



FRIEDMAN EMPLOYEE SAFETY MANUAL

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SECTION 1: Overview

I. INTRODUCTION

Friedman cares about our employees and is committed to providing all employees with a safe and healthy workplace. Our safety culture is an important part of our operations as represented by the Friedman Employee Safety Manual and Training Programs.

The goal of this document is to provide Policies and Procedures that will lead to a safe work place for all employees. Policies and Procedures are set forth under the premise that all levels of management will fully support them. This program will succeed only if everyone makes safety a priority during everyday operations.

It is beyond the scope of any document to cover every operation that may be encountered. For operations not covered here, it will be the responsibility of management, and its appropriate supervisor, to have all work performed in accordance with applicable local, state, and federal safety regulations.

II. DUTIES AND RESPONSIBILITY

The Company believes that every employee is entitled to a safe work place.

The approach to safety at the Company will be a team effort involving all levels; therefore, as a matter of policy, the following specific responsibilities are assigned:

Management

Management duties and responsibilities consist of the following:

1. Maintain an active safety program in which all employees participate.
2. Provide, within reason, a work environment in which identified occupational hazards are eliminated; or controlled when elimination is not feasible.
3. Actively support the safety program with decisions and directives that are required.
4. Delegate authority to expedite and facilitate the safety program.

Employees

Employee duties and responsibilities consist of the following:

1. Comply with occupational safety and health standards, rules, and regulations applicable to their own actions and conduct.
2. Report incidents, injuries, and recognized hazards that arise out of their work activities.
3. Comply with Company Safety and Health Policies and Procedures.
4. Comply with local or client safety and health requirements when required.
5. Complete required safety training as applicable to their work activities.

Safety Committee

The Safety Committee duties and responsibilities consist of the following:

1. Provide all levels of management the services and technical advice needed for proper administration of the safety program.
2. Develop technical guidance and programs to identify and remove physical hazards.
3. Develop, recommend and administer improvements to the safety program.
4. Provide training to employees that will enable them to better perform their safety responsibilities.
5. Identify and implement industry best management practices.
6. Consult with insurance providers and vendors as necessary to prevent loss and injury.

Duties of the Department Safety Representative

The Department Safety Representative duties and responsibilities consist of the following:

1. Coordinate all safety activities as a representative of management.
2. Develop and implement safety policies and procedures designed to insure compliance with applicable federal, state, and local rules and regulations.
3. Act as a consultant to local operating management in the implementation and administration of the Safety Program.
4. Develop and coordinate employee Safety Training Programs.
5. Review all accident reports to determine cause and preventability.
6. Evaluate safety performance of locations; discuss and help solve local problems.
7. Consult with representatives of insurance companies to ensure that their loss control services support the Safety Program.
8. Review all Workers' Compensation Claims with Company Worker's Compensation Representatives to ensure accurate information is provided to the current insurance carrier. Supply information about the injured employee's claim to ensure swift resolution of the claim.
9. Know applicable local, state, and federal safety regulations and how they affect Company projects.
10. Assist in the selection and buying of personal protection equipment.
11. Copy appropriate managers on all written communications to jobsite personnel relating to jobsite safety.

Safety Duties of Project Managers/Superintendent/ Supervisors

Project Managers carry full responsibility for the safety of their crews on each project or location. Their duties will include the following:

1. Coordinate all loss prevention activities as an extension of the Corporate Safety Program.
2. Evaluate all reports on injury and property damage to determine their validity and preventability. A written copy of these reports should be forwarded to the Department Safety Representative and the Company Worker's Compensation Representative.
3. The Project Manager must be on the job or immediately available by phone, etc. at all times

when employees are working.

4. Specific Jobsite Responsibilities:

- a. Conduct written monthly jobsite inspections and immediately report findings to the appropriate personnel to correct all unsafe actions and conditions.
- b. Become familiar with local, state, and federal safety regulations.
- c. Conduct weekly toolbox meetings with all jobsite employees.
- d. Require all subcontractors to comply with applicable local, state, and federal safety regulations and Company policies.
- e. Obtain a Certificate of Insurance (COI) from the subcontractor with appropriate liability insurance levels. Contractor shall maintain insurance with limits and coverage applicable to industry standards for the type of work being performed.
- f. Consult with insurance carrier representative during jobsite surveys to review and evaluate recommendations.
- g. Clarify safety responsibilities from the contract documents. Assure that all individuals and subcontractors follow rules and fulfill their job responsibilities.
- h. Locate the nearest hospital or medical facilities. Have emergency numbers posted near all phones.

Safety Duties of Field Maintenance Supervisors/Construction Site Foreman

Field Maintenance Supervisors and Construction Site Foreman are the most important individuals in a successful safety program. They have the most influence on employee safe work practices. Their duties will include the following:

1. Correct and/or report all unsafe conditions in their work areas immediately. If the condition is out of the control of the Foreman, notify the Project Manager for help in correcting the problem.
2. Perform beginning and ending huddles with crew.
3. Document weekly jobsite inspection.
4. Make certain that all machinery, equipment, and tools are maintained in safe working condition and operate properly.
5. Make certain that all necessary personal protective equipment is maintained and used when conditions warrant its use.
6. Make certain that proper first aid kits and firefighting equipment are maintained and used when conditions warrant their use.
7. Instruct all employees, under their supervision, in safe work practices and job safety requirements. Particular emphasis shall be placed on the safety instructions given to new employees.
8. Initiate and maintain good housekeeping practices at all times.
9. Make a physical inspection of their work area on a daily basis to ensure that all physical and mechanical hazards are under control.
10. Conduct weekly Tool Box meetings with the employees under their supervision.
11. Investigate all property damage losses. Make a report describing what happened.
12. Correct the cause of any accident as soon as possible.
13. Make certain that all injuries, which require medical treatment, are properly treated

and promptly reported. The Supervisor's First Report of Injury form (APPENDIX) shall be used to verify that the injury was work related.

Duties of Subcontractors/Partners (Third Party Vendors)

The Company's subcontractors are bound by their subcontract to abide by the safety and health rules and regulations established by the Company, and Owner specific rules and regulations where required, the Contract Documents, and/or promulgated by Federal, State, and Local governmental agencies. Failure to follow these job safety policies and procedures could result in back-charges or fines being assessed to the subcontractor/vendor.

Under OSHA regulations, the subcontractor is responsible for the safety and health of its employees and for any activity that adversely affects other contractors or their employees.

All subcontractors will designate a responsible individual at the jobsite who will assume directions of their safety activity and will:

1. Take immediate action on safety problems.
2. Conduct routine jobsite inspections and notify the Company's Project Manager or Project Foreman immediately of any unsafe condition that may exist.
3. Be responsible to see that no employees work in an unsafe manner or in an area which is not safe until proper corrective measures are taken by the responsible party.
4. Assume the responsibility for the availability and use of personal protective equipment (i.e. the mandatory use of head protection, eye protection, foot protection, etc.).
5. Verbally notify the Company's Project Manager or Project Foreman immediately that an accident took place on the jobsite. Written notification in the form of a completely filled out and legible accident report is to be turned over to the Department Safety Representative within 72 hours of the accident.
6. Assume responsibility that accident victims are promptly cared for and that the accident is promptly investigated and reported properly.
7. Be available to the Company's Department Safety Representative and insurance/loss control personnel when necessary.
8. Acquaint all employees with the Company's safety requirements and see that they are enforced.
9. Hold a weekly "Tool Box" Safety Meeting and daily huddles for all of their employees. A copy of the attendance roster will be given to the Company's project Foreman and forwarded to the office for documentation.
10. Have available copies of all Safety Data Sheets (SDS) prior to bringing hazardous materials onto the location.
 - a. All chemicals requiring any precautionary measures (special storage or disposal requirements, personal protective equipment, or additional ventilation) shall be brought to the attention of the Company's Department Safety Representative prior to their use on the project at least 7 days prior to any work requiring hazardous material usage.
 - b. All chemicals brought on site shall be clearly labeled.

- c. All employees using hazardous materials shall be made aware of the hazards associated with their use.
 - d. Dispose of all hazardous materials in accordance with EPA/DOT requirements, regardless of container size and quantity of waste.
 - e. Report any chemical spill immediately to the Company's Project Forman.
- 11. Furnish the Company's Department Safety Representative with the names of their employees who are certified in First Aid and CPR and other required safety certifications.
 - 12. Set a good example for their employees.

SECTION 2: Code of Safe Work Practices

I. PURPOSE

The purpose of this document is to present basic safety rules and safe work practices to newly hired employees.

II. SCOPE

The rules and work practices contained within this document apply to all Company facilities, projects and employees.

The rules and work practices contained within this document are not intended to be the only and all-inclusive guideline for each category of work activity. Safety procedures and guidelines for specific categories of work activity are contained within this Safety Manual. These procedures and guidelines should be reviewed and followed in addition to the safety rules and safe work practices contained in the Code of Safe Work Practices.

III. SAFE WORK PRACTICES

A. GENERAL SAFETY RULES

- Immediately report any unsafe conditions or behaviors, accidents, injuries, and illnesses to your supervisor.
- If you are unsure of the safe method to do your job, STOP and ask your supervisor.
- Eye protection, head, ear and hand protection must be worn where applicable.
- Keep your work area clean and free of debris.
- Immediately clean up spilled liquids. Dispose of all waste and refuse properly. Ask your supervisor about the proper disposal method and check the Safety Data Sheet (SDS).
- Do not run.
- Notify all individuals in your area who might be endangered by your work activity.
- Do not operate equipment to which you are unfamiliar. Do not attempt to use such equipment until you are fully trained and authorized to do so.
- Never bring firearms, illegal weapons, illegal drugs or unauthorized non-prescription drugs or alcoholic beverages on Company property or project sites.
- Use of fall protection is required when a fall potential of six feet or greater exists.
- Employees who are suspected of being under the influence of illegal or intoxicating substances, impaired by fatigue or an illness, shall be prohibited from working. Never work while under the influence of an illegal or intoxicating substance, fatigued or ill.
- All liquids are to be in labeled containers. At the end of each shift, store all flammable materials in designated flammable storage areas.
- A tag may identify equipment that is NOT to be operated, energized or used. All tag-out or lock-out notices and procedures must be observed and obeyed.
- When handling hazardous materials, ensure that you follow prescribed safety procedures, refer to SDS, and use required safety precautions.
- Do not block exits, fire doors, aisles, fire extinguishers, first aid kits, gas meters, electrical panels, or traffic lanes.
- Do not leave tools, materials, or other objects on the floor, which might cause others to trip and fall.

- Do not distract others while working. If conversation is necessary, make sure eye contact is made prior to communicating.
- All visitors must abide by all safety rules and be escorted by a responsible employee.
- Never work under forklift loads or overhead crane loads.
- Fighting, horseplay and acts of work place violence are prohibited and are not tolerated.

B. FIELD SAFETY

Field site safety rules are as follows:

- The location of the nearest medical clinic or hospital should be posted in the office.
- Keep your work areas free of debris. Remove debris from the work area to reduce tripping hazards.
- Maintain awareness of potential hazards when walking about the site.
- Keep tools, materials and equipment out of walkways and stairways at all times.
- Do not lend or borrow tools from other companies.
- When working on ladders and scaffolds, let people know you are working above them and follow ladder and scaffold safety rules.
- Always erect barricades before removing floor or roof opening covers. Replace the covers before removing barricades.
- Do not remove or work on any electrical equipment unless it is tagged and locked out.
- Wear clothing that will protect you from adverse weather conditions without hampering your freedom of movement.
- Do not disturb any asbestos. STOP work and tell your supervisor. If you are not sure, STOP and ask.
- Do not overload boom lifts or scissors lifts. Do not operate lifts unless authorized to do so.
- Do not enter any confined space, manholes, underground vaults, chambers, tanks or other similar places until written authorization has been posted and updated.
- When working in hot areas or confined spaces, be sure to drink water frequently to stay properly hydrated.

