders may also be stored where the oxygen is separated from combustible gas cylinders by a 5 foot or higher wall with a fire resistance rating of 30 minutes.
- Storage areas for full and empty cylinders must be designated and labeled. Cylinders should be stored in definitely assigned places away from elevators, stairs or gangways.

Use

- Cylinders must be equipped with the correct regulators. Regulators and cylinder valves should be inspected for grease, oil, dirt and solvents. Only tools provided by the supplier should be used to open and close cylinder valves.
- Never force or modify connections.
- Only regulators and gauges shall be used within their designated ratings.
- The use of a pressure-reducing regulator is required at the cylinder, unless the total system is designed for the maximum cylinder pressure.
- Valves must be closed when cylinders are not in use.
- Cylinders shall not be used as rollers or supports.

- Cylinders shall not be placed where they can come in contact with electrical circuits.
- Cylinders must be protected from sparks, slag or flame from welding, burning or cutting operations.
- Empty cylinders must be returned to designated storage areas as soon as possible after use.

Inspection of Compressed Gas Cylinders

- We will ensure that compressed gas cylinders under our control are in a safe condition to the extent that this can be determined by visual inspection. Visual and other inspections shall be conducted as prescribed in the Transportation of Dangerous Good Act (TDGA). Where those regulations are not applicable, visual and other inspections shall be conducted
- Hoses and connections should be inspected regularly for damage. Hoses should be stored in cool areas and protected from damage.
- These owned cylinders must be visually inspected prior to charging, before each use and at least annually.
- All inspections and testing must be documented.
- High Pressure Cylinders are those cylinders marked for service pressures of 900 psi and greater.
- High pressure cylinders shall be taken out of service and submitted for re-qualification testing when any of the following conditions are identified by visual inspection.
- Cuts, dings, gouges, dents bulges, pitting, neck damage or evidence of exposure to fire.
- The cylinders shall be inspected and retested according to the requirements stated in the Transportation of Dangerous Good Act (TDGA)
- Low Pressure Cylinders are those cylinders marked for service pressures of less than 900 psi.
- Low pressure cylinders fall into two categories, those requiring requalification and those that do not require re-qualification.
- Low pressure cylinders that do not require re-qualification shall be taken out of service and condemned when any of the following conditions are identified during inspection:
- The tare weight of the cylinder is less than 90% of the stamped-on weight of the cylinder.
- Observed pitting, dents, cuts, bulging, gouges or evidence of exposure to fire.
- Low pressure cylinders subject to re-qualification shall be taken out of service, inspected and retested when visual inspection identifies any of the following conditions; dents, bulges, pitting or neck damage.

Leaking Cylinders

Leaking cylinders should be moved promptly to an isolated, well-ventilated area, away from ignition sources. Soapy water should be used to detect leaks. If the leak is at the junction of the cylinder valve and cylinder, do not try to repair it. Contact the supplier and ask for response instructions.

Transportation

Cylinders must be transported in a vertical secured position using a cylinder basket or cart and must not be rolled. Regulators should be removed, and cylinders capped before movement. Cylinders should not be dropped or permitted to strike violently, and protective caps are not used to lift cylinders.

Empty Cylinder Marking

Cylinders should be marked as "MT" and dated when empty. Never mix gases in a cylinder and only professionals should refill cylinders. Empty cylinders must be handled as carefully as when filled.

Engineering Controls

Engineering controls such as emergency shutoff switches, gas cabinets and flow restrictors should be used wherever possible to control hazards. Emergency eyewash facilities should be present where corrosive gases or materials are used.

7 CONFINED SPACE PROGRAM

7.1 Purpose

To identify Confined Spaces and to provide a system to enter, work in and exit these locations free from physical injury and illness.

7.2 Scope

This program applies to all our operations, employees and contractors. It is meant to comply with OSHA standards.

7.3 General Requirements

Chesmar Homes DFW is identified as the “Host Employer” at our facilities. Before work begins:

- The Host Employer is to maintain a list of Confined Spaces that have been identified on site and identify which of those spaces are designated as “permit required’.
- If the site contains one or more permit required spaces, we will inform our employees, and inform other contractors who may have exposed employees by means of a danger sign or another equally effective means. We will notify of the permit required space existence, location, and the known dangers of each space.
- If we identify, or receive notice, of a permit required space, we will not let our unauthorized employees enter the space. This will be done through informing our unauthorized employees that they are not allowed in the space. When authorized employees are in the space, the Entry Supervisor and Attendant will verbally warn any unauthorized person who gets close to the space that they are not allowed in the space.
- For all Permit Required Confined Spaces a sign reading "DANGER-PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER" is to be posted near the entrance of the confined space.
- If it is determined that our employees will be entering a permit required confined space, our written permit required confined space program will be implemented and available at the site.

7.4 Employer Responsibilities

OSHA classifies three different types of employers. Depending on the site, we may be one or more of these employers. They are Host Employer, Controlling Contractor, and Entry Employer. The responsibilities for each include:

Host Employer

- Must provide the following information to the controlling contractor:
    - The location of each known Permit Required Confined Space.
    - The hazards or potential hazards of each space.er
    - Precautions that any the host employer or any previous controlling contractor or entry employer have implemented for the protection of employees in a particular permit required confined space.
- Must coordinate entry operations between the controlling contractor and entry employer(s) when:
    - More than one entity performs permit space entry at the same time.
    - Entry is performed at the same time that any activities could foreseeably result in a hazard in the permit space.

Controlling Contractor

- Must obtain the host employer's information about permit space hazards and previous entry operations and provide that information to each entity entering a permit space and any other entity at the worksite whose activities could foreseeably result in a hazard in the permit required space.
- After entry operations have been completed, must debrief each entity that entered a permit space regarding the permit space program followed and any hazards confronted or created in the permit space during entry operations.

Entry Employer

- Must obtain related entry information from the controlling contractor and inform the controlling contractor of the permit space program that they will follow.

7.5 Entry Supervisor Duties

- Is familiar with and understands the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
- Verifies, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
- Terminates the entry and cancels or suspends the permit as required by the OSHA standard.
- Verifies that rescue services are available and that the means for summoning them are operable, and that the employer will be notified as soon as the services become unavailable.
- Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations.

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

7.6 Attendant Duties

- Is familiar with and understands the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
- Is aware of possible behavioral effects of hazard exposure in authorized entrants.
- Continuously maintains an accurate count of authorized entrants in the permit space and accurately identifies who is in the permit space;
- Remains outside the permit space during entry operations until relieved by another attendant;
- Communicates with authorized entrants as necessary to assess entrant status and to alert entrants of the need to evacuate the space when needed.
- Assesses activities and conditions inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions:
    - If there is a prohibited condition.
    - If the behavioral effects of hazard exposure are apparent in an authorized entrant
    - If there is a situation outside the space that could endanger the entrants.
    - If the attendant cannot effectively and safely perform all the duties required.
- Summons rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards.
- Takes the following actions when unauthorized person’s approach or enter a permit space while entry is underway:
    - Warns the unauthorized persons that they must stay away from the permit space.
    - Advises the unauthorized persons that they must exit immediately if they have entered the permit space.
    - Informs the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space;
- Performs non-entry rescues if trained and authorized to do so.
- Performs no duties that might interfere with the attendant's primary duty to assess and protect the authorized entrants.

7.7 Authorized Entrant Duties

- Is familiar with and understand the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
- Properly use equipment as required in this program and by OSHA standards.
- Communicate with the attendant as necessary to enable the attendant to assess entrant status and to enable the attendant to alert entrants of the need to evacuate the space.
- Alert the attendant whenever:
    - There is any warning sign or symptom of exposure to a dangerous situation.
    - The entrant detects a prohibited condition
- Exit from the permit space as quickly as possible whenever:
    - An order to evacuate is given by the attendant or the entry supervisor.
    - There is any warning sign or symptom of exposure to a dangerous situation.
    - The entrant detects a prohibited condition.
    - An evacuation alarm is activated.

7.8 Permitting Process

- Before entry into a Permit Required Confined Space is authorized, the entry supervisor must prepare an entry permit, verifying the space is safe to enter, and sign the permit to authorize entry. The permit includes the following items:
    - The space to be entered
    - Purpose of the entry
    - Date and the authorized duration
    - Names of authorized entrants
    - Means of detecting an increase in atmospheric hazard levels in the event the ventilation system stops working
    - Name(s) of entry attendants
    - Name and signature of entry supervisor
    - Hazards of the permit space to be entered
    - Measures used to isolate the permit space and to eliminate or control permit space hazards before entry

  - Acceptable entry conditions
  - Results of tests and monitoring performed. The names or initials of the tester and the time of the testing
  - Rescue and emergency services that can be summoned and the means to contact them
  - Communication procedures that will be used by attendant and authorized entrants to maintain contact during entry
  - Equipment, including PPE, testing equipment, communication equipment, alarm systems, and rescue equipment that is to be provided
  - Any additional permits, such as hot work permits, that have been authorized for work in the space

- The completed permit must be made available at the time of entry to all authorized entrants or their authorized representatives, by posting it at the confined space entrance or by any other equally effective means, so that the entrants can confirm that pre-entry preparations have been completed. No one is to enter unless the space is made safe.
- The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit
- The entry supervisor must terminate entry and take the following action when any of the following apply:
  - Cancel the entry permit when the entry operations covered by the entry permit have been completed; or
  - Suspend or cancel the entry permit and fully reassess the space before allowing reentry when a condition that is not allowed under the entry permit arises in or near the permit space and that condition is temporary in nature and does not change the configuration of the space or create any new hazards within it; and
  - Cancel the entry permit when a condition that is not allowed under the entry permit arises in or near the permit space.
- Retain each canceled entry permit for at least 1 year to facilitate the review of the permit-required confined space program. Any problems encountered during an entry operation must be noted on the pertinent permit so that appropriate revisions to the permit space program can be made. A review is to be done, at minimum, every 12 months.

7.9 Permit Required Confined Space Procedures

In addition to the entry permit, the following is to be implemented for all permit required confined spaces:

- When employees of more than one employer are to work simultaneously in a confined space, or elsewhere on the site, a discussion is to be had, and procedures developed in coordination

with the controlling contractor so that employees of one employer do not endanger the employees of another employer.

- At least one attendant is to be designated to be directly outside the entrance to the confined space the entire time entrants are in the space. An attendant is not to be assigned to more than one space at a time.
- Perform pre-entry testing and periodic monitoring of the space. Provide an early warning monitoring system that continuously monitors for non-isolated engulfment hazards. Continuously monitor engulfment hazards. Before an employee enters the space, the internal atmosphere must be tested, with a calibrated direct-reading instrument, for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order. Any employee who enters the space, or that employee's authorized representative, must be provided an opportunity to observe the pre-entry testing.
- No hazardous atmosphere is permitted within the space whenever any employee is inside the space.
- If continuous monitoring is used, ensure that the monitoring equipment has an alarm that will notify all entrants if a specified atmospheric threshold is achieved, or that an employee will check the monitor with sufficient frequency to ensure that entrants have adequate time to escape. If continuous monitoring is not used, periodic monitoring is required. All monitoring must ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.
- Continuous forced air ventilation must be used as follows:
    - An employee must not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.
    - The forced air ventilation must be so directed as to ventilate the immediate areas where an employee is or will be present within the space and must continue until all employees have left the space.
    - The air supply for the forced air ventilation must be from a clean source and must not increase the hazards in the space
- Any conditions making it unsafe to remove an entrance cover must be eliminated before the cover is removed.
- When entrance covers are removed, the opening must be immediately guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space.
- Ensure entrants have the proper entry equipment (This is provided at no cost to employees), and ensure the employees are maintaining and uses the equipment properly.
- If a hazard is detected during entry:

  - Each employee must leave the space immediately.
  - The space must be evaluated to determine how the hazard developed.
  - The employer must implement measures to protect employees from the hazard before any subsequent entry takes place.

- Ensure a safe method of entering and exiting the space. If a hoisting system is used, it must be designed and manufactured for personnel hoisting. However, a job-made hoisting system is permissible if it is approved for personnel hoisting by a registered professional engineer, in writing, prior to use.
- Verify that the space is safe for entry and that the pre-entry measures in this program have been taken, through a written certification that contains the date, the location of the space, and the signature of the person providing the certification. The certification must be made before entry and must be made available to each employee entering the space or to that employee's authorized representative.

7.10 Reclassification of Confined Spaces

A confined space that is classified as a permit required confined space may only be reclassified as a non-permit required confined space only after a competent person has verified that the following has been met:

- Space poses no actual or potential atmospheric hazards and all hazards within the space are eliminated or isolated without entry into the space.
- Testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated or isolated.
- Forced air ventilation does not constitute elimination or isolation of the hazards
- Document the basis for determining that all hazards in a permit space have been eliminated or isolated through a certification that contains the date, the location of the space, and the signature of the person making the determination
- If hazards arise within a permit space that has been reclassified as a non-permit space, each employee in the space must exit the space. The entry employer must then reevaluate the space and reclassify it as a permit space.
- When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrants, or some indication that the initial evaluation of the space may not have been adequate, each entry employer must have a competent person reevaluate that space and, if necessary, reclassify it as a permit-required confined space.

7.11 Non Permit Required Alternative Procedures

If it can be demonstrated that each of the following conditions are satisfactorily addressed, the space should have continuous monitoring unless there is supporting data that demonstrates continuous monitoring is unnecessary:

- All physical hazards in the space are eliminated or isolated through engineering controls so that the only hazard posed by the permit space is an actual or potential hazardous atmosphere.
- Continuous forced air ventilation is utilized to maintain the space safe for entry.

7.12 Rescue and Emergency Services

In the event of an emergency the primary means of rescue is self-rescue. When an entrant recognizes a problem, or is instructed to get out of the space, he should immediately evacuate the space.

In addition, there must be a means of external rescue designated for when entrants are in a Permit Required Confined Space.

The primary means of external rescue is non-entry rescue. Non-entry rescue is required unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. Whenever non-entry rescue is selected, the entry employer must ensure that retrieval systems or methods are used whenever an authorized entrant enters a permit space, and must confirm, prior to entry, that emergency assistance would be available in the event that non-entry rescue fails. Retrieval systems must meet the following requirements:

- Each authorized entrant must use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, above the entrant's head, or at another point which the employer can establish presents a profile small enough for the successful removal of the entrant. Wristlets or anklets may be used in lieu of the chest or full body harness if the employer can demonstrate that the use of a chest or full body harness is infeasible or creates a greater hazard and that the use of wristlets or anklets is the safest and most effective alternative.
- The other end of the retrieval line must be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device must be available to retrieve personnel from vertical type permit spaces more than 5 feet deep.
- Equipment that is unsuitable for retrieval must not be used, including, but not limited to, retrieval lines that have a reasonable probability of becoming entangled with the retrieval lines used by other authorized entrants, or retrieval lines that will not work due to the internal configuration of the permit space.

The employer must designate an entry rescue service whenever non-entry rescue is not selected. The following applies to the selection of entry rescue services:

- Evaluate a prospective rescuer's ability to respond to a rescue summons in a timely manner, considering the hazards identified. What will be considered timely will vary according to the specific hazards involved in each entry.
- Evaluate a prospective rescue service's ability, in terms of proficiency with rescue-related tasks and equipment, to function appropriately while rescuing entrants from the particular permit space or types of permit spaces identified.
- The rescue team must have the capability to reach the victims within a time frame that is appropriate for the permit space hazards identified.
- The rescue team must be equipped for, and proficient in, performing the needed rescue services.
- The rescue team must agree to notify the employer immediately in the event that the rescue service becomes unavailable.
- Inform each rescue team or service of the hazards they may confront when called on to perform rescue at the site.
- Provide the rescue team or service selected with access to all permit spaces from which rescue may be necessary so that the rescue team or service can develop appropriate rescue plans and practice rescue operations.
- The phone number for the rescue team is to be noted on the entry permit. The attendant is to have a mobile phone that has reception and the ability to call the rescue team immediately when needed. The attendant is not to leave the entrance to space and is to keep any unauthorized personnel from entering the space to attempt rescue.

If employees have been designated to provide permit space rescue and/or emergency services must take the following measures and provide all equipment and training at no cost to those employees:

- Provide each affected employee with the personal protective equipment (PPE) needed to conduct permit space rescues safely and train each affected employee so the employee is proficient in the use of that PPE.
- Train each affected employee to perform assigned rescue duties. The employer must ensure that such employees successfully complete the training required and establish proficiency as authorized entrants.
- Train each affected employee in basic first aid and cardiopulmonary resuscitation (CPR). The employer must ensure that at least one member of the rescue team or service holding a current certification in basic first aid and CPR is available.

- Ensure that affected employees practice making permit space rescues before attempting an actual rescue, and at least once every 12 months, by means of simulated rescue operations in which they remove dummies, manikins, or actual persons from the actual permit spaces or from representative permit spaces, except practice rescue is not required where the affected employees properly performed a rescue operation during the last 12 months in the same permit space the authorized entrant will enter, or in a similar permit space. Representative permit spaces must, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescue is to be performed.

Note: If an injured entrant is exposed to a substance for which a Safety Data Sheet (SDS) or other similar written information is required to be kept at the worksite, that SDS or written information must be made available to the medical facility treating the exposed entrant.

7.13 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 within, the space.

Attendant: An individual stationed outside one or more permit spaces who assesses the status of authorized entrants and who must perform the duties specified for the attendant in this program.

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

Barrier: A physical obstruction that blocks or limits access.

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

Confined space: A space that:

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

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

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

Note to the definition of "Controlling Contractor". If the controlling contractor owns or manages the property, then it is both a controlling employer and a host employer.

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

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

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

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 actually performed in the space.

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

Entry permit: The written or printed document that is provided by the employer who designated the space a permit space to allow and control entry into a permit space and that contains the information specified for in the OSHA standard.

Entry rescue: When a rescue service enters a permit space to rescue one or more employees.

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

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

Hazard: A physical hazard or hazardous atmosphere. See definitions below.

Hazardous atmosphere: An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

- Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);
- Airborne combustible dust at a concentration that meets or exceeds its LFL;

Note: This concentration may be approximated as a condition in which the combustible dust obscures vision at a distance of 5 feet or less.

- Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;

- Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in subpart D of this part (Occupational Health and Environmental Control), or in subpart Z of this part (Toxic and Hazardous Substances), and which could result in employee exposure in excess of its dose or permissible exposure limit;

Note: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this definition.

Any other atmospheric condition that is immediately dangerous to life or health.

Note: For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Safety Data Sheets that comply with the Hazard Communication Standard, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

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

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

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

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

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

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

Non-entry rescue: When a rescue service, usually the attendant, retrieves employees in a permit space without entering the permit space.

Non-permit confined space: A confined space that meets the definition of a confined space but does not meet the requirements for a permit-required confined space.

Oxygen deficient atmosphere: An atmosphere containing less than 19.5 percent oxygen by volume.

Oxygen enriched atmosphere: An atmosphere containing more than 23.5 percent oxygen by volume.

Permit-required confined space: A confined space that has one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere;
- Contains a 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 other recognized serious safety or health hazard.

Physical hazard: An existing or potential hazard that can cause death or serious physical damage. Examples include, but are not limited to: Explosives, mechanical, electrical, hydraulic and pneumatic energy; radiation; temperature extremes; engulfment; noise; and inwardly converging surfaces. Physical hazard also includes chemicals that can cause death or serious physical damage through skin or eye contact.

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

Rescue: Retrieving, and providing medical assistance to, one or more employees who are in a permit space.

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

Test or testing: The process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space. Testing enables employers both to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to, and during, entry.

Ventilate or ventilation: Controlling a hazardous atmosphere using continuous forced-air mechanical systems that meet the requirements of the OSHA standard.

8 CONTROL OF HAZARDOUS ENERGY-LOCKOUT/TAGOUT PROGRAM

8.1 Purpose and Policy

The purpose of this program is to ensure that before any employee performs servicing or maintenance on machinery or equipment where unexpected energizing, startup, or release of any type of energy could occur and cause injury, the machinery or equipment will be rendered safe to work on by being locked-out and/or tagged-out.

All equipment and machinery will be locked/tagged out to protect against accidental or inadvertent operation during any servicing or maintenance activity. Anyone operating or attempting to operate any switch, valve, or other energy-isolating device that is not locked or tagged out will be disciplined.

- Lockout is the preferred method of isolating machines or equipment from energy sources and will be used whenever possible.
- If tags are used, additional steps will be taken as may be necessary to provide the equivalent safety available from the use of a lockout device.
- Equipment obtained or modified after January 2, 1990 will be equipped with lockout capability.
- An energy source is any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy..

8.2 Responsibility

Any employee who could be exposed to hazardous energy sources will be instructed in the safety significance of the lockout/tagout procedure. Employees authorized to perform lockout/tagout will receive training commensurate with their responsibilities.

Each new or transferred “affected” employee and “other” employees whose work operations are or may be in the area will be instructed in the purpose and use of the lockout/tagout procedure. Prior to lockout/tagout an authorized supervisor will brief all affected employees. In the event of tagout system only, the authorized individual will also brief all other personnel potentially exposed to the hazard.

8.3 Sources of Hazardous Energy

Definition of Energy – Energy is defined in science as the capacity to do work. Work is defined as the transfer of energy from one body to another, usually by a force that causes the body to move. These definitions of energy and work are important to persons who work around machinery or systems since they explain why they are hazardous. The energy to a machine or system could be transferred to a worker. To make sure we are safe, we must remove such hazardous energy before we begin working on a machine or system.

Classifications of Energy – Energy is classified as either kinetic or potential. Kinetic energy is energy produced by motion. A spinning saw blade has kinetic energy. Potential energy is the energy with the potential to cause motion. A compressed spring has potential energy since it has the potential to expand. When machines or systems are running, we are concerned with kinetic energy. When stopped, however, they have potential energy. Lockout/tagout prevents that potential energy from being transferred to the worker. The different types of energy that may be present in our work area are presented below.

- **Mechanical:** Dangerous potential energy can be stored in the workings of machinery or systems. Compressed springs, chains, and cables under stress can release their energy suddenly and violently.
- **Chemical:** Chemicals may cause reactions that threaten workers when the worker is directly exposed to them, as with acids, or when the chemicals react with other chemicals to cause reactions that release dangerous gases, heat, or light.
- **Electrical:** Any type of machine or system powered by electricity poses the threat of transferring the electrical energy to the worker, either directly by electric shock, or by converting the electrical energy to some other threatening form such as mechanical or thermal.
- **Gravitational:** Energy in the parts of a machine or system, due to their position, can be dangerous. A raised weight has the potential to drop and injure a worker.
- **Hydraulic and Pneumatic:** Fluids (hydraulic energy) and air (pneumatic energy) stored under pressure pose the threat of directly injuring a worker, such as by causing the movement of machine parts or system components that could injure the worker.
- **Thermal:** Machine parts or system components that heat up by design (like heating elements) or by friction between moving parts could pose a threat.

8.4 Basic Rules

Isolating Hazardous Energy: Isolation is the blocking off of a machine or system from an energy source. A circuit breaker can be opened to cut off the flow of electricity to a system. A valve can be used to cut off steam pressure or air pressure. A pin can be used to hold an assembly in place so that gravity cannot cause it to move. A push button, selector switch, or other control circuit type device is not considered an isolation device. An isolation device completely cuts off energy from the energy source.

Locking Out Hazardous Energy: After one isolates a machine or system, one must take steps to lock it in this isolated state so that it cannot accidentally become reenergized. This is called locking out. It allows a worker to literally put a padlock on the isolation device such as the ones discussed above.

Applicable Situations: Lockout must be performed on all machinery or systems that require cleaning, changeover and lubrication. All workers that operate, maintain, and service such machinery or systems shall be trained to recognize hazardous sources of energy and perform the lockout/tagout procedure.

Worker's Responsibility: When a worker has the potential to be affected by an energy source, they must place their own lock on the lockout device. A tag shall always accompany a lock when affixed and removed only by the person identified by the tag. It is not acceptable to use another person's lock for any reason. Never try to bypass the lock on a machine or system that has been locked or tagged out. If a worker locks out a machine or system and it becomes necessary to leave, it is a safe practice for him to verify upon returning that the machine or system is still locked out.

Equipment: Locks are to be provided by Chesmar Homes DFW for our employees and by each contractor for their own employees.

When Lockout/Tagout Must Be Used: The lockout/tagout procedure will be required whenever the following types of work are being performed:

- **Major cleaning** – This would apply to cleanup of machines as well as anytime guards or other safety devices are removed for cleaning.
- **Lubrication** – This applies to most lubrication performed on machinery. The only exception would be in the case of authorized and necessary on-the-run lubrication.
- **Changeover** – This applies to any changeover or setup work where guards or other safety devices are removed or bypassed.
- **Bypassing Guards and Safety Devices** – Any time normal production problems necessitate removing guards or other safety devices unless exempted in the specific procedural write-up.
- **Maintenance** – When maintenance work is to be performed on a machine or system where unexpected release could cause injury, those performing such maintenance must follow the lockout/tagout procedure.

All machinery or systems should have a specific procedural write-up that identifies all different types of hazardous energy associated with the machinery or systems. This write-up will include methods of properly locking out all such sources of hazardous energy. Any exceptions to the requirement of lockout/tagout for these procedures will be covered in the specific procedural write-ups for each type of machine or system. Steps to take for proper lockout procedures are:

- **NOTIFY** all workers in the area that lockout/tagout is going to be used and explain why it is necessary.
- **SHUT DOWN** the machine or system if it is operating, using a STOP button or by placing switch in "off/neutral" position. Individual shutting machine down must hang his personal tag over the STOP button.
- **ISOLATE** the machine or system from its energy sources. All sources of hazardous energy must be identified and isolated in the proper order.
- **LOCKOUT** the energy isolating device(s). Each individual working on the machine or system must attach his personal lock and tag to the energy-isolating device or the lock box containing the job lock keys.

- **DISSIPATE** any residual energy. Residual energy that cannot be dissipated must be blocked. Substantial blocking devices or hangers may be needed.
- **VERIFY** that all sources of hazardous energy have been isolated. After visually ensuring that no personnel are exposed, disengage STOP button, give warning startup call; then engage the START button, or other systems activating the machine or system. Engage the STOP button or return switches to the "off/neutral" position after performing this test.

Restore Sequence – All workers trained in lockout/tagout will be expected to perform the following steps each time they restore power to a machine or system:

- **CHECK** to see that all tools and rags have been removed from the machine or system, guards have been installed, and all workers are in the clear.
- **VERIFY STOP** button is engaged or switch is in "off/neutral" position.
- **REMOVE** all lockout and energy isolating devices. Each worker is responsible for removing his own lock and tag.
- **RESTORE** energy according to the write-up procedure outlined for each machine or system.

8.5 Additional Lockout Tagout Situations

More Than One Person Locking Out the Machine or System:

More than one person may be assigned to do work on a machine that requires lockout/tagout. However, the isolation source on the machine may only accommodate one lock. In such cases, the workers would use a hasp to lock out the machine. A hasp is a device that clamps onto an isolation device in the same way a lock does. The hasp has several places where personal locks can be attached so that the hasp cannot be removed from the isolation device until all locks have been removed from the hasp. In this way, several workers possess control over the lockout of the machine or system.

More Than One Source of Hazardous Energy:

As mentioned earlier, more than one type of hazardous energy can be present in a machine or system. For example, a machine section may have parts that are driven by electrical power, as well as parts that move due to air pressure. A person working on such a machine would have to isolate the electrical power by manually opening a circuit breaker or through the use of other disconnecting switches, and also isolate the source of pneumatic energy (the isolation device likely being a valve on an airline). However, the worker only has one lock in his possession. In such cases, a machine is provided with job locks. Job locks are locks that are assigned to a machine or system rather than personnel. The individual working on a machine or system with multiple energy sources would lock out each type of hazardous energy on the machine using these job locks. Then he would collect the keys to the job locks and deposit them in a lock box. A lock box is a container that job lock keys can be deposited in (usually a box on the lockout station). A worker can then place his personal lock on this lock box, thus ensuring that all the isolation devices on the machine cannot be unlocked until he removes his lock from the box.

Multiple Personnel Locking Out Multiple Sources of Hazardous Energy:

A combination of the above two situations may exist, where more than one worker is working on a machine or system with more than one source of hazardous energy. In such cases, a combination of the above-described procedures will be necessary. Job locks from the lockout station should be used to lock out all sources of hazardous energy on the machine or system. The keys to the job locks will be placed in a lock box. Then a hasp will be attached to the lock box and all personnel working on the machine or system will attach their personal lock to the hasp, thus giving control of all sources of hazardous energy to all workers.

Maintenance on Cord and Plug Equipment:

A machine or system connected to its only power source by an electrical cord and plug should be treated with the same caution as a machine or system that is connected to its source by a circuit breaker or similar isolation device. Whenever performing work that would require lockout (cleaning, lubrication, removal of guards, etc.), the machine or system should be isolated by unplugging it from the outlet. The worker should maintain control of this isolated state by either (a) keeping the plug in his immediate sight while working so that it cannot be returned to the outlet, or (b) securing the plug in a plug locking device to which a lock can be attached.

Note: Never remove another person's lock.

9 Cranes and Rigging

9.1 Purpose and Scope

The purpose of these policies and procedures is to provide a safe working environment for crane operators and all site personnel. All OSHA, and manufacturer requirements must be met.

It should be recognized that it is not feasible to address every possible issue, situation, and circumstance that may arise or be encountered on a project. Therefore, if problems develop or an unsafe condition occurs which is not addressed in this information the Contractor who is operating a particular crane should stop work immediately and determine how to safely resolve the issue. No work should proceed unless it is deemed safe to do so.

9.2 Criteria and Standards

All OSHA, and manufacturer requirements must be met.

The criteria and standards for the safe operation of cranes must include the following:

- Manufacturer's recommendations and requirements
- American National Standards Institute (ANSI)
- American Society of Mechanical Engineers (ASME)
- Occupational Safety and Health Administration (OSHA)
- National Commission for the Certification of Crane Operators (NCCCO)
- Local and State Regulations

These criteria are the minimum standard that must be met on all projects for all crane operations. These crane safety policies and procedures do not purport to restate all of these regulations but should be used for clarification and setting additional policies and procedures while operating cranes and/or rigging on projects.

9.3 Definitions

Accessory Gear

A secondary part of the crane or crane component which contributes to the overall function of the crane would include, but is not limited to, jibs, jib assemblies, outriggers, sheave assemblies, and compound weights.

Assembly & Disassembly Director (A/D)

A person who meets the criteria for both a competent person and a qualified person or by a competent person who is assisted by one or more qualified persons can be considered an A/D. The A/D must understand the applicable assembly/disassembly procedures. The A/D directly oversees the safe dismantling, moving, and set-up of the crane. The A/D needs to be both competent and qualified for the crane being worked with. These individuals will need to be able to oversee a crew for each task needed according to manufacturer's requirements.

Below-the-Hook Lifting Device

Rigging used in conjunction with the crane to attach the load to be lifted to the crane hook assembly. Would include, but is not limited to, such items as wire rope slings, lifting beams, shackles, and web slings.

Certified Agent

The manufacturer, or a person who is currently registered as a professional civil, mechanical, or structural engineer by the state in which work is being performed.

Certified Person

A person who has specific training and demonstrated proficiency and has been authorized by a private agency to perform specific work.

Competent Person

A person who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to fellow workers, and who has authorization to take prompt corrective measures to eliminate them.

Functional

This means a safety device shall be in use and operating while the crane is in use. Functional does not mean merely "capable of performing" for purposes of these safety requirements.

Jib

An extension attached to the boom point to provide added boom length for lifting specified loads.

National Commission for the Certification of Crane Operators (NCCCO)

An independent not-for-profit corporation formed to establish and administer a nationwide program of certification of crane operators. This organization establishes standards for measuring the knowledge and proficiency for the safe operation of crane equipment.

On-Rubber Pick and Carry

A lift made in conjunction with the manufacturer's load chart without the use of outriggers in which the load is lifted and moved under the power of the crane unit.

Positive Anti-Two-Blocking Device

A warning or damage prevention feature which alerts the operator before the load block or ball assembly makes contact with upper boom sheave assembly.

Qualified Person

A person who by possession of a recognized degree or certificate of professional standing, or who, by extensive knowledge, training, and experience, has successfully demonstrated the ability and skill they possess

9.4 Safety Policies for Operators and Workers

Crane operators and employees working with them need to adhere to the following safety procedures at all times:

- A critical crane lift plan should be developed for high hazard lifts.
- Always place boom directly above the load when lifting. Never side-load a boom or use the crane to push or pull the load.
- It is the operator's responsibility to keep the load under control at all times. This can be accomplished by starting and stopping smoothly and by avoiding swinging the load too fast. Never allow the load or any object to strike the boom. The operator must, at all times, operate the equipment within the guidelines set forth by the manufacturer.
- The crane operator is ultimately responsible for all operations. If there are any questions, doubts, or uncertainties about the equipment, rigging, equipment set up area, load chart interpretation, or the load he should stop operations immediately.
- At no time shall any mobile industrial equipment (crane) be engaged in operation unless appropriate load chart, operator's manual, and necessary decals are in place. The manufacturer's load chart shall be affixed to the crane or located in the operator's cab and accessible to the operator.
- To safely perform a lift, it is imperative that the weight of the load be known and the operator shall ensure that no lift exceeds the manufacturer's rated capacity for a given radius, angle, or configuration.
- Access for entry and assembly of the crane shall be free from obstructions, underground hazards and overhead power lines.
- Operator must understand the dynamics of boom flex.
- Crane equipment shall have the required inspection and current proof load testing certificates available upon arrival at the job site.
- Crane operators must be aware of power lines and safe distances as required by OSHA and the manufacturer. No crane shall be raised, lowered, or operated at unsafe distances from power lines.

- No loads shall be lifted over personnel.
- No one shall place their hands or any other portion of the body under a load suspended by the crane.
- No unauthorized personnel shall be working within the fall zone of the crane.
- A “Do Not Enter Zone”, perhaps using red tape, shall be used to prevent personnel from entering the crane rotation area. Allow 2’ minimum between crane and all objects.
- All personnel shall be clear of crawler tracks while the crane is moving.
- All personnel except for the operator and any trainee shall be clear of the crane rotating area during its operation.
- A qualified and certified signal person shall provide direction to the operator using the standard hand signals or radio communications that are common to the industry.
- Operation of crane equipment by persons designated as a trainee shall only be conducted during non-critical lifts and only under the direct supervision of an experienced operator. Where such lifts are conducted, advance notice shall be given to all those working with the crane equipment.
- All lifts and crane configurations shall be consistent with the manufacturer’s requirements and load charts.
- When pick and carry operations occur, the ground shall be smooth, level, and compacted, free from obstructions, underground hazards, and overhead power lines. There will need to be an A/D present with such lifts.
- No cribbing shall be placed under the crane axle, frame, or outrigger extension beams.
- Jib and boom shall be free from structural damage that exceeds the manufacturer’s maximum allowable tolerances.
- Anti-two-blocking device shall be functional and operational on all cranes equipped with such a device.
- A load indicator shall be on all load lines in use on mobile cranes that exceed 5 tons rated capacity or 200 feet of boom.
- Wind speed indicators shall be in use. No crane shall be operated in wind speeds that exceed the manufacturer’s specifications or when it is otherwise unsafe.

If manufacturer does not specify allowable wind speeds then the Crane Operator is responsible for only operating in safe conditions.

No person shall disable or circumvent a safety device while the crane is performing lifting service.

No load shall be lifted over occupied buildings; unless a letter has been obtained from the building’s owner stating the top 2 floors are empty or an engineer has verified it is safe.

Do not operate when there are lightning conditions.

When lifts are performed in the vicinity of other personnel, an audible signal will be used by the signal person to alert them.

The crane operator shall respond to signals only from the appointed qualified signal person, by radio contact using a hand-free device with the exception of an emergency stop signal. The operator shall obey an emergency stop signal when given at any time, regardless of who gives this signal.

The use of a cell phone or other communication devices during lifting services is prohibited. This avoids distractions or interruptions during these critical times.

9.5 Equipment, Attachments, and Inspections

An inspection of the crane components, accessory gear, below the hook lifting devices, the assembly, and setup of the crane will need to be completed each time a crane is placed on a project. All crane equipment and operation of crane equipment shall meet the requirements of the manufacturer, ANSI, ASME, and OSHA. Equipment is not to be modified, interchanged, or put to uses other than those described by the manufacturer. Equipment is to be repaired only by qualified persons. The crane is not to be left running, energized, or under pressure when unattended. Defective tools and equipment are to be reported immediately and removed from service until the defect can be corrected. Any defect shall be indicated on a "DANGEROUS-DO NOT USE" label if the tool and equipment is left unattended.

All guards are to be left in place and are to be properly used. Do not modify or tamper with the guards. Tools and equipment with defective, broken, modified, or missing guards are to be tagged "DANGEROUS-DO NOT USE" and removed from service. Any person found modifying or deactivating a safety guard or mechanism will be subject to disciplinary action up to and including termination.

Crane Attachments

Lifting Beams: Commonly known as “spreader bars” shall conform to ANSI B30.20, 1985 regulations which require the following permanent markings:

- Manufacturer’s name
- Serial number (ID #)
- Weight of the bar (if over 100 lbs.)
- Load Rating
- Initial Proof Load Testing at 125% of the lifting beam’s capacity. Proof of initial load testing shall be provided for all lifting beams. Load test shall not exceed 125% of the rated load.

Crane Outrigger Mats: The crane operator is responsible for the use and selection of crane outrigger mats. Since the maximum outrigger loading on a single outrigger pad can exceed 50,000 lbs. per sq. ft., a thorough investigation of ground conditions must be made prior to positioning the crane. By contrast, ground-bearing pressures on our largest lift rarely exceed 3,000 lbs. per sq. ft.

To ensure the safest working conditions, observe the following minimal guidelines when positioning for a lift:

- Thoroughly check surface conditions to ensure they will support the intended loading.
- The Law requires owner of property or general contractor to be responsible for all ground conditions. Make inquiries regarding the presence of voids beneath the surface, such as loose fill, piping, conduit, drainage channels, etc. In some cases, an engineer drawing will be needed.
- Use outrigger mats at least 2 ft. wider than the outrigger plate to distribute loads over a greater area in order to reduce the possibility of surface failure.
- Level and center mats beneath the outrigger pads. Mats should be strong enough to prevent crushing, be free from defects, and be of sufficient width and length to prevent shifting or toppling under a load.
- Recheck mat positioning and integrity after each lift.