C. HOUSEKEEPING

General requirements for housekeeping is as follows:

- Safe housekeeping practices are the responsibility of every employee.
- Keep roads, walkways, grounds, aisles, stairs, platforms, ladders, and fire doors clear of obstruction and debris.
- Oily rags should be placed in closed metal containers until they can be cleaned or disposed.
- Any oil or chemicals spilled should be cleaned up immediately using safe practices as outlined in the Safety Data Sheet for the spilled oil or chemical.
- Waste material should be disposed of in the proper containers and should not be allowed to accumulate.
- Broken glass should be immediately collected and placed in containers. It should be collected in such a manner as to avoid injury.
- Put items that might cause slips, trips or falls in proper receptacles.
- Excess materials, cuttings, and tools must be removed as promptly as possible from the job site after completion of work.
- Floors should be kept clean and in good repair.
- Clean and orderly storage areas shall be maintained.

D. MANUAL LIFTING SAFETY

- Consider the weight and size of a load prior to picking it up.
- Use material handling equipment such as carts or dollies whenever possible.
- If a load is too heavy or bulky to carry alone, ask someone for help.
- Remember in good lifting posture your ears, shoulders and hips are aligned.
- When you have to pick something off the floor, squat down keeping your back straight rather than bending over.
- While handling a load, instead of twisting your body, turn your whole body in the direction that you want to go.

E. MATERIAL HANDLING AND STORAGE

Material storage safety rules are as follows:

- Take care when lifting, moving or handling materials. Always use proper lifting techniques. Get help when lifting heavy loads.
- Store flammable liquids, combustible materials and compressed gasses in designated areas only.
- Use a cart to move compressed gasses; strap the cylinders securely in place.
- Use a bottle carrier when using a forklift. Be sure to secure the cylinder properly.
- Store all materials in a safe manner. Be careful not to overload floors, platforms or racks.
- Protect your hands; wear gloves when appropriate.
- To move heavy or bulky loads, use mechanical means whenever possible.
- When transporting gases in vehicles, secure them to the truck wall in an upright position.
- Never transport the cylinders lying down.
- When storing material in racks, observe all posted capacities and procedures.

F. CHEMICAL SAFETY

- Read all warning labels and Safety Data Sheets (SDS) before using any chemicals.
- Hazardous materials shall be handled in accordance with the SDS. SDS's contain personal protection and safety information and are available.
- If protective equipment is required, review its use with your supervisor prior to beginning work.
- Mixing of chemicals is prohibited at all times unless under the immediate direction of a supervisor. Before you mix - review all SDS.
- Always wash your hands thoroughly after handling chemicals, even if you were wearing protective gloves.
- Use chemicals only in well ventilated areas.
- Make sure acids are placed in a secure spot where they cannot be spilled.
- Do not use glass containers for acid; use only approved shatterproof containers.
- When using secondary containers filled by others, ensure that they are labeled as to their contents and hazards.

G. VEHICLE DRIVER SAFETY

- Only authorized employees are permitted to operate Company vehicles.
- Drive defensively and obey all traffic and highway laws.
- Always wear your seat belt, whether the driver or the passenger.
- Report all accidents as soon as possible to your supervisor and obtain a police report.

- Keys must be removed from all unattended vehicles and the vehicles must be locked.
- Report any vehicle defects for Company-owned vehicles, operating problems or missing parts to your supervisor.
- No smoking while refueling.
- Mobile phones should not be used when refueling.
- Employees who drive a vehicle on Company business must exercise due diligence to avoid distractions while driving (such as using cellular telephones), and to maintain the security of the vehicle and its contents.
- Hands-free equipment must be utilized whenever a wireless device is used.
- In every situation, employees are prohibited from using a wireless device while the vehicle is in motion if doing so distracts attention from driving.
- Additionally, no employee shall operate a motor vehicle on Company business while using a wireless telecommunications device to write, send or read any text-based communication, including but not limited to a text message, instant message, e-mail or Internet data.
- Employees are not permitted, under any circumstances, to operate a vehicle on Company business, when any physical or mental impairment causes the employee to be unable to drive safely. This prohibition includes circumstances in which the employee temporarily is unable to operate a vehicle safely or legally because of illness, medication, or intoxication.
- If your driver's license is revoked or expires, immediately notify your supervisor, Human Resources, and do not drive.

H. FORKLIFT TRUCK SAFETY

- Only properly trained and authorized drivers are permitted to operate forklift trucks.
- Inspect forklifts prior to using them.
- Immediately report to your supervisor any obvious defects or required repairs.
- Do not overload the forklift truck.
- Always use the proper size pallet with load properly secured.
- Position loads evenly on the forks for proper balance, utilizing the maximum possible width.
- Never elevate a load with the forklift truck tilted to one side.
- Do not permit anyone to stand between or under elevated forks.
- Keep hands and feet out of the mast assembly.
- Do not elevate the load with the mast tilted forward.
- Carry loads as close to the floor as possible.
- Keep the load against the backrest, with the mast tilted backwards.
- Keep your forklift truck under control at all times.
- Unsafe driving and horseplay are prohibited while operating forklifts.
- Go slow and sound the horn at corners.
- Avoid running over loose objects.
- Always watch load and mast for overhead and side clearances.
- Keep hands and feet inside the forklift truck.
- Watch that the rear end swing does not contact persons or material.
- For better vision with bulky loads, drive backwards.
- Always drive on a ramp with the load facing uphill.
- Do not use forklift truck as a personnel lift, unless personnel lift basket is issued. Raise and lower personnel in baskets no faster than 2 feet per second. Operator must be at the controls at all times when personnel are in the lift basket.
- Do not carry passengers.

- Shut off your forklift truck when leaving it unattended.
- No smoking while refueling.
- Check the condition of your forklift truck after the day's work.
- Always look before backing up.
- Forklift truck shall not be driven up to a person in front of a bench or other fixed object.
- Know the rated capacity of the forklift you are operating and do not exceed its rated capacity.
- Shut off the propane tank; remove the tank from forklift and secure outside of the building in the area provided at the end of the last working shift.

I. GENERAL MACHINERY AND EQUIPMENT SAFETY

- Never operate, service, repair or adjust any machinery without proper instructions from your supervisor and without reading and understanding the instruction manual.
- Do not remove or modify guards and/or other safety devices at any time.
- If it is necessary to remove a guard for service, be sure to lock or block out the machinery prior to removing the guard. Replace the guard before unlocking or unblocking the equipment.
- Report all missing guards promptly to a supervisor.
- Check to see if guards and other protective devices are properly adjusted. Do not operate machine until it is properly guarded.
- Do not repair or adjust machinery while in operation. Oiling of moving parts is also prohibited except on equipment that is designed or fitted with safeguards to protect the employee.
- Follow lock-out/tag-out procedure for all machinery and equipment prior to cleaning or repairing.
- Remove any key prior to operating equipment.
- Do not stand, sit or lean on any stationary or moving part of any machine during operation.
- Only one qualified operator controls the operations of the machine.

J. WELDING AND CUTTING SAFETY

Arc welding safety rules consist of the following:

- Make sure your welding equipment is installed properly, grounded and in good working condition.
- Always wear protective clothing suitable for welding.
- Always wear proper eye protection when welding or cutting.
- Keep your work area clean and free of hazards. Make sure that no flammable, volatile or explosive materials are in or near the work area.
- Do not weld in confined spaces without special precautions and/or supervisor's authorization.
- Do not weld on containers that have held combustibles without special precautions and/or supervisor's authorization.
- Use mechanical exhaust at the point of welding when welding lead, cadmium, chromium, manganese, brass, bronze, zinc or galvanized metals.
- Make sure all electrical connections are tight and insulated. Do not use cables with frayed, cracked or bare spots in the insulation.
- When the electrode holder or welding torch is not in use, hang it on brackets provided.
- Never let it touch a compressed gas cylinder.
- Dispose of electrode and wire stubs in proper container since stubs and rods on the floor

are a safety hazard.

- Use weld curtains to shield others from the light rays produced from arc welding.
- Keep your leads orderly and out of walkways. Suspend them whenever possible.
- Do not weld if your leads or machine is in or near water.
- Make sure a portable fire extinguisher is nearby.

Resistance welding safety rules consist of the following:

- Make sure your resistance welding equipment is installed properly, grounded and in good working condition.
- Always wear protective clothing suitable for welding.
- Always wear proper eye and hand protection when operating the welding equipment.
- Keep your work area clean and free of hazards.
- Keep your fingers and hands clear of electrodes.
- Do not touch the weld spot until it has had time to cool.
- Position weld screens to protect.

Oxy-fuel cutting, and welding safety rules consist of the following:

- Make sure that all of your gas welding equipment is installed properly and is in good working condition. Make sure that all connections are tight before lighting the torch. Do not use the flame to inspect for tight joints. Use soap solution to detect leaks.
- Always wear protective clothing suitable for welding, brazing, soldering or flame cutting.
- Always wear proper eye protection when welding, brazing, soldering or flame cutting.
- Keep your work area clean and free of hazards. Flame cutting sparks can travel 30–40 feet. Do not allow flame cut sparks to hit hoses, regulators or cylinders.
- Handle all compressed gas cylinders with extreme care. Keep caps on when not in use. •
Make sure that compressed gas cylinders are secured to the equipment carriage, wall or other structural supports.
- Store compressed gas cylinders in a safe place with good ventilation. Acetylene cylinders and oxygen cylinders should be kept at least 20 feet apart.
- When compressed gas cylinders or fuel gas cylinders are empty, close the valve, install the cap, and return to correct bottle storage area.
- Use oxygen, acetylene or other fuel gases with only the appropriate torches and tips.
- Oxygen should not be used for 'AIR' in any way.
- Never use acetylene at a pressure in excess of 15 pounds per square inch. Higher pressure can cause an explosion.
- Never use oil, grease or any other material on any apparatus or thread fitting in the oxy-acetylene or oxy-fuel gas system. Oil and grease in contact with oxygen will cause spontaneous combustion.
- Do not use excessive force to turn the cylinder valve tee handle.
- When assembling apparatus, crack gas cylinder valve before attaching regulators. This blows out accumulated foreign material. Make sure all threaded fittings are clean and tight.
- Always use the correct sequence and technique for assembling and lighting the torch.
- Always use the correct sequence and technique for shutting off a torch.
- Use mechanical exhaust at the point of welding when welding lead, cadmium, chromium, manganese, brass, bronze, zinc or galvanized metals.
- Do not weld or cut in confined spaces without special precautions and/or supervisor's authorization.
- Do not weld or cut on containers that have held combustibles without special precautions

and/or supervisor's authorization.

- Use weld curtains to shield others from the light rays produced by your gas welding.
- Handle all compressed gas cylinders with extreme care. Replace protective caps when the cylinder is not in use.
- Make sure that compressed gas cylinders are secured to the equipment carriage, wall or other structural supports.
- When compressed gas cylinders are empty, close the valve, install the cap, and return to correct bottle storage area.
- Make sure all compressed gas connections are tight and check for leaks. Do not use hoses that are frayed or cracked.