Inspections of Cranes and Crane Attachments

Daily Crane Inspections: At the beginning of each shift, the approved operator shall conduct a visual and functional inspection prior to using the crane. The inspections shall be documented and shall be maintained on-site.

Annual Crane Inspections: All cranes shall undergo a thorough annual inspection performed by a third-party agency. The third-party should be a qualified, certified person or company recognized by the U. S. Department of Labor. A copy of the inspection is to be kept with the crane.

Deficiencies: If deficiencies are discovered through operational use or inspection the defective crane should be labeled “Do Not Use” and placed out of service. No crane shall be placed back in service until deficiencies are evaluated and corrected by a qualified person.

Load Testing of Jibs: An approved operator that performs lifts with the jib attachment shall have a current certification stating that the jib has been proof tested by a qualified person. Proof tests shall be performed during the initial proof testing and every four years thereafter, unless a structural repair has been performed on the crane. If a structural repair has been performed (even if the jib was not damaged) a load test shall be performed prior to placing the crane back into service. No proof test of the jib is required during the annual certification as long as proof-testing of these components has been performed in accordance with the requirements specified above. These requirements apply equally to telescopic and lattice boom cranes.

Interpretation: Where the actual boom angle or radius does not match the values shown on the load chart, then the operator or engineer must calculate crane capacity using the next lowest capacity on the chart.

9.6 Equipment, Attachments, and Inspections

Only qualified riggers can perform rigging operations. According to OSHA standards:

- **Do** give safety first consideration in the handling of materials.
- **Do** familiarize yourself with the types of rigging available for easiest and safest lifting.
- **Do** inspect the lifting equipment before and after it is used to make certain it is in good condition.
- **Do** report to the appropriate shop supervisor any lifting equipment that appears to be unsafe before someone else uses it.
- **Do** remove damaged lifting equipment.
- **Do** refuse to move a load if you are not satisfied with the way the load is attached.
- **Do** stop operation and discuss any questions that arise over capacity, rigging, weather, or safety concerns with the crane operator and other qualified supervision.
- **Do not** let anyone overrule the judgment of the operator.
- **Do not** lift a piece without knowing its weight.
- **Do not** make a lift without reviewing Crane/Lifting Form, knowing the lifting equipment's capacity, and the method to be used.
- **Do not** use damaged lifting equipment to lift loads lower in capacity than the original rate capacity of the equipment.
- **Do not** leave equipment where it can be accidentally damaged by bending, cutting, or crushing.

Proper Use of Chain, Hooks, and Wire Rope Sling

- **Do** protect the sling from abrasions by using padding, blocks, or corner protectors.
- **Do** use a chain if abrasive environment.
- **Do** select the proper style hook or attachment.
- **Do** face the hook opening out and away from the sling pull when making choker hitches.
- **Do** use only positive locking hooks.
- **Do** see OSHA regulations for more information.
- **Do not** point load (tip load) standard sling hooks.
- **Do not** subject hooks or attachments to bending actions.

- **Do not** let the load lay directly on a sling wrapped around a load (lower the load on proper blocking).
- **Do not** assume when using a choker hitch that the hook is going to stay in place when the slack is being taken out of the sling. Add blocking or reposition.
- **Do not** use a grade of chain lower than 80 in conjunction with a crane.
- **Do not** use a hook that has more than 10 degrees of twist or if latch is not working.
- **Do not** use a hook with chain that is not a least the same capacity as what it is connected to.
- **Do not** use a cable choker sling that is less than the diameter of the shackle in the basket configuration. (See OSHA regulations for information).

Proper Use of Shackles

- **Do** make certain that the bolt in a screw pin shackle turns easily and is tightened by hand.
- **Do** use screw pin shackles wherever possible (they are safer).
- **Do** use the largest bearing surface possible on the shackle pin. This will reduce the bending movement on the pin.
- **Do not** use a shackle unless marked with its rated load capacity.
- **Do not** use any screw pin shackle where the bolt is very difficult to turn (the pin is either bent due to overload or the threads have been damaged).
- **Do not** use round pin shackles. Instead use screw pin shackles.
- **Do not** rest sling on pin if there is a chance that it can spin.
- **Do not** use a shackle that is not at least the same capacity as what it is connected to.

Proper Use of Nylon Webbing Slings

- **Do** inspect the surface and stitching of the sling for cuts and abrasions.
- **Do** use softeners, pads, sheaths, etc. to ensure protection of nylon and synthetic slings from cuts and abrasions.
- **Do** destroy if red safety thread is visible.
- **Do** use for fragile or valuable items.
- **Do** not use nylon slings on hoist hooks that are gouged or nicked (there could be sharp edges that could cut the sling).
- **Do** not use nylon slings on metal decking unless protected with padding.

- **Do** not use any sling if its rated capacity is not clearly identified.
- **Do** not use sling for convenience.
- **Do** not use slings that are too long as this may cause the load block to inadvertently contact the boom resulting in a dangerous situation.

Proper Use of Tag Lines

- **Do** use tag lines for lifting loads, unless this will cause other hazardous conditions. If tag lines are not going to be used, this will need to be specified on the Job Hazard Analysis (JHA) Crane Worksheet.
- **Do** use non-conductive rope – i.e. Polypropylen

10 ELECTRICAL SAFETY AWARENESS

10.1 Purpose

This program is implemented to ensure the safety of all our employees and protect them from electrical hazards.

10.2 Scope

This applies to all Chesmar Homes DFW employees. Note: See Chesmar Homes DFW High Voltage Electrical Programs for additional safety procedures.

10.3 Procedures

- Workers are required to report, as soon as practical, any obvious hazard to life or property observed in connection with electrical equipment or lines.
- Workers should be instructed to make preliminary inspections and/or appropriate tests to determine what conditions exist before starting work on electrical equipment or lines.
- When electrical equipment or lines are to be serviced, maintained, or adjusted, necessary switches should be locked-out and tagged whenever possible.
- Portable electrical tools and equipment should be grounded or of the double-insulated type.
- Make all electrical appliances grounded.
- All extension cords being used should have a grounding conductor.
- The ground-fault circuit interrupters installed on each temporary 15 or 20 ampere, 120-volt AC circuit at locations where construction, demolition, modifications, alterations, or excavations are being performed.
- All temporary circuits protected by suitable disconnecting switches or plug connectors at the junction should be with permanent wiring.
- Exposed wiring and cords with frayed or deteriorated insulation should be repaired or replaced promptly.
- Flexible cords and cables should be free of splices or taps.
- Clamps or other securing means should be provided on flexible cords or cables at plugs, receptacles, tools, and equipment and the cord jacket securely held in place.
- Cord, cable, and raceway connections should be intact and secure.
- The location of electrical power lines and cables (overhead, underground, underfloor, other side of walls) should be determined before digging, drilling, or similar work is begun.

- Metal measuring tapes, ropes, hand lines, or similar devices with metallic thread woven into the fabric should be prohibited where they could come in contact with energized parts of equipment or circuit conductors.
- The use of metal ladders is prohibited in areas where the ladder or the person using the ladder could come in contact with energized parts of equipment, fixtures, or circuit conductors. Portable ladders with non-conductive side rails are to be used.
- The disconnecting switches and circuit breakers should be labeled to indicate their use or equipment served.
- The disconnecting means should always be opened before fuses are replaced.
- The interior wiring systems should include provisions for grounding metal parts of electrical raceways, equipment and enclosures.
- All electrical raceways and enclosures should be securely fastened in place.
- All energized parts of electrical circuits and equipment should be guarded against accidental contact by approved cabinets and enclosures.
- Sufficient access and working space should be provided and maintained to all electrical equipment to permit ready and safe operations and maintenance.
- All unused openings (including conduit knockouts) in electrical enclosures and fittings should be closed with appropriate covers, plugs, or plates.
- Electrical enclosures such as switches, receptacles, junction boxes, etc. should be provided with tight-fitting covers or plates.
- All disconnecting switches for electrical motors in excess of two horsepower capable of opening the circuit when the motor is in a stalled condition should be without exploding. (Switches must be horsepower rated equal to or in excess of the motor hp rating).
- All motor disconnecting switches or circuit breakers located should be within sight of the motor control device.
- Each motor located within sight of its controller or the controller disconnecting means capable of being locked in the open position or is a separate disconnecting means installed in the circuit should be within sight of the motor.
- The controller for each motor in excess of two horsepower rated in horsepower should be equal to or in excess of the rating of the motor it serves.
- All workers who regularly work on or around energized electrical equipment or lines should be instructed in the cardiopulmonary resuscitation (CPR) methods.
- All workers are prohibited from working alone on energized lines or equipment over 600 volts.

10.4 Safe Electrical Practice & Training

- safe procedures that are in their job assignment. Employees who face a risk of electric shock but who are not qualified persons shall be trained & familiar with electrically related safety practices All employees must be trained on minimum safe approach distances and clearances to power lines. Instruction is to be given never towork on exposed and /or live wires.
- For all unqualified employees, minimum safe approach distance shall be posted and 10 feet distance shall be kept from all exposed power sources. If more than 50kv, consult the OSHA standard for proper distance to maintain.
- Where electrical hazards may exist in any location, including confined spaces or enclosed work spaces in that case protective barriers/shields and insulating material must be present to protect exposed electrical hazards.
- Conductive apparel will not be worn unless the items are rendered non-conductive by covering, wrapping or other insulating means.
- Employees will be trained on all safety-related work practices to prevent electrical shock. Avoid work on live equipment. Perform Lock-out Tag-out procedures prior to performing work
- When working on or near exposed de-energized parts, they are to be treated as live. Always have electrical exposures tested do not assume it is dead.
- Only qualified persons may work on energized parts. Protective measures must be in use such as insulated tools and PPE appropriate to the voltages contained in the equipment.
- When working under overhead lines, clearance distance must be provided or lines shall be de-energized and grounded. Minimum safe approach distance should be established prior to work commencing. When a qualified person is working near overhead lines, whether in an elevated position or on the ground, the person may not approach or take any conductive object without an approved insulating handle closer to exposed energized parts than shown in Table S5

TABLE S5 Voltage range (phase to phase) | Minimum approach distance

300V and less .....| Avoid Contact

Over 300V, not over 750V .....| 1 ft. 0 in. (30.5 cm).

Over 750V, not over 2kV .....| 1 ft. 6 in. (46 cm).

Over 2kV, not over 15kV .....| 2 ft. 0 in. (61 cm).

Over 15kV, not over 37kV .....| 3 ft. 0 in. (91 cm).

Over 37kV, not over 87.5kV .....| 3 ft. 6 in. (107 cm).

Over 87.5kV, not over 121kV .....| 4 ft. 0 in. (122 cm).

Over 121kV, not over 140kV .....| 4 ft. 6 in. (137 cm).

- Qualified employees must adhere to the approach distances in accordance with NFPA 70 standards.
- Qualified employees will be trained in safe work practices for work on ladders or near exposed energized parts.
- Employees may not enter spaces containing exposed energized parts unless illumination is provided that enables the employees to work safely and that employee is trained and qualified to work in that area.
- All vehicle and mechanical equipment must have a clearance distance of 10 feet or proper distance in relationship to electrical power lines or equipment. Minimum safe approach distance must be adhered to.

11 ELECTRICAL LOW VOLTAGE POLICY

11.1 Program Description

The purpose of this program is to prevent injuries and accidents and protect employees from low voltage electrical hazards. “Low Voltage” is defined by OSHA as work performed directly on or in proximity of systems of 600 volts, nominal, or less. Work unit specific safety procedures for preventing electric shock or other injuries resulting from direct/indirect electrical contact to employees working on or near energized or de-energized parts will be developed and implemented as required.

11.2 Scope

This program applies to all our work operations involving electrical systems of 600 volts or less where employees may be exposed to live parts and/or those parts that have been de-energized. Any work on energized equipment may be done only after it has been determined that this type of work must be performed with the equipment energized.

11.3 Definitions

Current - (measured in amps/amperage) Term used to describe electric flow. It is current that can cause electric shock.

Deenergized – Electrical devices that are disconnected from all energy sources including direct electric connections, stored electric energy such as capacitors, and stored non-electrical energy in devices that could reenergize electric circuit parts

Energized Electrical Work – Work conducted by an employee on or near an exposed energized circuit greater than 50 volts and less than or equal to 600.

FM - Factory Mutual –An independent product safety testing and certification company.

GFCI – Ground Fault Circuit Interrupter, provides additional protection from shocks by shutting off current to equipment when a change in electricity is sensed.

Grounding - Provides a safe path between electricity and the earth, preventing leakage of current. The creation of a conductive path for electricity between a circuit or the equipment to ground.

High Voltage – Electrical systems or equipment operating at or intended to operate at a sustained voltage of more than 600 volts.

Low voltage - Electrical systems or equipment operating at or intended to operate at a sustained voltage of 600 volts or less.

Polarized Plug - Helps reduce the potential for shock with easily identifiable plugs. One prong is wider than the other and can only be inserted into outlets one way.

Qualified Person – A person, designated by Our company, who by reason of experience or instruction has demonstrated familiarity with the operation to be performed and the hazards involved. Only qualified persons shall work on electric equipment.

Note One: Whether a person is considered to be a "qualified person" will depend upon various circumstances in the workplace. It is possible and, in fact, likely for an individual to be considered "qualified" with regard to certain equipment in the workplace, but "unqualified" as to other equipment.

Note Two: An employee who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified person is considered to be a qualified person for the performance of those duties.

Qualified Electrical Worker – A qualified person who by reason of a minimum of two years of electrical training and experience with high voltage circuits and equipment and who has demonstrated by performance familiarity with the work to be performed and the hazards involved. Only a Qualified Electrical Worker is allowed to work on energized conductors or equipment connected to energized high-voltage systems. With the exception of replacing fuses, operating switches, or other operations that do not require the employee to contact energized high voltage conductors or energized parts of equipment, clearing trouble or emergencies involving hazard to life or property, no such employee shall be assigned to work alone.

An employee is considered qualified only after they have successfully completed our Electrical Safety Awareness, Advanced Electrical Safety, and Hazardous Electrical Voltage trainings, and have demonstrated a minimum of two years experience working on the specific equipment under the oversight of another Qualified Electrical Worker. This training will be provided when the employee is initially assigned to the job with refresher training every three years after.

Resistance - The ease with which electricity flows through the material (conductor). Materials (conductors) with higher resistance properties can become hot. (Measured in ohms)

UL - Underwriters Laboratories is an independent product safety testing and certification organization.

Voltage - Electric potential or potential difference assigned to a circuit or system expressed in volts.

11.4 Responsibilities

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

Primary responsibilities include:

- Hazard identification
- Training
- Reporting/correcting safety hazards

Employees

- Are aware of electrical safety issues
- Comply with safe operating procedures when working with electrical equipment
- Attend appropriate safety training.
- Report safety concerns
- Only qualified persons shall work on electrical equipment.

Managers

- Ensure employee are trained, qualified, and authorized to work on electrical equipment
- Conduct periodic hazard analysis of work areas
- Correct identified safety hazards

Safety Coordinator

- Provide assistance in identifying electrical safety issues
- Provide electrical safety training for employee
- Review electrical equipment safe operating procedures as necessary

Facilities Management

- Ensure that all authorized or qualified persons have received appropriate levels of training
- Ensure appropriate Personal Protective Equipment is provided to authorized or qualified employee who work with electrical equipment

11.5 Program Components

Voltages as low as 12 volts can be dangerous. When working with or around electrical equipment, one may inadvertently become part of an electrical circuit. Only trained and authorized or qualified individuals should do any repair or work on electrical equipment.

As part of the Injury and Illness Prevention Program , foreman are required to conduct a hazard analysis of the workplace. This analysis will provide a mechanism for defining work unit specific hazards associated with electricity and create a plan for hazard mitigation and employee training.

General Precautions for All employees

- Never work on “hot” or energized equipment unless it is necessary to conduct equipment troubleshooting
- Use extension cords only as temporary power sources.

- Do not connect too many pieces of equipment to the same circuit or outlet as the circuit or outlet could become overloaded.
- Be sure that ground-fault circuit interrupters (GFCI) are used in high-risk areas such as wet locations (GFCI's are designed to shut off electrical power within as little as 1/40 of a second).
- Plug strips, such as those used on computers, should be plugged directly into outlets and not into extension cords or other plug strips.
- Inspect all equipment periodically for defects or damage.
- All cords that are worn, frayed, abraded, corroded or otherwise damaged must be replaced.
- Grasp the plug to remove it from a socket - never pull the cord.
- Keep all cords away from heat, oil and sharp edges.
- Always follow the manufacturer's instructions for use and maintenance of all electrical tools and appliances.
- Keep equipment operating instructions on file.
- Never touch an electrical appliance and plumbing at the same time.
- Always unplug electrical appliances before attempting any repair or maintenance.
- All electrical devices must be properly grounded with approved three wire plugs unless they are "double insulated". Grounding provides a safe path for electricity to the ground, preventing leakage of current in circuits or equipment.
- All electrical equipment used should be UL or FM approved.
- Keep cords out of the way of foot traffic so they don't become tripping hazards or become damaged by traffic.
- Never use electrical equipment in wet areas or run cords across wet floors.
- Ensure energized parts of electrical equipment operating at 50 volts or more are guarded against accidental contact.
- Only properly trained employees should work on electrical equipment.
- Know how to respond to emergencies such as electric shock incidents or fires.

Localized Electrical Outage

- All Employees should immediately report electric outages.
- If possible, identify the defective equipment or the cause of the failure and report this information to supervisors upon their arrival.

Facilities

- **NEVER** work with electricity greater than 600 volts without specific permission, training and written procedures. Notify your supervisor immediately if you have any questions.
- Be able to recognize electrical safety hazards in your work area.
- Ensure that all authorized or qualified persons have received appropriate training in order to operate or repair equipment.
- Keep equipment in good working order to help prevent electrical accidents.
- Maintain a three-foot clearance around electrical panels.
- Electrically operated equipment must be deenergized before work may commence.
- Always follow lockout/tag-out procedures when working on electrical equipment (Lockout/Tag-out Program) and wear appropriate Personal Protective Equipment (PPE) such as safety glasses, rated rubber gloves, rated rubber sleeves, insulated boots, or face shield.
- Never override safety devices such as electrical interlocks.
- Remove all rings, key chains or other metal objects when working around electricity.
- Wear appropriate personal protective equipment, such as eye protection or insulated gloves, as needed.
- Never use metal ladders when working near energized wiring.
- Damp or wet environments may be dangerous when working with electricity.
- Never plug in cords that are wet or touch electrical equipment with wet hands.
- Employees working with lasers, performing hardware or software testing, or other activities that do not require direct contact with electrical components, should be aware of electrical safety issues and be alert to the possibility of other employees conducting energized work in the area.

11.6 Reporting Requirements

Damaged or Defective Electrical Equipment

Report malfunctioning equipment or devices to your supervisor. Typical issues include:

- Damaged cords, plugs or outlets;
- Receiving a shock when touching the equipment; and
- Arcing, sparking, smoking, or otherwise malfunctioning equipment.

Any electrical equipment not operating properly should be:

- Taken out of service immediately.

- Tagged or labeled as “Do Not Use”.
- Reported to the appropriate individual for repair.

Do not attempt to repair any electrical equipment yourself unless you are properly trained and authorized to do so. If safety issues persist, please notify your supervisor.

11.7 Training Requirements and Competency Assessment

Training Requirement, Class Title	Target Audience	Frequency
Basic Electrical Safety Awareness	All Employees	At time of employment and periodically thereafter as part of our Core Safety Training Program
Advanced Electrical Safety	Employees who work directly with electrical systems from 50 to 600 volts, Qualified or Authorized Persons	Annually
Lock Out/Tag Out	Employees who work directly with electrical systems from 50 to 600 volts, Qualified or Authorized Persons	Annually
Hazardous Electrical Voltage Safety	Employees who work with or in the proximity of electrical equipment or systems over 600 volts, Qualified Electrical Worker (QEW)	Annually

OSHA Electrical Low- Voltage

The following conditions must be met before work is performed on exposed energized parts of equipment or systems.

- The Authorized Persons duties will consist of notifying all Affected Personnel/Persons that the task has been completed and all items are secured. All barricade systems will have been removed and all proper labeling will be in place. All permanent barriers and covers will be replaced after the work is completed.
- All electrical equipment and systems shall be treated as energized until tested.
- All low voltage will be locked and tagged out in accordance with lockout/tagout procedures.
- Conductive measuring tapes, ropes, conductive fish tapes or similar measuring devices will be used when using live low voltage.
- Temporary barriers and/or barricades will be used at access points.
- Responsible supervision has determined that the work is to be performed while the equipment or systems are energized.
- Involved personnel have received instructions on the work techniques and hazards involved in working on energized equipment.
- Suitable personal protective equipment and safe guards are provided and used.

12 ELECTRICAL HIGH VOLTAGE POLICY

12.1 Purpose

We have developed a High Voltage Electrical Safety Program to establish minimum standards to ensure that our employees' health and safety are protected during high voltage electrical work at Chesmar Homes DFW. We are required by OSHA, as well as other regulatory agencies, to provide protective equipment, training, guidelines, procedures and other protective measures for employees exposed to potential high voltage electrical hazards.

12.2 Scope

This program applies to all our employees, contractors working with our employees, vendors, visitors, and temporary employees performing energized electrical work over 600 volts. This includes all maintenance, repair, and diagnostic procedures involving energized electrical equipment.

12.3 Definitions

Authorized Lockout/Tagout Employee - A person who has completed the required hazardous energy control training and is authorized to lockout or tagout a specific machine or equipment to perform service or maintenance. A person must be certified as an Authorized Lockout/Tagout Employee in order to apply a lock or tag to control hazardous energy. All Authorized Lockout/Tagout Employees must be trained in:

- Core IIPP Safety Training;
- Advanced Electrical Safety/Lockout/Tagout Training; and
- Equipment specific procedures in their individual work units.

Confined space - An enclosed space which has limited egress and access, and has an atmospheric hazard (e.g., explosive atmosphere or asphyxiating hazard) and/or other serious safety hazards (e.g., electrical hazard).

Damp location - Partially protected locations subject to moderate degrees of moisture, such as some basements.

De-energized electrical work - Electrical work that is performed on equipment that has been previously energized and is now free from any electrical connection to a source of potential difference and from electrical charges.

Disconnecting (or Isolating) switch - A device designed to close and/or open an electric circuit.

Dry location - Locations not normally subject to dampness or wetness, as in the case of a building under construction.

Energized electrical work - Repair, maintenance, troubleshooting, or testing on electrical circuits, components, or systems while energized (i.e., live). Only Qualified High Voltage Electrical Workers are permitted to work on energized circuitry of 50 volts/25 amps to ground or greater.

Energy source - Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Exposed electrical parts - Energized parts that can be inadvertently touched or approached nearer than a safe distance by a person. Parts not suitably guarded, isolated, or insulated. Examples include terminal contacts or lugs, and bare wiring.

Ground fault circuit interrupt (GFCI) - A device whose function is to interrupt the electric circuit to the load when a fault current to ground exceeds a predetermined value that is less than that required to operate the over-current protective device of the supply circuit.

Ground - A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth or to some conducting body that serves in place of the earth.

Hazardous location - An area in which an airborne flammable dust, vapor or gas may be present and would represent a hazard if a source of ignition were present (see National Fire Protection Association (NFPA) Class I & II and Division 1 & 2).

High voltage - Circuits with a nominal voltage more than 600 volts.

Interlock - An electrical, mechanical, or key-locked device intended to prevent an undesired sequence of operations.

Isolating switch - A switch intended for isolating an electric circuit from the source of power. It has no interrupting rating, and is intended to operate only after the circuit has been opened by some other means.

Life safety equipment - Equipment that provides critical protection for safety in the event of an emergency or other serious hazard. Life safety equipment, which is electrically energized, should be worked on using Energized Electrical Equipment (EEW) procedures to ensure that the protection provided by the equipment is not lost (e.g., fire alarm and evacuation).

Lockout - The placement of a lock on an energy-isolating device according to procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout / tagout - A standard that covers the servicing and maintenance of machines and equipment in which the unexpected re-energization of the equipment or release of stored energy could cause injury to employees. It establishes performance requirements for the control of such hazardous energy. See our Company’s Control of Hazardous Energy and Lockout/Tagout Program.

Low voltage - Circuits with a nominal voltage less than or equal to 600 volts.

Switching devices - Devices designed to close and/or open one or more electric circuits. Included in this category are circuit breakers, cutouts, disconnecting (or isolating) switches, disconnecting means, interrupter switches, and oil (filled) cutouts.

Qualified High Voltage Electrical Worker – A qualified person who by reason of a minimum of two years of electrical training and experience with high voltage circuits and equipment, who has demonstrated by performance familiarity with the work to be performed and the hazards involved, and has successfully completed the following training:

- Core Safety Training;
- Advanced Electrical Safety and Lockout/Tagout training;
- Hazardous Electrical High Voltage training (Appendix E) ; and
- Demonstrated a minimum of two years experience working on the specific equipment under the oversight of another Qualified High Voltage Electrical Worker.

Such training will be provided when the employee is initially assigned to the job and refresher training will be provided every three years (see Section Seven, Training Requirements and Competency Assessment).

Only a Qualified High Voltage Electrical Worker is allowed to work on energized conductors or equipment connected to energized high-voltage systems. With the exception of replacing fuses, operating switches, or other operations that do not require the employee to contact energized high voltage conductors or energized parts of equipment, clearing trouble or emergencies involving hazard to life or property, no such employee shall be assigned to work alone.

Note One: Whether a person is considered to be a “qualified” person will depend upon various circumstances in the workplace. It is possible and, in fact, likely for an individual to be considered “qualified” with regard to certain equipment in the workplace, but “unqualified” as to other equipment.

Note Two: An employee who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified person is considered to be a qualified person for the performance of those duties.

Remote-control circuit - Any electric circuit that controls any other circuit through a relay or an equivalent device.

Service - The conductors and equipment for delivering energy from the electricity supply system to the wiring system of the premises served.

Service equipment - The necessary equipment, usually consisting of a circuit breaker or switch and fuses, and their accessories, located near the entrance of supply conductors to the building and intended to constitute the main control and means of cutoff of the supply.

Setting up - Any work performed to prepare a machine or equipment to perform its normal production operation.

Tagout - The placement of a tagout device on an energy-isolating device according to procedure to indicate that the equipment may not be operated until the tagout device is removed.

Voltage (of a circuit) - The greatest root-mean-square (effective) difference of potential between any two conductors of the circuit concerned.

Voltage, nominal - An approximate value assigned to a circuit or system for the purpose of conveniently designating its voltage class, e.g., 120/240, 480/277, and 600.

Wet location - Installations subject to saturation with water or other liquids. 4. Responsibilities

Supervisors and Facilities Management (FM) Responsibilities

Supervisors and managers of persons performing electrical work must be knowledgeable about the work to be performed and the hazards involved to determine who is qualified to perform the work.

Supervisors and Facilities Management are responsible for:

- Determining which employees are Qualified High Voltage Electrical Workers and are allowed to work on energized systems. This process involves “certification” of the individual by another Qualified High Voltage Electrical Worker based upon observation of their safe work practices, knowledge level and familiarity with the tools and equipment for performing energized electrical work on high voltage systems, and documentation of the required two years of training and experience;
- Creating a Hazard Assessment and Standard Operating Procedure (SOP) for High Voltage Activities) with a Qualified High Voltage Electrical Worker;
- Ensuring that the our Qualified High Voltage Electrical Worker has reviewed and approved the Hazard Assessment and SOP for high voltage activities;
- Reviewing and/or writing switching procedures in conjunction with the high voltage electrical contractor; and
- Notifying EH&S one (1) to two (2) days prior to the commencement of high voltage work.

Safety Coordinators Responsibilities

Safety Coordinator is responsible for:

- Performing program implementation review on an annual basis on all electrical work including lockout/tagout procedures for specific equipment, and high voltage switching procedures or high voltage electrical contractors;
- Assisting in the coordination of appropriate training for Qualified High Voltage Electrical Workers and Authorized Lockout/Tagout Persons;

Qualified Electrical Worker Responsibilities

Qualified High Voltage Electrical Workers who perform energized electrical work on equipment or systems operating at greater than 600 volts must be able to:

- Understand how to use special tools and special work procedures for greater than 600 volts;
- Know the clearance requirements for high voltage equipment, barrier and barricading requirements;

- Understand special hazards associated with high voltage equipment;
- Understand special procedures and tools for extracting personnel from energized circuits and providing rescue and resuscitation, and;
- Understand the workspace and guarding specified in the OSHA standard.

Additionally, all Qualified High Voltage Electrical Workers must also have the skills and techniques necessary to distinguish exposed live parts from other parts of electrical equipment and to determine the nominal voltage of exposed live parts . The Safety Coordinator will work together to determine who is a designated Qualified High Voltage Electrical Worker.

12.4 Program Components

Flow Chart

Hazard Assessment and Standard Operating Procedures (SOP's)

We will develop and implement written High Voltage Standard Operating Procedures (SOP) using the Hazard Assessment and Standard Operating Procedures for High Voltage Activities (Appendix A) form. All activities, performed by either an employee or by a High Voltage Electrical contractor, must have a SOP developed, documented, and reviewed by both the employee's supervisor and EH&S.

Qualified employees must assess the tasks to be performed and note whether the work can be performed with the equipment in the de-energized state, as described below. The equipment manual, as well as personnel who are experienced with the equipment, shall be consulted for assistance in making these determinations. When work on equipment must be performed while energized, qualified employees must follow the procedures for energized electrical work as described in this program.

De-Energized Electrical Work

Electrical systems must be worked on in the de-energized state, whenever feasible, following the work practices described in our Company's Control of Hazardous Energy and Lockout/Tagout Program. Energized electrical work should only be performed in situations where utilizing Control of Hazardous Energy practices increases the hazard(s) to the employee and/or equipment or it is not feasible (e.g., performing metering and testing).

High Voltage Work

Energized Electrical Work

Energized electrical work is acceptable for tasks which can only be performed with the equipment energized or when the use of de-energized electrical work procedures presents a greater hazard. OSHA has defined such work as repair, maintenance, troubleshooting, or testing on electrical circuits, components, or systems while energized (i.e., live). No other activities shall be performed while energized.

Due to the degree of electrical hazards associated with this type of work, the procedures, equipment, and other controls described in this section must be used when performing energized electrical work. Our energized electrical work practices and procedure shall incorporate all other applicable provisions of OSHA regulations covering work in confined or enclosed workspaces, work space illumination, alerting techniques, and personal protective equipment requirements.

Operating Procedures

Qualified High Voltage Electrical Worker

Energized electrical work on systems shall only be performed by a Qualified High Voltage Electrical Worker. We are responsible for determining whether an employee is qualified to perform energized electrical work. This qualification shall be made based on completion of applicable training and experience.

Only Qualified High Voltage Electrical Workers shall work on energized conductors or equipment connected to energized high voltage systems. Except for replacing fuses, operating switches, other operations that do not require the employee to contact energized high voltage conductors or energized parts of equipment or clearing trouble or emergencies involving hazard to life or property, no such employee shall be assigned to work alone.

Observers

During the time that work is being performed on any exposed conductors or exposed parts of equipment connected to high voltage systems, a Qualified High Voltage Electrical Worker, or an employee in training, must be in close proximity at each work location to:

- Act primarily as an observer for the purpose of preventing an accident

Render immediate assistance in the event of an accident.

All Safe Work Practices must be followed while performing energized electrical work.

Tools and Personal Protective Equipment (PPE)

Employees working in areas where there are potential electrical hazards must be provided with and use personal protective equipment (PPE) that is appropriate for the specific work to be performed. The electrical tools and protective equipment must be specifically approved, rated, and tested for the levels of voltage of which an employee may be exposed.

Electrical Protective Equipment must be selected to meet the criteria established by the American Society of Testing and Materials (ASTM) and by the America National Standards Institute (ANSI).

Insulating equipment made of materials other than rubber shall provide electrical and mechanical protection at least equal to that of rubber equipment.

PPE and all tools and equipment must be maintained in a safe, reliable condition and be inspected for damage before each day's use and immediately following any incident that can reasonably be suspected of having caused damage.

Our employees must use insulated tools and handling equipment that are rated for the voltages to be encountered when working near exposed energized conductors or circuit. Tools and handling

equipment should be replaced if the insulating capability is decreased due to damage. Protective gloves must be used when employees are working with exposed electrical parts above fifty (50) volts.

Fuse handling equipment (insulated for circuit voltage) must be used to remove or install fuses when the fuse terminals are energized. Ropes and hand lines used near exposed energized parts must be non-conductive.

Protective shields, barriers or insulating materials must be used to protect each employee from shock, burns, or other electrical injuries while that person is working near exposed energized parts that might be accidentally contacted or where dangerous electric heating or arcing might occur.

Precautions about Arcing and Flashes

Employees must wear protective equipment for the level of flash arc exposed to determined by the NFPA 70 e standard wherever there is a potential danger of electric arcs, flashes or flying objects resulting from electric explosion. Examples of situations with the potential for arcs:

- Working with a metal or conductive tool near a live electrical contact point with voltages above 600 volts;
- Accidentally making contact across two live electrical contact points with a metal or conductive tool; and
- Utilizing conductive materials or tools to connect a circuit in place of properly rated fuses or circuit breakers.

Precautions to prevent arcs or flashes include the following:

- Keep covers over live electrical contact points closed;
- Avoid using metal or conductive tools around live electrical contact points, when possible;
- Avoid pointing or placing metal tools near live electrical contact points in equipment with voltages above 600 volts;
- Verify the voltages present when working near live electrical contact points;
- Utilize test fixture boxes while performing adjustments, calibrations, or function tests of energized parts; and
- Use properly rated fuses for the capacity of the line or protection needed for the equipment in question.

Workspace Clearances and Precautions

Clearances and Access Distances for Energized Electrical Work must comply with OSHA regulations.

- Minimum approach distance to energized high power voltages lines for unqualified employees is 10 feet.9.5

- Minimum approach distance for qualified employees shall be followed per 29 CFR 1910.333(c)(3)(i) Qualified – Table S5 Selection and Use of Work Practices - Approach Distances for Qualified Employees – Alternating Current9.5

At least one entrance not less than 24 inches wide and six (6) and a half (1/2) feet high must be provided to give access to the working space around energized electrical equipment. When uninsulated energized parts are located adjacent to such entrance, they must be guarded.

The area in the immediate vicinity of the workspace must be surveyed and all potential hazards such as ladders, stacked boxes, ceiling tiles, or doors that may fall or swing into the workspace must be secured to prevent interference with the work being performed.

A clear escape path must be maintained from the work space to an exit from the area.

Proper illumination under CA Title 8 for work is required prior to performing any task involving high voltage.

Special Requirements High Voltage

Work on systems greater than 600 volts must be performed using de-energized electrical work practices, whenever possible. Energized electrical work on greater than 600 volt electrical systems must only be performed by a Qualified Electrical Worker. The following work practices are required, in addition to the requirements described above, for energized electrical work.

Work Practices

Work on greater than 600 volts must be performed following the same requirements as described above under Operating Procedures, including the use of permits, Qualified High Voltage Electrical Workers, tools, PPE, and safety observers.

Voltage Detection

The operating voltage of equipment and conductors must be determined before performing any energized electrical work on high voltage systems. This should be performed using a calibrated and working high voltage probe designed for high voltage circuits at the level of voltage to be encountered.

Clearances

Workspace clearances must comply with OSHA Clearance and Access Distances (Appendix D)

Tools and Probe

Insulating gloves and blankets shall be visually inspected before each use, electrically re-tested in accordance with ASTM standards (every six (6) months for gloves and sleeves and every twelve (12) months for blankets). Gloves and blankets shall be marked with either the date tested or with the date the next test is due. Whenever rubber gloves are used, they must be protected by outer canvas or leather gloves. Insulating protective equipment found to be defective or damaged must be immediately removed from use.

When not in use, protective equipment must be stored in suitable containers and stored away from direct sunlight, steam pipes, sources of excessive heat, and protected from physical damage.

We will provide insulating equipment designed for the voltage levels that will be encountered.

Overhead Voltage Lines

Special requirements are required for work on overhead voltage lines. In general, this work should only be performed by personnel (e.g., outside vendors) who are experienced in this type of electrical work and have the appropriate tools including hoists and fall protection.

All work near power lines with equipment must be at a minimum distance of 10 feet and maybe further determined on kv levels. Appropriate minimum safe approach distance should be kept under CFR 1926 and 1910 and CA Title 8. Post and maintain in plain view of the operator and driver on each crane, derrick, power shovel, drilling rig, or similar apparatus, a durable warning sign legible at 12 feet reading: "Unlawful to Operate This Equipment Within 10 Feet Of High-Voltage Lines of 50,000 Volts Or Less."

Hazardous Locations

Wet or Damp Locations

Work in wet or damp work locations (i.e., areas surrounded or near water or other liquids) should not be performed unless it is absolutely critical.

Electrical work should be postponed until the liquid can be cleaned up. If the work cannot be avoided, the Senior Superintendent or FM Project Manager responsible for the task, prior to performing the work, must grant approval.

Every attempt should be made to provide an insulated workspace if the work must be performed.

The following special precautions must be incorporated while performing work in damp locations :

- Only use electrical cords that have Ground Fault Circuit Interrupters (GFCIs);
- Place a dry barrier over any wet or damp work surface;
- Remove standing water before beginning work. Work is prohibited in areas where there is standing water;
- Do not use electrical extension cords in wet or damp locations; and
- Keep electrical cords away from standing water.Working on Life Safety Systems

Protection from Life Safety Systems

Life safety systems (e.g., emergency lighting) are intended to provide safety features additional to the safety features of the equipment being serviced, therefore, de-energized procedures should not be used. Examples:

- Work on alarm systems, which would require deactivation of the system in order to perform de-energized electrical work;
- Work on ventilation systems for hazardous locations, which would require shutting off the ventilation systems in order to perform de-energized electrical work; and

- Work on illumination systems, which would create a safety hazard if they are turned off in order to perform de-energized electrical work.

Energized Electrical Work for Life Safety Systems

Work on life safety systems should be performed using energized electrical work practices or preferably, during off hours when the life safety systems can be taken out of service to ensure the life safety protection provided by these systems is maintained. Specific procedures need to be developed by the individual departments to work on these systems safely.