IV. REFERENCES

Attachment 1 – Forklift Inspection Form

ATTACHMENT 1 – FORKLIFT INSPECTION FORM

	OK	Maintenance Needed
Truck No:		
Model / Make		
Fuel Odor Present	Do NOT Operate Truck	
Visual Check		
Leaks - Fuel, Hydraulic Oil, or Radiator Coolant		
Tire - Condition and Pressure		
Forks, Top Clip Retaining Pin and Heel - Condition		
Load Backrest Extension - Attached		
Hydraulic Hoses, Mast Chains and Stops		
Overhead Guard Attached		
Propane Tank (LP Gas Trucks) - Rust Corrosion , Damage		
Safety Warnings Attached		
Engine Compartment		
Hydraulic Fluid Level - Dipstick		
Transmission Fluid Level Dipstick		
Engine Oil Level - Dipstick		
All Engine Belts - Properly Functioning Smoothly		
Engine Air Cleaner		
Radiator Coolant Level		
Brake Fluid Level		
Operators Compartment		
Operators Manual Present		
Capacity Plate Attached		
Hood Latch Attached		
Seat Belt Buckle and Retractor Functioning Properly		
Controls (Turn Truck on)		
Investigate Unusual Noises Immediately		
Accelerator Linkage - Functioning Properly		
Parking Brake - Functioning Properly		
Service Brake - Functioning Properly		
Steering Operation - Functioning Properly		
Drive Control - Forward / Reverse		
Tilt Control - Forward / Back		
Hoist and Lowering Control - Functioning Smoothly		
Horn - Functioning Properly		
Lights - Functioning Properly		
Gauges		
Engine Oil Pressure - Functioning		
Hour Meter - Functioning		
Temperature - Functioning		
Instrument Monitors - Functioning		

Completed By: _____

Date: _____

SECTION 3: Safety Orientation Checklist

I. PURPOSE

Establish requirements for the communication of initial safety policies and information to newly hired or transferred employees.

II. GENERAL

New employees and employees who have transferred to a new facility shall receive appropriate training in the skills and procedures necessary to perform their duties safely.

III. RESPONSIBILITY

A. SUPERVISORS

Supervisors shall ensure that new employees are provided a safety orientation.

B. EMPLOYEES

Employees shall review materials presented in orientation and complete all associated documentation. Employees are encouraged to ask questions related to safe work practices and procedures.

C. DEPARTMENT SAFETY REPRESENTATIVES

Company Safety Representatives shall assist in Employee Safety Orientations when appropriate and monitor orientations to ensure accuracy and completeness of information presented.

IV. PROCEDURE

A. FREQUENCY

Newly hired or transferred employees shall receive orientation training within first five (5) days of employment or transfer.

B. FORMAT

A Supervisor or Safety Representative as a one-to-one review or a classroom session attended by multiple employees can present Employee Safety Orientations.

Employee questions related to training material shall be encouraged and addressed promptly. Presenters shall allow for a minimum of one hour for each training session.

C. CONTENT

Employee Safety Orientation at a minimum shall include the following:

- Review of Hazard Reporting Procedures
- Review and Issue of Safe Work Practices

- Review of Safety Manual
- Review of Personal Protection Equipment Requirements
- Review of Accident Reporting Procedures
- Review of Facility or Project Emergency Procedures
 - Fire
 - Medical Emergency
 - Other
- Review of Hazards Specific to Facility or Operations
- Opportunity for new employee to ask questions.

D. RECORDS

Employee Safety Orientation training records shall be retained for the duration of employment. These records shall include the following information:

- Dates of the training
- Topics covered in training
- Signature of the new or transferred employee
- Signature of the person presenting the Employee Safety Orientation

The presenter shall use a Safety Orientation Checklist to document training. Original documentation shall be maintained in the Human Resources Department files.

V. REFERENCES

Safety Orientation Checklists are available on the Company's Intranet.

SECTION 4: Recognition Programs

I. PURPOSE

This guideline provides information about the safety recognition program.

II. GENERAL

Safety recognition is incorporated into the Friedman Way Award and Recognition Program. Information about this program can be found on the Company's intranet.

SECTION 5: Disciplinary Policy

I. PURPOSE

All employees are required to abide by the provisions of our safety program. Violations of these requirements or failure to follow safety instructions will be grounds for disciplinary action, up to and including termination.

II. GENERAL

Please consult the Company's Disciplinary Action contained in the Employee Handbook for more information.

An employee who knowingly or negligently permits a violation of this safety program, any safety laws, rules, regulations, company rules, policies or instructions which results, or could result in serious personal injury, property damage, or damage to company equipment or a safety citation shall, after a complete investigation, be subject to disciplinary action appropriate for the severity of the violation, up to and including termination. All disciplinary programs of controlling contractor will be met.

SECTION 6: Safety Committees

I. PURPOSE

This guideline provides information regarding Safety Committees.

II. GENERAL

COMPANY SAFETY COMMITTEE

Friedman has a Safety Committee comprised of management and non-management employees.

The Safety Committee will meet at least once every calendar quarter. Interim meetings may be called to review serious accidents, discuss new exposures or respond to other safety issues.

The Safety Committee agenda will include topics such as:

- Review Safety Training Programs and make recommendations for improvement and/or change.
- Discuss any safety violations by employees and recommend disciplinary action.
- Discuss new safety laws or regulations or changes in safety laws and regulations and decide how to comply with them.
- Recommend topics for Toolbox Talks.
- Recommend safety recognition.

Additionally, the Safety Committee will review new accidents since the last meeting to:

1. Determine the cause of the incident.
2. Make recommendations for preventing a re-occurrence of such incident.
3. Follow-up to ensure that the Company and the Department Safety Representative have taken appropriate actions on their recommendations.

Minutes of all Safety Committee meetings shall be recorded and available for all employees.

SECTION 7: Safety Training

I. PURPOSE

This guideline presents requirements for safety training that will be provided to Company employees.

II. GENERAL

The Company shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to the work environment to control or eliminate any hazards or other exposure to illness or injury.

III. RESPONSIBILITY

A. DEPARTMENT SAFETY REPRESENTATIVE

The Department Safety Representative, in conjunction with the Training Department, will deliver training programs and supply materials that will provide necessary safety training to each employee.

B. PROJECT MANAGERS/SUPERVISORS

Project Managers and Supervisors will ensure that they instruct employees assigned to them in correct and safe work practices as outlined in Company guidelines.

C. MANAGERS

Managers will ensure that Project Managers and Supervisors within their area of management perform their responsibilities related to safety training. Managers will also ensure that employees within their area of management receive required safety training.

D. EMPLOYEES

Employees will attend and participate in safety training.

IV. PROCEDURE

A. DELIVERY

Safety training will be delivered through one of the following methods. Employee participation will be recorded either electronically or through another means of attendance recording, if not electronic.

- Employee Orientation
- Self-Directed Training Modules
- Weekly Toolbox Meetings
- On-The-Job Training
- Monthly Safety Meetings
- Computer-Based Training Modules
- Contractor Safety Councils
- Outside Consultants
- Special Training Sessions

B. TOPICS

Safety training topics may include but not be limited to the following:

- Asbestos Awareness
- Back Injury Prevention
- Bloodborne Pathogens
- Electrical Safety
- Emergency Response Procedures
- Job Safety Analysis
- Fire Prevention/Fire Extinguisher Use
- Personal Protective Equipment
- Hazard Communication
- Hazard Identification
- Spill Response
- OSHA 10 and 30 Hour
- Confined Space Entry
- CPR/First Aid
- Driving Safety
- Heat Stress
- Fall Protection
- Environmental Issues
- Lockout/Tagout
- Waste Disposal
- Respiratory Equipment Use
- Scaffold Use
- Hearing Conservation

Managers, project managers, and supervisors will receive annual training in topics designed to enable them to better perform their safety responsibilities.

SECTION 8: Accident/Incident and Claim Reporting

I. PURPOSE

The purpose of this guideline is to facilitate timely and accurate reporting of accidents/incidents and filing of insurance claims.

II. GENERAL

A. WHAT MUST BE REPORTED

Incidents that occur out of Company work-related activities involving Company employees or contractors that involve any of the following circumstances:

- Injuries - Injuries that involve medical treatment, first aid treatment, consultation with a doctor, lost time, or restricted duty.
- Near Miss Incidents - Any unplanned event that has the potential for imminent property loss or injury and prevents a task from being completed. Example would be material falling from a rack and almost hitting an associate standing nearby.
- Impacts on the Environment - Environmental incidents such as spills, discharges to waterways, equipment leaks, or air emissions.
- Fires - Fire incidents regardless of size or duration.
- Vehicle Accidents - Any accident involving a Company vehicle (e.g., forklift, truck, or rented or leased vehicle.)
- Incidents Affecting Utilities - Any incident that affects electrical, steam, water, or gas service to a Company facility or customer facility.
- Property/Equipment Damage Incidents - Any incident that involves significant damage to Company or customer owned or leased property or equipment.
- Incidents Involving Possible Liability - Any incident that is reasonably expected to present liability for the Company. Examples include injury to contractors, visitors, or the public and damage to customer or owner property or equipment.

B. TIME REQUIREMENTS FOR REPORTING

Initial oral reporting must occur as soon as possible.

Written incident reports should be completed by the appropriate supervisor and presented to the Department Safety Representative and Company Worker's Compensation Representative by the end of the workday.

The time requirements as a condition of the contract should be followed in reporting the incident to customers and/or owners.

C. DOCUMENTATION REQUIREMENTS FOR REPORTING

All incidents involving injury or near-miss/non-injury incidents to employees should be reported and documented using the First Report of Injury/Employee Accident Form located on the

Company Intranet.

Report documentation required as a condition of the contract should be completed and forwarded to the appropriate parties.

Documents related to the incident such as diagrams, photographs, third-party reports, medical treatment forms and similar should be attached to the report form and submitted to the Department Safety Representative and the Company Worker's Compensation Representative.

III. PROCEDURE

A. INITIAL ORAL REPORTING

As soon as possible, employees must notify their supervisor of all injury and non-injury incidents. Oral notification of the incident should include: who and/or what was involved, what happened, when it happened, and where it happened.

The notified supervisor shall then orally report the incident to the Department Safety Representative as soon as possible.

Cause or fault related to the incident should not be communicated in the initial oral reporting.

B. INJURY REPORTING

The following procedures shall be followed for incidents involving injury to employees:

1. Attend to the medical needs of the injured employee.
2. The Company's Worker's Compensation Representative will complete a Medical Treatment Authorization Form to be provided to the attending physician, as required.
3. Minimize or eliminate any unsafe conditions related to the incident.
4. Complete oral notification of incident to the person's Supervisor, Project Manager, Department Safety Representative and others as necessary.
5. Begin the incident investigation process. You should take pictures, gather witness statements and retain equipment and tools involved, if applicable. See safety procedure the Section "Accident Investigation" for guidance in conducting the investigation.
6. Complete First Report of Injury/Employee Accident Report form located on the Company's intranet. Forward the completed form and related documents to the Department Safety Representative and Company's Worker's Compensation Representative.
7. A "Doctor's Release" is required before an employee is allowed to resume work following any treated injury or illness. If a release requires restricted duty, and no such duty is available, consult with the Department Leadership and Department Safety Representative for recommendations.
8. Direct any questions related to the management or reporting of the injury to the Department Safety Representative.

C. FATALITY REPORTING

In the event of a fatality involving an employee, the following steps shall be followed:

1. Attend to the medical needs of any injured employees that may be involved in the incident.
2. Minimize or eliminate any unsafe conditions related to the incident. Examples would include erecting barricades or de-energizing equipment.
3. Immediately notify the Department Safety Representative of the fatality incident.
4. If contact cannot be made with the Department Safety Representative, immediately notify the Department Senior Managing Director of the fatality incident.
5. If contact cannot be made with the Senior Managing Director, immediately notify the Human Resources Director of the fatality incident.
6. The Department Safety Representative, Senior Managing Director or Human Resources Director will notify the Friedman Leadership Team, Risk Management, insurance companies, and any other parties that need to be notified.
7. The Department Safety Representative will notify the local state or federal OSHA office. This must be done within eight (8) hours of any work-related death.
8. Any questions or inquiries related to the incident should be directed to the Department Safety Representative.