De-Energized Electrical Work for Life Safety Systems

When work requires that a life safety system be de-energized, EH&S approval is required prior to work being performed.

Additional safeguards such as a fire watch, notification of security, and an ERT are also required if a life safety system is to be de-energized.

Overriding Safety Interlocks

Overriding safety interlocks are often required when performing metering, in emergency situations, or when troubleshooting equipment with the power on (i.e., energized electrical work). The following safe work practices shall be followed:

- Overriding safety interlocks shall only be performed by Qualified High Voltage Electrical Workers who are experienced with the equipment being serviced and understand the consequences of overriding the interlocks (NOTE: Interlocks must not be used as the sole means of de-energizing equipment);
- Work areas must be marked with labels, tags, or barriers when such work is being performed;
- All safety interlocks should be restored after the work has been completed; and
- Positive confirmation should be made to verify that each interlock functions as intended.

Equipment Inspection and Calibration

All electrical test equipment must be inspected for damage before use. The equipment must not be used if it is damaged or if its functionality is questionable. Equipment must be handled in a manner that will not damage the equipment. Prior to each use, electrical test equipment, such as voltmeters, must be verified to be functional. This is accomplished by testing the voltmeter on a known voltage to verify correct readings. After metering or testing is completed, the voltmeter should again be tested on a known voltage to verify functionality of the voltmeter.

Electrical test equipment should be calibrated yearly, at a minimum. If there is any doubt as to the equipment's calibration, the equipment should be recalibrated.

12.5 Reporting Requirements

We will make all energized electrical work practices and procedures available to all affected employees and to all OSHA and Department of Labor officials upon request.

12.6 Training Requirements and Competency Assessment

Training Requirement, Class Title	Target Audience	Frequency
Core Safety Training	All Employees	At time of employment & periodically thereafter
Advanced Electrical Safety and Lockout/Tagout Training	Employees who work directly with electrical systems from 50 to 600 volts, Authorized Lockout/Tagout Persons	Annually
High Voltage and Hazardous Electrical Safety Training	Employees who work with, or in the proximity of, electrical equipment or systems over 600 volts, Qualified High Voltage Electrical Worker	Annually

Employee Training

All employees involved with work on or around energized, or potentially energized electrical circuitry of fifty (50) volts to ground or greater, shall be trained in energized electrical safe work practices and procedures every three years. All employees fall into this category and receive this training every three years.

Qualified High Voltage Electrical Worker

Employees must receive training in avoiding the electrical hazards associated with working on or near exposed energized parts prior to performing energized electrical work. Such training will be provided when the employee is initially assigned to the job and refresher training will be provided every three years or when conditions change.

The following items are to be included in the training of Qualified High Voltage Electrical Workers:

- Our Control of Hazardous Energy Control and Lockout/Tagout Training Program including safe work practices required to safely de-energize electrical equipment;
- Universal safety procedures;

- Skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment;
- Perform on-the-job training with a skilled technician. This may include completion of the Hazardous Electrical Voltage Training checklist with a trained technician;
- Skills and techniques necessary to determine the nominal voltage of exposed live parts;
- Clearance distances corresponding to the voltage of exposed live parts;
- Selection and use of personal protective equipment, tools, insulating and shielding materials and equipment for working on or near energized parts; and
- Selection and use of proper work practices for working on or near energized parts.

Qualified High Voltage Electrical Workers must be also be trained in recognizing signs and symptoms of electric shock, heart fibrillation, electric burns, and proper first aid protocols for these conditions. They must have the following training:

- Basic Cardio Pulmonary Resuscitation (CPR);
- Automatic External Defibrillator (AED); and
- Contacting emergency personnel.

Only Qualified High Voltage Electrical Workers are permitted to perform energized electrical work on equipment or systems operating at greater than 600 volts. Such employees are qualified persons, who by reason of a minimum of two years of training and experience with high-voltage circuits and equipment, have demonstrated by performance familiarity with the work to be performed and the hazards involved.

Emergency Response

In case of an emergency, employees must contact their supervisor and dial 911 from an internal or external telephone.

Documentation of Training and Experience

Documentation of the three (3) types of training as described in the table above will be maintained. Experience received by Qualified High Voltage Electrical Workers must be maintained for all personnel as covered by this program. Documentation is necessary to demonstrate that individuals have met the training and experience requirements for the types of work being performed.

Qualified High Voltage Electrical Workers who have obtained the required two years of experience and training must demonstrate their knowledge before becoming authorized to perform energized electrical work on high voltage circuits. This process involves “certification” of the individual by another Qualified High Voltage Electrical Worker based upon observation of their safe work practices, knowledge level and familiarity with the tools and equipment for performing energized electrical work on high voltage systems, and documentation of the required two years of training and experience.

13 EMERGENCY ACTION / RESPONSE PLAN POLICY

13.1 Introduction

It is essential to the safety of employees to maintain an efficient emergency organization with procedures to cover emergency conditions. The purpose of this plan is to provide such protection. It is designed as simply as possible to allow maximum flexibility. It must be kept at each job site and readily available for employees to review. The following contains policies and procedures applicable to potential emergencies, and at a minimum includes:

- Reporting a fire or other emergency
- Emergency evacuation, including type of evacuation and exit route assignments
- Procedures to follow by employees who remain to operate critical plant operations before they evacuate
- Accounting for all employees after evacuation
- Procedures to follow by employees who perform medical or rescue duties
- Obtaining the name or job title of every employee who may be contacted by employees who need more information about the plan or an explanation of their duties under the plan.

13.2 Site Coordination

The Safety Director must establish the following for each job site:

- Emergency contact numbers for police, fire department and ambulance services.
- Name, address and telephone number of the nearest hospital for emergencies, and medical clinic for non-serious injuries and illnesses.
- An emergency staging area. This will be posted.
- A list of emergency contacts and their contact information.
- In the event of an emergency, our employees will evacuate immediately.
- The Safety Director will designate and train employees to assist in a safe and orderly evacuation of other employees.
- The Safety Director will ensure the plan is reviewed with each employee upon hire, when employee responsibilities change under the plan, and when the plan is changed.

13.3 Bomb Threat

When a bomb threat is received or if a suspicious article is found, we will take the following actions:

- Work shall be stopped immediately and the project and office shall be evacuated of all personnel. A count will be made to assure that all are present.
- Local police, fire or bomb disposal authorities shall be notified. A search of the premises will be made as directed by appropriate authorities.
- If a suspicious article is found, DO NOT TOUCH IT! Notify the appropriate authorities.
- Do not allow anyone except authorized personnel to re-enter the area.
- If necessary to stop or detour traffic away from the affected area, local police or flagmen shall be utilized.
- Re-entry to the site will only be allowed after consultation with the police department and any other applicable authorities.

13.4 Hazardous Material Spill

The following are guidelines when reacting to a hazardous chemical spill:

- Immediately take steps to prevent the spill from leaving the site or entering any waterways including but not limited to storm drains. Use material such as absorbent pads from a spill response kit.
- Contact the facility supervisor.
- Small spills should be cleaned up immediately by using absorbent materials such as sawdust, hay, sand, socks or pads.
- For spills that cannot safely be contained, the site supervisor will notify emergency services. If evacuation is needed, all personnel should leave the area and assemble at the predetermined emergency staging area.
- All spills are to be thoroughly investigated by the site supervisor or someone he or she designates. The investigation is to be documented and include details of the incident and how it was handled, the root cause of the incident, and the extent of damage done. Notify any additional regulatory agencies as required.

13.5 Fire / Explosion

The following procedures are established in the event of a fire. Ensure your safety and:

- Immediately notify the site supervisor who can sound the alarm and call 911.

- In such an event, all persons will exit the building by using the closest and safest exit route and continue on to meet at the staging area for roll call.

Fight a fire only if:

- 911 have been called and the Fire Department has been notified.
- The fire is small and confined.
- You have a way out that is not threatened by the fire.
- You have the training, the right type and size extinguisher, and the extinguisher is in good working order.
- There are no explosive materials near the fire.
- You have another person in the vicinity observing or fighting the fire.

When an Alarm Sounds:

- Evacuate the building or area through the safest exit. Do not use elevators. Leave personal items behind. Close doors, windows and gas valves in your area as you exit.
- Leave the building and go to the staging area for roll call and get assignments to help direct Emergency Services.
- Report all information to the site Superintendent.
- Do not re-enter building until instructed to do so by a Supervisor, or emergency services.

Supervisor or designee duties:

- Call 911 or designate a person to call 911.
- Take roll and account for all persons on site or assigned to you.
- Help with evacuation process including disabled persons.
- Use a fire extinguisher when appropriate.
- Direct Emergency Services to location of fire or hazard.
- Direct emergency services as to conditions, locations and hazards of the job site.
- Direct personnel on site to help emergency services.

13.6 Alarm System

- We will have and maintain an alarming system for each site. This will be an air horn.
- A continuous long blast on the air horn may be used to summon first aid assistance in the event of an accident.

- Three long blasts on the air horn are to signal the need to evacuate the site.

13.7 Injuries / Emergencies

- Provide First Aid to all injured personnel regardless of severity. If possible do not leave individual alone.
- Call 911 if the injury is serious and needs immediate medical treatment. Speak slowly and clearly. Identify the patient and the location from which you are calling, (give phone number). Encourage patient to remain calm.
- Notify the site supervisor.
- Where a specific procedure has not been established, reasonable judgment should be used in determining what course to follow.

13.8 First Aid Kits

First Aid Kits must be provided according to OSHA guidelines and within a reasonable distance to all workers. We will also maintain a first aid kit at each site according to OSHA guidelines.

13.9 Bloodborne Pathogens

Bloodborne pathogens can cause disease. Avoid contact with another person's blood. If a tool, utensil, or material is contaminated with blood or other body fluids, contain the area of contamination and inform your safety contact to perform to assist with decontamination and documenting of the incident.

14 FALL PROTECTION PROGRAM

14.1 Introduction

Employees are only to aceess walking and working surfaces that have the strength and structural integrity to support them safely. Such surfaces will not be released for access until they are deemed safe by a competent person. No one is to work at heights without the proper training and the authorization to do so.

14.2 Open-Sided Or Walking Or Working Surfaces

Every walking or working surface must be protected against slip, trip and fall hazards. In addition, any employee on a walking or working surface 6’ or more above a lower level must be protected with a means of fall protection.

14.3 Leading Edges

Each employee who is constructing a leading edge 6 feet or more above a lower level will be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems the use of a fall protection system. This may be a guardrail system, safety net system, or a personal fall restraint / arrest system.
Each employee on 6 feet or more above a lower level where leading edges are under construction, but who is not engaged in the leading-edge work, will be protected from falling by a fall protection system.

14.4 Hoist Areas

Each employee in a hoist area will be protected from falling 6 feet or more to lower levels by the use of a fall protection system. If guardrail systems, (or chain gate, or guardrail) or portions thereof, are removed to facilitate the hoisting operation (e.g., during landing of materials), and an employee must lean through the access opening or out over the edge of the access opening (to receive or guide equipment and materials, for example), that employee will be protected from fall hazards by a personal fall restraint / arrest system.

14.5 Holes / Floor Openings

Each employee on a walking/working surface will be protected from tripping in or stepping into or through holes 2”x 2” or greater (including skylights) by covers. The covers will be secured and labeled “HOLE” or “COVER”. The cover will be able to support 400 lbs. or 2 times the maximum weight, whichever is greater. As an alternative, a guardrail system may be used with a toe-board.
Each employee on a walking/working surface will be protected from objects falling through holes (including skylights) by covers.

14.6 Ramps, Runways, and Other Walkways

Each employee on ramps, runways, and other walkways will be protected from falling 6 feet or more to lower levels by guardrail systems.

14.7 Wall Openings

Each employee working on, at, above, or near wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is 6 feet or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches above the walking/working surface, will be protected from falling by the use of a fall protections system.

14.8 Fall Protection Systems

Guardrail Systems

Guardrail systems and their use will comply with the following provisions:

- Top edge height of top rails, or equivalent guardrail system members, will be 42 inches (+ or - 3 inches) above the walking/working level.
- Mid-rails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members will be installed between the top edge of the guardrail system and the walking/working surface when there is no wall or parapet wall at least 21 inches high.
- Screens and mesh, when used, will extend from the top rail to the walking/working level and along the entire opening between top rail supports.
- Intermediate members (such as balusters), when used between posts, will be not more than 19 inches apart.
- Other structural members (such as additional mid-rails and architectural panels) will be installed such that there are no openings in the guardrail system that are more than 19 inches wide.
- Guardrail systems will be capable of withstanding, without failure, a force of at least 200 pounds applied within 2 inches of the top edge, in any outward or downward direction, at any point along the top edge.
- When the 200-pound load is applied in a downward direction, the top edge of the guardrail will not deflect to a height less than 39 inches above the walking/working level.
- Mid-rails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members will be capable of withstanding, without failure, a force of at least 150 pounds applied in any downward or outward direction at any point along the mid-rail or other member.
- Guardrail systems will be so surfaced as to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.
- The ends of all top rails and mid-rails will not overhang the terminal posts, except where such overhand does not constitute a projection hazard.
- Steel banding and plastic banding will not be used as top rails or mid-rails.

- Top rails and mid-rails will be at least one-quarter inch nominal diameter or thickness to prevent cuts and lacerations. If wire rope is used for top rails, it will be flagged at not more than 6-foot intervals with high visibility material.
- When guardrail systems are used at hoisting areas, a chain, gate or removable guardrail section will be placed across the access opening between guardrail sections when hoisting operations are not taking place.
- When guardrail systems are used at holes, they will be erected on all unprotected sides or edges of the hole.
- When guardrail systems are used around holes used for the passage of materials, the hole will have not more than two sides provided with removable guardrail sections to allow the passage of materials. When the hole is not in use, it will be closed over with a cover, or a guardrail system will be provided along all unprotected sides or edges.
- When guardrail systems are used around holes which are used as points of access, they will be provided with a gate, or be so offset that a person cannot walk directly into the hole.
- Guardrail systems used on ramps and runways will be erected along each unprotected side or edge.

Safety Net Systems

Safety net systems and their use will comply with the following provisions:

- Safety nets will be installed as close as practicable under the walking/working surface on which employees are working, but in no case more than 30 feet below such level. When nets are used on bridges, the potential fall area from the walking/working surface to the net will be unobstructed.
- Safety nets will extend outward from the outermost projection of the work surface as follows:

Vertical distance from working level to horizontal plane of net	Minimum required horizontal distance of outer edge of net from the edge of the working surface
Up to 5 feet	8 feet
More than 5 feet up to 10 feet	10 feet
More than 10 feet	13 feet

- Safety nets will be installed with sufficient clearance under them to prevent contact with the surface or structure below when subjected to an impact force equal to the drop test.
- Safety nets and their installations will be capable of absorbing an impact force equal to that produced by the drop test.
- Defective nets will not be used. Safety nets will be inspected at least once a week for wear, damage, and other deterioration. Defective components will be removed from service. Safety nets will also be inspected after any occurrence which could affect the integrity of the safety net system.
- Materials, scrap pieces, equipment, and tools which have fallen into the safety net will be removed as soon as possible from the net and at least before the next work shift.

- The maximum size of each safety net mesh opening will not exceed 36 square inches nor be longer than 6 inches on any side, and the opening, measured center-to-center of mesh ropes or webbing, will not be longer than 6 inches. All mesh crossings will be secured to prevent enlargement of the mesh opening.
- Each safety net (or section of it) will have a border rope for webbing with a minimum breaking strength of 5,000 pounds.
- Connections between safety net panels will be as strong as integral net components and will be spaced not more than 6 inches apart.

Personal Fall Arrest Systems

Personal fall arrest systems and their use will comply with the provisions set forth below:

- Connectors will be drop forged, pressed or formed steel, or made of equivalent materials.
- Connectors will have a corrosion resistant finish, and all surfaces and edges will be smooth to prevent damage to interfacing parts of the system.
- D-Rings and snap hooks will have a minimum tensile strength of 5,000 pounds.
- D-Rings and snap hooks will be proof tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or taking permanent deformation.
- Snap hooks will be sized to be compatible with the member to which they are connected to prevent unintentional disengagement of the snap hook by depression of the snap hook keeper by the connected member, or will be locking type snap hook designed and used to prevent disengagement of the snap hook by the contact of the snap hook keeper by the connected member.
- Unless the snap hook is a locking type and designed for the following connections, snap hooks will not be engaged directly to webbing, rope or wire rope, to each other, to a D-ring to which another snap hook or other connector is attached, to a horizontal lifeline, or to any object which is incompatibly shaped or dimensioned in relation to the snap hook such that unintentional disengagement could occur by the connected object being able to depress the snap hook keeper and release itself.
- On suspended scaffolds or similar work platforms with horizontal lifelines which may become vertical lifelines, the devices used to connect to a horizontal lifeline will be capable of locking in both directions on the lifeline.
- Horizontal lifelines will be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.
- Lanyards and vertical lifelines will have a minimum breaking strength of 5,000 pounds.
- Lifelines will be protected against being cut or abraded.
- Self-retracting lifelines and lanyards which automatically limit free fall distance to 2feet or less will be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.
- Self-retracting lifelines and lanyards which do not limit free fall distance to 2 feet or less, rip stitch lanyards, and tearing and deforming lanyards will be capable of sustaining a minimum tensile load of 5,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.

- Ropes and straps (webbing) used in lanyards, lifelines, and strength components of body belts and body harnesses will be made from synthetic fibers.
- Anchorages used for attachment of personal fall arrest equipment will be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached, or will be designed, installed, and used as follows:
    - As part of a complete personal fall arrest system which maintains a safety factor of at least two; and under the supervision of a qualified person.
- Personal fall arrest systems, when stopping a fall, will:
    - Limit maximum arresting force on an employee to 1,800 pounds when used with a body harness.
    - Be rigged such that an employee can neither free fall more than 6 feet, nor contact any lower level
    - Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet.
    - Have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 6 feet, or the free fall distance permitted by the system, whichever is less.
- The attachment point of the body harness will be located in the center of the wearer's back near shoulder level, or above the wearer's head.
- Body harnesses, and components will be used only for employee protection (as part of a personal fall arrest system or positioning device system) and not to hoist materials.
- Personal fall arrest systems and components subjected to impact loading will be immediately removed from service and will not be used again for employee protection until inspected and determined by a competent person to be undamaged and suitable for reuse.
- We will provide for prompt rescue of employees in the event of a fall or will assure that employees are able to rescue themselves.
- Personal fall arrest systems will be inspected prior to each use for wear, damage and other deterioration, and defective components will be removed from service.
- Personal fall arrest systems will not be attached to guardrail systems, nor will they be attached to hoists except as specified.
- When a personal fall arrest system is used at hoist areas, it will be rigged to allow the movement of the employee only as far as the edge of the walking/working surface.

Positioning Device Systems

Positioning device systems and their use will conform to the following provisions:

- Positioning devices will be rigged such that an employee cannot free fall more than 2 feet.
- Positioning devices will be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or 3,000 pounds, whichever is greater.
- Connectors will be drop forged, pressed or formed steel, or made of equivalent materials.
- Connectors will have a corrosion-resistant finish, and all surfaces and edges will be smooth to prevent damage to interfacing parts of this system.
- Connecting assemblies will have a minimum tensile strength of 5,000 pounds.

- D-Rings and snap hooks will be proof tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or taking permanent deformation.
- Snap hooks will be sized to be compatible with the member to which they are connected to prevent unintentional disengagement of the snap hook by depression of the snap hook keeper by the connected member, or will be a locking type snap hook designed and used to prevent disengagement of the snap hook by the contact of the snap hook keeper by the connected member.
- Unless the snap hook is a locking type and designed for the following connections, snap hooks will not be engaged:
    - Directly to webbing, rope or wire rope.
    - To each other.
    - To a D-Ring to which another snap hook or other connector is attached.
    - To a horizontal lifeline.
    - To any object which is incompatibly shaped or dimensioned in relation to the snap hook such that unintentional disengagement could occur by the connected object being able to depress the snap hook keeper and release itself
- Positioning device systems will be inspected prior to each use for wear, damage, and other deterioration, and defective components will be removed from service.
- Body belts, harnesses, and components will be used only for employee protection (as part of a personal fall arrest system or positioning device system) and not to hoist materials.

Warning Line Systems

Warning line systems and their use will comply with the following provisions:

- The warning line will be erected around all sides of the roof work area.
- Points of access, materials handling areas, storage areas, and hoisting areas will be connected to the work area by an access path formed by two warning lines.
- When the path to a point of access is not in use, a rope, wire, chain, or other barricade, equivalent in strength and height to the warning line, will be placed across the path at the point where the path intersects the warning line erected around the work area, or the path will be offset such that a person cannot walk directly into the work area.
- Warning lines will consist of ropes, wires, or chains, and supporting stanchions erected as follows:
    - The rope, wire, or chain will be flagged at not more than 6-foot intervals with high visibility material.
    - The rope, wire, or chain will be rigged and supported in such a way that its lowest point (including sag) is no less than 34 inches from the walking/working surface and its highest point is no more than 39 inches from the walking/working surface.
    - After being erected, with the rope, wire, or chain attached, stanchions will be capable of resisting, without tipping over, a force of at least 16 pounds applied horizontally against the stanchion, 30 inches above the walking/working surface, perpendicular to the warning line, and in the direction of the floor, roof, or platform edge.
    - The rope, wire, or chain will have a minimum tensile strength of 500 pounds and after being attached to the stanchions, will be capable of supporting, without breaking.

- The line will be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.
- No employee will be allowed in the area between a roof edge and a warning line unless the employee is authorized to do so and has a means of fall protection.
- Mechanical equipment on roofs will be used or stored only in areas where employees are protected by a warning line system, guardrail system, or personal fall arrest system.

Protection from Falling Objects

Falling object protection will comply with the following provisions:

- Toe boards, when used as falling object protection, will be erected along the edge of the overhead walking/working surface for a distance sufficient to protect employees below.
- Toe boards will be capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or outward direction at any point along the toe board.
- Toe boards will be a minimum of 3 1/2 inches in vertical height from their top edge to the level of the walking/working surface. They will have not more than ¼ inch clearance above the walking/working surface. They will be solid or have openings not over 1 inch in greatest dimension.
- Where tools, equipment, or materials are piled higher than the top edge of a toe board, paneling or screening will be erected from the walking/working surface or toe board to the top of a guardrail system's top rail or mid-rail, for a distance sufficient to protect employees below.
- During the performance of overhand bricklaying and related work:
  - No materials or equipment except masonry and mortar will be stored within 4 feet of the working edge.
  - Excess mortar, broken or scattered masonry units, and all other materials and debris will be kept clear from the work area by removal at regular intervals.
- During the performance of roofing work:
  - Materials which are piled, grouped or stacked near a roof edge must be stable and self-supporting.
  - Canopies, when used as falling object protection, will be strong enough to prevent collapse and to prevent penetration by objects that may fall onto the canopy.

15 FIRE PREVENTION / FIRE EXTINGUISHERS

15.1 Scope

This Fire Prevention Plan will cover fire prevention procedures, housekeeping and maintenance controls, and training.

15.2 Fire Prevention Plan

The purpose of this Fire Prevention Plan is to prevent injuries and fatalities. Additionally, it is to protect the company from property damage due to a fire or smoke.

15.3 Fire Prevention

The priority of this company is to prevent fires before they start. This can be achieved by identifying potential fire hazards, through proper handling and storage procedures, by controlling potential ignition sources, and having set-up the proper fire-fighting systems and equipment.

Potential Fire Hazards:

a. Combustible materials will be kept in separate storage areas from flammable materials. Combustible materials will be protected by a welding blanket, shield, or 25 foot distance from any open flame operation. Combustibles will also be kept a safe distance from all ignition sources. Combustible materials will be stored in neat stacks and clear of aisles and passageways.

b. Flammable and combustible liquids will be stored in approved containers that are properly labeled. Flammable and combustible liquids will be stored in approved cabinets when not in use. When in use, flammable and combustible liquids will be used in a manner that prevents spills. Whenever feasible, substitute flammable liquids for a non-flammable material that is non-toxic.

c. Electrical fixtures, panels, boxes, outlets and cords should be wired to all applicable codes to prevent fire or explosion. Avoid the use of extension cords whenever possible. Fix any exposed or frayed wiring. Do not overload outlets or electrical systems. Label all outlets and electrical panels for voltage. Replace any reoccurring popping circuit breaker and/or smoking outlet.

d. Smoking should be done in designated areas only.

Proper Handling and Storage:

a. Use and store all chemicals in accordance with the Safety Data Sheets.

b. Store separately all incompatible chemicals that may cause a fire to start or spread. An example would be an oxygen cylinder next to acetylene.

c. Store all flammable and combustible liquids in approved cabinets. Not more than 120 gallons of Class I, Class II, or Class IIIA liquids may be stored in a cabinet. Of this total, not more than 60 gallons may be stored of Class I or Class II liquids.

d. Storage inside buildings must comply with the following conditions: The flammable or combustible liquids/gasses must not obstruct any egress. Flammable or combustible liquids must have lids kept tightly closed when not in use to avoid fumes or vapors. Remove only as much as needed for operation and replace lid. If a flammable or combustible storage facility is used, it will be a one-story building containing only flammable or combustible liquids. The building will have 2-hour fire rated exterior walls having no openings within 10 feet of such wall. (These can be superceded by any Federal, State or Local Regulation.) Ventilation inside a storage room will have a mechanical fan installed to all Federal, State and local regulations.

Controlling Ignition Sources:

a. Static electricity will be controlled by grounding and bonding all equipment that transfers or transports flammable liquids or any other potentially explosive chemical.

b. Open flames, such as from welding and cutting torches, welding units, heaters, or matches, should be kept from all flammable liquids or gasses.

c. Motors, switches, and circuit breakers, etc., should be eliminated where flammable liquids or gasses are handled or stored.

d. Only non-sparking tools should be used where flammable liquids or gasses may be present.

Fire Fighting Systems and Equipment:

a. Portable fire extinguishers should be used for small fires only and by trained personnel. Fire extinguishers will be conspicuously located and marked with arrows to clearly identify location, especially when material may block view of location. Open access will always be kept to fire extinguishers and fire-fighting equipment. Persons using a fire extinguisher should be trained and use the proper type of extinguisher for the type of fire. All fire extinguishers will be clearly marked for type and clearly identified by a sign when two different extinguishers are located together. Fire extinguishers will be located next to egress, near flammable operations, and where all other Federal, State and local law requires. Fire extinguishers will be inspected monthly and annual service will be provided. Annual maintenance date will be recorded and kept for 1 year after last entry. There are four general classifications of fires depending on the materials involved. The fire extinguisher that will be used will be rated for the materials involved in the fire.

    1. Class A fires have materials such as wood, paper, rags/cloth which produce embers, ash and char.

    2. Class B fires have materials such as flammable gasses and liquids or grease, which often create vapors or fumes that will combust.

    3. Class C fires have live electrical equipment/lines or materials near electrically powered equipment.

4. Class D fires have combustible metals like sodium, potassium, or magnesium.

b. Fire extinguishers must be serviced annually and inspected monthly. Additionally, all fire extinguishers must be maintained fully charged. In the event a fire extinguisher is used, a back-up fire extinguisher will be put in place while service is completed.

c. Fire sprinkler system must be maintained and tested in accordance with Federal, State and local regulations. Notify the Fire Department upon activation.

d. The Superintendent/Foreman/Supervisor/Manager will maintain equipment and systems that prevent and control ignitions or fires.

e. All employees must be trained on the proper use of fire extinguishers upon hire and annually thereafter.

15.4 Housekeeping and Maintenance Controls

Housekeeping and maintenance practices are essential in preventing fires and furthering the spread of fires. The housekeeping and maintenance controls that will be an essential part of the Fire Prevention Plan are storage of flammable and combustible waste, maintenance of aisles, stairways and exits, and posting evacuation maps.

Flammable Storage Waste:

a. Maintain all flammable materials in approved containers and approved cabinets. Do not exceed maximum quantities.

b. Label all flammable materials clearly.

c. Store away from ignition sources.

Combustible Storage Waste:

a. Maintain all debris, scraps and trash in proper disposal containers.

b. Maintain all combustible waste neatly and away from ignition sources.

Maintenance of Aisles, Stairways, and Exits:

a. Keep aisles free of clutter or debris that may cause a trip hazard.

b. Do not block aisles, passageways or exits.

c. Keep all exits unlocked during work hours.

d. Clearly mark exits with signs.

e. Light all stairways, aisles and exits that would not have proper illumination in a fire.

f. Maintain all fire fighting equipment and systems.

g. The Superintendent/Foreman/Supervisor/Manager will maintain the accumulation of flammable and combustible waste.

h. Regular inspections will be performed for fire hazards by the designated person.

15.5 Post Evacuation Map

a. Post a diagram showing exits, fire extinguishers, emergency shut-offs, flammable and combustible storage, and staging area in areas where every person on site will see it.

15.6 Training

All employees are trained on the fire hazards of the job and emergency evacuation. This is done on an annual basis and during orientation upon hire. Training is an essential way to avoid a fire, and in the event of a fire, avoid an injury or fatality. Training includes but is not limited to the following topics - fire hazards and fire prevention, use of fire extinguisher, evacuation routes, fire evacuation, fire drills, hazards involved in incipient stage fire fighting, and fire emergency procedures.

Emergency Evacuation:

In the event of a fire, the person who discovers the fire will immediately notify all persons on site by pulling an alarm, use of the public address system, or oral communication. A Supervisor or designated person, when available, will dial 911 and the public address system will be used to evacuate the site. When the alarm is heard or a notice to evacuate has been communicated, all persons will exit the building by using the closest and safest exit route and continue on to meet at the staging area for roll call.

Fight Fire Only If:

a. 911 has been called and the Fire Department has been notified.

b. The fire is small and confined.

c. You have a way out that is not threatened by the fire.

d. You have the training, the right type and size extinguisher, and the extinguisher is in good working order.

e. There are no explosive materials near the fire.

f. You have another person in the vicinity observing or fighting the fire.

When an Alarm Sounds:

a. Evacuate the building or area through the safest exit. Do not use elevators. Leave personal effects behind. Close doors, windows and gas valves in your area as you exit.

b. Leave the building and go to the staging area for roll call and get assignments to help direct Emergency Services.

c. Report all information to the designated person.

d. Do not re-enter building until instructed to do so by a Supervisor, designated person, or Emergency Services.

Designated Person Duties:

a. Call 911 or designate a person to call 911.

b. Take roll and account for all persons on site or assigned to you.

c. Help with evacuation process including disabled persons.

d. Use a fire extinguisher when appropriate.

e. Direct Emergency Services to location of fire or hazard.

f. Direct Emergency Services as to conditions, locations and hazards of the facility.

g. Direct personnel on site to help Emergency Services.

16 FIRST AID PROGRAM

16.1 Program Outline

Our company will have a sufficient number of employees trained in CPR and First Aid available to render emergency First Aid at each site. Each designated person will maintain a valid certificate in first aid training obtained from the U.S. Bureau of mines, American Red Cross or equivalent training that can be verified by documentary evidence.

The safety director is responsible for ensuring the following:

- The contents of the First Aid kits must be checked before being sent out to each job and at least weekly on each job to ensure that the expended items are replaced.
- First Aid supplies are readily available and easily accessible at the job site.
- Ensure there is proper equipment for prompt transportation of the injured person to a physician or hospital, or a communication system for contacting necessary ambulance services.
- Ensure the telephone numbers of the physicians, hospitals or ambulances are conspicuously posted using the attached form.
- Suitable facilities are provided for quick drenching or flushing of eyes or body where the eyes or body of any person may be exposed to injurious corrosive materials.

First Aid is the treatment given a victim prior to the arrival of professional medical assistance. Note: First Aid in no way replaces the attention of a physician. If there is any question about the seriousness of an accident victim's injury, contact a doctor as soon as possible. Give the following information:

1. What has happened and when.
2. Where the victim is located.
3. What First Aid has been provided.

While the following guidelines are not a substitute for First Aid training, they will help you provide First Aid in six serious emergency situations.

16.2 Broken Bones

Call for medical assistance. If a doctor or ambulance can arrive within a short time, make no attempt to move the victim unless absolutely necessary. Attempt to immobilize the injured limb to prevent further injury. If the victim must be moved, splint the injured part with any available rigid material long enough to reach above and below the break. Secure the splint above and below the break. Never attempt to set a broken bone – wait for a doctor. Watch for signs of shock and treat as discussed below.

16.3 Bleeding

Call for medical assistance. If bleeding is severe, apply firm, steady pressure to the wound with layers of sterile gauze pads or bandages. If they aren't available, use any cloth. Do not remove this dressing. If the pad becomes saturated with blood, add more layers. Bandage the pads firmly in place. If no gauze or cloth is available, close the wound with your fingers, holding it closed. Keep the victim lying down until a physician arrives. Elevate the bleeding part to help control blood loss. Never use a tourniquet to control bleeding unless you are dealing with an amputated, crushed, or mangled limb. Use a tourniquet ONLY as a last resort effort to save a victim's life, because applying a tourniquet improperly may result in loss of limb.

16.4 Burns

Minor burns: Immerse burned parts in clear, cold water or apply ice for pain relief. Bandage with sterile pad or clean cloth. If pain persists, apply mild burn ointment.

Severe Burns: Call for medical assistance. Take immediate steps to relieve pain, prevent infection, and treat victim for shock as described below. If burn was caused by fire, boiling liquid, or hot metal, do not strip away clothing covering the affected area. Keep air away from burn by covering area loosely in place. Apply NO grease or ointment. Keep victim lying down. If conscious, give victim plenty of water.

Chemical Burns: Flush burn with large amounts of water. Cover burn with cleanest cloth available, and have victim lie down until a doctor arrives. For chemical burns of the eye, flush with great amounts of water immediately, cover the eye, and rush the victim to the doctor.

16.5 Poisoning

Call a doctor or poison control center at once. If victim loses consciousness, give no other first aid. If breathing stops, start mouth-to-mouth resuscitation. Follow the instructions of the doctor or poison control center.

16.6 Shock

Can occur after any injury – a condition in which vital body functions are slowed down. The symptoms include: weakness; cold, pale, clammy skin with beads of perspiration on face and palms; rapid, weak pulse; chill; nausea; irregular breathing. Any or all of these symptoms may be evident.

First aid involves keeping the victim warm – covered with blankets to prevent loss of body heat and lying down. Keep victim's airway open. If victim vomits, turn his head to the side. If victim is conscious and able to swallow, give water. If victim becomes nauseated, stop liquids. Contact a doctor as soon as possible.

16.7 Breathing

If breathing stops for any reason, begin mouth-to-mouth resuscitation immediately. If possible, have someone else contact a doctor. Follow these steps:

1. Place victim on his or her back and determine if there is anything in the victim's mouth. If there is, turn the victim's head to one side and wipe out the mouth with a finger.
2. Straighten the victim's head and tilt it back so that the chin points up. Push down to keep the victim's tongue from blocking the airway.
3. Place your mouth over the victim's and pinch his nostrils shut with your fingers.
4. Breathe into the victim's mouth until the chest rises.
5. Remove your mouth and listen for the sound of escaping air. If you don't hear it, check the victim's head and jaw positioning and repeat the process. If there is no sound of escaping breath this time, turn the victim on his or her side and slap on the back between the shoulders. Check the mouth again for foreign matter.
6. Repeat steps 2, 3, and 4, removing your mouth to allow breath to escape from the victim's lungs. This process should be repeated 12 times per minute for an adult. Above all, keep repeating the process until help arrives.

The First Aid Form must be completed every time first aid is administered.

17 HAND AND POWER TOOLS

17.1 Purpose

The purpose of a portable tool and equipment program is to minimize and remove the risk of accidents and injuries caused by improperly guarded, maintained or otherwise unsafe or improper use of tools and equipment.

17.2 Scope

An effective portable tool and equipment program is an integral part of any effective safety program. Keeping tools and equipment neat, clean, organized and well maintained in a safe condition, reduces the chances of accidents, injuries and losses. Well-organized work areas also increase the ability of employees to perform their jobs efficiently. Tool and equipment inspections shall be conducted on a regular basis and documented.

17.3 General Procedures

Employees using hand and power tools will be provided with PPE that protects them from all hazards which includes, but is not limited to, eye protection, ear protection, hand protection, face protection, respiratory protection, body protection, and foot protection

Power tools that need service or are no longer in safe working order must be locked and tagged out to prevent unauthorized use. Hand tools must be issued a tag saying “do not use”.

Portable Tools & Equipment

- Discard or repair damaged tools such as frayed electric cords on tools, leaking hoses, and missing guards.
- Operating control on hand-held power tools shall be located as to minimize the possibility of its accidental operation.
- Non-current carrying metal parts of cord-and plug-connected equipment, where required to be grounded, shall be grounded.
- Adequate enclosures and or guarding shall be provided to protect portable and mobile equipment from physical damage. Guarding shall be in place when in use.

Pneumatic Tools

- Each tool must have a retainer to prevent ejection.
- Air tools must be operated at rated psi. Air compressors set above the rated psi for tools, must have regulators in the line between the compressor and the tools. Install adjustable pressure regulator and tool oiler in line between compressor and point of operation.

- Hose and hose connections must be rated for pressure and service being used and cannot be repaired with hose clamps.

Portable Abrasive Wheels

- A safety guard must cover the spindle end, nut, and flange projections.
- Abrasive wheels must be protected. Revolving guards shall be made of adequate strength and enclose the wheel sides upward from the back for 1/3 of the wheel thickness.
- Clearance of guard to wheel must be 1/16 inch or less.
- Vertical or right angle head grinders must be ½ covered with a guard.
- The guard must be between the operator and the wheel during use.
- Mounting and inspection: all grinding wheels must be inspected (ring test) and spindle speed checked to not exceed wheel rating.
- Ring Test: put an axle through the spindle hole and lightly tap with hard rubber. Listen for a solid ring such as tapping a crystal water glass. A dry thud indicates a cracked wheel, and should be discarded.
- All contact surfaces must be flat and free of foreign matter.
- Bushings used in wheel holes must be smaller than the width of the wheel and cannot touch the flanges.
- Abrasive wheels shall not be stored where they would be subjected to exposure to high temperature or humidity, water or other liquids, freezing temperature or temperature low enough to cause condensation on the wheels when moved from storage to an area of higher temperature, or where they would be subjected to physical damage from falling tools or materials.

17.4 Responsible Persons

It is our policy that accident prevention shall be considered of primary importance of our operation and administration. It is the intention of the Company and its top management to provide a safe and healthy work environment for all employees. It is the responsibility of all employees to conduct their job tasks in a manner that will protect the safety and well being of themselves and all fellow employees. Should an unsafe condition exist that cannot be immediately eliminated, report said conditions to the supervisor before beginning or continuing with your job duties.

18 HAZARD COMMUNICATION / GHS POLICY

18.1 Purpose

To enhance our employees' health and safety, we have developed, implemented, and maintained this Hazard Communication Program that ensures effective communication about associated hazards of the substances in our workplace, and the control of these hazards. The Safety Director has responsibility for implementing this program.

Each worker potentially exposed to hazardous chemicals must be advised of the potential hazards and how to guard against those hazards. Each department whose workers are potentially exposed to hazardous chemicals must develop a list of all such chemicals used on the project; gather safety data sheets (SDS's) for those materials; develop a labeling system for all materials; and train all potentially exposed personnel in the hazards and their controls for all listed compounds.

18.2 Safety Data Sheets (SDS)

A list of hazardous chemicals at each facility will be maintained. Employees must be allowed access to this information and the specific SDS's for chemicals utilized in their work areas.

The 16 sections of a SDS are as follows:

1. Identification

Product identifier, recommended use and restrictions on use, supplier contact information, emergency phone number.

2. Hazard Identification

Classification (hazard class and category), label elements (including hazard pictogram, signal word, hazard statement and precautionary statements) and other hazards (e.g. thermal hazards).

3. Composition/Information on Ingredients

For a hazardous product that is a substance: the chemical name, synonyms, CAS No. and the chemical name of impurities, stabilizing solvents and stabilizing additives where classified and that contribute to the classification of the product. For a hazardous product that is a mixture: for ingredients that present a health hazard, the chemical name, synonyms, CAS No. and concentration. Note: Confidential Business Information Rules may apply.

4. First-aid Measures

First-aid measures by route of exposure as well as most important symptoms/effects.

5. Fire-fighting Measures

Suitable (and unsuitable) extinguishing media, specific hazards, special equipment and precautions for fire fighters.

6. Accidental Release Measures

Protective equipment, emergency procedures, methods and materials for containment and clean up.

7. Handling and Storage

Precautions for safe handling, conditions for storage, including any incompatibilities.

8. Exposure Controls and Personal Protection

Exposure limits, engineering controls, personal protective equipment.

9. Physical Properties

Appearance, odour, odour threshold, pH, melting/freezing point, boiling point and range, flash point, upper and lower flammable or explosive limits.

10. Stability and Reactivity

Reactivity, chemical stability, possible hazardous reactions, conditions to avoid, incompatible materials, hazardous decomposition products.

11. Toxicological Information

Description of various toxic effects by route of entry, including effects of acute or chronic exposure, carcinogenicity, reproductive effects, respiratory sensitization.

12. Ecological Information

Aquatic and terrestrial toxicity (if available), persistence and degradability, bio-accumulative potential, mobility in soil.

13. Disposal Information

Safe handling and methods of disposal, including contaminated packaging.

14. Transport Information

UN number and proper shipping name, hazard classes, packing group.

15. Regulatory Information

Safety, health and environmental regulations specific to the product.

16. Other Information

Other information, including date of the latest revision of the SDS.

All questions relating to the program should be directed to the Department Supervisor or Safety Director.

18.3 Labeling

Each container of hazardous chemicals received from the chemical manufacturer, importer or distributor will be labeled with the following information:

- Product identifier
- Signal word
- Hazard statement(s)
- Pictogram(s)
- Precautionary statement(s)
- Name, address and telephone number of the chemical manufacturer, importer or other responsible party.

When a chemical is transferred from the original container to a portable or secondary container, the container will be labeled, tagged or marked with a GHS label containing the following information:

- Product identifier
- Signal word
- Hazard statement(s)
- Pictogram(s)
- Precautionary statement(s)
- Labels are not to be defaced or removed on wither incoming container or a secondary container.

18.4 Pictograms

Pictograms will be enclosed inside of a **RED** colored **DIAMOND** shape. The nine pictograms are shown below.

The “Biohazardous Infectious Materials” symbol will still remain the same and will still be enclosed inside of a **BLACK** colored **CIRCLE** shape.

	**Exploding bomb** (for explosion or reactivity hazards)		**Flame** (for fire hazards)		**Flame over circle** (for oxidizing hazards)
	**Gas cylinder** (for gases under pressure)		**Corrosion** (for corrosive damage to metals, as well as skin, eyes)		**Skull and Crossbones** (can cause death or toxicity with short exposure to small amounts)
	**Health hazard** (may cause or suspected of causing serious health effects)		**Exclamation mark** (may cause less serious health effects or damage the ozone layer*)		**Environment*** (may cause damage to the aquatic environment)
	**Biohazardous Infectious Materials** (for organisms or toxins that can cause diseases in people or animals)				

* The GHS system also defines an Environmental hazards group. This group (and its classes) was not adopted in WHMIS 2015. However, you may see the environmental classes listed on labels and Safety Data Sheets (SDSs). Including information about environmental hazards is allowed by WHMIS 2015.

18.5 Employee Training

Employees are to attend a health and safety training session prior to starting work. This training session will provide information on the following:

- The requirements of the hazard communication regulation, including the employees' rights under the regulation.
- The location and availability of the written Hazard Communication Program.
- Any operation in their work area, including non-routine tasks, where hazardous substances are present and exposures are likely to occur.
- Methods and observation techniques used to determine the presence or release of hazardous substances in the work area.
- Protective practices prescribed to minimize or prevent exposure to these substances.
- How to read labels and review SDS to obtain hazard information.
- Physical and health effects of the hazardous substances, particularly when it comes to use of grease and similar cleaners.

- Symptoms of overexposure.
- Measures employees need to put into practice to reduce or prevent exposure to these hazardous substances by engineering controls, work practices, and use of personal protective equipment.
- Emergency and First Aid procedures to follow if employees are exposed to hazardous substances, grease and similar cleaners in particular.

Employees will receive additional training when a new hazard is introduced into the workplace.

18.6 Hazardous Non-Routine Tasks

Periodically, our employees may be required to perform hazardous non-routine tasks. Prior to starting work on such projects, affected employees will be given information by their supervisor on hazards to which they may be exposed during such an activity. This information will cover:

- Specific hazards.
- Measures taken to reduce the risk of these hazards, such as providing ventilation, ensuring the presence of another employee, providing a respiratory protection program, and establishing emergency procedures.
- Required protective/safety measures.

18.7 Unlabeled Pipes

To ensure that employees who work on unlabeled pipes, vessels or containers have been informed as to the hazardous materials contained within, the following policy has been established: Prior to starting work on unlabeled pipes, vessels or containers, employees are to contact their supervisor for the following information:

- Type of chemical in the pipe, vessel or container.
- Potential hazards.
- Safety precautions that should be taken.

18.8 Program Review

It will be the responsibility of the safety director to review the entire Hazard Communication Program annually, and to revise and update the material contained herein to reflect all changes in the purchase, use, storage, and handling of hazardous chemicals at the project site.

It will be the further responsibility of safety director to periodically make audits so that procedures in the use of the hazardous chemicals meet the requirements as set forth in the OSHA standard.

19 HEAT ILLNESS PREVENTION PROGRAM

19.1 Heat Illness Prevention

When employees work in hot conditions, special precautions must be taken in order to prevent heat illness. Heat illness can progress to heat stroke and be fatal, especially when emergency treatment is delayed. Each job is to have sufficient potable water on site available for employees to drink. Consider and understand the following:

Heat Stroke is a condition that occurs when the body becomes unable to control its temperature. It can cause death or permanent disability.
Symptoms:

- High body temperature
- Confusion
- Loss of coordination
- Hot, dry skin or profuse sweating
- Throbbing headache
- Seizures
- Coma

First Aid Treatment:

- Request immediate medical assistance.
- Move the worker to a cool, shaded area.
- Remove excess clothing and apply cool water to their body.

Heat Exhaustion is the body's response to an excessive loss of water and salt, usually through sweating.
Symptoms:

- Rapid heart beat
- Heavy sweating
- Extreme weakness or fatigue
- Dizziness
- Nausea, vomiting
- Irritability
- Fast, shallow breathing
- Slightly elevated body temperature

First Aid Treatment:

- Rest in a cool area.
- Drink plenty of water or other cool beverages.
- Take a cool shower or bath.

Heat Cramps affects workers who sweat a lot during strenuous activity. Sweating depletes the body's salt and moisture levels.

Symptoms:

- Muscle cramps, pain, or spasms in the abdomen, arms or legs.

First Aid Treatment:

- Stop all activity, and sit in a cool place.
- Drink clear juice or a sports beverage, or drink water with food.
- Avoid salt tablets.
- Do not return to strenuous work for a few hours after the cramps subside.
- Seek medical attention if you have heart problems, are on a low-sodium diet, or if the cramps do not subside within one hour.

Protect Yourself

Avoid heavy exertion, extreme heat, sun exposure, and high humidity when possible. When these cannot be avoided, take the following preventative steps:

- Monitor your physical condition and that of your coworkers for signs or symptoms of heat illnesses.
- Wear light-colored, loose-fitting, breathable clothing such as cotton.
- Avoid non-breathable synthetic clothing.
- Gradually build up to heavy work.
- Schedule heavy work during the coolest parts of day.
- Take more breaks when doing heavier work, and in high heat and humidity.
- Take breaks in the shade or a cool area.
- Drink water frequently. Drink enough water that you never become thirsty.
- Be aware that protective clothing or personal protective equipment may increase the risk of heat-related illnesses.

20 Heavy Mobile Equipment Operation

20.1 Policy

The use of heavy equipment/mobile equipment is a common part of many jobs conducted by our employees. We recognize the hazards associated with the operation of heavy equipment/mobile equipment. This policy to establish guidelines in an attempt to eliminate injuries or fatalities related to this type of equipment.

20.2 Scope

This policy applies to all free moving mobile equipment that may be propelled by gasoline, propane, diesel or electricity. However, the policy is not intended for operators of licensed and registered (by the Department of Motor Vehicles) automobiles and similar motor vehicles intended for use by licensed motor vehicle operators on public roads and highways. Examples of Heavy Equipment/Mobile Equipment covered by this policy include but are not limited to:

- Backhoes
- Loaders
- Tractors
- Sweepers
- Excavators
- Compact Tractor
- Graders
- Mini-Excavator
- Golf Carts

Only competent personnel may operate heavy equipment/mobile equipment. An individual's competency must be demonstrated by successful completion of the training and evaluation process specified in this policy. This policy establishes requirements to work in or around all types of mobile equipment.

The requirements defined in this policy describe the minimum required by our company. In addition, the operation of some equipment may require the operator to possess other licenses (i.e., Commercial Driver's License) or specialty training required by the State or other regulatory agency.

20.3 Responsibility and Authority

The following identifies some of the responsibilities for various parties affected by this policy.

Safety Director

- Ensuring that Federal, State and Local laws, regulations, codes, and ordinances are followed.
- Developing policies, accident prevention methods, procedures, and programs.
- Conducting periodic safety inspections of all work locations.
- Assuring that any accidents and hazardous conditions are investigated, and corrective actions are implemented.
- Ensuring that a competent person is available for heavy equipment/mobile equipment training and evaluations

- Ensure that operators of heavy equipment/mobile equipment are trained, evaluated, observed, and given skills needed to operate the equipment safely.
- Ensuring that Operator's manuals and manufacturer's safety information is available for all equipment and vehicles under this program.
- Ensuring that safety procedures presented in this and other company policies, as well as in Manufacturer's Operator's and Safety Manuals are implemented and enforced.
- Maintaining training and certification records for all operators of heavy equipment/mobile equipment.

Supervisors
Due to their constant contact with employees, supervisors must take a primary role in the prevention of accidents and the safety of employees under their supervision. Supervisor's responsibilities include:

- Observing and evaluating the use of heavy equipment/mobile equipment by employees and correcting any unsafe conditions or practices and reporting or correcting any found.
- Checking and ensuring that heavy equipment/mobile equipment is properly maintained and in safe operating condition.
- Remove from service, **any** heavy equipment/mobile equipment that is not safe.
- Promptly investigating all accidents and completing required reports.
- Encouraging employees to report all unsafe conditions and practices.
- Being familiar with and enforcing all safety procedures and practices applicable to work done by their employees.

Employees/Heavy Equipment/Mobile Equipment Operators
Employee responsibilities include:

- Reading, understanding, and following the procedures and practices outlined in this policy.
- Reading, understanding, and complying with owner's manuals and manufacturer-provided safety information before using heavy equipment/mobile equipment.
- Completing the Daily Heavy/Mobile Equipment Checklist before use.
- Report any inspection deficiencies with equipment to their immediate supervisor for maintenance or further action prior to operation of the equipment
- Using all appropriate safety equipment and devices, including but not limited to seatbelts.
- Immediately reporting all work-related accidents, fuel spills, fires, and injuries to their supervisors.
- Obey traffic signs and signals and audible or visual warning devices.
- Immediately reporting all unsafe conditions and practices to their supervisors

Competent Person (Equipment Trainer):

- Train and evaluate equipment operators in classroom, hands-on training process and refreshers.
- Be knowledgeable and experienced in the particular equipment operation and how-to train.
- Document evaluations and training.

20.4 Heavy Equipment/Mobile Equipment Operations

General Requirements

- All vehicles must have a service brake system, an emergency brake system, and a parking brake system. These systems may use common components and must be maintained in operable condition.
- Whenever visibility conditions warrant additional light, all vehicles in use must be equipped with at least two headlights and two taillights in operable condition.
- All vehicles, or combination of vehicles, must have brake lights in operable condition regardless of light conditions.
- All vehicles must be equipped with an adequate audible warning device at the operator's station (horn) in an operable condition.
- No employer may use any motor vehicle equipment having an obstructed view to the rear unless:
- The vehicle has a reverse signal audible above surrounding noise level.
- The vehicle backs up only when an observer signals it is safe to do so.
- All vehicles with cabs must be equipped with windshields and powered wipers. Cracked and broken glass must be replaced. Vehicles operating in areas or under conditions that cause fogging or frosting of the windshields must be equipped with operable defrosting devices.
- All haulage vehicles, whose pay load is loaded by means of cranes, power shovels, loaders, or similar equipment, must have a cab shield and/or canopy adequate to protect the operator from shifting or falling materials.
- Tools and material will be secured to prevent movement when transported in the same compartment with employees.
- Vehicles used to transport employees must have seats firmly secured and adequate for the number of employees to be carried.
- Seat belts and anchorages meeting the requirements of 49 CFR Part 571 (Department of Transportation, Federal Motor Vehicle Safety Standards) must be installed in all motor vehicles and used by the operator.
- Trucks with dump bodies must be equipped with positive means of support, permanently attached, and capable of being locked in position to prevent accidental lowering of the body while maintenance or inspection work is being done.
- Operating levers controlling hoisting or dumping devices on haulage bodies must be equipped with a latch or other device which will prevent accidental starting or tripping of the mechanism.
- Trip handles for tailgates of dump trucks will be so arranged that, in dumping, the operator will be in the clear.
- All rubber-tired motor vehicle equipment manufactured on or after May 1, 1972, must be equipped with fenders.
- Mud flaps may be used in lieu of fenders whenever motor vehicle equipment is not designed for fenders (such as dump trucks where the dump bed forms an effective fender).
- All vehicles in use must be checked at the beginning of each shift to assure that the following parts, equipment, and accessories are in safe operating condition and free of apparent damage that could cause failure while in use:

- Service Brakes (including any trailer brake connections)
- Parking System (hand brake)
- Emergency Stopping System (brakes)
- Tires
- Horn
- Steering Mechanism
- Coupling Devices
- Seat Belts
- Safety Devices
- Operating Controls

Operators will complete the Daily Heavy/Mobile Equipment Checklist every day that a piece of equipment is used, prior to using that equipment.

All defects will be corrected before the vehicle is placed in service. These requirements also apply to equipment such as lights, reflectors, windshield wipers, defrosters, fire extinguishers, etc., where such equipment is necessary.

20.5 General Safety Requirements for Earthmoving Equipment

These OSHA/PESH rules apply to the following types of earthmoving equipment: scrapers, loaders, crawler (track) or wheel tractors, bulldozers, off-highway trucks, graders, agricultural and industrial tractors, and similar equipment. Following are OSHA/PESH's general requirements for earth moving equipment:

Seat Belts

Seat belts must be provided on all equipment listed above and must meet the requirements of the Society of Automotive Engineers (SAE).

Tractors listed above must have seat belts as required for the operators when seated in the normal seating arrangement for tractor operation, even though back-hoes, breakers, or other similar attachments are used on these machines for excavating or other work.

Access Roadways and Grades

No employer may move or cause to be moved construction equipment or vehicles upon any access roadway or grade unless the access roadway or grade is constructed and maintained to accommodate safely the movement of the equipment and vehicles involved.
Every emergency access ramp and berm used by an employer will be constructed to restrain and control runaway vehicles.

Brakes

All earthmoving equipment must have a service braking system capable of stopping and holding the equipment fully loaded.

Fenders

Pneumatic-tired earth-moving haulage equipment (trucks, scrapers, tractors, and trailing units) whose maximum speed exceeds 15 miles per hour must be equipped with fenders on all wheels.

Rollover Protective Structures (ROPS)

Rollover protective structures must meet the requirements of 29 CFR 1926.1001 Minimum performance criteria for rollover protective structures for designated scrapers, loaders, dozers, graders, and crawler tractors.

Audible Alarms

All bidirectional machines, such as rollers, compacters, front-end loaders, bulldozers, and similar equipment, must be equipped with a horn, distinguishable from the surrounding noise level, which can be operated as needed when the machine is moving in either direction. The horn must be maintained in an operating condition.

Earthmoving equipment with an obstructed view to the rear will not be used in reverse gear unless 1) the equipment has in operation a reverse signal alarm distinguishable from the surrounding noise level, or 2) a ground guide signals that it is safe to do so.

Scissor Points

Scissor points on all front-end loaders or articulating equipment, which constitute a hazard to the operator during normal operation, must be guarded.

Lift trucks, Stackers, etc.

Equipment of this type must have the rated capacity clearly posted on the vehicle so as to be clearly visible to the operator. When auxiliary removable counterweights are provided by the manufacturer, corresponding alternate rated capacities also must be clearly shown on the vehicle. These ratings will not be exceeded.

Modifications or Additions

No modifications or additions which affect the capacity or safe operation of the equipment may be made without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals will be changed accordingly. In no case will the original safety factor of the equipment be reduced.

Steering or Spinner Knobs

Steering or spinner knobs must not be attached to the steering wheel unless the steering mechanism is of a type that prevents road reactions from causing the steering wheel to spin. The steering knob must be mounted within the periphery of the wheel.

Operator Training Safe Operation

The employer must ensure that each heavy equipment/mobile equipment operator is competent to operate the equipment safely, as demonstrated by the successful completion of the training and evaluation specified in this section.

Prior to permitting an employee to operate heavy equipment/mobile equipment (except for training purposes), the employer must ensure that each operator has successfully completed the training required by this section.

20.6 Training Program Implementation

Trainees may operate heavy equipment/mobile equipment only:

- Under the direct supervision of persons who have the knowledge, training, and experience to train operators and evaluate their competence.
- Where such operation does not endanger the trainee or other employees.

Training will consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, video tape, written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance on the job site.

All operator training and evaluation will be conducted by persons who have the knowledge, training, and experience to train heavy equipment/mobile equipment operators and evaluate their competence.

Training Program Content

Heavy equipment/mobile equipment operators must receive initial training in the following topics, except in topics which the employer can demonstrate are not applicable to safe operation of the equipment in the employer's workplace. Training will be documented on the Heavy Equipment/Mobile Equipment Operator Training Certification Form**.** All training documentation will be maintained by the safety director.

Equipment-Related Topics

- Operating instructions, warnings, and precautions for the types of equipment the operator will be authorized to operate.
- Employee will read and understand Owners/Operators Manual and any other safety information provided by the manufacturer of the equipment.
- Trainer will review this information with the trainee and should incorporate additional information about specific equipment based on previous experiences with the equipment.
- Differences between the equipment and an automobile (e.g., turn radius, braking ability, visibility of surroundings, blind spots, etc.)
- Equipment controls and instrumentation; where they are located, what they do, and how they work.
- Engine or motor operation.
- Steering and maneuvering.
- Visibility (including restrictions due to loading).
- Implement and attachment adaptation, operation, and use limitations.

- Equipment capacity.
- Vehicle stability.
- Any equipment inspection and maintenance that the operator will be required to perform.
- Daily Heavy/Mobile Equipment Checklist
- Refueling and/or charging and recharging of batteries.
- Operating limitations.
- Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of equipment that the employee is being trained to operate.

Workplace-Related Topics

- Surface conditions where the equipment will be operated.
- Composition of loads to be carried and load stability.
- Load maneuvering, loading, and unloading (includes trucks, hoppers, etc.).
- Pedestrian traffic in areas where the equipment will be operated.
- Confined areas and other restricted places where equipment will be operated.
- Hazardous (classified) locations where the equipment will be operated.
- Ramps and other sloped surfaces that could affect the vehicle's stability.
- Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause buildup of carbon monoxide or diesel exhaust.
- Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.

Refresher Training and Evaluation

Refresher training, including an evaluation of the effectiveness of that training, must be conducted as required below to ensure that the operator has the knowledge and skills needed to operate the heavy equipment. Refresher training in relevant topics will be provided to the operator when:

- The operator has been observed to operate the equipment in an unsafe manner.
- The operator has been involved in an accident or near-miss incident.
- The operator has received an evaluation that reveals that the operator is not operating the equipment safely.
- The operator is assigned to operate a different type of equipment.
- A condition on the job-site changes in a manner that could affect safe operation of the equipment.

An evaluation of each heavy equipment operator's performance will be conducted at least once every three years. Employer Certification will be documented on The Heavy Equipment Operator Evaluation/Employer Certification

Avoidance of Duplicative Training

If an operator has previously received training in a topic specified in this section, and such training is appropriate to the equipment and working conditions encountered, additional training in that topic is not required if the operator has been evaluated and found competent to operate the equipment safely.

Certification

The employer will certify that each operator has been trained and evaluated as required by this section. The certification will include the name of the operator, the date of the training, the date of the evaluation, and the identity of the person(s) performing the training or evaluation. The Heavy Equipment Operator Evaluation/Employer Certification Form that will be completed upon initial or refresher training of the operator, and at a minimum frequency of every three years thereafter.

20.7 Equipment Operations

OSHA has listed safety rules for the operation of equipment. These rules are general in nature and are not intended as a comprehensive guide to the safe operations of specific pieces of heavy equipment:

- Equipment will not be driven up to anyone standing in front of an excavation or a fixed object.
- No person will be allowed to stand or pass under the elevated portion of any equipment, whether loaded or empty.
- Unauthorized personnel will not be permitted to ride on heavy equipment/mobile equipment. A safe place to ride will be provided where riding of equipment is authorized.
- The employer will prohibit arms or legs from being placed between the moving parts of the equipment, or outside the running lines of the vehicle.
- When heavy equipment/mobile equipment is left unattended, implements will be fully lowered, controls will be neutralized, power will be shut off, and brakes set. Wheels will be blocked if the vehicle is parked on an incline.
- Heavy equipment/mobile equipment is considered unattended when the operator is 25 ft. or more away from the vehicle which remains in his view, or whenever the operator leaves the vehicle, and it is not in his view.
- When the equipment operator is dismounted and within 25 ft. of the machine still in his view, the implements will be fully lowered, controls neutralized, and the brakes set to prevent movement.
- A safe distance will be maintained from the edge of ramps or platforms while on any elevated surface, and from the edge of any excavation.
- Brakes will be set, and wheel blocks will be in place to prevent movement of trucks, trailers, or railroad cars while loading or unloading. Fixed jacks may be necessary to support a semi-trailer during loading or unloading when the trailer is not coupled to a tractor. The flooring of trucks, trailers, and railroad cars will be checked for breaks and weakness before they are driven onto.
- There must be sufficient headroom under overhead installations, lights, pipes, sprinkler system, etc. for the safe passage of equipment.
- An overhead guard will be used as protection against falling objects. It should be noted that an overhead guard is intended to offer protection from the impact of small objects, representative of the job application, but not to withstand the impact of a falling capacity load.
- A load backrest extension will be used whenever necessary to minimize the possibility of the load or part of it from falling rearward.
- Only approved heavy equipment/mobile equipment will be used in hazardous locations.

Traveling (Roading) Heavy/Mobile Equipment

All traffic regulations must be observed, including authorized site speed limits. A safe distance must be maintained approximately three vehicle lengths from the vehicle ahead, and the equipment must be kept under control at all times.

- The right of way will be yielded to ambulances, fire trucks, or other vehicles in emergency situations.
- Other vehicles traveling in the same direction at intersections, blind spots, or other dangerous locations may not be passed.
- The operator will be required to slow down and sound the horn at cross intersections of roadways, paths, and other locations where vision is obstructed. If the load being carried obstructs forward view, the operator will be required to travel with the load trailing (to the rear).
- Railroad tracks must be crossed diagonally wherever possible. Parking closer than 8 feet from the center of railroad tracks is prohibited.
- The operator is required to look in the direction of and keep a clear view of the path of travel.
- Grades must be ascended or descended slowly.
- When ascending or descending grades more than 10 percent, loaded equipment will be driven with the load upgrade.
- On all grades the load and load carrying implement must be tilted back if applicable and raised only as far as necessary to clear the road surface.
- Under all travel conditions the equipment must be operated at a speed that will permit it to be brought to a stop in a safe manner.
- Stunt driving and horseplay will not be permitted.
- The operator will be required to slow down for wet and slippery surfaces.
- Ramps or bridge plates will be properly secured before they are driven over. Ramps or bridge plates will be driven over carefully and slowly, and their rated capacity never exceeded.
- Running over loose objects on the roadway surface will be avoided.
- While negotiating turns, speed will be reduced to a safe level by means of turning the hand steering wheel in a smooth, sweeping motion. Except when maneuvering at a very low speed, the hand steering wheel will be turned at a moderate, even rate.

Loading

- Only stable or safely arranged loads will be handled. Caution will be exercised when handling off-center loads which cannot be centered. The bucket should be struck to avoid scattering loads before traveling with equipment.
- Only loads within the rated capacity of the equipment will be handled.
- Long or high (including multiple-tiered) loads which may affect capacity will be adjusted.
- A load must be securely within the bucket or hopper as far as possible; the bucket must be carefully tilted backward to stabilize the load.
- Extreme care must be used when tilting the load forward or backward when the load is elevated. Tilting forward with the bucket elevated will be prohibited except to pick up a load. An elevated load will not be tilted forward except when the load is in a deposit position over a hopper or stack.

- All personnel not within a guarded enclosure must stay clear of loading operations. Drivers of trucks being loaded must remain in the cab, if it is equipped with overhead protection, or remain well clear of the operation.

20.8 Servicing and Maintenance of Heavy/Mobile Equipment

- If at any time heavy/mobile equipment is found to need repair, defective, or in any way unsafe, the machine will be taken out of service until it has been restored to safe operating condition.
- Fuel tanks must not be filled while the engine is running.
- Spillage of oil or fuel must be carefully washed away or completely evaporated and the fuel tank cap replaced before restarting engine.
- No equipment will be operated with a leak in the fuel system until the leak has been repaired.
- Open flames must not be used for checking electrolyte level in storage batteries or gasoline level in fuel tanks.
- All repairs will be made by authorized personnel.
- No repairs will be made in Class I, II, and III locations.

Class I locations	Class II locations	Class III locations
Locations in which flammable gasses or vapors are, or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures	Locations which are hazardous because of the presence of combustible dust.	Locations where easily ignitable fibers are present but not likely to be in suspension in quantities sufficient to produce ignitable mixtures.

- Those repairs to the fuel and ignition systems of equipment which involve fire hazards will be conducted only in locations designated for such repairs.
- Equipment in need of repairs to the electrical system will have the battery disconnected prior to such repairs.
- All parts of any heavy/mobile equipment requiring replacement will be replaced only by parts equivalent as to safety with those used in the original design.
- Equipment will not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor will they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts, except for fuel system conversions.
- Equipment will be examined before being placed in service and will not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Inspections will be made at least daily.
- Where heavy/mobile equipment is used on a round-the-clock basis, it will be examined after each shift. Defects when found will be immediately reported and corrected.
- Water mufflers must be filled daily or as frequently as is necessary to prevent depletion of the supply of water below 75 percent of the filled capacity. Vehicles with mufflers having screens or other parts that may become clogged will not be operated while such screens or parts are clogged. Any vehicle that emits hazardous sparks or flames from the exhaust system will immediately be removed from service and not returned to service until the cause for the emission of such sparks and flames has been eliminated.

- When the temperature of any part of any equipment is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the equipment will be removed from service and not returned to service until the cause for such overheating has been eliminated.
- Heavy/mobile equipment will be kept in a clean condition, free excess oil, and grease.
- Noncombustible agents should be used for cleaning equipment. Low flash point (below 100 F.) solvents must not be used. High flash point (at or above 100 F.) solvents may be used. Precautions regarding toxicity, ventilation, and fire hazard will be in agreement with the agent or solvent used.
- Heavy/mobile equipment originally approved for the use of gasoline for fuel may be converted to liquefied petroleum gas fuel provided the complete conversion results in a vehicle which embodies the features specified for LP or LPS designated equipment. Such conversion equipment will be approved.

20.9 OSHA General Requirements for Heavy Equipment Use

- All equipment left unattended at night, adjacent to a highway in normal use, or adjacent to construction areas where work is in progress, will have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, to identify the location of the equipment.
- A safety tire rack, cage, or equivalent protection will be provided and used when inflating, mounting, or dismounting tires installed on split rims, or rims equipped with locking rings or similar devices.
- Heavy machinery, equipment, or parts thereof, which are suspended or held aloft by use of slings, hoists, or jacks will be substantially blocked or cribbed to prevent falling or shifting before employees are permitted to work under or between them.
- Bulldozer and scraper blades, end-loader buckets, dump bodies, etc., will be either fully lowered or blocked when being repaired or when not in use. All controls will be in a neutral position, with motors stopped, and brakes set unless work being performed requires otherwise.
- Whenever the equipment is parked, the parking brake will be set. Equipment parked on inclines will have the wheels chocked and the parking brake set.
- The use, care and charging of all batteries will conform to the following:
- Ventilation will be provided to ensure diffusion of the gases from the battery and to prevent the accumulation of an explosive mixture.
- Face shields, aprons, and rubber gloves will be provided for workers handling acids or batteries.
- Facilities for quick drenching of the eyes and body will be provided within 25 feet of battery handling areas.
- Facilities will be provided for flushing and neutralizing spilled electrolyte and for fire protection.
- All cab glass will be safety glass, or equivalent, that introduces no visible distortion affecting the safe operation of any machine covered by this section.
- All equipment will comply with the OSHA/PESH requirements when working or being moved in the vicinity of power lines or energized transmitters.

General Requirements for Site Clearing

- Employees engaged in site clearing will be protected from hazards of irritant and toxic plants and suitably instructed in the first aid treatment available.

- All equipment used in site clearing operations must be equipped with rollover guards. In addition, rider-operated equipment will be equipped with an overhead and rear canopy guard meeting the following requirements:
- The overhead covering on this canopy structure will be of not less than 1/8-inch steel plate or ¼-inch woven wire mesh with openings no greater than 1 inch, or equivalent.
- The opening in the rear of the canopy structure will be covered with not less than ¼-inch woven wire mesh with openings no greater than 1 inch.

Additional Heavy/Mobile Equipment Safety Guidelines

Many injuries involving heavy/mobile equipment do not occur to the operator but are inflicted on ground personnel working in or around the vicinity of moving machines.

Always be aware of the location of personnel working near your machine. Heavy/mobile equipment operations frequently require the aid of ground personnel who should be thoroughly familiar with the procedures of your operation and the capabilities of the machine; usual operating procedures should not be changed without first notifying ground personnel.

Never assume that your assigned ground workers will watch out for themselves. Always know your ground personnel's location, if they are not visible to you, **DO NOT MOVE THE MACHINE OR ANY IMPLEMENTS!** When working in conjunction with ground personnel, never operate equipment at speeds which would necessitate ground personnel to work in a careless manner. **REMEMBER,** they are depending on your skill and judgment, as are all personnel in your immediate work area.

- Read the operators manual and operate the machine only if trained and considered competent to do so.
- Wear appropriate clothing and personal protective equipment for the job. Hearing protection is recommended for operating many types of heavy/mobile equipment.
- Do a walk around to make sure the area is clear before moving the machine.
- Do not climb on the machine where hand and foot holds have not been provided. Use a three-point climbing technique whenever entering, exiting, or servicing the machine.
- Start machine only while sitting in the operator's seat and all personnel are clear.
- Ensure all controls are in the neutral position before starting the machine.
- Keep tires properly inflated. Improper inflation may cause the machine to tip over under load.
- Heavy/mobile equipment machines are required to have a seat belt and rollover protection
- (ROPS). Always use the seat belt. OSHA takes the position that seat belts are personal protective equipment, and failure to use them is grounds for a citation.
- Keep the load as low as possible while traveling; always reduce speed when making a turn. Keep speeds low on rough terrain. Bouncing, bucking, or side hopping because of excessive speed may cause loss of control of the machine.
- Check for overhead lines or obstructions before raising any overhead implement.
- Do not allow the tires to spin when picking up or pushing a load.
- Do not walk, work, or allow personnel under any raised part of heavy/mobile equipment.
- Do not use heavy/mobile equipment for demolition of structures which are taller than the machine without overhead protection sufficient to withstand the debris likely to impact the cab.

- Do not under-cut a bank which is higher than the machine.
- Use extreme caution when approaching or operating near excavations, the weight of the machine or vibration may cause the edges to collapse.
- Dust suppression and control is required where dust seriously limits visibility.
- Wear respiratory protection when needed.
- Pre-wet soil to make loading easier and to aid in dust control.
- Rip tight soil before scraping or excavating to improve speed and efficiency.
- Always load buckets or hoppers down grade to increase the speed of operation, lessen wear on equipment, and reduce the need for a push tractor.
- Do not use heavy/mobile equipment as a battering ram.
- In tight turns, make sure the machine has clearance in front and rear if equipped with rear implements.
- Do not place any part of your body under any raised implement at any time unless it is properly blocked.
- Keep operator's compartment free of clutter and all controls free of oil and grease. Personal tools or equipment must be secured.
- All underground utilities in the work area must be located prior to digging. Utility companies must be notified of your intention to excavate within established, or customary, response times. (Check local codes).
- When excavations approach the estimated location of underground utilities, the exact location must be determined and marked.
- Wherever equipment operations encroach on a public thoroughfare, a system of traffic controls must be used.
- Flaggers are required at all locations where barricades or warning signs cannot control moving traffic.
- Never use an elevating part of heavy equipment as a man-lift.

The productivity and safety of heavy equipment operations are increased by using well trained employees, along with properly maintained and serviced equipment. A well laid out worksite and work-plan always improves efficiency and safety on the jobsite.

21 HOUSEKEEPING

21.1 Policy

Maintaining good housekeeping is essential to keeping a safe worksite. The following must be followed:

- The site must be kept clean to the extent that the nature of the work allows.
- To facilitate cleaning, keep every floor, working surface, and passageway free from protruding nails, splinters, loose boards or openings.
- Perform cleaning and sweeping in such a manner as to minimize the contamination of the air with dust.
- In areas where workers may pass or perform duties, remove all debris and accumulations of material. Cover hoses and electrical conductors across aisles or passageways or suspend them overhead so that there is no tripping hazard.
- Where mechanical handling equipment is used, allow sufficient safe clearances for aisles, at loading docks, through doorways and wherever turns or passages must be made. Mark such aisles and passageways.
- Storage of material must not create a hazard. Store bags, containers, bundles, construction materials and other equipment in tiers, stacked, blocked or interlocked. They must be limited in height so that they are stable and secure against falling, sliding, or collapse.
- Maintain free access at all times to all exits, fire alarm boxes, fire extinguishing equipment, and any other emergency equipment. Free access means clear of all obstructions.
- Keep working and storage areas free from accumulation of materials that pose hazards of tripping, fire, explosion, or pest harborage. Exercise vegetation control.
- Keep all lunchrooms, washrooms and restrooms in a clean and sanitary condition. Garbage cans in lunchrooms and restrooms must be equipped with fitted covers and the contents disposed of daily.
- During the course of construction, alteration, repair or demolition of buildings and structures, ensure continuous clean-up of your work area, including removal of all rubble, scrap, boxes, crates and excess material to trash disposal areas.
- Maintain all floors and walkways in good condition. Repair or replace loose or broken components. Ensure secure footing on all floors and walkways.

- Provide containers for the collection and separation of waste, trash, oily or used rags, and other refuse. Containers used for garbage and other oily, flammable or hazardous wastes, such as caustics, acids, harmful dusts or similar materials must be equipped with covers. Dispose of common garbage and other waste at frequent and regular intervals. Store and dispose of chemical agents or substances which might react to create a hazardous condition separately. Handle, accumulate and dispose of all hazardous wastes in accordance with OSHA, state and federal regulations.

22 INDUSTRIAL POWERED TRUCKS

22.1 Purpose

Only certified operators with current operating certification on their person are permitted to operate a powered industrial truck.

All powered industrial truck training must be specific to the piece of equipment being operated. Each different class or type of industrial truck requires a separate certification.

22.2 Training Program

The program will include formal instruction, practical training and an operator evaluation specific to their workplace.