In the event of a jobsite death which does NOT involve the Company or Company employee (i.e., employee of another contractor or owner's employee) the following steps will be followed:

1. The Supervisor or Project Manager on the jobsite shall, on the day of the accident, make a record of the events, witnesses, or other pertinent information, as they understand them.
2. Send a copy of the record to the Department Safety Representative, Risk Management Department, and Friedman Leadership Team.

D. NON-INJURY REPORTING

The following procedures will be followed for non-injury-incidents:

1. Minimize or eliminate any unsafe conditions related to the incident.
2. Complete oral notification of incident to the person's Supervisor, Project Manager, Department Safety Representative and others as necessary.
3. Begin the incident investigation process. You should take pictures, gather witness statements and retain equipment and tools involved, if applicable. See safety procedure the Section "Accident Investigation" for guidance in conducting the investigation.
4. Complete First Report of Injury/Employee Accident Report form located on the Company's intranet. Forward the completed form and related documents to the Department Safety Representative and Company's Worker's Compensation Representative.
5. Direct any questions to the Department Safety Representative.

E. INSURANCE CLAIM REPORTING

Insurance claim reporting for employee injury, automobile liability, general liability, automobile physical damage, and property damage will be filed with the applicable insurance company.

Information needed when filing claims includes may include the following:

- Names, addresses, phone numbers of person involved
- Insurance carrier for other parties involved
- Date and time of incident
- Location of incident
- Vehicle or property information
- Nature of damage of injury
- Description of how incident occurred

The Department Safety Representative, Manager of Risk Management, and Worker's Compensation Representative should be contacted if you have questions or need assistance in handling claims.

IV. REFERENCES

Attachment 1 – Accident/Incident Report Form



EMPLOYEE ACCIDENT/INCIDENT REPORT

- Use this form for all employee work-related injuries and illnesses.
- Please complete this form in its entirety and be as specific as possible.
- In the event of an emergency, employee should proceed to the nearest emergency room. In the event of a non-emergency, employee must use an approved workers' compensation facility and employee must tell that facility that they are an employee of Friedman Management Company.
- Completed forms and any medical documentation that the employee receives must be emailed to WorkersComp@freg.com

EMPLOYEE INFORMATION

FULL NAME OF EMPLOYEE:	
SOCIAL SECURITY NUMBER:	
DATE OF BIRTH:	
HOME ADDRESS: CITY, STATE, ZIP	
HOME PHONE NUMBER:	
CELL PHONE NUMBER:	
EMAIL ADDRESS:	
MALE OR FEMALE:	
MARITAL STATUS:	
NUMBER OF DEPENDENTS:	
DATE OF HIRE:	
RATE OF PAY:	
REGULAR WORKING HOURS (FROM/TO):	
REGULAR DAYS WORKED:	
OCCUPATION:	

SUPERVISOR'S NAME:	
SUPERVISOR'S WORK/OFFICE NUMBER:	
SUPERVISOR'S CELL NUMBER:	
PROPERTY ASSIGNED TO:	

INJURY INFORMATION

DATE OF INCIDENT:	
TIME OF INCIDENT:	
TIME EMPLOYEE BEGAN WORK ON DATE OF INCIDENT:	
PROPERTY NAME AND ADDRESS WHERE INCIDENT OCCURRED:	
LOCATION WHERE INCIDENT HAPPENED? (DETAILED DESCRIPTION)	
WHAT WAS THE EMPLOYEE DOING JUST BEFORE THE INCIDENT OCCURRED?	
DETAILED DESCRIPTION OF HOW ACCIDENT HAPPENED: (PLEASE TAKE PHOTO'S IF POSSIBLE.)	
DESCRIBE INJURY:	
WHAT OBJECT OR SUBSTANCE DIRECTLY HARMED THE EMPLOYEE?	
WERE POWER TOOLS INVOLVED?	
WERE SAFETY GUARDS ON POWER TOOLS?	
DID EMPLOYEE LOSE CONSCIOUSNESS, EYE SIGHT, HEARING, OR BECOME DIZZY:	

TREATMENT INFORMATION

WHAT TREATMENT WAS GIVEN ON SITE:	
-----------------------------------	--

WAS EMPLOYEE TREATED AWAY FROM THE WORKSITE?	
IF YES, PROVIDE NAME & ADDRESS OF MEDICAL FACILITY:	
DATE & TIME 1 ST SEEN AT HOSPITAL OR DOCTOR?	
WAS EMPLOYEE TREATED IN AN EMERGENCY ROOM?	
WAS EMPLOYEE HOSPITALIZED OVERNIGHT AS AN IN-PATIENT?	
NEXT SCHEDULED OR FOLLOW-UP VISIT:	
HAS EMPLOYEE RETURNED TO WORK?	
ARE THERE ANY WORK RESTRICTIONS?	

ADDITIONAL INFORMATION

WITNESS #1: (RELATIONSHIP TO INJURED PARTY):	
WITNESS #1'S PHONE NUMBER:	
NAME, PHONE #, AND RELATIONSHIP TO INJURED PARTY, OF PERSON WHO NOTIFIED US OF THIS INCIDENT:	
DATE, TIME, & HOW WE WERE NOTIFIED OF THIS INCIDENT:	
THIS REPORT WAS COMPLETED BY (NAME, TITLE & PHONE #):	
DATE THIS REPORT WAS COMPLETED:	
ANY ADDITIONAL INFORMATION:	

FOR HUMAN RESOURCES USE ONLY:

CASE NUMBER FROM THE LOG:	
INJURY OR ILLNESS?	
RECORDABLE EVENT?	
REPORTABLE EVENT? (DEATH (INCLUDE DATE), IN-PATIENT HOSPITALIZATION, AMPUTATION, LOSS OF AN EYE)	
COMPLETED BY – NAME AND DATE:	

10/2016 REVISION

SECTION 9: Accident/Incident Investigation

I. PURPOSE

The purpose of this guideline is to provide for the efficient and consistent investigation of accidents that occur out of or in the course of Company business. The ultimate goal of accident investigation is to determine cause and prevent recurrence.

II. RESPONSIBILITY

EMPLOYEES

Employees shall participate in the accident investigation process as required by their job function or involvement in the accident. This participation is likely to include being interviewed and submittal of documentation related to the accident.

SUPERVISORS/FOREMAN

Supervisors shall participate in and initiate the investigation of accidents that involve employees under their supervision. Supervisors shall also monitor the completion of any corrective action that is recommended from the investigation.

RESPONSIBLE MANAGERS

Responsible Managers shall review the investigation by the supervisor/foreman, and can initiate the investigation of accidents and direct the investigation team during the investigation process, where applicable.

DEPARTMENT SAFETY REPRESENTATIVE

The Department Safety Representative shall review the investigation by the supervisor/foreman, and can initiate the investigation of accidents and direct the investigation team during the investigation process, where applicable.

The Department Safety Representative shall also participate in and provide guidance to investigations as requested or appropriate.

III. PROCEDURE

A. ACCIDENT INVESTIGATION

The appropriate immediate supervisor or manager will investigate the accident with input from the Manager and Department Safety Representative. The following steps will be taken to accomplish this:

- Start the investigation process as soon as possible.
- Obtain accident information through interview of witnesses to and those involved in the accident. Guidance on how to conduct an interview and questions that should be asked are found in Attachment 1 "Interview Process".
- Separate witnesses and those involved in the accident and have them prepare a hand-written statement of what they saw and heard. The statement requires the signature of the

preparer and the date prepared.

- Interview witnesses and those persons involved in the accident.
- Have the person being interviewed tell you what happened.
- Read the handwritten statements and ask clarifying questions if needed.
- Survey the accident scene and examine any physical evidence associated with the accident.
- Take pictures, if applicable, and gather any surveillance video, if applicable.
- Analyze all information gathered during the investigation in order to determine events and conditions that contributed to the accident.
- Complete an Accident Investigation Report form, which can be found on the Company's Intranet. Emphasis will be placed on the identification of accident cause(s), as well as the listing of corrective actions recommended and taken.
- A copy of the Accident Investigation Report should be emailed to WorkComp@freg.com and maintained at the Human Resources Department office.

Note: The Accident Investigation Report is separate from and submitted after the Accident Reporting Form.

B. RECOMMENDATION FOLLOW-UP PROCEDURES

The appropriate supervisor or manager will monitor the completion status of recommended corrective actions until all have been satisfactorily completed.

IV. REFERENCES

Attachment 1 – Interview Process Guidelines

Attachment 2 – Accident Investigation Report

ATTACHMENT 1 – INTERVIEW PROCESS

Step One: Visual Orientation

This is a survey of the accident scene to get “the big picture.” This helps you talk with the witness from a point of common knowledge. While making this survey, outline what questions need to be answered. Make notes to help you remember the things that look different or out of place so you can ask questions about them.

Step Two: Select Suitable Place for Interview

The place should help the witness or at least be an area that will not make the witness feel uncomfortable. If the scene of the accident is not too dangerous or unsuitable because of noise, weather, or work activity, an interview at the scene can help stimulate the witnesses’ memory and can help communication through visually relating to things at the scene.

If the accident site is not suitable, a neutral location will help the witness feel at ease. The Supervisor/Manager's office with the Supervisor/Manager behind the desk is not neutral and will be psychologically uncomfortable. The interview should also be private or at least out of hearing of others. This will allow the witness to respond from his or her own observations and not be influenced by the presence of others. When witnesses are interviewed in the presence of others, they react to the strongest personality in the group and don’t speak up when they disagree.

Step Three: Put Witness at Ease

Control the impulse to get right to the facts of the accident. A few moments to show consideration of the witness saves time in the long run.

Step Four: Explain purpose

Next, you should explain that the purpose is to find out what happened and why so that the problem can be corrected before another accident occurs.

Step Five: Ask for Facts

Actual testimony should start with asking the witness to tell, in his or her own words, what was observed, seen, heard or known about the accident.

Don’t ask for a chronological order. What the witness remembers best is what is most vivid and meaningful to him. This in itself means something. If you attempt to force thoughts into a sequence, you will cause the witness to forget things or to make up a smooth story. Trying to remember something he/she actually didn’t see is uncomfortable, so he/she builds a memory to fill the gaps, usually honestly believing that he/she actually remembers the “facts” he/she builds. You can put things in order after you get the facts.

Your memory is not better than the witnesses’ so major points of the testimony must be recorded in brief notes. Don’t try to write everything word for word. That forces either a slow pace or excessive repetition. To ensure understanding and provide the witness with time to reflect and consider, you should give periodic feedback. Give short summaries of the main points, as you understand them. This corrects misunderstanding.

Step Six: Permit Silent Periods

While you are getting the initial facts, let the witness have silent periods to collect their thoughts. Don't prompt or question until he/she appears to have exhausted his/her memory. What the witness remembers without prompting is the most meaningful.

Step Seven: Ask Neutral, Predetermined Questions

After the witness has exhausted his/her memory, you can ask questions to expand details of earlier testimony.

Answer pre-determined questions you formed while getting the big picture or that were raised by previous witnesses' comments.

The questions should be neutral in form so they require the witness to form answers in their own words. Questions that can be answered "yes" or "no", or that give multiple choices should be avoided as they lead the witness into distortions. Questions should also be objective rather than asking for the witnesses' opinions.

Step Eight: Ask for Suggestions

People often think of good solutions to problems. They also support changes better when they have had a part in those changes. While you are interviewing them, get their ideas. They may have good ones that you didn't think of.

Interview Questions

Who was Involved?

Accidents usually affect more than just the injured person and very often, more than just the injured person contributed to the cause: WHO, therefore, should go beyond who was injured and who was present. Who supervised the injured employee? Who may have failed to report the unsafe condition? All of those people involved are important to the underlying cause of the accident. Get the names of everyone involved!

Where Did the Accident Occur?

Look beyond the obvious answer to this question. The name of the Department or general area is not enough. A detailed description of the accident site should be included.

Also, determine if the people involved were where they were supposed to be. Was the equipment in its proper location?

What Happened?

The question can be further broken down to uncover the following acts:

- What was being done? (The answer to this question describes an action or procedure.)
- What things are involved? (A description of the tool or equipment that was involved answers this question.)
- What was the result? (This is answered by a description of the actual injury, including the nature of the injury and the part of the body injured.)

When?

The answer requires more than just the date. The time of day, the day of the week, and whether the

accident occur at the beginning or end of a shift can also be very important.

How Did the Accident Occur?

The answer to this question brings together all the facts of the accident.

The answer to "how" is a description of people, things, places and time, as they all combine into a complete event. The exact sequence of events that led to the accident should be reported. Refer to the Breakdown of Unsafe Acts and Conditions Guide.

Why Did the Accident Occur?

In order to determine or recommend what corrective action should be initiated, it must be determined exactly why the accident occurred. Under no circumstances should carelessness be considered the cause of any accident. The word "carelessness" does not describe the reasons for a person's behavior. What contributed to the accident may have been inattention, inadequate training, failure to report a hazard, etc. To determine root cause(s), the following questions must to be answered:

- WHY was the injured person inattentive?
- WHY was he poorly trained?
- WHY did someone fail to report an unsafe condition/procedure?
- WHY did the accident produce an accident?
- WHY did the combination of all the factors that made up the event result in an injury?
- WHY did the event result in anything other than an ordinary everyday occurrence?

These questions and others you can think of will help you determine IF and WHY an unsafe act occurred.

What can be done to prevent recurrence?

After evaluating the facts of an accident, you will most likely find that the accident was caused by a combination of unsafe acts and/or unsafe conditions. Recommendations to prevent a recurrence should be directed toward correcting all contributing factors leading to an unsafe condition and/or unsafe act.

NOTE: It is important to remember that an accident investigation is not a trial to find fault or blame. Its purpose is to find accident causes so that similar accidents may be prevented by physical or mechanical improvement or employee training and motivation.

ATTACHMENT 2- ACCIDENT/INCIDENT INVESTIGATION REPORT

INVESTIGATION DATA (PLEASE PRINT)		Date of Investigation
Person(s) making investigation:		
Type of incident: <input type="checkbox"/> Injury/Illness <input type="checkbox"/> Non-Injury/Illness <input type="checkbox"/> Automobile <input type="checkbox"/> Subcontractor <input type="checkbox"/> Other _____		Department Safety Representative
Date of Incident	Time of Incident <input type="checkbox"/> a.m. <input type="checkbox"/> p.m.	Location of Incident
Witnesses to Incident (<i>Attach written witness statements to report</i>)		
Describe how the incident occurred (include sequence of events, who, what, where, when, why, and how):		
Describe impact of incident, if any, on public or customer:		
Contributing Factors (Events and conditions that contributed to the accident: people, environment, equipment failure, lack of training, etc.):		
Property Damage (if applicable):		
STEPS TAKEN TO PREVENT SIMILAR OCCURRENCE - Mark and explain all that apply: <input type="checkbox"/> Instruction of employee involved <input type="checkbox"/> Formal disciplinary action taken <input type="checkbox"/> Other _____ <input type="checkbox"/> Reminder instruction of all employees <input type="checkbox"/> Installation of guard device <input type="checkbox"/> Personal protective equipment required <input type="checkbox"/> Counseling of employee		
Was drug/alcohol screening conducted? Only conduct if reasonable suspicion is present (contact HR prior to conducting) <input type="checkbox"/> Yes <input type="checkbox"/> No		
Lead Investigator Name	Lead Investigator Signature	Date Signed
Employee Name	Employee Signature	Date Signed
Supervisor Name	Supervisor Signature	Date Signed
Safety Representative Name	Safety Representative Signature	Date Signed

SECTION 10: Asbestos and Lead Awareness

I. PURPOSE

The purpose of this document is to provide information to reduce the likelihood of being exposed to asbestos and/or lead.

II. RESPONSIBILITY

If a Customer requires us to be involved with Asbestos and/or Lead at a job site, the Corporate Operations Officer (COO) is to sign off. It must be subcontracted to a reputable and financially strong subcontractor who has all the proper insurances and can secure a properly rated bond. The Legal Department must review the subcontractor agreement. At no time should an Employee be in the area of an abatement project, with the exception of our Project Manager or General Foreman, who must be properly trained on abatement and a plan in place for that project with the subcontractor before the work starts.

III. ASBESTOS

Usually asbestos is mixed with other materials to form products. Depending on what the product is, the amount of asbestos in asbestos-containing materials (ACM) may vary from 1%-100%. Examples of products that might contain asbestos are:

- Sprayed on fire proofing and insulation in buildings
- Insulation for pipes and boilers
- Wall and ceiling insulation
- Floor tiles
- Putties, caulks, and cements (such as in chemical carrying cement pipes)
- Wall and ceiling texture in older buildings and homes
- Joint compound in older buildings and homes
- Cooling tower panels

A. DEFINITIONS

Asbestos - the name applied to six naturally occurring minerals that are mined from the earth. The different types of asbestos are Amosite, Chrysotile, Tremolite, Actinolite, Anthophyllite, and Crocidolite. Of these six, three are used more commonly. Chrysotile (white) is the most common but, it is not unusual to encounter Amosite (brown/off-white), or Crocidolite (blue) as well.

Asbestos fibers are also virtually indestructible. They are resistant to chemicals and heat and they are very stable in the environment. They do not evaporate into air or dissolve in water and they are not broken down over time.

B. PROCEDURE

1. *Health Effects of Asbestos*

The most common way for asbestos fibers to enter the body is through breathing. In fact, ACM is not generally considered to be harmful unless it is releasing dust or fibers into the air where they can be inhaled or ingested. Many of the fibers will become trapped in the mucous membranes of the nose and throat where they can then be removed but, some may pass deep into the lungs, or, if swallowed, into the digestive tract. Once they are trapped in the body, the fibers can cause health problems.

Asbestos is most hazardous when it is friable. The term “friable” means that the asbestos is easily crumbled by hand, releasing fibers into the air. Sprayed on asbestos insulation is highly friable. Asbestos floor tile is not.

Because it is so hard to destroy asbestos fibers, the body cannot break them down or remove them once they are lodged in lung or body tissues. They remain in place where they can cause disease. There are three primary diseases associated with asbestos exposure: Asbestosis, lung cancer, and Mesothelioma.

2. *Asbestos Exposure*

To avoid being exposed to asbestos, you must be aware of the locations it is likely to be found. If you do not know whether something is asbestos or not, assume that it is until it is verified otherwise. Remember that you cannot tell if floor tile or insulation contains asbestos just by looking at them. If you have reason to suspect that something is asbestos, either because it is labeled as such, or because it is something that is likely to contain asbestos (9” floor tile, for example) DO NOT DISTURB IT.

Never do the following to any asbestos containing materials or suspected materials:

- | | |
|----------|-----------|
| ▪ Drill | ▪ Break |
| ▪ Hammer | ▪ Damage |
| ▪ Cut | ▪ Move |
| ▪ Saw | ▪ Disturb |

3. *Asbestos Reporting*

If anyone discovers or accidentally damages materials suspected of containing asbestos, they should be instructed to:

- Leave the area immediately and report the situation to their supervisor.
- Post signs and control access to the area.
- The supervisor must report the damage to the Manager, Department Safety Representative, Department Leadership.
- ACM can be removed/abated by properly trained authorized personnel only.

4. *Asbestos Awareness Training*

All Company employees that have the potential to be exposed to asbestos will receive asbestos awareness training. The training will include a review of this document.

All contractors that have the potential to be exposed to asbestos will be required to train their personnel in asbestos awareness. If asbestos is present on a Customer site, contractors will make all of their employees aware of it.

IV. LEAD

- Lead overexposure is one of the most common overexposures found in industry and is a leading cause of workplace illness.
- Lead is a major potential public health risk.
- In general populations, lead may be present in hazardous concentrations in food, water, and air.
- Sources include paint, urban dust, and folk remedies.
- Lead poisoning is the leading environmentally induced illness in children. At greatest risk are children under the age of six because they are undergoing rapid neurological and physical development.

A. DEFINITIONS

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

B. PROCEDURE

1. *Health Effects of Lead*

Lead adversely affects numerous body systems and causes forms of health impairment and disease that arise after periods of exposure as short as days (acute exposure) or as long as several years (chronic exposure). The frequency and severity of medical symptoms increases with the concentration of lead in the blood. Common symptoms of acute lead poisoning are loss of appetite, nausea, vomiting, stomach cramps, constipation, difficulty in sleeping, fatigue, moodiness, headache, joint or muscle aches, anemia, and decreased sexual drive. Acute health poisoning from uncontrolled occupational exposures has resulted in fatalities. Long term (chronic) overexposure to lead may result in severe damage to the blood-forming, nervous, urinary, and reproductive systems.

2. *Avoid Lead Exposure*

To avoid being exposed to lead, you must be aware of the locations it is likely to be found. If you do not know whether something is lead or not, assume that it is until it is verified otherwise. Remember that you cannot tell if something contains lead just by looking at it. If you have reason to suspect that something contains lead, either because it is labeled as such, or because it is something that is like to contain lead (old paint) DO NOT DISTURB IT.

Never drill, hammer, cut, saw, break, peel, scrape, damage, move or disturb any lead containing materials or suspected materials.

Employees and contractors must follow the Environmental Protection Agency's (EPA's) Lead-Based Paint Renovation, Repair and Painting (RRP) Rule (as amended in 2010 and 2011). The EPA's

RRP Rule aims to protect the public from lead-based paint hazards associated with renovation, repair and painting activities. These activities can create hazardous lead dust when surfaces with lead paint, even from many decades ago, are disturbed. The rule requires workers to be certified and trained in the use of lead-safe work practices, and requires renovation, repair, and painting firms to be EPA-certified. These requirements became fully effective April 22, 2010.

In general, any activity that disturbs paint in pre-1978 housing and child-occupied facilities is covered, including:

- Remodeling and repair/maintenance
- Electrical work
- Plumbing
- Painting preparation
- Carpentry
- Window replacement
- The following housing or activities are not covered by the rule
- Housing built in 1978 or later
- Housing specifically for elderly or disabled persons, unless children under 6 reside or are expected to reside there
- "Zero-bedroom" dwellings (studio apartments, dormitories, etc.)
- Housing or components declared lead-free by a certified inspector or risk assessor. Also, a certified renovator may declare specific components lead-free using an EPA recognized test kit or by collecting paint chip samples for analysis by an EPA recognized laboratory
- Minor repair and maintenance activities that disturb 6 square feet or less of paint per room inside, or 20 square feet or less on the exterior of a home or building. (Note: Window replacement, and partial and full demolition activities, are always covered regardless of square footage. Activities designated as "prohibited" are prohibited regardless of square footage.)