Operator training

Only trained and authorized operators shall be permitted to operate a powered industrial truck. All operator training and evaluation shall be conducted by persons who have the knowledge, training, and experience to train powered industrial truck operators and evaluate their competence. Employees will be trained in accordance with the following guidelines:

- The company Safety Administrator, individual supervisor, or select trainers that are qualified, will have the authority to provide training on the operation of powered industrial trucks.
- Employees will not operate a powered industrial truck (PIT) unless they have received training in accordance with this standard practice instruction and 29 CFR 1910.178.
- Personnel rotated within the company will have their training verified prior to being allowed to operate a PIT.
- Employee personnel records will be annotated with the date, title, and specifics of said training.
- Any employee who refuses such training will not be permitted to operate a PIT.
- Trainees may operate a powered industrial truck only:
    - Under the direct supervision of persons who have the knowledge, training, and experience to train operators and evaluate their competence; and
    - Where such operation does not endanger the trainee or other employees.
- Retraining shall be provided for all operators.
- Refresher training in relevant topics shall be provided to the operator when:
    - The operator has been observed to operate the vehicle in an unsafe manner;
    - The operator has been involved in an accident or near-miss incident;

- The operator has received an evaluation that reveals that the operator is not operating the truck safely;
- The operator is assigned to drive a different type of truck; or
- A condition in the workplace changes in a manner that could affect safe operation of the truck.
- Every three years

Outline of Training:

1. Give example of accidents that have occurred recently and give annual statistics on accidents.
2. Lecture on rules and regulations.
3. Lecture and review on operating and handling procedures.
4. Daily inspection procedures with a lift.
5. List specific hazards to companies operation and handling.
6. List specific hazards of the loads of the facility or job site.
7. Discuss special attachments to the forks.
8. Question and answer period.
9. Test on knowledge of operations and regulations.
10. Review correct answers of test.
11. Observation period of viewing operators at work.
12. Training content to include load capacity, instructions, distances, refueling, ramps, visibility and balancer and counterbalances.

22.3 Operating Rules for Industrial Trucks

Industrial trucks and tow tractors shall be operated in a safe manner in accordance with the following operating rules:

1. Only drivers authorized by the employer and trained in the safe operations of industrial trucks or industrial tow tractors pursuant to Section 3668 shall be permitted to operate such vehicles
2. Stunt driving and horseplay are prohibited.
3. No riders shall be permitted on vehicles unless provided with adequate riding facilities.
4. Employees shall not ride on the forks of lift trucks.

5. Employees shall not place any part of the bodies outside the running lines of an industrial truck or between mast uprights or other parts of the truck where shear or crushing hazards exist.

6. Employees shall not be allowed to stand, pass, or work under the elevated portion of any industrial truck, loaded or empty, unless it is effectively blocked to prevent it from falling.

7. Drivers shall check the vehicle daily before use, and if it is found to be unsafe, the matter shall be reported immediately to a foreman or mechanic, and the vehicle shall not be put in service again until it has been made safe. Attention shall be given to the proper functioning of tires, horn, lights, battery, controller, brakes, steering mechanism, cooling system, and the lift system for fork lifts (forks, chains, cable, and limit switches)

8. No truck shall be operated with a leak in the fuel system.

9. Vehicles shall not exceed the authorized or safe speed, always maintaining a safe distance from other vehicles, keeping the truck under positive control at all times and all established traffic regulations shall be observed. For trucks traveling in the same direction, a safe distance may be considered to be approximately 3 truck lengths or preferably a time lapse--3 seconds--passing the point.

10. Trucks traveling in the same direction shall not be passed at intersection, blind spots, or dangerous locations.

11. The driver shall slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver shall be required to travel with the load trailing.

12. Operators shall look in the direction of travel and shall not move a vehicle until certain that all persons are in the clear.

13. Trucks shall not be driven up to anyone standing in front of a bench or other fixed object of such size that the person could be caught between the truck and object.

14. Grades shall be ascended or descended slowly.

    - When ascending or descending grades in excess of 10 percent, loaded trucks shall be driven with the load upgrade.

    - On all grades, the load and load engaging means shall be tilted back if applicable, and raised only as far as necessary to clear the road surface.

    - Motorized hand and hand/rider trucks shall be operated on all grades with the load-engaging means downgrade.

15. The forks shall always be carried as low as possible, consistent with safe operations.

16. When leaving a vehicle unattended (the operator is over 25 feet (7.6 meters) from or out of sight of the industrial truck), the brakes are set, the mast is brought to the vertical position, and forks are lift in the down position, either:

    - The power shall be shut off and, when left on an incline, the wheels shall be blocked; or

- The power may remain on provided the wheels are blocked, front and rear.

17. When the operator of an industrial truck is dismounted and within 25 feet (7.6 meters) of the truck which remains in the operator's view, the load engaging means shall be fully lowered, controls placed in neutral, and the brakes set to prevent movement.

    Exception: Forks on fork-equipped industrial trucks may be in the raised position for loading and unloading if the forks are raised no more than 42 inches above the level where the operator/loaders are standing, and the power is shut off, controls placed in neutral and the brakes set. If on an incline, the wheels shall be blocked.

18. Vehicles shall not be run onto any elevator unless the driver is specifically authorized to do so. Before entering an elevator, the driver shall determine that the capacity of the elevator will not be exceeded. Once on an elevator, the industrial truck's power shall be shut off and the brakes set.

19. Motorized hand trucks shall enter elevators or other confined areas with the load end forward.

20. Vehicles shall not be operated on floors, sidewalk doors, or platforms that will not safely support the loaded vehicles.

21. Prior to driving onto trucks, trailers and railroad cars, their flooring shall be checked for breaks and other structural weaknesses.

22. Vehicles shall not be driven in and out of highway trucks and trailers at loading docks until such trucks or trailers are securely blocked or restrained and the brakes set.

23. To prevent railroad cars from moving during loading or unloading operations, the car brakes shall be set, wheel chocks or other recognized positive stops used, and blue flags or lights displayed in accordance with applicable regulations promulgated by the Public Utilities Commission.

24. The width of one tire on the powered industrial truck shall be the minimum distance maintained from the edge of the truck while it is on a any elevated dock, platform, freight car or truck.

25. Railroad tracks shall be crossed diagonally, wherever possible. Parking closer than 8 ½ feet from the centerline of railroad tracks is prohibited.

26. Trucks shall not be loaded in excess of their rated capacity.

27. A loaded vehicle shall not be moved until the load is safe and secure.

28. Extreme care shall be taken when tilting loads. Elevated loads shall not be tilted forward except when the load is being placed onto a storage rack or equivalent. When stacking or tiering, backward tilt shall be limited to what is necessary to stabilize the load.

29. The load engaging device shall be placed in such a manner that the load will be securely held or supported.

30. Special precautions shall be taken in the securing and handling of loads by trucks equipped with attachments, and during the operation of these trucks after the loads have been removed.
31. When powered industrial trucks are used to open and close doors, the following provisions shall be complied with:
    a. A device specifically designed for opening or closing doors shall be attached to the truck.
    b. The force applied by the device to the door shall be applied parallel to the direction of travel of the door.
    c. The entire door opening operation shall be in full view of the operator.
    d. The truck operator and other employees shall be clear of the area where the door might fall while being operated.
32. If loads are lifted by two or more trucks working in unison, the total weight of the load shall not exceed the combined rated lifting capacity of all trucks involved.
33. The operator must verify trailer chocks, supports, and dock plates prior to loading/unloading.

CHESMAR HOMES
Setting a Higher Standard

OPERATOR'S DAILY REPORT

Engine-Powered Lift Trucks

Truck No. _____ Make _____ Date of inspection _____

CHECK EACH ITEM If OK write OK	Explain below if not OK or any other action taken
1. Fuel level	
2. Oil level & Pressure	
3. Water level and fan belt	
4. Brakes--service and parking	
5. Lights--head, tail, warning	
6. Horn	
7. Hour meter and gauges	
8. Steering	
9. Tires	
10. Hydraulic controls	
11. Other conditions	
12. Seat belts	

Notes

_____

_____

_____

Operator's Signature: _____

OPERATOR'S DAILY REPORT

Battery-Powered Lift Trucks

Truck No. _____ Make _____ Shift_____

CHECK EACH ITEM If OK write OK	Explain below if not OK or any other action taken
1. Battery plug connection	
2. Battery charge	
3. Battery load test	
4. Brakes--service and seat brake	
5. Lights--head, tail, warning	
6. Horn	
7. Hour meter	
8. Steering	
9. Tires	
10. Hydraulic Controls	
11. Other conditions	

Please add dates of inspection

_____

_____

Operator's Signature_____

23 LADDER SAFETY PROGRAM

23.1 Scope

If used unsafely, using ladders can lead to serious injury or death. To prevent ladder incidents, follow these basic rules:

- Use the proper ladder for the height of the job.
- Choose a ladder where the upper supports extend at least 3 feet above the landing or worksite.
- Make sure the ladder is strong enough for the job.
- Make sure the ladder can be properly secured with ropes or wires.

23.2 Inspect Ladders Carefully Before Use

- Check rungs, rails, and feet for damage or missing parts.
- Check surfaces for grease, oil or the like.
- Check all working parts.
- Check all hinges, bolts, ropes, etc. for safe working condition.
- Tag all defective ladders and place out of service.

23.3 Setting Up a Ladder Safely

Extension Ladders and Stepladders

- The base should be one foot away from vertical support for every 4 feet of height. (extension ladder)
- Check for sturdy support.
- Check for level and secure footing.
- Make sure ladder is tied down properly (extension ladder).
- If in high traffic area, use barricades.
- Be sure the ladder is not near power lines. No use of metal ladders near electricity.
- Make sure all locking devices are set.
- Don't set up ladder or climb unless you are qualified and trained.

23.4 Climbing Safely with Ladders

- Clean hands and shoes off all slippery substance.
- Use both hands and face forward and grasp rungs not the side-rails. (extension ladder)
- Take one step at a time.
- Carry small tools in a work belt or hoist larger tools with a hand-line.

23.5 General Safety for Ladders

- Keep one hand on ladder at all times or use a safety harness. (3 points of contact.)
- Never reach too far to one side. Keep your body within side rails.
- Never climb higher than second rung from the top of a step ladder – third rung on extension ladders.
- One person on a ladder at a time.
- Don't use a ladder in strong winds.
- Don't try to shift ladder to another position while you are on it.
- Don't use metal ladder near electrical circuits. Metal ladders should be marked with a caution sign about working near electricity.
- All ladders must be uniformly spaced and meet OSHA specifications. Ladder rungs, cleats, and steps must be parallel, level, and uniformly spaced when the ladder is in use. All Ladders will have an ANSI label and weight capacity clearly marked.
- Ladder must be clearly labeled for capacity and are not to be overloaded beyond their capacity.
- Ladders are only to be used for their intended purpose to gain access to an elevated area.

24 MOBILE ELEVATED WORK PLATFORMS (MEWP)

24.1 Purpose

The purpose of the plan is to ensure safety guidelines for employees who operate, perform work on, or work near mobile elevated work platforms (MEWPS).

We recognize that the safety of our employees is of the utmost importance. This program is designed to aid employees and management in adhering to safe standards in our workplace. The ultimate company objective is to prevent accidents and injuries to all employees and avoiding property damage.

The workers will be trained on the MEWP Safe Use Plan. It is vital persons working with the MEWP are physical, medically and mentally fit and capable of comprehending the scope of work to be performed. This is including but not limited to safe operations, maintenance, service and hazard assessment.

To ensure all Mobile Elevated Work Platforms (MEWPs) meet or exceed minimum operational safety requirements and are maintained and operated in a safe manner in accordance with Contractor, Equipment Manufacturer, OSHA, and ANSI specifications governing their use.

24.2 Plan Responsibilities

Management

- To provide MEWP equipment which is compliant to ANSI and OSHA regulations.
- Create and revise as necessary a MEWP safety plan.
- To supervise the company MEWP plan per ANSI and OSHA regulations.
- To coordinate and/or provide MEWP training to employees.
- Identify employees and workers who are affected by MEWPs operations and ensure they are trained.
- Maintain proof of training for all employees/workers who are authorized and involved in MEWPS operations.
- Provide the appropriate PPE to affected employees.
- To ensure MEWPS are repaired and kept in good and safe working order.
- To ensure MEWPs are received (if rented, borrowed and/or transported) in good and safe working order.
- To follow plan and regulations.
- Perform required inspections of equipment.

- Review and update of safety plan and policies when standards, regulations, manufacturer's instructions and updated bulletins are needed for an effective plan.
- Ensure only trained and authorized employees perform work on MEWPs.
- Assign a qualified MEWP supervisor to work areas with MEWP in use.

Supervisor

All personnel that oversee and supervise MEWPs operations and operators shall receive training. This includes, but is not limited to:

- Proper selection of the appropriate MEWP for the scope of work.
- Have confidence and understanding of the rules, regulations, standards that apply to MEWPs. This includes safe use as defined in ANSI A92.22, training and familiarization and the work being performed.
- Ensure no employee operates or performs work on MEWPs without receiving the required safety training.
- Provide communication between employees and management on MEWPS issues.
- Ensure the proper Personal Protective Equipment is available and being used.
- Monitor MEWPs use and ensure the responsibilities and safety requirements are followed.

Maintenance Supervisor

- Oversees the MEWP maintenance program.
- Manages the MEWP maintenance and repair program.
- Ensures documentation of MEWP inspections and abatement maintenance in compliance with ANSI and manufacturer requirements.
- Collect and maintain a minimum of 4 years of the inspection reports.
- Provide technical assistance to workers.
- Periodically audit equipment and documented inspection records.
- Maintain operations manuals and other manufacturer guidelines in good condition and that they are kept in a weatherproof box on MEWPS.

Employees

- Must complete required safety training before performing work with MEWPs.
- Wear all required Personal Protective Equipment.
- Abide by the MEWPs Safety Plan along with ANSI and OSHA regulations.

- Immediately report any hazardous condition, unsafe act, or unsafe equipment to supervisor.

24.3 Documenation

- Operations manuals must be provided by the manufacturer with make and model and stored in a weatherproof compartment on the MEWP. The operating manual shall be provided with each rental, lease or sale delivery.
- The operator shall read and understand the manufacturer's operator manual(s) or has it explained to him or her.
- Owners should keep and maintain copy of the service and parts manuals provided with MEWP.
- Owners shall register the MEWP with the manufacturer to ensure they are receiving safety bulletins and updates.

Maintenance

- The owner shall arrange for maintenance per standard on a scheduled basis. The owner shall have a preventative maintenance program according to manufacturer's recommendations. Continual, heavy and extreme use of the MEWP should be taken into consideration.
- Malfunctions, issues during inspection, any problems identified that affect safe operations should be corrected by a qualified person and authorized by the owner before the MEWP is returned to service.
- Operator's should isolate, tag and report any defects or problems with the equipment. The MEWP should be taken out of service immediately if the problem or defect is critical.
- All replacement components shall be OEM or equivalent to original MEWP part.
- There shall be no modification without written manufacturer's consent. If permission is granted this should be provided to additional owners.

Training for Maintenance and Repair Personnel

All personnel performing maintenance on a MEWP, shall be trained according to manufacturer's instructions and recommendations. The training will be in accordance with the operating and maintenance manuals. The user's work instructions and the requirements listed in this program.

Only trained personnel shall repair and/or perform adjustments to the MEWP. The maintenance conduct annual inspections.

Only one person shall work on the MEWPS.

Repair personnel should be aware of and comply with the requirements prior to adjustments and repairs.

- Read and understand the manufacturer's instructions.
- LOTO – Lock Out Tag Out procedures, specific to the piece of equipment shall be in place and documented.
- All controls should be tested for stored energy prior to repairs or maintenance.
- Work platforms should be fully lowered. If unable to lower, the platforms should be braced to prevent movement.
- Any hydraulic pressure should be released prior to any hydraulic work.
- Follow manufacturer's instructions on removing guards or other safety covers.
- Be trained on wind effects.

24.4 Inspections

Annual Inspections

Annual inspections must be done no later than thirteen (13) months from the date of the prior annual inspection. This inspection should be performed by a qualified person to inspect the specific make and model of the MEWP. The inspection shall include all the frequent inspection items and items specified by the manufacturer for annual inspection and any manufacturer's bulletins, updates.

The MEWP shall not be used for service until all malfunctions, defects, safety violations, safety issues and hazards have been corrected.

Operators and inspectors should be encouraged to report issues or problems. Safety hazards should be corrected immediately and the MEWP taken out of service as applicable.

The most recent annual inspection date information and the next annual inspection due date shall be kept on the MEWP.

Frequent Inspections

Frequent inspections should be done on a quarterly basis.

A MEWP is required inspection if out of service for longer than three months or if environmental conditions require a shorter period.

The inspection shall be done by a qualified person who is trained on the specific make and model of the MEWP. This shall include manufacturer's specified instructions and bulletins.

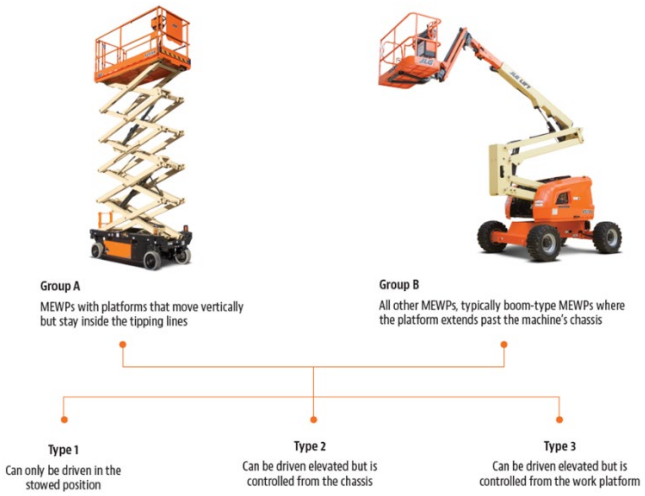
Pre-Delivery Inspection

Prior to each delivery, the owner or dealer shall ensure the MEWP is inspected, repaired and working according to manufacturer's instructions.

Pre-Use/Pre-Start Inspection

This inspection should be done prior to use each day or each shift. Forms attached to this program may be used. If the naufacturer designates an inspection form or checklist for any type of inspection, that form and/or information provided should be used.

24.5 MEWP Classification for Selection



ANSI A92 MEWP Classifications

Aerial Work Platforms (AWPs) are now called Mobile Elevating Work Platforms (MEWPs). Rather than being classified by the equipment type, machines are now broken up by Groups, then sub-divided into Types.

MEWP Groups

- If a MEWP moves vertically but within the tipping lines, such as a scissor lift, it is classified as Group A.
- If the MEWP can move beyond the tipping lines (outriggers or wheels) it is considered Group B. A boom lift is an example of equipment in Group B.

MEWPS are further classified into Types:

- Type 1: The equipment can only be driven with the platform in its stowed position.
- Type 2: The equipment can be driven elevated but is controlled from the chassis.
- Type 3: The equipment can be driven elevated, controlled from the work platform.

24.6 Selecting the Mobile Elevating Work Platform

The information is targeted at those who select, specify, manage and operate mobile elevating work platforms (MEWPs).

There is a worksheet provided to identify the appropriate MEWPS to use. The focus is to minimize risk. Working with the right piece of equipment in size, reach, etc. to accomplish the scope of work will minimize risks.

The operations and equipment are to be planned by a qualified person.

Identify the MEWP Needed

- Identify the full scope of work to transpire, the materials to be used and the location and include the day(s) and time(s).
- At what stage of the job will the MEWP be used?
- What will ground conditions or supporting structure be like at that stage (example: rough, prepared, slab, etc.)?

Identify the Hazards Associated with the Tasks

Once the MEWP has been chosen, the hazards associated with the task need to be identified and develop safe plan to control measures for safe methods.

Survey Work Area / Site Hazard Assessment

Survey the work area for potentially hazardous operating conditions and ensure hazards are mitigated. The form with this program may be used.

Authorized MEWPs

MEWPs used in the workplace must meet the design and construction requirements of the American National Standards Institute. The MEWP Administrator will verify that vehicles used for the workplace meet these requirements and are in a safe working condition.

Rental MEWPs

The owner or supervisor will assess and prequalify the rental company to ensure their fleet meets ANSI and OSHA requirements. The company will then authorize employees to rent from the rental company.

Pre-planning is essential. Communicate delivery and return of the MEWPS.

Responsible persons should be appointed and a plan of action should be in place to ensure it is delivered by a competent person.

Ensure that procedures and agreements are in place for the maintenance and inspection of the MEWP during the rental period.

Borrowing or Using MEWPs from another Company

At times employees may need to use a MEWP that belongs to another company or is rented by another company. In these cases, the site supervisor needs to do an inspection of the equipment and review the other company's MEWP safe work plan.

24.7 MEWP Training

- Manufacturer's instruction and safety manuals should always be on the equipment and immediately available. Always refer to the manufacturer's instruction and safety manuals for training and safe operation of the MEWPS.
- The operator must read and understand the manufacturer's operating instruction(s) and user's safety rules.
- All operators should be trained on the same model of MEWP in use, or a MEWP with the same capabilities and controls. A practical evaluation for an operator should be done to demonstrate competent use and knowledge of controls. This should be monitored by a qualified person.
- The operator shall be trained on each of the controls.
- MEWP should be operated only in an area where a workplace assessment has been done. Hazards have been identified and controls have been put into place and communicated. The inspection log should be maintained and kept on the MEWP at all times.
- Review with operators on overhead hazards. Inspect for overhead structures, framing, ceilings, walls where an operator could be trapped or caught in between. If hazards of this sort exist, consider using a MEWP with protective control covers.
- MEWPs controls allow for smooth movement. At times, there can be "run-on" when the controls are stopped abruptly. This means the platform can continue to move for a short time. Extreme caution needs to be taken when working in an area where there are overhead structures to avoid impact and crushing. The operator should not crouch over controls or railing to reach work location.
- Overhead obstructions, tight working conditions, structures, pipes, ducts, ceiling grids or any other material that may come in contact with the MEWP, should be observed. Operators should remain within the platform, do not lean out over the railing. Do not lean out over railing during vertical movement at any time.
- Ground openings such as trenches, manholes, etc. are serious tipping hazards. The work conditions for MEWPS should be firm and level ground. Temporary covers should be able to support the weight, being heavy metal plates and/or permanent manhole covers, a berm can also be built-up around plate and covers to prevent shifting. Open trenches can be backfilled and compacted.
- If outriggers are on the equipment, they must be used to increase stability and capacity.
- Fall protection hazards are addressed with making sure the working platform has guardrails in place, toe boards in place and a chain guard or door.
- Falls are a serious hazard when working from elevated work platforms. Arresting the fall, using a PFA – Personal Fall Arrest system to act as fall restraint prevents the worker from

falling out of basket. Using a harness with a short lanyard which is secured to a manufacturer designated anchor point within the basket to restrain user prevents the falls.

- Users are never to stand on toe boards or railing. Ladders, buckets or other items are not allowed in the basket to increase height/reach.
- Tools, equipment, etc. in the basket could be a fall hazard. Secure with a tether system and/or secure the area below the MEWPS to prevent trades from coming in area. No work should be performed below a MEWPs.
- Materials can be heavy. Check the weight capacity and the safety of the environment when transporting materials. Consider load distribution issues. Additional equipment to lift or transport materials may be needed.
- MEWP platforms can 'bounce' at a height due to the boom structure flexing. This may make them less capable to use for long or heaving materials. Materials should never be balanced on the handrails of of a MEWP. Consideration of using a crane or forklift/reachlift having appropriate weight capacity and material handling attachments.
- Do not allow the MEWP near overhead machinery or other objects.
- The MEWP boom should not protrude into traffic roadways at any time.
- High winds can make a MEWP unstable. Obey maximum wind speed signage per manufacturer's instructions. Take into consideration wind gusts. Wind warning limitation decal is required on MEWP.
- Weather conditions such as storms, thunder and lightening and snow may create an unsafe environment. Work should stop in these conditions.
- Never overload the MEWP. Being capacity or limiting space/movement within MEWP platform.
- Access gates or openings shall be protected per manufacturer's instructions.
- Always inspect for hazardous energy in the work area such as electrical cords, electrical panels, chemical lines, gas lines, drain lines and utilities. These should be labeled. Never put pressure on any lines from MEWP. If work has to transpire in close proximity a spotter may be used.
- Secure the work area to avoid collision with other work equipment, materials and vehicles. Place a spotter if necessary when working in an area where there is a blind corner and there is a possibility of traffic in area.
- When working in an area with open edges, a fall protection plan will be created. This may include a spotter.
- MEWP working in a structure with blind corners, signage, flashing lights, spotter or other means of warning will be used.

- Prior to work on concrete slab or deck of any sort, ensure the slab/deck have been cured and are engineered to support the weight of the MEWP. Also take into consideration additional weight of employees and materials to the MEWP.

Occupant Training

- Review PPE required and PFA requirements as this varies per MEWP.
- Moving around in the MEWP can cause instability.
- Do not climb or stand on toeboards or guardrails.
- Do not jump on platform.
- Review manufacturer's instruction of any accessories used.
- Review scope of work and hazards associated with it.
- Review Risk Assessment Checklist.
- Manufacturer's warnings and instructions in the Operator's Manual should be discussed. The manufacturer's manual should be out and in hand to review and reference.
- Review purpose and function of MEWP platform controls.

Equipment Alarms, Guards

- Never disable the platform overload system.
- Never disable alarms, lights, sirens or governors on equipment.
- Equipment should always be used as intended by manufacturer.
- No modifications are allowed.

Reporting Problems and Malfunctions

Operators shall immediately report operation issues, MEWP malfunction problems, jobsite hazards to their supervisor. If the MEWP has malfunctions, it should be removed from serviced and LOTO procedures in place.

Electrical Power Lines – Safe Approach Distance

- The MEWP may be operated no more than 20 ft. from steel energized lines.
- The MEWP may be operated no more than 10 ft. from low voltage energized lines.

Travel Speed

- Under all travel conditions, the operator shall limit travel speed according to conditions of ground surface, congestion, visibility, slope, location of personnel, and other factors causing hazards of collision or injury to personnel.

Spotter Training

All spotters shall be trained on their responsibilities and their sole focus on being a spotter. Spotters shall be trained on basic MEWP operating procedures that they are monitoring. Each spotter shall be trained in the operation of lower controls and understand the overriding capability of the upper controls.

Spotters may be required when there is a potential for operator injury due to physical contact with facility systems or structures. They may also be required when there is a potential for damage to sensitive facility systems.

Spotters may be used when these conditions exist. This is a partial list.

- Congested work areas
- Blind corners
- Sensitive/fragile systems/structures.
- Overhead structural hazards which could lead to crushing injuries.
- When working in close proximity to workers.
- In areas with floor openings or leading edges.
- Working in areas where there is energized electrical lines or equipment

A spotter may be another coworker located on the platform or on the ground.

A spotter will be in a hardhat, Class II Safety Vest (this could become Class II depending on conditions), safety glasses, boots. There should be a clear item which easily identifies spotter to operator.

If spotter is on ground working with MEWP operator. The operator shall not move base, boom or basket until there is confirmed visual the spotter is clear.

The spotter which is guiding the MEWP to a work location shall be easily identifiable to operator. The spotter should be at least 20 ft. clearance of mobile MEWP.

Decals, Warnings and Instructions Displayed

All operators and maintenance crew shall understand by reading or having qualified person explain all decals, warnings and instructions displayed on the MEWPS.

MEWP Deliver and Pick-Up from the Jobsite

- Ensure a safe traffic management plan is in place when loading and unloading the MEWP. This should have designated routes to separate MEWP activities from workers, pedestrians and vehicle activities.
- Assess, designate and communicate a safe loading and unloading area.

- Assess the best time of day for delivery and pick-up from the jobsite. Take into consideration morning and evening traffic.
- Appropriate PPE – Personal Protective Equipment will be worn.
- Plan for traffic control with several trained flaggers.
- Ensure the delivery truck has enough space to turn.
- Check for lighting and ensure there is good visibility. Times of year can effect lighting.
- Check for ground stable with no openings.
- Ensure the access and terrain are appropriate for the MEWP to travel to the work location.
- Check for overhead powerlines where the MEWP will need to pass under or near.
- If the MEWP will need to be lifted by a crane in and out of the work area, a Lift Plan will need to be in place. Certified crane operator, certified crane and certified riggers are required.
- Verify per manufacturer's instructions and safety manuals where the lifting points are indication on the MEWP for rigging.
- Ensure somebody is on site to assist driver. This should be designated Qualified Person.
- A pre-delivery inspection must be completed and documented.

Adverse Weather

Think about wet, cold and windy weather.

- Can the MEWP be used outdoor in the elements?
- Wind speed, take into consideration heavy wind gusts? How will windspeed be checked? What is maximum windspeed for MEWP?
- Note a MEWP being operated between buildings can increase wind speed and/or turbulence.
- How safe is operator in wind chill which can effect operator's response time, concentration and dexterity.

Storage/Charging Area

- The MEWPS should be stored in a designated area. This area should be on level ground. The engine or motor should be off. The working platform should be in the lowered position and brakes set. If there is a gradient, the wheels should be chocked.
- Recharging electrically powered MEWPs should be carried out in an area that is protected from the elements.
- The keys to operate the MEWP should be issued to authorized personnel only.

MEWP Work Over Water

- When working near or over water, the greatest hazard must be assessed.
- When there is a risk of drowning, a life preserver must be worn
- If work is over water, a life preserver should be worn over a harness when there is a risk of drowning.

Working in Traffic and Open Roads

When working near live roads (for example, when erecting signage on motorways) a detailed risk assessment needs to be carried out. This should identify the most suitable MEWP for the task and the means of transport and delivery.

24.8 Falls

Falls is the biggest risk when using a MEWP. A site specific risk assessment should be completed and reviewed prior to work.

The hazards associated with carrying out work at a height include but are not limited to:

- Falling from a height
- Overturning and ejection from the working platform
- Collisions
- Objects falling from a height
- Entanglement
- Trapping and crushing
- Electrocution
- Structural/mechanical failure and becoming stranded
- Suspension trauma
- Lack of familiarization and improper training
- Being thrown from the basket if the boom is bumped, jolted, tilted, swings. Falls occur when the operator overreaches. Catching a boom or basket on obstructions causing a swing back.

The use of PFA – Personal Fall Arrest system will minimize the chances of someone falling from a MEWP. This system should be a restraint system. This option will prevent person from falling outside of the platform. This system consists of a fully body harness connected to a lanyard. The lanyard is then connected to a manufacturer designated anchor point designed to support the weight. In addition:

- The lanyard should be short enough to restrain the user in the basket.

- Tying off to an adjacent pole, facility structure or other equipment is prohibited.
- Standing on any guardrails of the MEWP is prohibited.
- THE MEWP is not used to transfer people from one level to another or as an elevator or material lift.
- Ensure the safe working load (SWL) is verified and clearly displayed on the platform. This should never be exceeded. Always take into consideration the weight of personnel, equipment and materials.
- Use spreaders, outriggers as available.
- Set up safe traffic management plan to segregate the MEWP activity.

24.9 MEWPS Rescue Plan

A rescue plan is a requirement and must be documented. This is part of the training program.

Employees should be trained on the procedures and follow them in the event of a fall or being a witness to a fall.

Designated employee on ground with complete knowledge on handling an emergency and MEWP ground controls.

When a person falls or is ejected, suspension trauma can occur within 18 minutes. Serious injury followed by death can occur in 30 minutes or less. The ANSI Z359/406.1 Standard recommends the goal should be rescue within 6 minutes. OSHA 1926.502(D)(20) “the employer shall provide for prompt rescue of employees in the event of a fall or shall assure the employees are able to rescue themselves.”

Training

- Self Rescue (by the person involved)
- Assisted Rescue (by others in the work area)
- Technical Rescue (by emergency services)

Self Rescue

- Primary platform controls – Occupant slowly lowers platform.
- Ground platform controls - Ground worker accesses override controls at base of MEWP and lowers the platform.
- Employee has fallen out of basket and is hanging in harness:
- Suspension Trauma Safety Straps – Employee can stand in straps attached to harness to relieve pressure applied to arteries and veins until rescued.
- Notify emergency services.

Assisted Rescue

- Employee has fallen from platform and MEWP is inoperable. A second MEWP is available:
- Activate all normal emergency lowering procedures if possible.
- Contact the foreman to report any failure of back up emergency systems.
- If it is not possible to repair the lowering mechanism a basket to basket rescue can be hazardous and pose additional safety risks.
- Secondary MEWP – Basket to Basket Rescue
- Assess area for hazards.
- Do not attempt to free a stuck platform.
- The "rescue MEWP" should be placed in the safest and closest position to minimize and hazards.
- Plan to use the second MEWP for retrieval.
- Person being rescued must be in PFA – Personal Fall Arrest with 100% tie off to rescue machine.
- Do not overload secondary MEWP causing tip over hazard.
- Follow manufacturer's instructions manual.

Technical Rescue

Calling 911 and do your best to describe the type of injury so prompt action is taken. Know the address and meet emergency services and guide them to the incident area.

Example: Worker is injured.

- Contact 911.
- At minimum one person on crew should be first aid/CPR trained. Use training to treat or at minimum assure injured party.

Example: Worker is hanging from basket in harness and there are no working controls on MEWP and there is not a secondary MEWP on site.

- Call 911.
- Describe injury and urgency with suspension trauma.

Example: Electrical power line contact.

- Worker is injured.
- Contact 911.
- Secure area to keep others away from electrical exposure.

- Do not attempt rescue.
- Notify supervisor.

Example: Worker has collapsed in MEWP platform in a confined space tunnel.

- Contact 911.
- Secure area to keep others away from hazardous atmosphere.
- Do not attempt rescue.

25 PERSONAL PROTECTIVE EQUIPMENT (PPE) POLICY

25.1 Scope

Personal Protective Equipment (PPE) is vital to prevention of injury. All employees who may need or are required to wear PPE must be properly trained and/or retrained.

Initial training is required prior to performing a task that requires PPE. Training includes at least, the following:

- When PPE is necessary
- What PPE is necessary
- How to properly don, doff, adjust & wear PPE (Note: The employee must be fitted with these items)
- The limitations of PPE
- The proper care, cleaning, maintenance, useful life & disposal of PPE.
- Selection and reasons for the PPE selected for each employee (Hazards vs. Selection must be discussed)

Retraining of an employee is required when the following occurs:

- The workplace changes, making the earlier training obsolete.
- The type of PPE changes.
- When the employee demonstrates lack of use, improper use, or insufficient skill or understanding.

The certification training must be documented and include the employee name, the dates of training, and the certification subject of the PPE trained on.

25.2 Company Provided and Employee Owned Equipment

PPE will be provided to employees at no cost. However, if employee-owned equipment is used, employees must still participate in the training mentioned above. The employee must notify the company of the desire to use employee-owned equipment The Company will then verify its adequacy, maintenance & sanitation.

25.3 Defective or Damaged Equipment

Defective or Damaged PPE must not be used under any circumstances.

Note: To properly protect against the hazards of the job processes or the environment (inhalation, absorption, physical contact), PPE must be provided, used and maintained in a sanitary and reliable condition.

25.4 Hazard Assessments

Each operation is evaluated and a Personal Protective Equipment (PPE) Assessment is done to determine what type of PPE is best for the task and those reasons for selection are stated.

Written hazards assessments include the following:

- Indicate hazards that are present or likely to be present
- What PPE is required to protect against the hazards
- Certifier's name, signature, date(s) and identification of assessment documents

25.5 PPE

Based on our assessment, the following PPE will be worn on all job sites:

- Hard hats
- Hi-Vis safety vests or equivelant
- Work boots
- Safety rated eye protection

In addition, other PPE may be required depending on the tasks being performed.

26 RESPIRATORY PROTECTION

26.1 Purpose

The purpose of this program is to provide a safe working environment for all of our workers. In this regard, no one shall work for any amount of time where airborne contaminates pose a danger to health without being trained, certified, and provided proper respiratory protection. Efforts will first be made to provide safety through engineering; but if these steps are not feasible or while they are being implemented, respirators will be required to do any necessary work.

This program is in line with federal and state regulations and will educate all those who need to use a respirator in such a way as to get the most protection from it. It sets forth requirements for approval to use a respirator and guidelines for respirator selection, use, and care. The goal is to help you learn how to safeguard your own respiratory health and get the level of protection commensurate to the danger of any airborne contaminate.

WHAT IS A RESPIRATOR?

Definition – A respirator, as is used in this program, is a device worn over the mouth and nose for protecting a person's respiratory system. This device can be tight or loose fitting (overhead). It can be made of a cloth-like material (ratings of N95 or higher) or of rubber. In this program, we refer to two descriptions of respirators: filtering face pieces (disposable) and rubber face pieces (reusable). Each respirator is permanently assigned to a worker.
Rubber respirators should be visibly marked in a way that will not interfere with the performance of the respirator. Of course, disposable respirators should be replaced as needed.

Each respirator has an assigned protection factor. This means that some respirators work better than others. Please note the following classification of filtering face pieces and rubber respirators, listed in order of least protection to the greatest.

Respirator Descriptions – Respirators come in several combinations of fit types and classes. All respirators must be NIOSH approved. It is important that you understand the benefits and limitations of each device. Only positive pressure types are permitted when working in an immediately dangerous to life or health (IDLH) environment.

A. **Particulate Respirators** – Particulate respirators capture particles in the air, such as dusts, mists, and fumes. The most common example of a particulate respirator is the **filtering face piece** (disposable). It covers the mouth and nose. These are lightweight and allow for eyeglasses or goggles. Potential for leakage is the same as for half-masks. Rubber face piece respirators can also be used as a particulate respirator depending on what cartridge is applied.

B. **Combination Respirators (Rubber)** – These face piece respirators are made of rubber, either full face piece or half-mask. They are reusable and can be used for both filtering out particles and harmful gases/vapors for safe breathing.

1) **Half-Mask** – Fits over the nose and under the chin. These masks are usually lighter and easier to wear, covering only the chin, mouth, and nose. However, the half-mask has a greater potential for leakage because it comes in contact with complex facial surfaces, such as the bridge of the nose, cheeks, and chin.

2) **Full Face piece** – Covers the face from the hairline to below the chin. These offer more protection by covering the eyes and protecting the face and head from chemically or biologically contaminated dusts, mists, and splatter. Head harnesses secure the respirator to the body at more points of contact. Eyeglasses can be difficult to wear. Wearing contact lenses eliminates this problem. Spectacle kits are also available to fit snugly into the full mask.

C. **Air-Purifying Respirators** – These include a filter or chemical cartridge along with powered air. This combination removes contaminants from the surrounding air. Air-purifying respirators filter contaminants from the air through a filter or a chemical cartridge.

D. **Atmosphere-Supplying Respirators** – These provide clean breathing air from an uncontaminated source. They employ the use of full-face piece rubber respirators. This is needed in situations where the atmosphere is immediately dangerous to life or health, such as those that are oxygen deficient, those containing toxic air contaminants, and rescue situations. There are two methods of delivering safe air as follows:

1) **Self-Contained Breathing Apparatus (SCBA)** – SCBAs are compressed air cylinders carried on the user's back connected by an air supply hose to a full-face piece rubber respirator. SCBA cylinders contain a 30-minute air supply. Users must carefully monitor the amount of air used and exit contaminated environment before the air supply runs out.