3. Lead Reporting

If anyone discovers or accidentally damages materials suspected of containing lead, they should be instructed to:

- Leave the area immediately and report the situation to their supervisor.
- Post signs and control access to the area.
- The supervisor must report the damage to the facility safety personnel.
- Lead can be removed/abated by properly trained authorized personnel only.

4. Lead Awareness Training

All employees that have the potential to be exposed to lead will receive lead awareness training.

All contractors that have the potential to be exposed to lead will be required to train their personnel in lead awareness. If lead is present on a project site, the contractors will make their employees aware of it.

SECTION 11: Electrical Ground Fault Protection/Assured Grounding

I. PURPOSE

This program outlines safe work practices to follow to protect workers on construction sites from all electrical injuries resulting from possible equipment malfunctions, improper grounding, and defective electrical tools.

II. SCOPE

It is the policy of the Company that our employees follow safe work practices when performing work operations using extension cord sets and receptacles that are not part of a building or structure, as well as when using equipment connected by a cord and plug as per Part 1926 Subpart K of OSHA's standards.

III. GENERAL

Employees will not be permitted to use any electrical tool/equipment which does not meet the requirements of this program.

Ground fault circuit interrupters (GFCI's) will be used at the Company in addition to an Assured Ground Fault Program on construction sites.

IV. DEFINITIONS

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

Grounded Conductor: A system or circuit conductor that is intentionally grounded.

Ground Fault Circuit Interrupt: A device whose function is to interrupt the electrical circuit when a fault current to ground incident occurs.

V. RESPONSIBILITY

The Department Safety Representative will have the overall responsibility for implementing this safety and health program. Employees should review a copy of this program. Copies of this program will be available at the job site for inspection and any affected employee.

VI. PROCEDURE

A. GROUND FAULT PROTECTION

GFCI's shall be used on all 120-volt, single-phase, 15- and 20- ampere receptacle outlets which are not part of the permanent wiring of any building and are used by Company employees. GFCI's are not required on receptacles on a two-wire single-phase portable or vehicle-mounted

generator rated not more than 5kW where the circuit conductors are not part of the generator frame. All other grounded surfaces need not be protected with GFCI's.

B. ASSURED EQUIPMENT GROUNDING

In addition to the use of GFCI's, the Company shall implement and follow assured equipment grounding, where applicable, which is a testing and identification procedure to verify that electrical equipment is safe to operate regarding electrical hazards. Each GFCI, cord set, attachment, cap, plug, and receptacle cord sets, and any equipment connected by cord and plug must be visually inspected daily for external defects.

1. *Daily Visual Inspection*

Employees will be instructed that each cord set, attachment cap, plug, and receptacle of the cord set, and any equipment connected by cords and plugs, must be visually inspected before each day's use for external defects, such as deformed or missing pins, insulation damage, and current test verification code numbers. Any indication of possible internal damage must be checked as well. Damaged equipment shall be tagged "DO NOT USE" and taken out of service until the required repairs and tests have been conducted. Equipment that has not been tested within 3 months must not be used.

2. *Test Procedure*

GFCI's, cord sets, receptacles which are not part of the permanent wiring of a structure, and cord and plug connected equipment required to be grounded shall all be tested. The tests shall be performed:

- Before first use;
- Before equipment is returned to service;
- Before equipment is used after any incident in which it was reasonable to suspect it became damaged; and
- At intervals not to exceed 3 months

The tests are as follows:

- All equipment-grounding conductors shall be tested for continuity and shall be electrically continuous.
- Each plug and attachment plug shall be tested for the correct attachment of the grounding conductor.
- The grounding conductor shall be connected to its proper terminal.

The method to determine the condition of the affected equipment is as follows:

- Receptacles- use receptacle tested to determine correct connection to terminals
- Cord Sets – first plug the cord set into a properly wired receptacle, which has been tested as above. Then, plug receptacle tester into the female cord connector of the cord set to determine both continuity of grounding conductor and correct connections to terminals.
- Cord and Plug Connected Equipment – use continuity tester. Connect or touch one terminal of continuity tester to the metal frame of the equipment or tool and the other

terminal to the grounding prong of the attachment cap plug at the end of the cord. An audible or visual signal of the test indicates that there is continuity of the grounding conductor.

Any equipment which does not pass the tests will not be available for use by Company employees. Equipment that fails the tests shall be tagged and marked out-of-service by reading "DO NOT USE". The equipment should be removed from service until it has been repaired and has successfully passed the re-tests.

It shall be the site Foreman's responsibility to ensure that the equipment under their control has been tested. The Foreman does have the ability of performing the respective tests in the field using appropriate testing equipment. The Department Safety Representative or his designee will perform random safety inspections to ensure compliance with this program.

3. Test Record

Tests performed as required by this program will be recorded as to the identity of each receptacle, cord set, and cord and plug connected equipment that passed the test and will indicate the last date tested or interval for which it was tested. The test verification record will be by means of a number coded marking tape on the male end of the cord or equipment to identify that it has passed the test. The number coding system shall identify the actual month and year. The first number will be the month (04=April) and the second number will be the year (14=2014). Example: 414 = April, 2014.

The Company will keep record by using tape to signify the successful testing of the cord set, receptacle, plug and cord connected equipment.

SECTION 12: Back/Lifting Safety

I. PURPOSE

Provide information that will help prevent back injuries related to lifting and material handling.

II. PROCEDURE

The Company shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to the work environment to control or eliminate any hazards or other exposure to illness or injury.

A. AVOID LIFTING AND BENDING SIMULTANEOUSLY

Avoid lifting and bending whenever you can by following these steps:

- Whenever possible, avoid back stress and the strain of lifting and bending. If you don't use your back like a lever, you avoid putting it under so much potentially damaging force.
- Place objects off the floor. If you can set something down on a table or other elevated surface instead of on the floor, do it so you won't have to reach down to pick it up again.
- Raise/lower shelves. The best zone for lifting is between your shoulders and your waist.
- Put heavier objects on shelves at waist level, light objects on lower or higher shelves.
- Use carts and dollies to move objects, instead of carrying them. Remember that it is better on your back to push carts than it is to pull them.
- Use cranes, hoists, lift tables, and other lift-assist devices whenever you can:

B. PROPER LIFTING

You can't always avoid lifting, but there are ways to reduce the amount of pressure placed on the back when you do lift. By bending the knees, you keep your spine in a better alignment and you essentially remove the lever principle forces. Instead of using your back like a crane, allow your legs to do the work. Follow these steps when lifting:

- Take a balanced stance with your feet about a shoulder-width apart. One foot can be behind the object and the other next to it.
- Squat down to lift the object but keep your heels off the floor. Get as close to the object as you can.
- Use your palms (not just your fingers) to get a secure grip on the load. Make sure you'll be able to maintain a hold on the object without switching your grip later.
- Lift gradually (without jerking) using your leg, abdominal and buttock muscles and keeping the load as close to you as possible. Keep your chin tucked in so as to keep a relatively straight back and neckline.
- Once you're standing, change directions by pointing your feet in the direction you want to go and turning your whole body. Avoid twisting at your waist while carrying a load.
- When you put a load down, use these same guidelines in reverse.
- Reduce the amount of weight lifted. If you're moving a bunch of books, better to load several small boxes than one extremely heavy load.

- Use handles and lifting straps.
- Obtain help if the shape is too awkward or the object is too heavy for you to lift and move yourself.

C. BODY MANAGEMENT

It is important to know your body's limitations and it's important to be aware of your body position at all times. Learn to recognize those situations where your back is most at risk: bending, lifting, reaching, twisting, etc. Then take measures to avoid an injury.

- Stretch first - If you know that you're going to be doing work that might be hard on your back, take the time to stretch your muscles before starting, just like a professional athlete would do before a workout. This will help you avoid painful strains and sprains.
- Slow down - If you're doing a lot of heavy, repetitive lifting, take it slowly if you can. Allow yourself more recovery time between lifts, as well. Don't overdo it.
- Rest your back - Take frequent, short (micro) breaks. Stretch. If you've ever been working in an awkward position for a long time, then stood up and felt stiff and sore, you know you've been in that position too long and your body is now protesting. Take one-minute stretch breaks frequently to help avoid sore muscles.

SECTION 13: Compressed Gas Cylinders

I. PURPOSE

This guideline establishes the requirements to be followed to protect personnel and equipment during the receiving, acceptance, handling, storage, transportation and operation of compressed gas cylinders.

II. GENERAL

Compressed gas cylinders can present a variety of hazards if proper procedures are not developed and followed. These cylinders typically have a number of uses including welding gas, breathing air, refrigerants and purge gases for instrumentation. However, high pressures and toxic gas can present serious health and safety risks. The following information shall address these hazards and provide precautions to be taken.

III. DEFINITIONS

Compressed gas cylinder - A pressure-tested metal container constructed and maintained in accordance with U.S. Department of Transportation requirements (49 CFR Parts 171-179). These containers are available in various sizes.

Cylinder cap - A threaded metal cover for the protection of the valve and connection area of a compressed gas cylinder.

Cylinder dolly - A hand truck designed to carry standard industrial-size compressed gas cylinders. This hand truck is wheeled and has a chain or similar mechanism for securing the cylinder during transportation within the facility.

Flashback arrestor - The valve or mechanism used on fuel and oxygen lines to prevent the mixing of these gases.

Valve assembly - Consists of a valve and connections used to access the compressed gas in a cylinder.

IV. PROCEDURE

A. ACCEPTING COMPRESSED GAS CYLINDERS FROM VENDORS

When accepting compressed gas cylinders from vendors, the following precautions shall be observed:

- Do not accept cylinders that are not permanently and clearly marked by content. The name of the gas must be clearly marked on the shoulder of the cylinder.
- Ensure that a Material Safety Data Sheet (MSDS/SDS) accompanies all cylinders. Confirm that a current MSDS/SDS is on hand.
- Check the cylinder for integrity. The cylinder shall show no evidence of damage or defects such as gouges, grooves, dents, burrs or corrosion. It shall have a properly fitted threaded

valve protection cap and the current hydrotest date shall be stamped on the cylinder collar.

- Confirm that the cylinder has been ordered. Do not accept cylinders that have not been ordered by the location.
- Do not accept cylinders that lack a valve cover properly fitted on the valve.

B. STORAGE OF COMPRESSED GAS CYLINDERS

Cylinders shall be stored with the threaded cylinder cap in place and secured with chains or placed in racks to prevent falling. Storage areas for compressed gas cylinders shall be properly labeled by the contents and the cylinders shall be grouped accordingly.

C. EMPTY CYLINDERS

The valves of empty cylinders shall be closed with the cylinder cap secured and shall be marked or tagged “MT” or “EMPTY”. If stored in the same area, empty cylinders shall be separated from full cylinders.

D. FIRE PREVENTION STORAGE REQUIREMENTS

Flammable (fuel) gases include acetylene, hydrogen, natural gas and LP gas. Toxic gases include chlorine and other gases not used as fuel. Other gases may also be flammable. Check with the Department Safety Representative regarding the flammability of a cylinder gas. Fuel gas cylinder storage inside a building must be limited to a total capacity of 2,000 standard cubic feet. Some precautions to be observed when storing cylinders include:

- Oxygen cylinders shall not be stored with flammable gases. Oxygen cylinder valve connections are reverse threaded.
- Nitrogen and carbon dioxide cylinders may be stored with fuel or oxygen cylinders, as these are inert gases and do not feed a fire.
- Remove damaged or leaking cylinders from enclosed areas. Tag cylinders as “DAMAGED” or “DEFECTIVE” and arrange for return to the vendor as soon as possible.
- “No Smoking” signs shall be posted in flammable (fuel) gas storage areas.

Separation of flammable, toxic and oxidizer gases must be maintained. The same separation must be maintained between the cylinders and flammable or combustible materials such as paper, wood or grease. Separation can be accomplished by taking the following steps:

- Maintain a minimum distance of 20 feet (~6.2 meters) between the types of gases.
- Install a firewall 5 feet (~1.5 meters) high with a one-half hour fire rating.

E. MOVING AND TRANSPORTING COMPRESSED GAS CYLINDERS

The following procedures shall be observed when moving or transporting compressed gas cylinders:

- Do not move or lift cylinders by the cap.
- For local transport, use cradles, lugs, platforms, hand trucks or similar devices that allow the cylinder to be secured to the wheeled device.

- When transporting by a powered vehicle, secure the cylinder.
- To reposition a cylinder, it may be tilted slightly with the threaded cap in place and rolled on the bottom edge.

F. PUTTING CYLINDERS INTO SERVICE

Only employees trained in the safe use of compressed gas cylinders shall be allowed to use the cylinders. Accessory equipment including regulators, gauges, hoses and other equipment must be selected for compatibility with the gas being used. Precautions should be used when using these cylinders, as follows:

- The thread pattern on the oxygen cylinder is right-handed. The thread pattern on the fuel cylinder is left-handed. Left-handed threads are indicated by a notch around the fastening nut on the pressure regulator and the hose.
- Equipment shall be examined for damage or wear prior to use. Damaged or worn equipment shall be removed from use, tagged and returned to the warehouse for repair or replacement.
- Oil or grease shall not be used on regulators, fittings, hoses or gauges.
- Use check valves when any potential for backflow of gases into the cylinder exists.
- Because of potentially high pressures, open valves slowly on cylinders of compressed gas.
- Use a suitable cylinder truck, chain or other securing device to prevent cylinders from being knocked over while in use or standby service.

SECTION 14: Confined Space Entry

I. PURPOSE

The purpose of this program is to define safe conditions for working in confined space and to establish proper safety precautions to be taken when working in confined spaces.

This program is designed to prevent personal injuries and illnesses and to meet 29 CFR 1910.146 requirements.

Friedman employees will NOT enter any permit-required confined spaces. Work requiring entry into a permit-required confined space will be completed by a company authorized to complete that type of work. For those companies, completing permit-required confined spaces, below are Friedman's guidelines.

II. DEFINITIONS

Confined Space - A space that is large enough for a human to enter, has restricted means of entry and exit, and is not designed for continuous human occupancy. Examples: tanks, excavations, pits, process equipment, etc.

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

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

Entry - Occurs when any part of the body breaks the plane of the confined space opening to perform work activities.

III. RESPONSIBILITY

A. ENTRY SUPERVISOR

The Entry Supervisor is responsible for determining if acceptable entry conditions are present, authorizing entry into the confined space, overseeing entry operations, and terminating entry as required by conditions or program requirements.

B. ATTENDANT

The Attendant is responsible for knowing the hazards that may be faced during entry.

- Be aware of possible effects of hazard exposure in authorized entrants.
- Maintain an accurate record of those entering and exiting the confined space.

- Remain outside the confined space during entry operations.
- Alert entrant as needed of conditions outside the confined space.
- Monitor activities inside and outside the confined space.
- Summon rescue/emergency personnel if needed and prevent unauthorized persons from entering the confined space.

C. AUTHORIZED ENTRANT

The Authorized Entrant is responsible for understanding and following permit requirements and is to notify the Attendant if any hazardous condition is identified and evacuate the confined space if any hazardous condition is identified.

D. DEPARTMENT SAFETY REPRESENTATIVE

The Department Safety Representative is responsible for reviewing and updating the Confined Space Program to conform to OSHA standards.

- Conduct periodic inspections of entry operations to ensure compliance.
- Assist in all aspects of this program as required.
- Conduct a single annual review of all entries performed by Company employees.

E. SUPERVISOR

The Supervisor is responsible for performing the duties of entry supervisor as needed and ensuring that employees under their supervision follow the provisions of this program.

IV. PROCEDURE

A. IDENTIFYING ALL CONFINED SPACES

All confined spaces located within a facility or under the facilities control shall be identified. Once identified a determination will be made as to whether a permit will be required for entry. All employees will be made aware of these confined spaces through training, instruction and signs.

B. PREVENTING UNAUTHORIZED ENTRY

All employees shall be instructed that entry into a confined space is prohibited without a permit. All entrants authorized for entry will be documented on the permit.

C. THE PERMIT SYSTEM

When a confined space must be entered, a permit shall be completed and authorized by a supervisor, customer representative or safety representative prior to entry. The permit should consist of the following:

- The permit shall contain the date, the location of the confined space, and the signature of the person authorizing entry.
- A permit shall not be authorized until all conditions of the permit have been met.
- Permits will be canceled in the event of a fire, vapor release, spill or by the direction of customer representatives. A new permit must then be issued before work can continue.

D. PLANNING THE ENTRY

Gathering Data

- Identify the confined space and its location.
- Give reason for entering the confined space.
- Identify contents of confined space.

Identifying the Hazards

- Determine oxygen content of the space.
- Determine flammable gas content.
- Determine presence of toxic substances.
- Determine physical and mechanical hazards.

Ventilation of the Confined Space

- Determine whether mechanical or natural ventilation will be required.
- Mechanical ventilators must be bonded to the space.

Isolating the Confined Space

- Determine the procedures for disconnecting equipment, blinding and energy isolation.
- All energy sources should be isolated.

Purging/Cleaning the Confined Space

- Determine if the confined space will be purged with an inert gas.
- Determine the type of cleaning methods to be used.

Placement of Warning Signs

- Determine where warning signs and barriers will be required to prevent unauthorized entry or to protect entrants from external hazards.

Identifying All Personnel

- List all employees that will be required to prepare the confined space and complete the work inside the space.

Identifying Necessary Equipment

- List all equipment that will be needed to complete the confined space entry and involved work.

Preparing the Confined Space for Entry

- Warning signs and barriers should be placed on or around the confined space.
- Place all tools and equipment near the confined space.
- Isolate all energy sources connected to the confined space using proper lockout/tagout procedures.
- Install ventilation equipment if required. Install the ventilation equipment so that air is pulled through the entire space.
- Before starting mechanical ventilation equipment, a test of the atmosphere in the space must be done. The instrument used must be able to determine oxygen content, flammable gas concentration and toxic gases likely to be present in the space.
 - Oxygen content in the space must be between 19.5% and 23.5%.
 - The LEL or flammable gas reading must be less than 10%.
 - If a toxic atmosphere exists, entry will not be allowed until levels are below the PEL for

the toxic substance present.

- All employees involved shall be assembled at the space and permit requirements and emergency procedures will be reviewed.
- Entrants shall be allowed to witness atmospheric testing of confined spaces if they desire to do so.
- The entry supervisor will then add any additional information, then complete and sign the permit.

Rescue Procedures

- In the event of an emergency, immediately notify the local fire department.
- Assist rescue personnel as requested.
- Never enter a confined space to rescue an entrant.

Communication

- A means of oral communication shall be continuously maintained between the entrants and the standby.
- Radios can be used to meet this requirement.
- The confined space attendant will be equipped with an air horn and orange or red vest for emergency communication.

Entry by Multiple Companies

- A pre-entry meeting between supervisors of all companies entering the confined space must be conducted.
- The meeting will be conducted to determine precautions to be taken so that entrants do not endanger one another.
- Company employees may not enter the space until the meeting has been conducted.

Entry into Customer Owned Confined Spaces

- Customer entry procedures will be followed as required by the customer.
- Company employees concerned that customer procedures are not sufficient may refuse to enter until a Company Safety Representative has made a determination that the customer procedures will adequately protect employees involved in entry operations.

E. TRAINING

All employees whose job function may require them to be involved confined space entry operations shall be trained prior to their initial assignment.

Training for employees will include, but not be limited to the following:

- An explanation of the OSHA Standard 1910.146.
- Signs and barriers.
- The hazards of confined spaces.
- The Company Confined Space Program.

F. OUTSIDE SERVICES

There are companies that specialize in Confined Space Entry Programs and provide all pertinent training and equipment. These services should be seriously considered whenever large-scale

programs, long periods of exposures and/or high hazards exist.

If another company's program is to be utilized, a copy of their written program should be submitted to the Department Safety Representative for review and approval prior to use.

V. REFERENCES

Code of Federal Regulations

- Title 29, Part 1910.146

Attachment 1 - Confined Space Permit

Attachment 2 - Duties of Entry Supervisor

Attachment 3 - Duties of Attendants

Attachment 4 - Duties of Authorized Entrants

Attachment 5 - Confined Space Flow Chart

ATTACHMENT 1 - CONFINED SPACE PERMIT

EMERGENCY SERVICES PHONE NUMBER: _____

1. Permit Conditions

Reason for entry:	Entry date: Time of Entry:
Location:	Space Owner:
Entrant:	What Hazards will be adding to space: <input type="checkbox"/> Combustible <input type="checkbox"/> Flammable <input type="checkbox"/> Oxidizer <input type="checkbox"/> Explosive <input type="checkbox"/> Temperature <input type="checkbox"/> Toxic <input type="checkbox"/> Other: _____
Entrant:	
Entrant:	
Entrant:	
Attendant:	
Attendant:	
Supervisor:	
Known and potential hazards:	
Additional required permits <i>(for example work, hot work, radiological work permit, penetration permit)</i> :	

2. Requirements Checklist *(check all that apply)*

Equipment	Personal protective equipment and personal monitors
Non-entry rescue equipment <input type="checkbox"/> Rescue body harness (chest D-Ring) <input type="checkbox"/> Tripod <input type="checkbox"/> Davit Arm <input type="checkbox"/> Lifeline <input type="checkbox"/> Retrieval Hoist Area security: <input type="checkbox"/> Warning signs <input type="checkbox"/> Barricades <input type="checkbox"/> Ladder(s) <input type="checkbox"/> Fall protection equipment <input type="checkbox"/> Ventilation fan or blower _____ CFM <input type="checkbox"/> Can the fan provide 6 rotations per hour <input type="checkbox"/> Fire extinguisher(s) <input type="checkbox"/> Self-contained breathing apparatus (SCBA) <input type="checkbox"/> Air purifying respirator: specify cartridge type: <input type="checkbox"/> Supplied Air with minimum 5min escape bottle:	Gloves: <input type="checkbox"/> Leather <input type="checkbox"/> Impervious <input type="checkbox"/> Chemical resistant <input type="checkbox"/> Cut resistant <input type="checkbox"/> Other: _____ Face / eye protection: <input type="checkbox"/> Face shield <input type="checkbox"/> Goggles <input type="checkbox"/> Other: <input type="checkbox"/> Footwear <input type="checkbox"/> Coveralls <input type="checkbox"/> Head protection <input type="checkbox"/> Hearing protection <input type="checkbox"/> Radiation dosimeter(s) <input type="checkbox"/> Pocket ion chamber (PIC) <input type="checkbox"/> 4-Part Gas Detector for entrant(s) <input type="checkbox"/> Other: _____