Breathing air quality and use. OSHA requires the employer to provide employees using atmosphere-supplying respirators (supplied-air and SCBA) with breathing gases of high purity.

(1) The employer shall ensure that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration accords with the following specifications:

(A) Compressed and liquid oxygen shall meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and

(B) Compressed breathing air shall meet at least the requirements for Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G- 7.1-1989, to include:

1. Oxygen content (v/v) of 19.5-23.5%;

2. Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less;

3. Carbon monoxide (CO) content of 10 ppm or less;

4. Carbon dioxide content of 1,000 ppm or less; and

5. Lack of noticeable odor.

Local jurisdiction requirements for cyliners must also be met.

2) **Air-Supplied** – These can be tight fitting or loose fitting. They make use of a hose to deliver clean, safe air from a stationary source of compressed air. They provide clean air for long periods of time and are light in weight for the user. They can, however, limit the range of use and your mobility. Also, there is the danger of damaging the hose or the hose being caught, affecting airflow.

Fit – Everyone's face is different. Each person needs a good facial seal in order to be fully protected. As noted in chapter V, respirator users must pass a fit test to ensure that the respirator will fit correctly and guard the respiratory system. You are also required to do a careful seal check of your respirator before entering a contaminated environment *every time you wear it*.

Selection of Filters – Selection of filters depends on the airborne contaminant. Please note the following:

A. Presence of Oil – Selection of N, R, and P series filters depends on the presence or absence of oil particles as follows:

1) If no oil particles are present, use any series (N, R, or P).

2) If oil particles are present, use only R or P series.

3) If oil particles are present and the filter is to be used for more than one work shift, use only P series.

B. **Filter Efficiency** – Selection of filter efficiency (i.e., 95%, 99%, or 99.97%) depends on how much filter leakage can be accepted.

C. **Change Schedule and Storage for Cartridges** – All filters must be replaced whenever they are damaged, soiled, or causing noticeably increased breathing resistance. If you taste or smell an airborne contaminant, immediately leave the danger area and change out your cartridge.

1) **Identify A Specific Change Schedule** – For the department respiratory protection write-up, supervisors may establish a change-out schedule based on experience with the contaminant and cartridge use. If a more definite change schedule is desired, a total use period of eight hours is recommended. Some cartridges come with built-in end-of- service-life indicators (ESLI) which should be closely adhered to.

2) **Storage** –The shelf life of a cartridge is lessened if it is exposed to air or contaminants. Cartridges should remain in sealed packaging until used. Once in use, the cartridge should be dated and any heavy usage periods logged on the label of the storage container.

D. **Gases and Vapors** – Chemical cartridges remove gases and vapors through a filter, catalyst, or sorbent. These attach to half-mask and full-face-piece rubber respirators. There is no one cartridge that is effective on all gases and vapors, so you must know which contaminant you are dealing with before selecting one.

BEFORE USING A RESPIRATOR

Medical Questionnaire – Using a respirator may place a physiological burden on an individual, depending on a person's health, type of respirator, and work to be performed. Thus, each potential respirator user will fill out a medical questionnaire provided by a physician. This is in line with legal requirements. Additional medical questionnaires may be needed, however, due to the following:

A. A worker reports medical signs or symptoms that are related to his ability to use a respirator.

B. Oversight feels that a worker needs to be reevaluated.

C. A change occurs in workplace conditions (e.g., physical work effort, protective clothing, temperature) that may result in a physiological burden being placed on a worker.

Initial Training – All respirator users must receive training. Your training will be provided to you before you use a respirator. It will teach you the following:

A. Why a respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator.

B. What the limitations and capabilities of the respirator are.

C. How to inspect, don (put on), remove, and check the seals of the respirator.

D. How to properly maintain and store your respirator.

E. How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.

Fit Test – A fit test is not required for loose-fitting dust masks with one strap or a loose- fitting hood on positive air-supplied respirators. Single-strap dust masks, which are designed for comfort and used for nuisance dust or as face shields, are not acceptable as respiratory protective equipment.

Rubber face pieces (full face piece, half-mask, SCBA, etc.) require annual *qualitative* fit tests (a pass/fail test will be performed to see if an individual wearing a respirator can smell a test agent, like banana oil). A failure will require another respirator size or type. A *quantitative* fit test (a test where the amount of leakage is precisely measured) will also be required for frequent users or those who may be at greater risk due to the type of contaminant they are exposed to.

An additional fit test may be required if:

A. A different type of respirator or face piece (size, style, model or make) needs to be worn for an assignment.

B. A change in physical condition affects how the respirator fits. This would include changes to the area of the face such as an obvious change in body weight, or other changes that merit consideration.

Certification – No one will be allowed to do work requiring the use of a respirator until cleared medically, trained, and fit tested successfully.

USE AND CARE OF RESPIRATORS

Obtaining A Respirator – After an employee has received medical clearance and training, a supervisor will provide clean, sanitary respirators in good working order that is the correct one for the job.

Proper Face-To-face Piece Seal – Regardless of the style of mask, true respiratory protection is only as good as a proper face-to-face piece seal. Even a small leak can be hazardous. The fit test should reveal any problems with the seal, and subsequent user seal checks should alert you to any change in the effectiveness of your face piece. A good seal allows no leakage. The face piece should be tight fitting, but the nose should not be pinched and the fit should not be uncomfortable or painful.

Inspection – Before each use of your respirator, inspect it to ensure that it will indeed protect your respiratory system.

A. **Filtering face piece (Disposable)** – Check for damage to filter or straps or if there is excessive wear. Replace as needed.

B. **Rubber Respirators (Reusable)** – For rubber respirators, first take visual inventory of the respirator to detect any signs of excessive wear, deterioration, or damage. Check for holes, snags, or cracks and inspect rubber parts carefully. Check the tightness of connections, the condition of the face piece, and the seal and headband. Make sure the valves are in good working order and check the connecting tube. Make sure cartridges on air-purifying respirators are not dented or damaged in any way. Inspect the condition of the following components of your respirator, if applicable, and replace as needed:

1) face piece

2) Fastening straps and closures

3) Inhalation and exhalation valves

4) Filter

5) Cartridge

6) Air hose

7) Breathing tubes

8) Regulator
9) Lens

10) Connections and clamps for hoses and tubes

User Seal Check – Since the seal is critical between the face and the face piece, nothing can be allowed to interfere with it. This includes facial hair, wearing glasses or goggles, or any other action or condition that would interfere with it. Before each use of a respirator, a user seal check must be performed. This test will confirm that the respirator will not leak while you are exposed to the contaminated atmosphere. User seal checks are different for filtering face piece (disposable) respirators and rubber (reusable) respirators.

Before performing a user seal check, a respirator must be donned correctly. Then proceed to perform the user seal check.

User Seal Check for Filtering face piece (Disposable) – This user seal check involves a negative pressure check only, as follows:

1) Once donned correctly, cover the front of the respirator by cupping both hands. Inhale sharply. A negative pressure should be felt inside the filtering face piece. If any leakage is detected at the respirator edges, adjust the straps by pulling back along the sides and or reposition the respirator.

2) Repeat until sealed properly. If problems persist, see your supervisor. Never enter into a contaminated area with an improper fit.

User Seal Check for Rubber Respirators – This user seal check involves both positive pressure and negative pressure checks, as follows:

1) **Positive Pressure Seal Check**

a. Make sure the respirator is secured and a good facial seal is achieved.

b. Cover the exhalation valve with the palm of your hand (you may have to unscrew the valve cover).

c. Exhale gently into the face piece to create positive pressure.

d. *There should be no signs of leakage out of the facial seal, inhalation valve, or cartridge seats.*

2) **Negative Pressure Seal Check**

a. Make sure the respirator is secured and a good facial seal is achieved.

b. Cover the cartridge inlet opening with the palm of your hand or by replacing the filter seals. Due to the design of some respirators, you may need to use a latex glove to completely close off the inlet.

c. Gently inhale to create a vacuum and hold your breath for ten seconds.

d. *The face piece should slightly collapse inward, without any inward leakage of air through the facial seal.*

NOTE: The tightness of the respirator is considered effective if it passes these two user seal checks. Remember, even a small gap in the facial seal could leak contaminants.

Removal and Replacement of Respirator Due to Malfunction – If something does not seem right with the respirator, stop what you are doing and leave the contaminated work area immediately. You may detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece. If you detect a problem, bring it immediately to your supervisor to be replaced. Do not re-enter a contaminated atmosphere until a respirator is repaired or a new respirator is issued to you.

Cleaning and Disinfecting – The purpose of cleaning and disinfecting reusable rubber respirators is to prevent damage to the respirator and harm to the worker. Please note the following:

A. Daily Cleaning – After each use, you should clean your rubber respirator using disinfectant respirator wipe pads. Then it is ready to use next time.

B. Weekly Cleaning – A thorough cleaning should be done about once a week, depending on how much the respirator was used. Cleaning should also be done prior to long-term storage.

1) Remove cartridges. Disassemble face pieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or other components. Replace or repair any defective parts.

2) Wash components in warm water with a mild detergent or with an approved cleaner. Use a brush (not wire) to remove dirt.

3) Rinse components in clean, warm, preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on face pieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.

4) Components should be hand dried with a clean lint-free cloth or air-dried.

5) Reassemble face piece, replacing filters and cartridges where necessary.

6) Test the respirator to ensure that all components work properly.

Storage – Each individual is responsible to properly store his respirator to protect it from damage, air contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. It should be packed or stored in such a way to prevent deformation of the face piece and exhalation valve. A good method is to place it in a sealed plastic storage bag labeled with a name, and placed in a cabinet or container.

MAINTAINING RESPIRATOR EFFECTIVENESS

In the Workplace – Be conscious of the work environment. Changes in work conditions or atmospheric hazards may affect your respirator usage. While using your respirator for an extended period of time, you may find it beneficial to periodically leave the work area to wash your face and respirator face pieces as necessary to prevent eye or skin irritation associated with respirator use. *Do not remove your respirator in a contaminated environment, even if only for a short time and even if it is uncomfortable.* Do not remove your respirator too soon. Wait until you are no longer in the presence of airborne contaminants. You should also relocate to a better location when examining or adjusting your respirator. Remember, the *concentration* or toxicity of the contaminant is the hazard, and not the *length* of exposure, in many cases.

Refresher Training –This will be conducted Annually. Additional refresher training may be provided when one of the following situations occur, or as needed:

A. Changes in the workplace or the type of respirator render previous training obsolete.

B. A safety audit notes inadequacy in the worker's knowledge or use of the respirator.

RECORDKEEPING

All documentation regarding medical evaluations, fit testing, and the respirator program will be maintained in the human resource office. This information will facilitate employee involvement in the respirator program, assist in auditing the adequacy of the program, and provide a record for compliance determinations by OSHA.

27 SANITATION

27.1 DISPOSAL OF CONTAMINANTS AND DEBRIS

During construction, the site will be maintained in a sanitary condition at all times. Waste materials generated (e.g., trash, excess materials, hazardous waste) will always be stored in containers and disposed of in an approved disposal site.

- All waste generated during construction will be removed or disposed of in compliance with all Federal, State, and local requirements.
- Toilets will be available for human waste and will be serviced on a regular basis.
- No open burning of waste materials will be allowed.
- Any materials used to clean up a chemical spill will be treated as hazardous waste and disposed of appropriately.

28 SCAFFOLDING

28.1 Purpose

If these guidelines in any way conflict with any State, Local, Federal, or other Government Statute or Regulations, said Statute or Regulation shall supersede these guidelines and it shall be the responsibility of each user to comply therewith.

Scaffolds shall be provided for all work that cannot be done safely by employees standing on permanent or solid construction at least 20 inches wide, except where such work can be safely done from ladders.

All employees that work on scaffold must be trained on the hazards of scaffolding including falls and collapses, electrical hazards, proper loading, proper access, and object falling hazards. Retraining will be required annually and upon any violation. Training must be done by a Competent Qualified Person, following all Federal and State Requirements. Scaffolding must be inspected daily for safe use (inspect prior and periodically during use) by a Competent Person.

Unsafe equipment or conditions must be tagged out by Competent Person and must be complied with. Tagging system is as follows:

- "DANGER" - Red, or predominantly red, with lettering or symbols in a contrasting color.
- "CAUTION" - Yellow, or predominantly yellow, with lettering or symbols in a contrasting color.
- "WARNING" - Orange, or predominantly orange, with lettering or symbols in a contrasting color.
- "BIOLOGICAL HAZARD" - Fluorescent orange or orange-red, or predominantly so, with lettering or symbols in a contrasting color.

Note: Only Qualified and Competent Personnel are allowed to modify scaffolding systems. Non-qualified personnel may create more hazards.

28.2 General Guidelines

a) Post these Scaffolding Guidelines in a conspicuous place and be sure that all persons who erect, dismantle, or use scaffolding are aware of them.

b) Follow all state, local and federal codes, ordinances, and regulations pertaining to scaffolding.

c) Survey the job site. A survey shall be made of the job site for hazards, such as earth fills, ditches, debris, high tension wires, unguarded openings and other hazardous conditions created by other trades. These conditions should be corrected or avoided as noted in the following sections.

d) Inspect all equipment before using. Never use any equipment that is damaged or defective in any way. Remove it from the job site.

e) Scaffolds must be erected in accordance with design and/or manufacturer’s recommendations.

f) Do not erect, dismantle, or alter a scaffold unless under supervision of a Qualified Person.

g) Do not abuse or misuse the scaffold equipment.

h) Erected scaffolds should be continually inspected by users to be sure that they are maintained in a safe condition. Report any unsafe condition to your supervisor.

i) Never take chances! If in doubt regarding the safety or use of scaffold, consult your scaffold supplier.

j) Never use equipment for purposes or in ways for which it was not intended.

k) Do not work on scaffolds if your physical condition is such that you feel dizzy or unsteady in any way.

l) Scaffolding should not be used in unsafe weather conditions including wet or slippery conditions or high winds unless it is a necessary part of construction work.

m) Opaque finishes are unacceptable for use on wood platform.

n) If there are any overhead hazards posed to workers on scaffolding, proper protection should be in place.

o) Materials should be hoisted to scaffolding platform levels if they cannot be safely carried by workers. Tag lines should always be used when materials are being hoisted.

28.3 Scaffold Design and Construction

1. Scaffolds shall be constructed of select grade lumber or other suitable materials such as steel or aluminum members of known strength characteristics. All bolts used for constructing scaffolding should be installed and used properly. Where materials other than wood are used, or where scaffold designs differ from those specified in these Orders, the scaffold and its parts must provide a degree of strength, rigidity and safety equivalent to that provided by the described scaffold it replaces.

2. Prohibited Types of Scaffolds. Lean-to or jack scaffolds, shore scaffolds, nailed brackets, loose tile, loose brick, loose blocks, stilts, or other similar unstable objects shall not be used as working platforms, or for the support of such platforms.

3. Each scaffold shall be designed and constructed using a dead load safety factor that will ensure the scaffold supports, without failure, its own weight and 4 times the maximum intended working (live) load applied or transmitted to it. Maximum intended working loads shall be as follows:

(a) Light-duty scaffolds: 25 pounds per square foot of work platform.

(b) Medium-duty scaffolds: 50 pounds per square foot of work platform.

(c) Heavy-duty scaffolds: 75 pounds per square foot of work platform.

(d) Special-duty scaffolds: exceeding 75 pounds per square foot of work platform as determined by a qualified person or a Civil Engineer currently registered in the State of California and experienced in scaffold design.

Wood scaffolding nailing procedures

All nailed joints in scaffolds and wooden falsework must contain enough properly placed nails of ample size to carry the loads they are intended to support. Nailed joints or connections shall not be used to support concrete hoppers with a capacity in excess of 1/2 cubic yard. Double-headed nails shall not be

used for attaching railings or in other service where the projections might catch on the clothing of workers or create similar hazards. No nail smaller than 8-penny shall be used in the construction of scaffolding. All nails shall be driven full length or to the first head when double-headed nails are used.

The minimum number of nails per connection shall be in accordance with the following table:

	1" x 6" Material	*1" x 8" Material*	*2" Material*
Ledgers	4-8d	5-8d	2-16d
Ribbons	3-8d	3-8d	
Braces	3-8d	3-8d	2-16d
Guardrails	2-8d	2-8d	2-16d

28.4 Guidelines for Erection and Use of Scaffolds

a) A scaffold's base must be set on an adequate pad to prevent slipping or sinking and fixed thereto where required. Any part of a building or structure used to support must be capable of supporting the maximum intended load to be applied.

b) Use adjusting screws or other approved methods instead of blocking to adjust in uneven conditions.

c) Bracing, Leveling and Plumbing of Frames or Scaffolds:

   1. Plumb and level all scaffolds as the erection proceeds. Do not force frames or braces to fit. Level the scaffolds until proper fit can easily be made.

   2. Each frame or panel shall be braced by horizontal bracing, cross bracing, diagonal bracing, or any combination thereof, for securing vertical members together lateral. All brace connections shall be made secure in accordance with the manufacturer's recommendations.

d) Bracing, Leveling and Plumbing of Tube & Clamp and System Scaffolds:

   1. Posts shall be erected plumb in all directions, with the first level of runners and bearers positioned as closed to the ground as feasible. The distance between bearers and runners shall not exceed manufacturer's procedures.

   2. Plumb, level and tie all scaffolds as erection proceeds.

   3. Fasten all couplers and/or connections securely before assembly of next level.

   4. Vertical and/or horizontal diagonal bracing must be installed according to manufacturer's recommendations.

e) Tie continuous (running) scaffold to the wall or structure at each end and at least every 30' of length when scaffold height exceeds the maximum allowable free-standing dimension. Begin ties or stabilizers when the scaffold height exceeds that dimension and repeat at vertical

intervals not greater than 26'. The top anchor shall be placed no lower than four (4) times the base dimension from the top of the completed scaffold. Anchors must be used to prevent scaffold from tipping into or away from wall or structure. When scaffolds are partially or fully enclosed or subjected to overturning loads, specific precautions shall be taken to insure the frequency and adequacy of ties to the wall and structure. Due to increased load resulting from wind or overturning loads, the scaffolding component to which ties are secured to shall be checked for additional loads.

f) When free standing scaffold towers exceed four (4) times their minimum base dimension vertically, they must be sustained from tipping. Free standing scaffold shall not exceed 3 times the smallest dimension of the base.

g) Do not erect scaffold near electrical power lines unless proper precautions are taken. Consult the power service company for advice.

h) A means of access to all platforms shall be provided.

i) Do not use ladders or makeshift devices on top of scaffolds to increase height.

j) Provide guardrails and mid-rails at each working platform level where open sides and ends exist above working platforms of 30 inches. Toe boards are required at or above 6ft.

k) Brackets and Cantilevered Platforms:

1. Brackets for System Scaffolds shall be installed and used in accordance with manufacturer's recommendations.

2. Brackets for Frame Scaffolds shall be seated correctly with side brackets parallel to the frames and end brackets at 90 degrees to the frames. Brackets shall not be bent or twisted from normal position. Brackets (except mobile brackets designed to carry materials) are to be used as work platforms only and shall not be used for storage of materials or equipment.

3. Cantilevered Platforms shall be designed, installed, and used in accordance with manufacturer's recommendations.

l) All scaffolding components shall be installed and used in accordance with manufacturer's recommended procedure. Components shall not be altered in the field. Scaffold frames and their components manufactured by different companies shall not be intermixed unless the component parts readily fit together, and the resulting scaffold's structural integrity is maintained by the user.

m) Planking:

1. Work platforms shall cover scaffold bearer as completely as possible. Only scaffold grade wood planking, or fabricated planking and docking meeting scaffold use requirements shall be used.

2. Check each plank prior to use to be sure plank is not warped, damaged, or otherwise unsafe.

3. Planking shall have at least 12" overlap and extend 6" beyond center of support or be closed or restrained at both ends to prevent sliding off supports.

4. Solid sawn lumber, LVL (laminated veneer lumber) or fabricated scaffold planks and platforms (unless cleated or restrained) shall extend over their end supports not less than 6” nor more than 18”. This overhang should not be used as a work platform.

n) For Putlogs and Trusses, the following additional guidelines apply:

1. Do not cantilever or extend putlogs/trusses as side brackets without thorough consideration for loads to be applied.

2. Putlogs/trusses should extend at least 6” beyond point of support.
3. Place proper bracing between putlogs/trusses when the span of the putlog/truss is more than 12”.

o) For Rolling Scaffolds the following additional guidelines apply:

1. Riding a rolling tower is very hazardous. The Scaffold Industry Association does not recommend nor encourage this practice. However, if you choose to do so, be sure to follow all State, Federal or other Government Guidelines.

2. Casters with plain stems shall be attached to the panel or adjustment screw by pins or other suitable means.

3. No more than 12’ of the screw jack shall extend between the bottom of the adjusting nut and the top of the caster. All work levels shall be level with the use of base plates or screw jacks.

4. Wheels and casters shall be provided with locking means to prevent center rotation and scaffold movement and shall be kept locked. They must be properly designed for strength and dimensions.

5. Joints shall be restrained from separation.

6. Use horizontal diagonal bracing near the bottom and at 20’ intervals measured from the rolling surface.

7. Do not use brackets or other platform extensions without compensating for the overturning effect.

8. The platform height of a rolling scaffold must not exceed three (3) times the smallest base dimension.

9. Cleat or secure all planks.

10. Secure or remove all materials and equipment from platform before moving.

11. Do not attempt to move a rolling scaffold without sufficient help. Watch out for holes in floor or overhead obstructions. Stabilize against tipping.

12. Platform Planks at Corners. When a scaffold materially changes its direction, the platform planks shall be laid to prevent tipping. The planks that meet the corner ledger at an angle shall be laid first, extending over the diagonally placed ledger far enough to have a good safe bearing, but not far enough to involve any danger from tipping. The planking running in the opposite direction at an angle shall be laid so as to extend over and rest on the first layer of planking.

p) Guardrails:

- Guardrails are to be installed at all open sides above 6'. If manufacturers call for guardrails at any height, then that must be followed.
- Guardrails are installed at 42" +/-3" above platform and mid-rails at half the height and must follow the OSHA requirements.

q) Safe Use of Scaffold:

1. Prior to use, inspect scaffold to insure it has not been altered and is in safe working condition.
2. Erected scaffolds and platforms should be inspected continuously by those using them.
3. Exercise caution when entering or leaving a work platform.
4. Do not overload scaffold. Follow manufacturer's safe working load recommendations.
5. Do not jump onto planks or platforms.
6. Do not use ladders or makeshift devices on top of working platforms to increase the height or provide access from above.
7. Climb in access areas only and use both hands.
8. Tag all defective parts. Example would be a bent frame or ledger. Do not bypass or remove a tag. This is grounds for immediate termination.
9. Modifications can only be made by a Qualified Person. Any non-qualified person who modifies scaffolding will be terminated.

28.5 When Dismantling Scaffolding, the following additional guidelines apply:

a) Check to assure scaffold has not been structurally altered in a way which would make it unsafe and, if it has, reconstruct where necessary before commencing with dismantling procedures. This includes all scaffold ties.

b) Visually inspect planks prior to dismantling to be sure they are safe.

c) Consideration must be given as to the effect removal of a component will have on the rest of the scaffold prior to that component's removal.

d) Do not accumulate excess components or equipment on the level being dismantled.

e) Do not remove ties until scaffold above has been removed (dismantled).

f) Lower dismantled components in an orderly manner. Do not throw off scaffold.

g) Follow erection procedures and use manuals.

28.6 Mobile Scaffolding

a) The minimum dimension of rolling scaffold shall not be less than 1/4 the height of the scaffold unless the scaffold is securely guyed or tied. An exception would be if the manufacturer has stricter requirements.

b) Railings are required at when above 6’.

c) Uprights shall not exceed 24 inches without being braced to manufacture’s specifications.

d) Wheels or casters shall be provided with an effective locking device and kept locked when working or climbing on scaffold. At least two of the four must be swivel type.

e) All wheels or casters must be able to support 4 times intended load.

f) Joints of metal scaffolding shall be locked together with lock pins, bolts or equivalent fastening, including caster joints. Lock pins must be of locking type.

g) Platform planks on rolling scaffolds shall not project farther than 18 inches past supports at the edges of scaffold. An effective method of preventing platform planks from slipping off must be provided. The nailing of cleats more than 1 inch material on the underside of each projecting end, or equivalent means.

h) Platforms shall be tightly planked for the full width of scaffold except for necessary entrance openings.

29 Silica Exposure Control

29.1 General Information

Silica, or silicon dioxide, is a specific type of silicate and is found as a naturally-occurring component of sand, rock, soil, clays, granite, certain minerals, and some living organisms. There are different forms of silica: crystalline and non- crystalline forms (amorphous type). The three types of crystalline silica of concern to human health are quartz (most common), cristobalite, and tridymite.

Silica is used in many different industrial activities and commercial products. Some industries such as mining, construction, and granite quarrying involve disturbing silica-containing materials. Many industries, including dental labs, pottery and ceramics, glass making, abrasive blasting, and cement production utilize sand and other silica-containing products.

29.2 Health Hazards

Certain factors can affect the potential toxicity of silica. The crystalline form has sharp edges that can damage living tissue. Also, the age of the crystalline particle, the presence of impurities, or coating on the particle surface may either reduce or increase the health hazard. Since workplace settings and types of silica vary, the exposure risk to workers of a given level of respirable crystalline silica may not be equivalent in different work environments.

Several types of adverse lung health effects have been associated with respirable crystalline silica exposures. Some of these diseases are listed below.

29.3 Silicosis

Respirable crystalline silica structures, as opposed to non-crystalline (amorphous) structures, present a unique health hazard. The crystalline silica particles cause lung tissue to react and form fibrotic nodules and scarring around the trapped particles. The formation of these nodules can develop into a disease condition referred to as silicosis, a slowly progressive, irreversible, and potentially fatal disease. Even with cessation of exposure, disease progression can continue once established. There are three types of silicosis; acute, chronic, and accelerated.

29.4 Exposure

Inhalation is the route of exposure for respirable crystalline silica. In general, silica particles vary in size. Larger particles get entrapped in the nose, throat, larynx, trachea, and bronchi from which they can be expectorated (coughed up) or swallowed into the digestive tract. Respirable-sized particles penetrate deeper into the lungs. Crystalline silica containing substances can become respirable sized particles when workers grind, cut, drill, or crush materials that contain crystalline silica.

Exposures to respirable crystalline silica can also occur when mixing or handling raw materials in other industrial activities if small particles become airborne and are inhaled. For example, cutting open bags that have silica-containing product and pouring out the contents can generate airborne silica dust.

Smoking and Silica Exposure

Research has shown that smoking doubles the negative effects of silica dust exposure. A strong correlation has been reported for increased risk of lung cancer among silica-exposed workers who smoke and have silicosis.

Factors affecting occupational exposure risk

The use of controls in the workplace to prevent exposures to respirable crystalline silica is required when air concentrations are above the permissible exposure limit. However, if these controls are not used or are used improperly, exposure risk increases. Personal protective equipment is often used in conjunction with engineering and other controls to protect workers. When respiratory protection is worn, a proper fit is a significant factor in reducing exposure risk.

29.5 Workplace Assessment

Material and Product Review

Many construction sites typically contain well-known sources of silica such as sand, stone, soil, and concrete. Geological surveys can provide some information on soil, rock, and minerals at a construction site.

Products containing silica are used in the construction and general (including maritime) industries. Glass makers, mineral wool manufactures, abrasive blasting operations, and dental laboratories are just a few of the many industries that use silica-containing materials.

Some products that contain silica may not be so commonly known or easily identified. A safety data sheet (SDS) should provide information helpful in determining silica content of manufactured products. The hazard identification section and/or composition (ingredient) section should include this information. The exposure controls/personal protection section, and/or the toxicological information section should also indicate whether or not silica is in the product and explain potential health effects (such as silicosis or lung cancer). SDSs should have descriptive words that indicate silica content such as the following:

- Crystalline silica
- SiO2
- Silica dust
- Silica
- Quartz
- Sand

Conditions of Use and Work Activity Review

A review of work activities associated with silica-containing products and materials should be conducted. Any activities that may generate airborne dust should be carefully assessed. Some processes use silica bound in a matrix (occluded) or amorphous (non-crystalline) silica. These materials are not the same as crystalline silica particles and are considered not as hazardous. Process knowledge along with product knowledge is essential for assessing the workplace and work tasks for potential risk of crystalline silica exposures.

29.6 Silica Exposure Standard

Exposure Limits

The development and application of an action level (AL) provides a trigger for implementing specific controls and efforts to reduce worker exposures. The AL is 25 micrograms of respirable silica quartz per cubic meter of air (25 µg/m3) averaged over an eight-hour period. The new action level aligns with the American Conference of Governmental Industrial Hygienists (ACGIH®) threshold limit value (TLV®) which was established in 2009.

The permissible exposure limit is 50 µg/m3 averaged over an eight-hour period. Employers must ensure that no employee is exposed above the established permissible exposure limit (PEL).

Exemptions from the respirable crystalline silica rules include:

1. Agricultural operations.
2. Exposures resulting from *processing sorptive clays* (such as kitty litter). This exclusion is based on the fact that this type of silica is typically occluded (blocked with ions) or coated and does not pose the same level of health risks as crystalline silica.
3. Operations where *objective data* demonstrate employee exposures will remain below the 25 micrograms per cubic meter (µg/m3) as an eight-hour time-weighted average (TWA) under any foreseeable conditions.

Exposure Assessment

Each employer is required to determine employee exposures to respirable crystalline silica unless one of the specific exposure control methods detailed in Table 1 of the OSHA standard are used. There are two options provided for assessing employee exposures: the performance option and the scheduled monitoring option.

Performance Option

An assessment of employee exposure may consist of objective data and/or air monitoring data that accurately characterizes employee exposures to respirable crystalline silica. An employer must demonstrate through objective data that any material containing silica or any specific process, operation, or activity involving silica-containing materials cannot release respirable crystalline silica dust in concentrations at or above 25 µg/m3 as an eight-hour TWA under any expected conditions of use.

Objective data means “information, such as air monitoring data from industry - wide surveys or calculations based on 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 work conditions closely resembling or with a higher exposure than the tasks, controls, processes, materials, and/or environmental conditions in the current work activities.

Objective data can consist of monitoring data obtained prior to the effective date of the rule. It can also consist of size-specific real-time monitoring, material information, such as safety data sheets or geoengineering sample analysis, or any other form of alternative information where the definition is

satisfied. However, objective data cannot include exposures below the action level due to engineering or other controls in place.

Scheduled Monitoring Option (a.k.a. periodic monitoring option)

Initial monitoring must first be performed to determine eight-hour TWA exposures for each employee. One or more breathing zone samples must be obtained that represent employees on each shift, job classification, and work area. If there are a number of employees who share the same tasks, shifts, and/or job classification, a representative number of samples can be taken to determine similar exposure groups. If representative sampling is done instead of sampling all employees, the employer shall sample the employee(s) expected to have the highest respirable crystalline silica exposures.

The employer requirements based on initial monitoring results are listed below:

1. If initial monitoring results are below AL (<25 µg/m3), monitoring may be discontinued for those employees.
2. If initial monitoring results are at or above AL and below PEL (≥25 µg/m3 and < 50 µg/m3), then monitoring must be repeated within six months of the most recent monitoring event.
3. If initial monitoring results are above the PEL (>50 µg/m3), then monitoring must be repeated within three months of most recent monitoring.
4. If monitoring results, other than initial sampling results, are below the AL (<25 µg/m3), then repeat monitoring within six months of most recent monitoring event until two consecutive measurements taken seven or more days apart are below the AL. If this occurs, then monitoring can be discontinued for those employees.

Methods of Sample Collection and Analysis

Employers must ensure that all samples taken to determine employee exposure are *collected* using approved sampling methods (for respirable-sized particles) and *evaluated* by an accredited laboratory that analyzes air samples for respirable crystalline silica according to approved analytical methods.

Air sampling results should be reported in total respirable crystalline silica (RCS) which contains analyzed concentrations for quartz, cristobalite, and tridymite forms of silica. The RCS concentration is compared to the exposure limits.

Reassessment of Exposures

If changes in the workplace may result in new or additional exposures at or above the action level, a new exposure assessment must be conducted to accurately represent the changed conditions and exposures.

Employee Notification of Exposure Assessment Results

Employers must notify all affected employees of the results either by providing individual results in writing or by posting the results in an appropriate, accessible location for all affected employees.

The time requirements for reporting exposure results are listed below:

- Construction employees must receive the results of exposure monitoring within five working days of employer receipt of results.
- All other employees must receive the results of exposure monitoring within 15 working days of employer receipt of results.

Observation of Exposure Monitoring

Affected employees or their designated representatives must be provided an opportunity to observe any monitoring of employee exposure to respirable crystalline silica.

If entry into a regulated or restricted access area is required to observe monitoring, personal protective equipment and clothing must be provided at no cost to the observer. The employer is required to ensure the observer used the equipment and clothing.

Specified Exposure Control Methods (including Table 1)

Certain tools and equipment used in construction-type work activities can be retrofitted with dust controls. Specific work practices can provide additional dust controls. Wet methods, exhaust ventilation, and enclosures are some examples of specific exposure controls methods to reduce exposure when handling crystalline silica-containing materials.

Indoor and Enclosed Area Tasks

Tasks performed indoors or in enclosed areas must include a means of exhaust to minimize dust accumulation.

Wet Methods

Workers can wet surfaces or use equipment with water delivery systems designed to deliver water at the cutting or grinding surface. The water flow rate must be sufficient to minimize the release of visible dust. An example of a wet method is a wet saw used for cutting tile or concrete.

Ventilation

Local exhaust ventilation systems capture dust at the source. This type of dust control method is very efficient when designed for the tool or equipment. High-efficiency particulate air (HEPA) filtration must be used to ensure redistribution of dust does not occur. An example of a ventilation control is a rotary hammer drill equipped with a vacuum and HEPA filter for dust control.

Enclosures

Enclosures provide a barrier to separate the worker from the dust source. Seals must be airtight to provide appropriate dust control. Enclosed cabs or booths on vehicles and large equipment must be under positive pressure and temperature controlled, have airtight seals and gaskets, and have properly functioning doors and closing mechanisms. In addition, the enclosure must have an air intake filter with a minimum efficiency rating value (MERV) rating of 16 or better and be maintained as free from settled dust as practicable. A rock drilling rig with an enclosed cab is an example of a dust control method for a construction activity.

Some specific exposure control methods have been deemed acceptable by OSHA. These methods are included in Table 1.

Air sampling is not required when construction employees engage in tasks using the specific exposure controls outlined in Table 1.

In addition, air sampling is not required when non-construction employees, such as building maintenance personnel, engage in tasks using the methods in Table 1 as long as:

- The task is indistinguishable from a construction task listed; and
- The task will not be performed regularly in the same environment; and
- The specific controls and respiratory protection are fully implemented according to the table.

NOTE: All other elements of the silica rules apply when using OSHA's Table 1 (see attachment), except for air sampling. This includes training, medical surveillance, control measures, and recordkeeping.

If an employee performs more than one task in OSHA's Table 1 during their shift, the total duration of tasks must be used to determine the appropriate respiratory protection. For instance, tasks which total less than four hours may use the respiratory protection specified for less than four hours. If the total duration of tasks is greater than four hours, then the respiratory protection must be the level specified in the "> hours/shift" column.

Regulated and Restricted Access Areas

Fixed Sites – Regulated Areas

Regulated areas must be established at fixed sites where employee exposures to respirable crystalline silica exceed or can be expected to exceed the PEL of 50 µg/m3.

Regulated areas must also be demarcated from the rest of the worksite to reduce the number of employees exposed to respirable crystalline silica dust. Signs are required at all entrances and must read:

DANGER RESPIRABLE CRYSTALLINE SILICA MAY CAUSE CANCER CAUSES DAMAGE TO LUNGS WEAR RESPIRATORY PROTECTION IN THIS AREA AUTHORIZED PERSONNEL ONLY

Access must be limited at regulated areas to authorized personnel only. Authorized personnel consist of employees or contractors required by work duties to be in the area, any designated representative of employees for the purpose of observing monitoring, and anyone authorized by the Occupational Safety and Health Act or regulations issued under it to be in a regulated area.

Respiratory protection must be required for and provided to every authorized person entering a regulated area.

Construction Activities – Restricted Areas

Written Procedures

Employers engaged in construction activities or using the specific exposure control methods in Table 1 must have written procedures to restrict work areas where respirable crystalline silica dust is generated and employees may be exposed. These procedures must be included in the written exposure control plan.

Competent Person

A competent person must be identified to control access to restricted areas and ensure exposure control procedures are followed at the site. This is an individual who is capable of identifying existing and foreseeable respirable crystalline silica hazards and who has the authorization to implement corrective measures.

Methods of Compliance (when exposures are above the PEL)

Engineering and Work Practice Controls

If an employee is exposed to respirable crystalline silica at or above the PEL, the employer must implement engineering and work practice controls (including administrative controls) to reduce and control employee exposures. There are many types of engineering and work practice controls.

Not all possible control methods have been included in the Specified Exposure Control Methods (see Table 1). Manufacturing activities cannot use the Table 1 methods since they are not considered construction or construction-like activities. Wet methods, ventilation, and enclosures are still excellent methods for controlling dust in any environment.

Whenever controls are not feasible to reduce employee exposures to or below the PEL, controls must still be implemented that will reduce employee exposure to the lowest feasible level. Respiratory protection must be provided and used for all activities where feasible controls cannot reduce the exposure to below the PEL or during the time period feasible engineering controls or work practices are being installed or implemented.

Written Exposure Control Plan

A written exposure control plan is required for worksites where respirable crystalline silica exposures are above the PEL. The exposure control plan must include, at minimum, the following elements:

- Task descriptions that involve exposure to respirable crystalline silica in the workplace.
- Engineering controls, work practices, and respiratory protection used to limit employee exposure to respirable crystalline silica for each task.
- Housekeeping measures used to limit employee exposure to respirable crystalline silica.
- Annual review, at minimum, of the written exposure control plan to evaluate the effectiveness of the plan. Updates to the plan should be made as necessary.

- Designation of a competent person if employees are engaged in construction activities or if employees are using any of the specific exposure control methods allowed in Table 1 of the standard. The competent person must make frequent and regular inspections of job sites, materials, and equipment to ensure implementation and effectiveness of the written exposure control plan.
- Provision of the written exposure control plan for review, or copies of the plan, upon request to affected employees, designated employee representatives, or required agencies.

Abrasive Blasting

Employers engaged in abrasive blasting activities where blasting agents contain crystalline silica or where abrasive blasting is conducted on substrates that contain crystalline silica must also comply with other OSHA standards, when applicable.

Respiratory Protection

Respiratory protection is required for reduction of employee exposure to hazardous levels of respirable crystalline silica when exposures cannot be feasibly controlled to below the PEL (50 µg/m3). Respirators are to be provided at no cost to employees and a respiratory protection program is required to be in place in accordance with OSHA regulations.

Specific circumstances when the appropriate respiratory protection is required include:

- When feasible engineering or work practice controls are not sufficient to reduce employee exposures to or below the PEL
- During periods when feasible engineering and work practice controls are being installed or implemented
- During certain maintenance and repair tasks where engineering controls and work practices are not feasible
- When specified by an exposure control method listed in Table 1: Specified Exposure Control Methods
- During periods when employees and employee representatives are in a regulated area

Housekeeping

The following practices are prohibited under the silica rule where the activity could contribute to employee exposure to respirable crystalline silica:

- Dry sweeping or dry brushing
- Use of compressed air to clean clothing or surfaces

Wet sweeping, HEPA-filtered vacuuming, cleaning with compressed air with a dust collection system, or other methods of minimizing exposure should be used to clean silica-containing dust.

If none of these methods are feasible, this must be documented and exposures still maintained below the PEL using respiratory protection and other feasible control methods.

Medical Surveillance

Medical surveillance must be provided to each employee covered under the silica rule at no cost to the employee and at a reasonable time and place. The following are the requirements for inclusion in the medical surveillance program:

- Within 30 days of initial assignment (baseline) of work, unless they have received a medical exam within the last three years that meets the requirements (see exam requirements below); or
- They are exposed to respirable crystalline silica at or above the action level for 30 or more days per year; or
- They are required to wear a respirator for 30 or more days per year.

A qualified physician or other licensed health-care professional (PLHCP) who manages silica medical surveillance programs and performs medical exams should have a thorough knowledge of silica-related diseases and health effects.

A qualified NIOSH B-Reader must be utilized to interpret all chest X-rays. The B-Reader certification is a unique certification for physicians and specialists. A classification scheme was created to codify and describe radiographic abnormalities in a simple, systematic, and reproducible manner by the International Labour Organization (ILO), a specialized agency of the United Nations. This type of interpretation and classification has been shown to help in the early detection of silicosis. X-ray analysis alone was estimated to miss about 63 percent of patients who would have otherwise been diagnosed with silicosis.

The employer is required to provide the PLHCP with a copy of the respirable crystalline silica rule and the information below:

- A description of the employee's former, current, and anticipated duties related 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
- Personal protective equipment used or anticipated to be used and the expected time and duration of use
- Previous employment-related medical exams provided to employee and still within control of the employer

Baseline (initial) Medical Surveillance

The initial employee medical examination must 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; any history of respiratory system dysfunction, including signs and symptoms of respiratory disease (e.g., shortness of breath, cough, wheezing); history of tuberculosis; and smoking status and history;
- A physical examination with special emphasis on the respiratory system

- A chest X-ray [a single poster anterior radiographic projection or radiograph of the chest at full inspiration recorded on either film (no less than 14 x 17 inches and no more than 16 x 17 inches) or digital radiography systems], interpreted and classified according to the International Labour Office (ILO) International Classification of Radiographs of Pneumoconiosis by a NIOSH-certified B Reader;
- A pulmonary function test to include forced vital capacity (FVC) and forced expiratory volume in one second (FEV1) and FEV1/FVC ratio, administered by a spirometry technician with a current certificate from a NIOSH approved spirometry course;
- Testing for latent tuberculosis infection; and
- Any other tests deemed appropriate by the PLHCP.

Periodic Medical Surveillance

Medical exams are required every three years (excluding the TB test) for employees who remain in the medical surveillance program. The PLHCP may recommend a higher frequency for this medical exam based on individual medical and health factors.

PLHCP Written Medical Report for Employee

The results of an employee medical exam must be explained to the employee by the PHCLP. A written medical report must also be provided to the employee within 30 days of each medical exam performed.

PLHCP Written Medical Opinion for Employer

Employers should obtain a written medical opinion for each covered employee stating the employee has met the requirements to perform their work and any recommended limitations. The employer must provide a copy of the written medical opinion to the employee within 30 days of the exam. The medical opinion instructions must be followed and may include employee referral to a specialist.

Employee Authorization

An employee may provide written authorization to allow for more information to be included in the written medical opinion made available to the employer. The additional information can include recommended limitations on the employee's exposure to respirable crystalline silica and a statement that the employee should be examined by a specialist if chest X-rays are classified as 1/0 or higher by the B Reader or if the PLHCP deems a specialist visit is otherwise necessary.

Training

The elements required for communication to employees must be included in the overall hazard communication program and include at least the health hazards listed below:

- Cancer
- Lung effects
- Immune system effects

- Kidney effects

Training and hazard communication must also include:

- Any other health hazards associated with respirable crystalline silica;
- Specific tasks that could result in exposure and any regulated or restricted access areas;
- Specific protective measures to prevent or reduce exposures;
- Medical surveillance program purpose and description; and
- When a competent person is required and the identity of this person.

Employees must be able to demonstrate knowledge and understanding of the communication and training elements listed above.

Recordkeeping

Employers are required to maintain records according to OSHA regulations depending on the type of record:

- Exposure records (including objective data records) must be retained for 30 years.
- Medical records must be retained for the duration of employment plus 30 years.

All medical records and exposure assessment records must be made available to employees upon request.

Exposure Assessment Records

Air monitoring records must include the following information:

- The date of sampling;
- The task(s) evaluated;
- Sampling and analytical methods used;
- The number, duration, and results of samples;
- The identity of the laboratory that performed the analysis;
- The type of PPE used during sampling; and
- The name, social security number, and job classification of all employees represented by the sampling with a note as to which employees actually participated in the sampling.

Objective data records used to determine employee exposures must include at least the following:

- The crystalline silica-containing material used by employees
- The source of the objective data
- The results of material testing and the testing protocol used
- Description of the process, task, or activity using the material

- Any other data relevant to the objective data and associated exposures

Medical Surveillance Records

Records associated with medical surveillance must include the following employee information:

- Name and social security number
- A copy of the PLHCP's and specialists' written medical opinions
- A copy of the information provided to the PLHCPs and specialist

30 TRAFFIC CONTROL

30.1 Purpose

The purpose of the program is to prescribe rules and establish minimum requirements for traffic control

30.2 Scope

When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers our company's employees and contractors and shall be used on owned premises or when an operator's program doesn't exist or is less stringent.

30.3 Key Responsibities

Managers and Supervisors

Managers and supervisors are responsible for ensuring that all employees, and/or contractors have been trained in the procedures, equipment and PPE associated with traffic control. Training must be based on jurisdictional requirements.

Employees

Employees are responsible for following this program.

30.4 Procedure

Our company shall develop, in writing, and implement a traffic control plan for its workers at a worksite if any of them may be exposed to a hazard from vehicular traffic that may endanger the safety of any worker or the public. It shall include the following control measures:

- Pedestrians have the right-of-way. In all instances on the work site, pedestrian traffic has the right-of-way.
- Our company shall ensure the use of signs, barricades, and other control measures to protect workers from traffic hazards. Employees struck by vehicles or mobile equipment account for many work zone injuries or fatalities. Work zones should be marked by traffic control devices such as:
    - Signals
    - Message boards
    - Cones
    - Barricades
    - Delineator Posts
    - Flashing Lights

  - Flares
  - Conspicuously identified pilot vehicles
  - Speed Restrictions
  - Traffic control personnel must wear high visibility work vests. Workers exposed to traffic must be attired in bright, highly visible apparel. See OSHA Safety Vest Classification Table.

- Provisions of Flaggers to Direct Traffic – When work activity occurs on or adjacent to a surface being used by the public, our company is responsible for providing flagger(s) to direct traffic.
- Flaggers are provided with proper hand-signaling devices. Hand-signaling devices such as Stop/Slow paddles or red flags should be provided to flaggers. Oftentimes, the Stop/Slow paddle is the preferred hand-signaling device because the paddle gives road users more positive guidance than red flags, which are primarily used in emergency situations.
- Traffic control persons operating during hours of darkness or when there is poor visibility are provided with a reflective paddle and a flashlight fitted with a red signaling device.
- A means of communication is provided when there is more than one traffic control person. When there are multiple traffic control persons that are not working within sight of each other, an effective means of communication should be provided and used (preferably radios).

31 TRENCHING & EXCAVATION

31.1 General

An excavation, as defined by OSHA, means any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal. All excavation work performed by Chesmar Homes DFW or a sub- contractor, shall conform to the guidelines of this policy and the above referenced OSHA standards. If the subcontractor's procedures and policies meet or exceed this document, the subcontractor's policy and procedures shall be used.

This policy and procedure is limited to excavations of less than 20' in depth. Excavations that exceed 20' require a protective system designed by a qualified professional engineer.

31.2 Definitions

An excavation, as defined by OSHA, means any man-made cut, cavity, trench, or depression in an earth surface, **Accepted Engineering Practices** are those requirements that are compatible with standards of practice required by a registered professional engineer.

Aluminum Hydraulic Shoring is a pre-engineered shoring system comprised aluminum hydraulic cylinders (cross braces) use in conjunction with vertical rails (uprights) or horizontal rails (whalers). The system is designed specifically to support the side walls of an excavation and prevent cave-ins.

Bell-Bottom Pier Hole is a type of shaft or footing excavation, the bottom is made larger than the cross section above to form a belled shape.

Benching is a method of protecting employees from cave-ins by excavating the sides to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between the levels.

Cave-in means the separation of a mass of soil or rock material from the side of the excavation or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation by falling or sliding in a quantity that may be sufficient to entrap, bury or injure and immobilize a person.

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

Cross Braces are the horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales.

Faces or sides are the vertical or inclined earth surfaces formed as a result of the excavation.

Failure is the breakage, displacement or permanent deformation of a structural member or connection that would reduce its structural integrity and its support capabilities.

Hazardous atmosphere is an atmosphere that may be harmful, cause death, illness or injury by being explosive, poisonous, flammable, corrosive, oxidizing, irritating or toxic.

Kick out is the accidental release or failure of a cross brace.

Protective system is a method of protecting employees from cave-ins materials that could roll or fall into the excavation face, collapse of adjacent structures. They include support systems, sloping and benching systems, shield systems and other systems which provide the necessary protection.

Ramp means an inclined walking or working surface used to gain access to one point from another and is constructed from earth or structural materials like wood or steel.

Registered Professional Engineer is a professional engineer registered in the state where the work is to be performed.

Sheeting are the members of a shoring system that retain the earth in position and are supported by other members of the shoring system.

Shield (Trench Box, Trench Shield) is a structure that is able to withstand the forces of a cave-in. Shields can be permanent structures that can be designed to be portable and moved along as the work progresses, pre-manufactured, or job built in accordance with OSHA regulations.

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

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

Stable Rock is a solid mineral material that can be excavated with vertical sides and shall remain intact while exposed. (see the standard for methods of converting unstable rock to stable rock.)

Structural Ramp is a ramp made of steel or wood and usually used for vehicle access. Soil or rock ramps are not considered structural.

Support System is a structure such as underpinning, bracing or shoring which provides support to an adjacent structure, underground installation or the sides of an excavation.

Tabulated Data are tables and charts approved by a registered professional engineer and used to design and construct a protective system.

Trenches are a narrow excavation, in relation to length, made below the surface of the ground. Generally, the depth is greater than the width, but the width of a trench measured at the bottom is not greater then 15 feet. If forms or other structures are installed or constructed in an excavation and reduce the dimension from the structure to the side to 15 feet or less the excavation is considered a trench.

Uprights are vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not come in contact with each other. Uprights in contact with each other are sheeting.

Wales are horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the shoring system or earth.

31.3 Competent Person

An excavation, as defined by OSHA, means any man-made cut, cavity, trench, or depression in an earth surface, The Subcontractor is responsible for the designation of a Competent Person for each excavation. Chesmar Homes DFW reserves the right to review the qualifications of any Sub-Contractor furnished Competent Person. The competent person is responsible for implementing all aspects of compliance with trenching and excavation operations.

31.4 Underground Utilities

Prior to beginning excavation work, Blue Stakes of Texas 811 must be contacted and proper procedures followed to avoid striking underground utilities. This includes:

- Always calling 811 before digging
- Wait for utilities to be located and marked accurately
- Carefully dig using hand tools within two feet of the markings
- Respect and protect the markings during the project.
- Additional information can be found at www.texas811.org

31.5 Pre-Excavation Checks

The following checks are to be done prior to beginning excavation activities:

Identify hidden obstructions or hazards by obtaining and checking site plans identifying underground pipes or utilities in the area of the excavation. Follow requirements for locating and marking underground utilities.

Care should be used as these plans and records may not be up-to-date or accurate.

Check the area for previously disturbed ground. Excavations in previously disturbed ground may require additional bracing and shoring. Previously disturbed ground near a new excavation may also require use of bracing and shoring in the new excavation.

31.6 Soil Classification

An excavation, as defined by OSHA, means any man-made cut, cavity, trench, or depression in an earth surface, The competent person is to determine the soil type as either (1) Stable rock, (2) Type A, (3) Type B (4) Type C. The classification of soil is to be made based on the result of at least one visual and one manual test. Manual tests can be performed by (1) Thumb penetration test, (2)

Plasticity Test, (3) Drying test (4) Pocket penetrometer test. Soil cannot be classified as type A if it is fissured or has been previously disturbed.

31.7 Protective Systems

An excavation, as defined by OSHA, means any man-made cut, cavity, trench, or depression in an earth surface, All trenches 5 feet or more in depth are required to have a protective system. The trench must be shored, benched, sloped, or shielded according to OSHA regulations and to protect workers.

Excavations shallower than 5 feet shall also be sloped or shored if they are in unstable soil.

(Note: Workers kneeling in less than 5 feet can still be exposed to the hazards of cave-ins or hazardous environments).

The depth of an excavation shall be measured at its greatest vertical dimension.

Spoil piles, located close to the edge of an excavation (within 2') shall affect the vertical depth.

Sloping and Benching

Sloping and benching is a cutting back of the trench walls to the proper angle of repose. Angles of repose are dependent upon soil classification, water condition, previous soil disturbances, etc. The proper angle should be determined by a competent person for each trench. Where the excavation has water conditions, silty material, loose boulders, and areas where erosion, deep frost action, and slide planes appear, the angle of repose shall be flattened. Sloping and benching is to be done at the following ratio, measured from the bottom of each trench wall to the top.

Type A soil: ¾:1 (53 degrees)

Type B soil: 1:1 (45 degrees)

Type C soil: 1 ½:1 (34 degrees)

Shoring and Shielding

Shoring of a trench may be accomplished with the use of wood timbers, screw jacks, aluminum hydraulic shoring or combinations of all of these methods. The type of shoring to be used is determined by the soil type and soil conditions. Ground water and water intrusion can weaken the soil face and add weight, increasing the force on the shores. If the excavation is below the water line, the shoring should be driven below the bottom of the surface of the trench to prevent undermining.

Timbers shall be in sound condition and free of major defects. They shall be equal to the grade size specified. Workers shall be alert for the warning signs of splintering or separating wood fibers**.**

Pressure Gauges, cylinders and rails shall all be in good condition if hydraulic shoring is used. Signs of fluid leakage shall be detected and repaired.

Aluminum hydraulic shoring is to be installed according to the OSHA standard and the manufactures specifications and recommendations.

Shields are to be installed in accordance with the OSHA standard, and the manufacturers specifications and recommendations.

No one is allowed in the trench while shoring or shielding systems are being installed or removed.

The tabulated data must be on site.

31.8 Trench Hazards

Weather conditions can affect the water content of the soil through excess water from rain or melting ice and snow. Water can liquefy firm soil and increase pressure on the shores.

Freezing of the ground and quick thaw can undermine a shoring system and cause failure.

Soils can change properties from exposure to the air. Air exposure can turn hard, solid soil to soft, slippery soil.

Vibrations from machinery, roadways, railroad tracks, explosives, flares, etc., can cause increased loads on a shoring system and extra sheeting and shoring may be needed.

The location of the spoils may also affect the pressure on a shoring. Spoils must be kept no closer than 2 feet from the trench. Increase the distance when site conditions warrant.

The edges of all open trenches must be protected. Barricades are to be erected to prevent accidental entry, and to prevent equipment from falling into the excavation.

All tools, equipment and supplies must be kept back from the excavation edge to prevent accidental slippage into the trench.

Hydrocarbon vapors are heavier than air. In locations where hydrocarbon vapors may be present, atmospheric monitoring and confined space procedure are required.

All welding and cutting torches shall be shut down at the source when workers depart the excavation or trench.

31.9 Excavation Equipment

An excavation, as defined by OSHA, means any man-made cut, cavity, trench, or depression in an earth surface, Only trained and qualified personnel may operate excavation equipment.

Workers in the excavation are not to place themselves below a load being lifted overhead.

Equipment shall be shut down when the operator dismounts the equipment.

Refueling of equipment shall not take place in the immediate vicinity of the site.

A knowledgeable signal person must be in place when equipment operators cannot see the bottom of the excavation.

31.10 Daily Inspections

Daily inspections of the excavation and shoring equipment must be conducted by a competent person and documented.

Should an unsafe condition be discovered, work shall stop immediately in the affected area and corrective action taken.

Inspections must also be performed after rainstorms, snowstorms or any other occurrence which may alter the condition and hazard of the trench.

31.11 Access and Egress

An excavation, as defined by OSHA, means any man-made cut, cavity, trench, or depression in an earth surface, A means of access and egress must be provided within 25 feet of every worker in a trench 4’ or more in depth.

Ladders shall be in good condition, extend 3 feet over the top of the trench and be secured in such a manner as to prevent movement while in use.

Walkways, runways and sidewalks must be kept clear of excavated material or other obstructions.

No sidewalk, ramp or walkway is to be undermined unless properly shored.

32 WELDING, CUTTING, AND HOT WORK

32.1 Basic Burning and Welding Precautions

1. All Moveable fire hazards shall be taken to a safe place away from burning/welding.
2. Guards must be used to shield/confine the heat, sparks and slags.
3. Welding and cutting are not permitted if a safe environment cannot be created. Stop all operations if there becomes presence of hazardous fumes, dust and hazards of dangerous metals.
4. Cracks, holes and floor openings are to be covered if they are within 50 feet of the heat source.
5. Keep suitable extinguishing equipment in the area.
6. No hot work is allowed in the presence of flammable or combustible vapors, liquids, or dusts.
7. Remove combustibles 50 feet from the hot work operations or cover/barricade them with flame proof covers.
8. All equipment will be inspected and maintained including hoses, gauges, and cylinders.

32.2 Fire Watch

1. A fire watch is used in areas where other than minor fires could occur.
2. A fire watch is used where appreciable combustibles are closer than 35 feet from the point of hot work.
3. Fire watch is used where combustibles are likely to ignite.
4. Fire watch will have a trained individual that can activate the alarm system and who is trained to use an extinguisher or fire-fighting equipment.
5. Fire watch must be kept during the entire operation and a half hour after the operation is complete.

32.3 Permit and Authorization

1. The supervisor is responsible to prepare and issue the permit.
2. The supervisor must also ensure that the work site is prepared.
3. The permit is assigned to the welder by name of job, and cannot be used by anyone else.
4. Permits must be posted at the job site.
5. If work extends to a different shift the oncoming supervisor must inspect area and initial permit.

6. When work is complete the permit is to be returned to the supervisor.

32.4 Compressed Gas Cylinders

1. Never tamper with pressure relief devices, cylinder markings or labels.
2. Never paint or otherwise alter cylinder.
3. Notify vendor of corrosion, damage, or leaks.
4. Cylinders must be capped unless the cylinder is connected.
5. Valves must be shut-off when cylinders not in use.
6. Never transport on lift unsecured or in a horizontal position.
7. Keep cylinders away from heat.
8. Carts must be used to move cylinders in an upright condition.
9. Do not lift cylinders with ropes or slings.
10. Store cylinders with like gases.
11. Store cylinders away from ignition sources.
12. When storing keep cylinders capped, upright, and chained.
13. Keep oxygen 20 feet from anything flammable.
14. Consult SDS for storage.
15. Identify empty cylinders.
16. Those in charge of oxygen and fuel supply must be competent and trained annually.
17. Workman assigned to operate or maintain equipment with all laws and Amercian Welding Society standard.

32.5 Welding and Cutting Safety Procedures

The greatest hazard of welding and burning operations is the possibility of eye injuries. Ultra-violet radiation is generated during these operations. After exposure to excessive ultra-violate radiation, eyes may develop sharp pains, become red and irritated. Without proper protection, it is possible to damage eyes permanently.

The following are recommended shades of lenses for various welding and burning operations:

OPERATION	SHADE NUMBER
Soldering	**2**
Torch Brazing	**3 or 4**
Light Cutting up to one inch	**3 or 4**
Medium Cutting, one to six inches	**4 or 5**
Heavy Cutting, six inches and over	**5 or 6**
Gas Welding (light) up to 1/8 inch	**4 or 5**
Gas Welding (medium) up to 1/8 to 1/2 inch	**5 or 6**
Gas Welding (heavy) 1/2 inch and over	**6 or 8**
Shielded metal-arc welding, 1/16 to 5/32 inch electrodes	**10**
Inert-gas metal-arc welding (non-ferrous) 1/16 to 5/32 inch electrodes	**11**
Inert-gas metal-arc welding (ferrous) 1/16 to 5/32 inch electrodes	**12**
Shielded metal-arc welding 3/16 to 1/4 inch electrodes	**12**
Shielded metal-arc welding 5/16 to 3/8 electrodes	**14**
Carbon-arc welding	**14**

It must be remembered that some plated and/or painted metals can give off harmful fumes or vapors when subjected to the high temperatures of welding or burning. These fumes or vapors could cause a health problem if breathed for too long. Welding and burning should be performed in a well-ventilated area or if working outside position yourself "up-wind" from the point of operation. Respiratory Protection maybe required- ask your supervisor if you have any questions

When chipping slag, be sure to wear eye protection!

In all welding and burning operations be sure the necessary fire protection and measures are taken.

Do not store oxygen and acetylene bottles in the same area and protect them from physical damage.

Specialist in welding and cutting must not only protect themselves from injury but must also assume a certain responsibility for their helper, their co-worker in other trades and in some instances, the public. Accident records indicate that others near arc welding operations are injured more often than the operator. Also, there is the ever-present chance of fire. Fires caused from welding and cutting cost hundreds of thousands of dollars annually. You just can't substitute oxygen for air to produce artificial ventilation. Air is usually supplied by a forced draft to all such operations.

There is no good reason at all for taking a chance by welding or cutting in a confined area which does not have proper ventilation. Remember that oxygen does not burn, but it does support combustion. Do proper testing of atmosphere in confined space areas.

Responsibility for safety in welding and cutting goes all the way up and down the line from superintendent, foreman and operator. Everyone concerned should do his share in making these operations safe.

Accident records indicate that certain conditions and acts caused most cutting and welding accidents. Precautions for preventing welding and cutting accidents and required arc welding training are:

1. Before you start to weld or cut in confined spaces, be sure there is proper ventilation. Follow all confined space requirements.
2. Keep a proper type fire extinguisher within reach at all times.
3. Use only a wrench of the proper size on cylinder apparatus and keep all connections right.
4. Keep oil away from oxygen valves.
5. Inspect all work areas and place required shields and welding blankets before welding or cutting; see that there are no explosives, dangerous gases or flammable materials nearby.
6. Never stand on wet floors or touch other ground when changing electrodes.
7. Don't allow anyone to stand too near the work or stare at the arc.
8. Keep your job clean. Get rid of rubbish.
9. Be sure that floor gratings are covered, with no cracks through which sparks can drop to lower levels.
10. Whenever possible, do your work out-of-doors.
11. Take extra precautions and use the proper respirator when working on or around metals like lead and cadmium that give off highly dangerous fumes. Follow all respiratory requirements.
12. See that your helper is as well-equipped as you are.
13. Don't start work in an area that is full of dust.
14. Inspect your equipment before you start work.
15. Have only qualified persons repair or adjust equipment.
16. Oxygen and acetylene bottles should be secured at all times.

17. Request a fire watch if a burning hazard exists.
18. All parts of the body should be protected from radiant energy, sparks, and molten metal splashes. Clothing made from wool, or wool blends, is generally better than cotton. Some cutting operation such as inert- gas metal arc welding will cause exposed cotton clothing to rapidly deteriorate. Leather capes, jackets, leggings, and aprons provide addition protection especially in vertical, overhead operations. Use of dark clothing will help reduce reflected light.

32.6 Additional Rules for Safe Use

- First Aid equipment shall be available near all welding, cutting, and hot work operations.
- Employees left in charge must be properly instructed and competent to handle fuel, gas, and oxygen supply equipment. They must know the hazards and what procedures to follow in the event of a leak from gases, fumes from welding and explosive dust. The area must be immediately evacuated and a risk assessment complete to eliminate hazard prior to continuing welding operations. See number 7 from basic procedures above.
- Welders and supervisors will be properly trained on all parts of this program and to report immediately any unsafe condition.
- If the object to be welded or cut cannot readily be moved, all moveable fire hazards should be removed from the welding area.
- If all fire hazards cannot be removed, then guards shall be used to confine the heat, sparks and slag and to protect the immovable fire hazards. Such things as welding blankets and welding screens would be used so that the hazard is completely protected.
- If welding cannot be conducted safely, the welding and cutting shall not be performed.
- Fire extinguishers shall be made readily available during welding operations within 7 1/2’ of welding operations or the closest safest distance to the operation.
- A fire watch is required when there is any chance of fire from combustible sources within 50 feet or flammable sources.
- A fire watch shall be maintained at least a half an hour after the welding or cutting operation was completed.
- A hot work permit needs to be completed before performing hot work.
- Equipment operators must inspect their equipment daily for defect or damage prior to use.
- Equipment operators must report equipment defects and discontinue use until it has been repaired or replaced. Defective or damaged equipment is not to be used.

Job Safety Inspection Form

Company _____

Job Name _____ Week _____

Place an (x) if no correction needed, N/A for not applicable, or (c) if correction is needed

Item	M	T	W	T	F	S	S
Postings, Safety Program, SDS, Heat Illness							
Permits							
Tailgate Meetings							
Trenching & Excavation							
Personal Protective Equipment							
Walkways, Runways, and Aisles							
Emergency Exits							
Ladders							
Housekeeping							
Fall Protection / Guardrails							
Illumination / Lighting							
Sanitation Facilities							
Tools and Equipment							
Electrical							
Confined Spaces							
Scaffolding							
Material Handling							
Overhead Hazards							
Fire Prevention / Fire Extinguishers							
Silica Exposure Control							
Lockout / Tagout Procedures							
Other							

Items requiring correction notes:

Person conducting inspection:

Safety Training

Safety Training must be provided for employees in the performance of their duties

NAME _____

DEPARTMENT _____

The employee has been given the safety indoctrination, advised of company safety rules, and needs additional training as indicated below.

TRAINING TOPIC	Date Training Must Be Completed	Date Training Completed	Initials of Trainer	Initials of Employee

EMPLOYEE VIOLATION WARNING NOTICE

DATE: _____ LOCATION: _____

EMPLOYEE NAME: _____

==========

☐ lst Violation ☐ 2nd Violation ☐ 3rd Violation

==========

You are hereby warned and have been counseled on:

Disciplinary action taken:

Issued by: _____ Reviewed by: _____

Supervisor Director of Safety / Human Resources

I agree to comply with the safety procedures as discussed and outlined above.

_____ _____

Employee Signature Date

ACCIDENT, INJURY & ILLNESS INVESTIGATION FORM

Company Name: _____

Person(s) Conducting Investigation: _____

Title(s): _____

Date of Accident/Injury/Illness: _____

Name(s) of Affected Employee(s):

(1) _____ (2) _____

Nature of Accident/Injury/Illness: _____

Part(s) of Body Affected: _____

What Workplace Condition, Work Practice, or Protective Equipment Contributed to the Incident:

_____

Was a Code of Safe Practice Violated? If so, Which One?

_____

What Corrective Actions Will Prevent Another Occurrence?

_____

Was the Unsafe Condition, Practice, or Protective Equipment Problem Corrected Immediately?

_____

If No, What Has Been Done to Ensure Correction?

_____

Until Corrected, What Actions Have Been Taken to Prevent Recurrence?

_____

Will the Inspection Checklist for the Area Require Modification to Prevent Recurrence?
If so, What Will Be Added?

_____

Signature of Investigator: _____ Date: _____

Person Responsible for Corrective Actions: _____

FIRST AID FORM

COMPANY NAME: _____

NAME OF INJURED: _____

DATE OF INJURY: _____ TIME OF INJURY: _____

OUTSIDE TREATMENT REQUIRED? YES: ☐ NO: ☐

IF YES, WHERE? _____

DESCRIPTION OF INJURY

TYPE OF FIRST AID

SIGNATURE OF INJURED: _____ DATE: _____

SIGNATURE OF PREPARER: _____ DATE: _____

HOT WORK PERMIT

Company Name: _____ Date: _____

Name of Person filling out Permit: _____

Work Location: _____

Start Time: _____ Finish Time: _____

Name of *(Trained)* Fire Watch Person: _____

(Fire watch for 30 minutes after work completed) End of Fire Watch Time: _____

- ☐ Person doing hot work has been trained in the safe of equipment, and how to work safely?

  Name of Person doing Hot Work: *(Print Clearly)* _____
- ☐ Appropriate PPE (eye protection, helmet, protective clothing, respirator, gloves, etc.) available
- ☐ Where work permits, welding booth screens will be used
- ☐ Fire extinguishers placed for immediate use
- ☐ Floors swept clean of combustible materials for a radius of 35 feet
- ☐ Combustible floors dampened, covered with damp sand, or protected with fire-resistant shields.
- ☐ Combustible materials and supplies moved at least 35 feet away from hot work location
- ☐ Wall and floor openings (windows, etc.) within 35 feet of work location have been covered
- ☐ Equipment not to be used near flammable vapors or liquids, or containers that flammable vapors or liquids
- ☐ Fire hazards that can't be moved protected by appropriate guards
- ☐ Dusts and conveyor systems such as duct work that might carry sparks cleaned, protected and shut down where necessary
- ☐ Any pipelines to containers disconnected or blanked
- ☐ On-site contractors advised of hot work
- ☐ Warning sign(s) posted to warn other workers
- ☐ If working in confined space, confined space permit has been issued
- ☐ Maintain a fire watch during operations and for 30 minutes after work has been completed

_____ _____

Authorized Signature Date

Confined Space Entry Permit

Permit valid for one shift only. Permit must be posted near entry point. Keep permit on file for one year.

Date:____/____/____ **Entry Time:**_____ AM PM **Permit Expiration Time:**_____AM PM

Confined Space Name/ID: _____ **Location:**_____

Reason for Entry:_____

Entry Point: TOP BOTTOM SIDE **Communication used:** VOICE HAND SIGNAL RADIO Other_____

Hazard Identification & Control

Identify potential or known hazards for the confined space. For "OTHER" explain in notes.

Atmospheric Hazards present or potentially present – *(check all that apply).* **YES NO NA**

☐ Oxygen Deficient <19.5% ☐ Flammable Gases, Vapors when ≥ 10% LFL ☐ Airborne combustible dust

☐ Oxygen Enriched ≥ 23.5% ☐ Toxic Gases, Vapors when ≥ PEL ☐ Other_____

Control: ☐ Test before entry ☐ Continual monitoring ☐ Natural ventilation ☐ Forced air ventilation ☐ Other

Engulfment & Entrapment Hazards present or potentially present - *(check all that apply)* ☐ **YES** ☐ **NO** ☐ **NA**

☐ Flowing material ☐ Hung up, bridged, crusted material ☐ Inwardly converging walls ☐ Sloping floors ☐ Other

Control: ☐ LOTO fill and/or emptying equipment ☐ Lock gates ☐ Block spouts/pipes ☐ Drain/empty ☐ Lifeline use

Potential/known hazard	YES	NO	Type / Control Used	Potential/known hazard	YES	NO	Type / Control Used
Egress hazards	☐	☐		Respiratory hazards	☐	☐	
Insufficient lighting hazard	☐	☐		Skin hazards	☐	☐	
Chemical hazards	☐	☐		Heat/Cold hazards	☐	☐	
Mechanical hazards (unguarded items)	☐	☐		Snake, Rodent, Animal and Insect Hazards	☐	☐	
Electrical hazards	☐	☐		Vehicle hazards	☐	☐	
Fall hazards	☐	☐		Noise hazards	☐	☐	

Other Hazards & Control:

Safety & Emergency Rescue

RESCUE / FIRE CONTACT #:

	YES	NO	NA		YES	NO	NA
Entry area secure	☐	☐	☐	Safety harness & lifeline or retrieval line	☐	☐	☐
LOTO/de-energization & isolation	☐	☐	☐	PPE inspection completed before use	☐	☐	☐
Lighting (rated for type of space/work)	☐	☐	☐	Mechanical retrieval device	☐	☐	☐
Hot work permit	☐	☐	☐	Respirator	☐	☐	☐
GFCI equipment	☐	☐	☐	Hearing Protection	☐	☐	☐
Non-sparking tools	☐	☐	☐	Other PPE_____	☐	☐	☐

Entrants should always wear hard hats, work books, and eyewear.

Rescue equipment available? ☐ **YES** ☐ **NO** Type: _____

Stand by personnel used? ☐ **YES** ☐ **NO** Name(s): _____

CPR trained person available? ☐ **YES** ☐ **NO** Name(s): _____

Atmospheric Information *Acceptable atmospheric entry conditions must meet the limits stated below.*

Monitor calibrated? ☐ **YES** ☐ **NO** Date calibrated: ____/____/____ Monitor functioning correctly? ☐ **YES** ☐ **NO**

Bump test conducted against known concentration of gases, your meter is set up to check? ☐ **YES** ☐ **NO**

Pre-entry / Initial Air Monitor Readings

Time	O2 19.5 - 23.5%	LFL <10%	CO ≤ 50 ppm	H2S ≤10 ppm	PH3 ≤ 0.3 ppm	NH3 ≤ 25 ppm	Other ____	Signature

Periodic Air Monitor Readings – *Test every ½ hour unless entrant wears meter continuously*

Time	O2	LFL	CO	H2S	PH3	NH3	Other ____	Signature

NOTES:

I have been trained for the confined space job duties assigned and agree with the conditions listed on the entry permit.

Entrant(s): _____ _____ _____ _____

Print Name *Signature* *Print Name* *Signature*

Attendant(s): _____ _____ _____ _____

Print Name *Signature* *Print Name* *Signature*

I certify all conditions and actions necessary for safe entry have been performed and the entry is authorized.

Entry Supervisor: _____ _____

Print Name *Signature*

Permit Cancellation Time: _____ AM PM Structure returned to operating condition? ☐ **YES** ☐ **NO**

Entry Supervisor Signature: _____ **Date:** ____/____/____

Ensure employee has received the appropriate training for the job & tasks and the training is documented.

MEWPS Frequent Inspection Checklist

MAKE: _____ **MODEL:** _____ **DATE:** _____

INSPECTOR: _____

All inspections should be conducted in accordance with manufacturer's manual and guidelines.

	Current inspection sticker (Must be within 13 months)	YES	NO	N/A	COMMENTS
Documentation	Operator(s) Certified	☐	☐	☐	
Documentation	Manufacturer's operator manual is in weatherproof box	☐	☐	☐	
Documentation	Rescue Plan	☐	☐	☐	
Wheels/Tires	Wheel security (nuts, retainers: loose, damaged, missing)	☐	☐	☐	
Wheels/Tires	Tire pressure (pneumatic, foam filled or solid)	☐	☐	☐	
Wheels/Tires	Cuts, splits, exposed braiding, damaged rims	☐	☐	☐	
Engine/Power Source	Fluid levels (enbvine oil, coolant, fuel)	☐	☐	☐	
Engine/Power Source	Fluid leakage on ground and around engine	☐	☐	☐	
Engine/Power Source	Battery (electrolyte, security and charging plug condition)	☐	☐	☐	
Hydraulics	Hydraulic fluid level	☐	☐	☐	
Hydraulics	Leaks (hoses, pipe connections, rams, cylinders)	☐	☐	☐	
Hoses and cables	Security and condition (cuts, chaffing, bulges)	☐	☐	☐	
Hoses and cables	Power track cable trays (free from damage and debris)	☐	☐	☐	
Outriggers, stabilizers	General condition, pins/retainers, footplate	☐	☐	☐	
Outriggers, stabilizers	Spreader plates (present, condition, secure for travel)	☐	☐	☐	
Outriggers, stabilizers	Interlocks (functioning, engaging)	☐	☐	☐	
Chassis, boom and scissor pack	General condition (damage, misalignment, corrosion)	☐	☐	☐	
Chassis, boom and scissor pack	Cracks in weld	☐	☐	☐	
Chassis, boom and scissor pack	Pins, retainers and chains (security, signs of wear)	☐	☐	☐	
Chassis, boom and scissor pack	Canopies, guards, engine covers (security and condition)	☐	☐	☐	
Platform or cage	Steps for access/egress (secure, undamaged, clear)	☐	☐	☐	
Platform or cage	Entrance gate, guardrails, retaining pins	☐	☐	☐	
Platform or cage	Harness anchor points	☐	☐	☐	
Platform or cage	Clear of rubbish, debris, obstructions	☐	☐	☐	
Decals and signage	ID plate, safety, warning, and information decals (legible).Wind load chart. Inspection sticker	☐	☐	☐	
Decals and signage	Controls (identification decals, directional arrows)	☐	☐	☐	
Decals and signage	Platform loads (SWL, mqx. windspeed, max. number of persons)	☐	☐	☐	
Using Ground (G) And Platform (P) controls	Security device (power isolator, keypad, smart card)	☐	☐	☐	
	Function enables (ignition key, foot switch, hold to run device)	☐	☐	☐	
	Emergency stops and emergency lowering system	☐	☐	☐	
	All switches, function controls (move freely, do not stick)	☐	☐	☐	
	Lifting functions (raise lower, slew, tele-out, tele-in)	☐	☐	☐	
	Travel functions (forward, reverse, steer, brakes)	☐	☐	☐	
	Elevated drive speed (reduced or prevented)	☐	☐	☐	
	Lights, beacons, warning devices	☐	☐	☐	
	Alarms (tilt, descent, and travel)	☐	☐	☐	
	Limit switches (e.g. descent, load, outreach, rotation)	☐	☐	☐	
	Pothole protection device (fully deploys and retracts)	☐	☐	☐	
	Oscillating axle locks, extending decks	☐	☐	☐	
	Accessories, power to platform, extending decks	☐	☐	☐	
	Jack-legs, stabilizers, outriggers, leveling devices	☐	☐	☐	

All malfunctions, defects, safety violations, safety issues, hazards MUST BE IMMEDIATELY REPORTED TO SUPERVISOR

Only persons who are trained and authorized by their employer should operate this equipment.

MEWPS Frequent Inspection Checklist

MAKE:_____ **MODEL:**_____ **DATE:** _____

QUALIFIED INSPECTOR/OPERATOR: _____

All inspections should be conducted in accordance with manufacturer's manual and guidelines.

	YES	NO	N/A	COMMENTS
Qualified person Operator(s) certified and certification on site	☐	☐	☐	
Wind load chart	☐	☐	☐	
Manufacturer's operator manual is in weather proof box	☐	☐	☐	
All manufacturer's specified items and updated bulletins	☐	☐	☐	
All functions and controls (emergency ops, speed, limits of motion)	☐	☐	☐	
Ground level controls, overriding of additional controls	☐	☐	☐	
All chain and cable mechanisms, for adjustment and worn or damaged parts	☐	☐	☐	
All guards are in place and in good working order	☐	☐	☐	
Lubrication of all moving parts, inspection of filter element(s), hydraulic oil, engine oil, coolant	☐	☐	☐	
Visual inspection of structural components (fasteners, pins, shafts, turntable attachment devices and locking devices	☐	☐	☐	
Instructions, warnings and control markings are in place and legible	☐	☐	☐	
Hydraulic or pneumatic systems, for proper fluid or pressure levels and observable for proper operation, damage, leaks, external wear	☐	☐	☐	
Ele3ctrical systems, for signs of damage, deterioration, dirt or moisture accumulation	☐	☐	☐	
Tires for damage and proper inflation (as applicable)	☐	☐	☐	
Wheel fasteners are in place and tightened	☐	☐	☐	
Lights for proper operation and illumination (as applicable)	☐	☐	☐	
Battery fluid level, connections secure with no damage, corrosion	☐	☐	☐	
Drive systems, brakes, steering and speed controls	☐	☐	☐	
Audible or visual alarms	☐	☐	☐	
Communication system between platform and ground working properly	☐	☐	☐	
Annual inspection sticker with date	☐	☐	☐	
	☐	☐	☐	
	☐	☐	☐	
	☐	☐	☐	
	☐	☐	☐	
	☐	☐	☐	
	☐	☐	☐	
	☐	☐	☐	
	☐	☐	☐	

All negative faults, defects, safety violations, safety issues, hazards MUST BE IMMEDIATELY REPORTED TO SUPERVISOR

Only persons who are trained and authorized by their employer should operate this equipment.

MEWPS Pre-Start Inspection Checklist

MAKE_____ **MODEL**_____ **WEEK**_____

QUALIFIED INSPECTOR/OPERATOR_____

All inspections should be conducted in accordance with manufacturer's manual and guidelines.

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Operators Manual(s) in a waterproof box	☐	☐	☐	☐	☐	☐
Safety decals are in place and readable	☐	☐	☐	☐	☐	☐
Wind load chart	☐	☐	☐	☐	☐	☐
All guardrails are sound and in place, basket chains and gate door	☐	☐	☐	☐	☐	☐
Control panel is clean and all buttons/switches are clearly visible(no paint or overspray)	☐	☐	☐	☐	☐	☐
Emergency lowering function operates properly	☐	☐	☐	☐	☐	☐
Lower controls override the upper controls	☐	☐	☐	☐	☐	☐
Drive controls function properly and are accurately labeled (verify up, down, left, right, forward, backward)	☐	☐	☐	☐	☐	☐
Audible and visual alarms and beacons	☐	☐	☐	☐	☐	☐
Motion alarms are functional	☐	☐	☐	☐	☐	☐
PPE – Hardhats, safety glasses, face shields, safety vests, boots	☐	☐	☐	☐	☐	☐
Air, hydraulic and fuel system leaks	☐	☐	☐	☐	☐	☐
Electrical cables and wiring harness	☐	☐	☐	☐	☐	☐
Loose, damaged, worn or missing parts	☐	☐	☐	☐	☐	☐
Tires, pressure as applicable, wheels and wheel fasteners	☐	☐	☐	☐	☐	☐
Instructions, warnings, control markings	☐	☐	☐	☐	☐	☐
Structural – extended platforms	☐	☐	☐	☐	☐	☐
Structural – outriggers	☐	☐	☐	☐	☐	☐
Work platform – guardrail, floor, anchorage and mounting	☐	☐	☐	☐	☐	☐
Work platform – cleanliness, rust, bent frames	☐	☐	☐	☐	☐	☐
Brake operation and performance	☐	☐	☐	☐	☐	☐
Fluid levels – engine coolant, engine oil, hydraulic oil	☐	☐	☐	☐	☐	☐
Pins, pin securing devices	☐	☐	☐	☐	☐	☐
Visible damage to the platform and extended structure	☐	☐	☐	☐	☐	☐
Visible damage to the access to the work platform	☐	☐	☐	☐	☐	☐
Cleanliness of the access to the work platform	☐	☐	☐	☐	☐	☐
Operation of stabilizers/outriggers, extendable oscillating axles	☐	☐	☐	☐	☐	☐
Manufacturer Specific items Required:	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐

All malfunctions, defects, safety violations, safety issues, hazards MUST BE IMMEDIATELY REPORTED TO SUPERVISOR

Only persons who are trained and authorized by their employer should operate this equipment.

MEWPS Pre-Use Inspection Checklist

MAKE:_____ **MODEL:**_____ **DATE:** _____

OPERATOR:_____ **LOCATION:** _____

All inspections should be conducted in accordance with manufacturer's manual and guidelines.

Pre Start-up Walk Around	OK	NO	N/A	Powered Checks	OK	NO	N/A
Wheels, tires & axles – condition/inflation	☐	☐	☐	Engine – starts/oil pressure	☐	☐	☐
Hydraulic components – condition/leaks	☐	☐	☐	Battery – charge level	☐	☐	☐
Data stickers – accurate/legible	☐	☐	☐	Gauges & instruments – hour meter/warning lights	☐	☐	☐
Annual inspection verified	☐	☐	☐	Ground and Platform Controls	☐	☐	☐
Battery tray – opens/closes easily, latch/lock shut	☐	☐	☐	Elevating section – raise/lower	☐	☐	☐
Cover panels- open/close easily, latch/lock shut	☐	☐	☐	Drive – forward & reverse	☐	☐	☐
Engine – fluids/filters/belts/hoses	☐	☐	☐	Steer – Left & right	☐	☐	☐
Batteries – clean/dry/secure/caps-cables/level	☐	☐	☐	Horn	☐	☐	☐
Fuel tank/level	☐	☐	☐	Outriggers/stabilizers	☐	☐	☐
Hydraulic oil level	☐	☐	☐	Pothole protection	☐	☐	☐
Lights & strobes	☐	☐	☐	Function-enable deice	☐	☐	☐
Placards/labels/decals	☐	☐	☐	Manual lowering system	☐	☐	☐
Top of base- leaks/debris	☐	☐	☐	Safety interlocks	☐	☐	☐
Accessory plugs & cables	☐	☐	☐	Other:	☐	☐	☐
Elevating section – general condition/wear	☐	☐	☐	Workplace Inspection	OK	NO	N/A
Hydraulic cyulinders & pin locks	☐	☐	☐	Drop-offs or holes	☐	☐	☐
Pivot pines -wear/secured	☐	☐	☐	Bumps & floor/ground obstructions	☐	☐	☐
Power track – lines/hoses	☐	☐	☐	Debris	☐	☐	☐
Platform – guardrails/toeboard/extension	☐	☐	☐	Overhead obstructions	☐	☐	☐
Weather-resistant manual storage compartment	☐	☐	☐	Energized power lines	☐	☐	☐
All controls – clearly marked/hold to run	☐	☐	☐	Hazardous locations	☐	☐	☐
Other:	☐	☐	☐	Ground surface & support conditions	☐	☐	☐
	☐	☐	☐	Pedestrian/vehicle traffic	☐	☐	☐
	☐	☐	☐	Wind & weather conditions	☐	☐	☐
	☐	☐	☐	Other possible hazards	☐	☐	☐
COMMENTS:	☐	☐	☐	COMMENTS:	☐	☐	☐
	☐	☐	☐		☐	☐	☐
	☐	☐	☐		☐	☐	☐
	☐	☐	☐		☐	☐	☐
	☐	☐	☐		☐	☐	☐

All negative faults, defects, safety violations, safety issues, hazards MUST BE IMMEDIATELY REPORTED TO SUPERVISOR

Only persons who are trained and authorized by their employer should operate this equipment.

All malfunctions, defects, safety violations, safety issues, hazards MUST BE IMMEDIATELY REPORTED TO SUPERVISOR

MEWPS Selection

MEWPS SCOPE OF WORK:
MEWPS SCOPE OF WORK:
SPECIFIC LOCATION OF WORK:
DATE AND TIME OF WORK TO BE DONE:
MATERIALS TO BE USED:
Height – How high will you need to go?
Horizontal Outreach – How far will you need to reach?
Load Capacity – How much weight do you need to lift?
Terrain – is a 4x4 rough terrain needed?
Platform Rotation – How much maneuvering does the platform need to do to accomplish task?
Turning Radius – How much space do you need?
Small Space – What size equipment will fit in work area?
Platform Height – Will the MEWP fit through the door or entrance to the work area?
Platform Weight – Can the ground or work surface support the weight of the MEWP?
How many people are needed on the MEWP to do the task?
Lighting?
Hazardous Atmosphere Conditions? - Confined Space training for employees? Emissions and/or fuelingsafety? Air monitoring?
This is a general worksheet to reference when deciding what MEWP to use. It does not designate oreliminate a piece of equipment to be used. The decision is the responsibility of a Qualified Person Supervisor of the company.

MEWPS Jobsite Risk Assessment

ASSESSMENT	YES	N/A	CONTROL MEASURES
Trades working below or in vicinity – Secure area?	☐	☐	
Path of worker travel in vicinity – Secure area and/or scaffold cover/canopy needed?	☐	☐	
General public exposure – Sidewalk canopy needed?	☐	☐	
What access is there to deliver and pick up a MEWP?	☐	☐	
What access and terrain will there be for the MEWP to travel to the work location?	☐	☐	
Are there overhead powerlines?	☐	☐	
Are there trenches or excavations?	☐	☐	
What is ground bearing capacity? Backfilled soil?	☐	☐	
How many people need to be lifted?	☐	☐	
What is safe working load of MEWPS?	☐	☐	
Are there overhead structures that could cause crushing? Tight working conditions, adjacent structures, beams, pipe racks, ducts, ceiling grids?	☐	☐	
What is weight of materials to be lifted? What isshape/length?	☐	☐	
What type of fuel and where can refueling transpire?	☐	☐	
Is lighting and/or additional lighting needed in work area needed?	☐	☐	
Are there ground openings/manholes? Slopes?	☐	☐	
Housekeeping: Debris, floor obstructions, cords, construction materials?	☐	☐	
Hazardous Energy - Electrical power cables or panels, chemical/gas/drain lines, utilities?	☐	☐	

RESCUE Plan Example

Company Name: _____

Company Address: _____

Jobsite Location: _____

Date: _____

Emergency Services Contact Info

Name: _____ **Contact Number:** _____

Hours of Operation: _____ **Response Time:** _____

Identification of Fall Hazards:

1. **Tipping over**
2. **Falling out of platform**
3. **System failure on elevated platform**
4. _____
5. _____
6. _____

Work Procedures:

1. **Wear a short lanyard on platform**
2. **Never stand on railing of platform**
3. **Do an onsite evaluation of jobsite hazards**
4. **Auxiliary power function of controls**
5. _____
6. _____

Lockout/Tagout/Blockout - Inspection Sheet

Authorized Supervisor and/or Maintenance Foreman must perform at least a bi-annual audit of the Lockout/Tagout/Blockout Program.

Inspector_____ Title_____ Date_____

Locks

☐ 1. Locks are identifiable and set-up for one authorized user.
☐ 2. Equipment or machinery that has multiple authorized employees performing repair, cleaning, or service has a lock adapter for each authorized employee to install a lock.

Tags

☐ 1. Reason for tag.
☐ 2. Signed by authorized employee and special contact number available.
☐ 3. Visible.
☐ 4. Date and time are marked.

Blocks

☐ 1. Secure.
☐ 2. All pressure released and bleeders opened (air, hydraulics, steam, etc.).
☐ 3. Preventing movement; falling, sliding, rotating, rolling or any other parts motion.
☐ 4. Blinds in place on pipes.

Electrical

☐ 1. All electricity is disconnected.
☐ 2. All items have been checked for stored energy.

☐ Has all equipment or machinery been updated to accept a locking device?

☐ Are all employees currently trained and/or certified to perform authorized work? Has annual training been performed?

☐ Have affected employees been notified?

☐ Is there a zero-energy state on all equipment and machinery being locked out/tagged out/blocked out?

☐ Have all procedures been followed?

☐ Were any Safety Violations written? If yes, for what?_____ If yes, was retraining given? _____

☐ If special circumstances are in place where a zero-energy state cannot be obtained due to the nature of the work, has the authorized Supervisor and/or the Maintenance Foreman been notified?

☐ Is all the proper safety equipment being worn and are all tools acceptable for energized work? (Insulated Tools)

Signature_____ Date_____

ENERGY CONTROL
LOCKOUT/TAGOUT/BLOCKOUT FACT SHEET

1. **Equipment or Machine** _____
2. **Location**_____
3. **Type of Energy Source and Description**
   - **Electrical**_____
   - **Hydraulic**_____
   - **Pneumatic**_____
   - **Chemical** _____
   - **Thermal** _____
   - **Gravity** _____
   - **Kinetic** _____
   - **Other** _____
4. **Department of Affected Employees to be notified** _____
5. **Hazardous Stored Energy Condition to Avoid (explain)**

   _____
6. **Type of Lockout** _____
7. **Type of Tagout** _____
   - **Location of Lockout and Blockout**
     _____
     _____
   - **Method of Lockout and Blockout**
     _____
     _____
8. **Verification of equipment or machine Lockout/Tagout/Blockout procedure**

Signature_____**Date**_____
Authorized Supervisor and/or Authorized Foreman

Heavy/Mobile Equipment Operator Evaluation / Employer Certification Form

Name of Operator:

Equipment:

Date:

Person Performing Evaluation:

Safety Director:

This evaluation is to be completed upon completion of initial or refresher training of the heavy equipment operator, and at a minimum frequency of every three years thereafter.

EMPLOYER CERTIFICATION

I certify that the individual identified above has been instructed and evaluated in the safe operation of the equipment identified at the top of this form. Training and evaluation were conducted in accordance with this Heavy Equipment Policy. The operator has been evaluated and been deemed competent in his performance of the following:

☐ Safely operates and does not abuse the equipment.

☐ Completion of daily equipment inspections

☐ Keeping equipment clean and serviceable

☐ Practices good driving habits

☐ Identifying and reporting equipment wear, malfunctions, and damage

Evaluator:_____Date:

Safety Director Signature: _____Date:

Daily Heavy/Mobile Equipment Checklist

Operator:_____ Vehicle:_____ Date:

Check: (S) each safe item, (D) each defect, NA for non-applicable

	(1) Seatbelt
	(2) Gauge and Instruments
	(3) Light (front and rear)
	(4) Horn/Warning Device
	(5) Back-Up Signal
	6) Brakes (hand and foot)
	(7) Steering and Hydraulic controls
	(8) Tires and Wheels
	(9) Fluid Leaks
	(10) Physical Damage? (Y/N) Recent? (Y/N) Does it affect safe operation? (Y/N)
	(11) Equipment Kill Switch
	(12) Window Defrost
	(13) Reflectors
	(14) Windshield Wipers
	(15) Fire Extinguishers

Service Required?	Y / N	Technician Called?	Y / N
By Whom?		Date:	
Service Performed?	Y / N	By Whom?	
Date:	Lockout/Tagout Required?	Y / N	
Vehicle Back in Service?	Y / N	Date:	

Heavy Equipment / Mobile Equipment Operator Training Certification Form

Employee Name:

Location:

Equipment/Make/Model:

Trainer Name:

Training Date(s):

Training included the following topics. Instructor should indicate and initial the dates that a particular topic was completed.

Equipment-Related Topics

Date	Topic	Trainers Initials
	Operating instructions, warnings, and precautions for the types of equipment the operator will be authorized to operate.	
	Differences between the equipment and an automobile (e.g., turn radius, braking ability, visibility of surroundings, blind spots, etc.).	
	Equipment controls and instrumentation; where they are located, what they do, and how they work.	
	Engine or motor operation.	
	Steering and maneuvering.	
	Visibility (including restrictions due to loading).	
	Implement and attachment adaptation, operation, and use limitations.	
	Equipment capacity	
	Vehicle stability.	
	Equipment Inspection and Maintenance Requirements. (See Daily Heavy Equipment Inspection Form)	
	Refueling and/or charging and recharging of batteries.	
	Operating limitations.	
	Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of equipment that the employee is being trained to operate.	

Workplace-Related Topics

Date	Topic	Trainers Initials
	Surface conditions where the equipment will be operated.	
	Composition of loads to be carried and load stability.	
	Load maneuvering, loading, and unloading (includes trucks, hoppers, etc.).	
	Pedestrian traffic in areas where the equipment will be operated.	
	Confined areas and other restricted places where equipment will be operated.	
	Hazardous (classified) locations where the equipment will be operated.	
	Ramps and other sloped surfaces that could affect the vehicle's stability.	
	Closed environments and other areas were insufficient ventilation or poor vehicle maintenance could cause buildup of carbon monoxide or diesel exhaust.	
	Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.	

I have been instructed in the safe operation of the equipment identified at the top of this form. Training included the topics identified above. I have read, understand, and agree to abide by our company Heavy Equipment Policy as well as the manufacturer's User's Manual/Safety Guidelines for the equipment.

Signature of Employee/Operator:_____Date:

The individual identified above has been instructed in and evaluated on the safe operation of the equipment identified at the top of this form. Instruction included the topics identified in the tables presented above.

Signature of Trainer:_____Date:

WRITTEN SITE-SPECIFIC SILICA EXPOSURE CONTROL PLAN

(Used as a guide for each site)

Company:

Location: **Annual Review Date:**

Work task(s) that describes respirable silica exposure:

Supervisor/Competent Person:

PRIMARY SILICA CONTROL OPTIONS

- **Substitution Controls (using procedures or products that do not create respirable silica; must review SDSs)**

  Other means of completing task(s)

  Different Products

  Other Substitutions

- **Engineering Controls (List what controls to limit exposure and don't expose others to exhaust dusts)**

  Vacuuming:

  Wetting:

  Ventilation:

  Isolation:

  Other Means:

- **Administrative Controls (reducing exposure by work schedules, timing, or planning options)**

  Control Points:

  Work Schedule:

  Other Means:

SECONDARY SILICA CONTROL OPTIONS *(Mark with X; explain use if needed)*

Personal Protective Equipment

☐ **Half-mask Respirators**	**Cartridge Type:**	**Fit Tests:**
☐ **Full-face Respirators**	**Cartridge Type:**	**Fit Tests:**
☐ **Supplied Air**		**Unit:**
☐ **Coverall required**		

Note:

Housekeeping, Hygiene, and Decontamination Options:
(Reducing exposures after work has stopped or during breaks)

Water or Washing Facilities on Site:
(Note compressed air not to be used to clean clothing or surfaces where such activity could contribute to employee exposure to respirable crystalline silica)

Vacuuming with HEPA filter:

Safe Work Procedures for wet sweeping (no dry sweeping or dry brushing):

Notes:

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.

Containment area:

Method of containment:

Location of Signage:

DANGER
RESPIRABLE CRYSTALLINE SILICA
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
WEAR RESPIRATORY PROTECTION IN THIS AREA
AUTHORIZED PERSONNEL ONLY

A written exposure control plan readily available for examination and copying, upon request, to each employee covered by this section, their designated representatives, the Assistant Secretary, and the Director.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(i) 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	Water Controls: ■ An adequate supply of water for dust suppression is used; ■ The spray nozzle is working properly to apply water at the point of dust generation; ■ The spray nozzle is not clogged or damaged; and ■ All hoses and connections are intact.
(ii) Handheld power saws (any blade diameter) 	Use saw equipped with integrated water delivery system that continuously feeds water to the blade. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. ■ When used outdoors. ■ When used indoors or in an enclosed area.	None APF 10	APF 10 APF 10	Water Controls: ■ An adequate supply of water for dust suppression is used; ■ The spray nozzle is working properly to apply water at the point of dust generation; ■ The spray nozzle is not clogged or damaged; ■ All hoses and connections are intact.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(iii) 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 greater, and have a filter with 99% or greater efficiency.	None	None	Dust Collection Systems: ■ The shroud or cowling is intact and installed in accordance with the manufacturer's instructions; ■ The hose connecting the tool to the vacuum is intact and without kinks or tight bends; ■ The filter(s) on the vacuum are cleaned or changed in accordance with the manufacturer's instructions to prevent clogging; and ■ The dust collection bags are emptied to avoid overfilling.
(iv) Walk-behind saws 	Use saw equipped with integrated water delivery system that continuously feeds water to the blade. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. ■ When used outdoors. ■ When used indoors or in an enclosed area.	None APF 10	None APF 10	Water Controls: ■ An adequate supply of water for dust suppression is used; ■ The spray nozzles are working properly to apply water at the point of dust generation; ■ The spray nozzles are not clogged or damaged; and ■ All hoses and connections are intact.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(v) 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	Water Controls: ■ An adequate supply of water for dust suppression is used; ■ The spray nozzles produce a pattern that applies water at the point of dust generation; ■ The spray nozzles are not clogged or damaged; and ■ All hoses and connections are intact.
(vi) 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	Water Controls: ■ An adequate supply of water for dust suppression is used; ■ The spray nozzles produce a pattern that applies water at the point of dust generation; ■ The spray nozzles are not clogged or damaged; and ■ All hoses and connections are intact.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(vii) 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	Dust Collection Systems: ■ The shroud or cowling is intact and installed in accordance with the manufacturer's instructions; ■ The hose connecting the tool to the vacuum is intact and without kinks or tight bends; ■ The filter(s) on the vacuum are cleaned or changed in accordance with the manufacturer's instructions; and ■ The dust collection bags are emptied to avoid overfilling.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(viii) 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.	APF 10	APF 10	Dust Collection Systems: ■ The shroud is intact and installed in accordance with the manufacturer's instructions; ■ The hose connecting the tool to the vacuum is intact and without kinks or tight bends; ■ The filter(s) on the vacuum are cleaned or changed in accordance with the manufacturer's instructions; and ■ The dust collection bags are emptied to avoid overfilling.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(ix) 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. OR Operate from within an enclosed cab and use water for dust suppression on drill bit.	None None	None None	Dust Collection Systems: ■ The shroud or hood is intact and installed in accordance with the manufacturer's instructions; ■ The hose connecting the tool to the vacuum is intact and without kinks or tight bends; ■ The filter(s) on the vacuum are cleaned or changed in accordance with the manufacturer's instructions; and ■ The dust collection bags are emptied to avoid overfilling. Water Controls: ■ An adequate supply of water for dust Suppression is used; ■ The spray nozzles are working properly and produce a pattern that applies water on the discharge point from the dust collector; ■ The spray nozzles are not clogged or damaged; and ■ All hoses and connections are intact.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(x) Jackhammers and handheld powered chipping tools 	Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact. ■ When used outdoors. ■ When used indoors or in an enclosed area. OR Use tool equipped with commercially available shroud and dust collection system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. ■ When used outdoors. ■ When used indoors or in an enclosed area.	None APF 10 None APF 10	APF 10 APF 10 APF 10 APF 10	Water Controls‡: ■ An adequate supply of water for dust suppression is used; ■ The water sprays are working properly and produce a pattern that applies water at the point of dust generation; ■ The spray nozzles are not clogged or damaged; and ■ All hoses and connections are intact. Dust Collection Systems: ■ The shroud is intact and installed in accordance with the manufacturer's instructions; ■ The hose connecting the tool to the vacuum is intact and without kinks or tight bends; ■ The filter(s) on the vacuum are cleaned or changed in accordance with the manufacturer's instructions; and ■ The dust collection bags are emptied toavoid overfilling.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(xi) 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.	APF 10	APF 25	Dust Collection Systems: ■ The shroud is intact, encloses most of the grinding blade, and is installed in accordance with the manufacturer's instructions; ■ The hose connecting the tool to the vacuum is intact and without kinks or tight bends; ■ The filter(s) on the vacuum are cleaned or changed in accordance with the manufacturer's instructions; ■ The dust collection bags are emptied to avoid overfilling; ■ The blade is kept flush against the surface whenever possible; and ■ The tool is operated against the direction of blade rotation, whenever practical.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(xii) Handheld grinders for uses other than mortar removal 	For tasks performed <u>outdoors only</u>: 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. OR Use grinder equipped with commercially available shroud and dust collection system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism. ■ When used outdoors. ■ When used indoors or in an enclosed area.	None None None	None APF 10	Water Controls§: ■ An adequate supply of water for dust suppression is used; ■ The spray nozzles are working properly and produce a pattern that applies water at the point of dust generation; ■ The spray nozzles are not clogged or damaged; and ■ All hoses and connections are intact. Dust Collection Systems: ■ The shroud is intact and installed in accordance with the manufacturer's instructions; ■ The hose connecting the tool to the vacuum is intact and without kinks or tight bends; ■ The filter(s) on the vacuum are cleaned or changed in accordance with the manufacturer's instructions; and ■ The dust collection bags are emptied to avoid overfilling.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(xiii) 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. OR 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	None None	Water Controls: ■ An adequate supply of water for dust suppression is used; ■ The spray nozzles are working properly and produce a pattern that applies water at the point of dust generation; ■ The spray nozzles are not clogged or damaged; and ■ All hoses and connections are intact. Dust Collection Systems: ■ The hose connecting the tool to the vacuum is intact and without kinks or tight bends; ■ The filter(s) on the vacuum are cleaned or changed in accordance with the manufacturer's instructions to prevent clogging; and ■ The dust collection bags are emptied to avoid overfilling.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(xiv) 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	Water Controls: ■ An adequate supply of water for dust suppression is used; ■ The spray nozzles are working properly and produce a pattern that applies water at the point of dust generation; ■ The spray nozzles are not clogged or damaged; and ■ All hoses and connections are intact.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(xv) 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. 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. OR 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 None	None None None	No additional information provided. Refer to the engineering and work practice control methods outlined.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(xvi) 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	Water Controls††: ■ Nozzles are located upstream of dust generation points and positioned to thoroughly wet the material; ■ The volume and size of droplets is adequate to sufficiently wet the material (optimal droplet size is between 10 and 150 µm); and ■ Spray nozzles are located far enough from the target area to provide complete water coverage but not so far that the water is carried away by wind.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(xvii) 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. 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	None None	No additional information provided. Refer to the engineering and work practice control methods outlined.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(xviii) Heavy equipment and utility vehicles for tasks such as grading and excavating but not including: demolishing, abrading, or fracturing silica-containing materials 	Apply water and/or dust suppressants as necessary to minimize dust emissions. OR When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab.	None None	None None	The following scenarios are examples of when the employer must use water and/or dust suppressants as necessary to minimize dust emissions: ■ Equipment for grading and excavating is not equipped with enclosed, pressurized cabs. OR ■ Employees other than the operator are engaged in the task. If water or dust suppressants are applied as necessary to minimize visible dust, the employer need not provide an enclosed, filtered cab for the operator.

APF 10 (requires fit testing)		APF 25	
			
Dust Mask/Half Mask	Half Mask (Elastomeric)	Loose-Fitting Powered Air-Purifying Respirator (PAPR)	Hooded Powered Air-Purifying Respirator (PAPR)

† (1) When implementing the control measures specified in Table 1, each employer shall:

i. *For tasks performed using wet methods*, apply water at flow rates sufficient to minimize release of visible dust. The appropriate water flow rates for controlling silica dust emissions can vary; therefore, it is necessary to follow manufacturers' instructions when determining the required flow rate for dust suppression systems on a given worksite. Integrated water systems must be developed specifically for the type of tool in use so they will apply water at the appropriate dust emission points based on tool configuration and do not interfere with other tool components or safety devices.

Any slurry generated when using water to suppress dust should be cleaned up to limit secondary exposure to silica dust when the slurry dries following procedures described in the employer's *Written Exposure Control Plan*.

When working in cold temperatures, where there is a risk of water freezing, additional work practices such as insulating drums, wrapping drums with gutter heat tape or adding environmentally-friendly antifreeze.

ii. *For tasks performed using commercially available, dust collection systems (i.e. LEV)*, use equipment that is designed to effectively capture dust generated by the tool being used and does not introduce new hazards such as obstructing or interfering with safety mechanisms. The "commercially available" limitation is meant only to eliminate on-site improvisations of equipment by the employer. When employers use methods other than commercially available systems for dust suppression, they must conduct exposure assessments and comply with the PEL.

Some Table 1 entries for dust collection systems specify use of cyclonic pre-separators and filter cleaning mechanisms to prevent buildup of debris on filters that result in less dust capture. A cyclonic pre-separator collects large debris before the air reaches the filters. A filter cleaning mechanism prevents the need for manually cleaning filters to prevent buildup of debris (caking). Some vacuums are equipped with a gauge indicating filter pressure or an equivalent device (*e.g.*, timer to periodically pulse the filter) to help employees in determining when it is time to run a filter cleaning cycle.

i. *For tasks performed indoors or in enclosed areas*, provide a means of exhaust as needed to minimize the accumulation of visible airborne dust. Indoors or in an enclosed areas mean areas where airborne dust can build up unless additional exhaust is used. Sufficient air circulation in enclosed or indoor environments is important to ensure the effectiveness of the control strategies and to prevent the accumulation of airborne dust. The means of exhaust necessary could include: the use of portable fans (box fans, floor fans, and axial fans), portable ventilation systems, or other systems that increase air movement and assist in the removal and dispersion of airborne dust. To be effective, the ventilation must be set up so that movements of employees during work, or the opening of doors and windows, will not negatively affect the airflow.

ii. *For measures implemented that include an enclosed cab or booth*, ensure that the enclosed cab or booth:
   a. Is maintained as free as practicable from settled dust;
   b. Has door seals and closing mechanisms that work properly;
   c. Has gaskets and seals that are in good condition and working properly;
   d. Is under positive pressure maintained through continuous delivery of fresh air;
   e. Has intake air that is filtered through a filter that is 95% efficient in the 0.3-10.0 µm range (e.g., MERV-16 or better); and
   f. Has heating and cooling capabilities.

(2) Where an employee performs more than one task on Table 1 during the course of a shift, and the total duration of all tasks combined is more than four hours, the required respiratory protection for each task is the respiratory protection specified for more than four hours per shift. If the total duration of all tasks on Table 1 combined is less than four hours, the required respiratory protection for each task is the respiratory protection specified for less than four hours per shift.

* Refer to OSHA's Small Entity Compliance Guide for more information.

‡ The water delivery system is not required to be integrated or mounted on the tool; it can be assembled and installed by the employer. Acceptable water delivery systems include direct connections to fixed water lines or portable water tank systems. These water delivery systems can be operated by one worker or could require a second worker to supply the water at the point of impact.

§ The integrated water delivery system can be a free-flowing water system designed for blade cooling as well as manufacturers' systems designed for dust suppression alone. This option applies only when grinders are used outdoors.

†† The water spray systems can be installed so that they can be activated by remote control.

** NOTE: When the operator exits the enclosed cab and is no longer actively preforming the task, the operator is considered to have stopped the task. However, if other abrading, fracturing, or demolition work is performed by other heavy equipment and utility vehicles in the area while an operator is outside the cab, that operator is considered to be an employee "engaged in the task" and must be protected by the application of water and/or dust suppressants.

Emergency Contacts

AMBULANCE _____

FIRE - RESCUE _____

HOSPITAL _____

PHYSICIAN _____

ALTERNATE PHYSICIAN _____

POLICE _____

OSHA _____

POSTING IS REQUIRED BY TITLE 8 SECTION 1512(e)

EMERGENCY ACTION PLAN

COMPANY:

PROJECT:

ADDRESS:

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SECTION 1 - EMERGENCY ACTION PLAN

1.1 EMERGENCY MANAGEMENT

This plan works along with our Emergency Program in our Company Safety Program. Our company site supervision will complete and distribute the Emergency Response Map for this site. In the event of an emergency requiring evacuation, employees will receive verbal notification to evacuate. If this occurs, all personnel are to evacuate to the emergency staging area as noted on the emergency response map. In the event of an emergency contact:

Company	Name	Phone Number

1.2 INCIDENT / INJURY HANDLING AND REPORTING POLICY

If someone is seriously injured and it is an emergency, call 911. Notify your supervisor and the project superintendent. Those trained in CPR & First Aid are to help according to their level of training. All injuries, equipment and property damage, near miss incidents, and on-site vehicle accidents must be reported immediately.

Company	Name	Phone Number

1.3 ADDITIONAL SPECIFIC PROCEDURES, IF NEEDED

SECTION 2 - EMERGENCY RESPONSE MAP

PROJECT: _____

EMERGENCY EVACUATION MAP

Codes of Safe Practice

General Codes of Safe Practice

Report all unsafe conditions and equipment to their supervisor or safety coordinator.

• Report all accidents, injuries and illnesses to their supervisor or safety coordinator immediately.
• Anyone known to be under the influence of intoxicating liquor or drugs shall not be allowed on the job while in that condition.
• Horseplay, scuffling, and other acts which tend to have an adverse influence on the safety or well-being of the employees are prohibited.
• Means of egress shall be kept unblocked, well lighted and unlocked during work hours.
• In the event of fire, call for supervisor or sound alarm and evacuate.
• Upon hearing the alarm, stop work safely, turn off machines and evacuate to the designated emergency staging area immediately.
• Only trained workers may attempt to respond to a fire or other emergency.
• Exit doors must comply with fire safety regulations during business hours.
• Stairways should be kept clear of items that can be tripped over and all areas under stairways that are egress routes should not be used to store combustibles.
• Materials and equipment will not be stored against doors or exits, fire ladders or fire extinguisher stations.
• Aisles must be kept clear at all times.
• Work areas should be maintained in a neat, orderly manner. Trash and refuse are to be thrown in proper waste containers.
• All spills must be cleaned up promptly. For large spills beyond an employee's training to handle, 911 and/or a trained clean up team must be called.
• Always use the proper lifting technique. Never attempt to lift or push an object that is too heavy.
• You must contact your supervisor when help is needed to move a heavy object.
• When carrying material, caution should be exercised in watching for and avoiding obstructions, loose material, etc.
• Do not stack material in an unstable manner.
• Report exposed wiring and cords that are frayed or have deteriorated insulation so that they can be repaired promptly.
• Never use a metal ladder where it could come in contact with energized parts of equipment, fixtures or circuit conductors.
• Maintain sufficient access and working space around all electrical equipment to permit ready and safe operations and maintenance.
• Do not use any portable electrical tools and equipment that are not grounded or double insulated.
• All electrical equipment should be plugged into appropriate wall receptacles or into an extension of only one cord of similar size and capacity.
• Inspect motorized vehicles and other mechanized equipment daily or prior to use.
• Shut off engine, set brakes and block wheels prior to loading or unloading vehicles.

• Inspect pallets and their loads for integrity and stability before loading or moving.
• Do not store compressed gas cylinders in areas which are exposed to heat sources, electric arcs or high temperature lines.
• Do not use compressed air for cleaning off clothing unless the pressure is less than 10 psi.
• Identify contents of pipelines prior to initiating any work that affects the integrity of the pipe.
• Wear hearing protection in all areas identified as having high noise exposure.
• Face Shields must be worn when grinding.
• Do not use any faulty or worn hand tools.
• Guard floor openings by a cover, guardrail, or equivalent.
• Always keep flammable or toxic chemicals in closed containers when not in use.
• Do not eat in areas where hazardous chemicals are present.
• Be aware of the potential hazards involving various chemicals stored or used in the workplace.
• Cleaning supplies should be stored away from edible items on kitchen shelves.
• Cleaning solvents and flammable liquids should be stored in appropriate containers and properly labeled.

Construction Codes of Safe Practice

• All conditions from construction, alteration, demolition and/or repair including painting and decorating that no contractor or sub-contractor for any part of contract work shall require any laborer or mechanic employed in the performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his/her health or safety.
• All equipment, materials and, job sites should be regularly inspected for safety.
• All employees must be competently trained and/or have experience to operate equipment or machinery.
• All employees should be aware of hazards presented by materials, equipment, and job sites.
• Personal protective equipment: All employees must wear the proper equipment for the job site and task at hand.
• Head protection (hard hats) are required when overhead work is being conducted (risk of flying or falling objects), risk of electrical shock and burns and/or when required by posting at the jobsite.
• All employees must wear hearing protection on job sites exceeding 90 DBAS. (Decibel level.)
• All employees must wear respiratory protection when dust exceeds limits specified by the Safety Data Sheet.
• All employees should be aware of occupational hazards in construction industry.
• First Aid kits shall be provided on all job sites.
• All job sites must supply potable drinking water and adequate washing facilities.
• One toilet is required for every 20 employees where there is no transportation. Toilets must be cleaned and supplied with toilet paper.
• Fire protection materials must be portable and located 75 feet from all working areas: fire extinguisher must meet specifications for job at hand.
• Construction site must have person certified in First Aid. CPR certification is also required when there is confined space work.