3. Pre-entry Checklist

<input type="checkbox"/> Verify adequate confined space training <input type="checkbox"/> Pre-entry huddle on specific hazards and control methods <input type="checkbox"/> Receive detail information from owner of previous permits and hazard conditions <input type="checkbox"/> Non-entry rescue and procedure in place <input type="checkbox"/> Rescue Team (if required) and procedure in place <input type="checkbox"/> Notify affected departments and persons of service interruption <input type="checkbox"/> Lines blocked or broken <input type="checkbox"/> Drain space <input type="checkbox"/> Other: _____	Control of hazardous energy: <input type="checkbox"/> Lockout / tagout (LOTO) <input type="checkbox"/> Zero-voltage verification (ZVV) <input type="checkbox"/> Other: Communication from Attendant to Workers: <input type="checkbox"/> Phone <input type="checkbox"/> Radio <input type="checkbox"/> Intercom <input type="checkbox"/> Audible Signal <input type="checkbox"/> Visual Hand Signal <input type="checkbox"/> Rope Signal <input type="checkbox"/> Other: _____ Lighting: <input type="checkbox"/> Hazardous location rated <input type="checkbox"/> Standard Air flush: <input type="checkbox"/> Preliminary <input type="checkbox"/> Continuous:
---	---

4. Personnel Entry and Exit Record *(to be completed as needed before and during work)*

	Time In:	Time Out:	Time In:	Time Out:	Time In:	Time Out:
Entrant name:						
Entrant name:						
Entrant name:						
Entrant name:						
Entrant name:						
Entrant name:						
Entrant name:						
Entrant name:						

6. On-Site Rescue Plan

Is On-Site Rescue Team Required: <input type="checkbox"/> IDLH Atmosphere <input type="checkbox"/> Possibility of IDLH Atmosphere	
On-Site Rescue Members:	
Location of members during entry:	
Methods of Rescue: <input type="checkbox"/> External: (Self-Rescue) <input type="checkbox"/> External: (Retrieval) <input type="checkbox"/> Internal <input type="checkbox"/> Hauling system required <input type="checkbox"/> Patient lowering system required <input type="checkbox"/> Anchor overhead: Anchorage: (Pre-Rigging Required: <input type="checkbox"/> Yes <input type="checkbox"/> No) <input type="checkbox"/> Beam <input type="checkbox"/> Stairwell <input type="checkbox"/> Support Strut <input type="checkbox"/> Support Column <input type="checkbox"/> Other: _____	Methods of Communication: Attendant to Rescue Personnel: <input type="checkbox"/> Phone <input type="checkbox"/> Radio <input type="checkbox"/> Audible Signal <input type="checkbox"/> Intercom Attendant to Workers: <input type="checkbox"/> Phone <input type="checkbox"/> Radio <input type="checkbox"/> Intercom <input type="checkbox"/> Audible Signal <input type="checkbox"/> Visual Hand Signal <input type="checkbox"/> Rope Signal <input type="checkbox"/> Other: _____
Rescue Equipment Requirements (Quantity) <input type="checkbox"/> Hauling System (___) <input type="checkbox"/> Carabineers (___) <input type="checkbox"/> Anchor Straps (___) <input type="checkbox"/> Pulleys (___) <input type="checkbox"/> Webbing (___) <input type="checkbox"/> Shock absorbers (___) <input type="checkbox"/> Ascenders (___) <input type="checkbox"/> Body Harnesses (___) <input type="checkbox"/> Rigging Plates (___) <input type="checkbox"/> Safety Lines (___) <input type="checkbox"/> Main Lines (___) <input type="checkbox"/> Wrist/Ankle Harnesses (___) <input type="checkbox"/> Rescue Equipment has been inspected by competent worker. <input type="checkbox"/> Record of inspection attached to equipment	Additional possible equipment requirements <input type="checkbox"/> First Aid Kits <input type="checkbox"/> Packaging Devices <input type="checkbox"/> High Visibility <input type="checkbox"/> SCBA <input type="checkbox"/> Supplied Air with escape bottle <input type="checkbox"/> Other: _____ <input type="checkbox"/> Other: _____ <input type="checkbox"/> Other: _____ <input type="checkbox"/> Other: _____
Diagram of Space	

7. Pre-entry Certification *(must be signed by the confined space entry supervisor before entry)*

I hereby certify that all required hazard controls are in place, that air monitoring is being conducted as required and results show that the atmosphere is acceptable for entry, and that all required information is documented on this permit.

Confined space entry supervisor for this entry:

Signature:

Date:

8. Permit Closure *(must be signed by the confined space entry supervisor after work is completed)*

The work was done in accordance with this permit. A copy of this permit will be forwarded to the site owner, GC, and O Safety Department.

Name:

Signature:

Date:

ATTACHMENT 2 - DUTIES OF ENTRY SUPERVISOR

Know the Hazards that Entrants Face

- Routes of exposure
- Signs and symptoms of exposure
- Behavioral effects of exposure
- Consequences of exposure
- Other _____

Entry Permit

- Appropriate entries have been made on permit
- All tests have been conducted
- Equipment and procedures are in place
- Rescue services are available and summoning equipment is operable
- Signs permit and authorize entry
- Other _____

Terminate the Entry and Cancel Permit

- Operations covered by permit are complete
- A condition that is not allowed under the permit arises in or near the permit space
- Note any problems on permit so that appropriate revisions can be made
- Other _____

- Remove unauthorized personnel from area
- Determine when and if entry operation responsibility is transferred

I have reviewed the above information and I fully understand my responsibilities as a confined space entry supervisor.

Entry Supervisor Name – Print

Entry Supervisor Signature

Date

ATTACHMENT 3 - DUTIES OF ATTENDANTS

Know the Hazards that Entrants Face

- Routes of exposure
- Signs and symptoms of exposure
- Behavioral effects of exposure
- Consequences of exposure
- Other _____

While Entrants are in Space

- Maintain an accurate head count of authorized entrants
- Accurately identify who is actually in the space
- Remain outside space during entry operation until relieved by another attendant
- Monitor activities around space to determine safety of entrants
- Maintain rescue equipment
- Warn unauthorized person(s) they must stay away from the space
- Advise unauthorized person(s) they must immediately exit space
- Perform no other duties – concentrate on monitoring and protecting the entrants
- Other _____

Communication with Entrant

- Monitor entrant status
- Advise if unauthorized entrants are in space
- Alert entrant to evacuate
- Other _____

Order an Evacuation

- A prohibited condition is detected
- Behavioral effects of hazard exposure is detected in an entrant
- A situation outside of the space could endanger entrants
- Attendant cannot effectively and safely perform all of their required duties

If there is an Emergency

- Summon rescue and other emergency services if entrants need assistance to escape
- Perform non-entry rescue as specified by employer's procedures
- Other _____

I have reviewed the above information and I fully understand my responsibilities as a confined space entry attendant.

Attendant Name – Print

Attendant Signature

Date

ATTACHMENT 4 - DUTIES OF AUTHORIZED ENTRANTS

Know the Hazards that you, as Entrants, Face

- Routes of exposure
- Signs and symptoms of exposure
- Consequences of exposure
- Other _____

Know how to Properly use Equipment

- Respirators
- Communication equipment
- Gas detection equipment
- Lighting equipment
- Egress equipment
- Personal protective equipment
- Other _____

Communication with Attendant

- Entrants status
- For evacuation orders
- Other _____

Alert Attendant

- Symptoms or signs of exposure are present
- Detection of prohibited conditions
- Unexpected problems or conditions
- Other _____

Exit Space as Quickly as Possible

- When ordered by attendant
- Detection of prohibited conditions
- Symptoms or signs of exposure are present
- Evacuation alarm is sounded
- Other _____

I have reviewed the above information and I fully understand my responsibilities as a confined space entry authorized entrant.

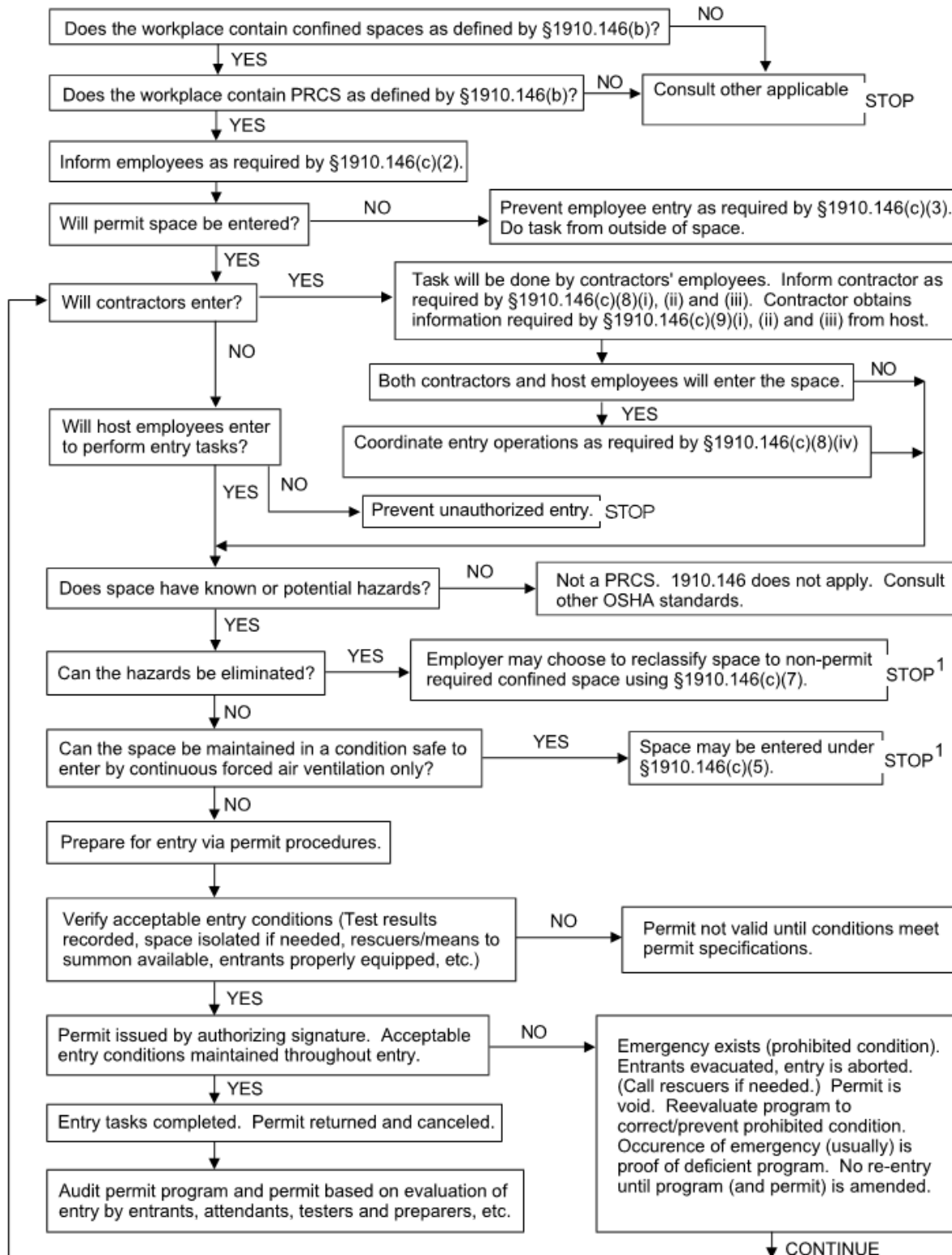
Entrant Name – Print

Entrant Signature

Date

ATTACHMENT 5 - CONFINED SPACE FLOW CHART

Appendix A. Permit - Required Confined Space Decision Flow Chart



¹ Spaces may have to be evacuated and re-evaluated if hazards arise during entry.

SECTION 15: Cranes, Aerial Platforms, and Scaffolding – General Safety

I. PURPOSE – Cranes

This guideline establishes the requirements to be followed to protect the safety and health employees during the operation of cranes, hoists and lifting devices.

II. GENERAL – Cranes

This guideline outlines terminology and responsibilities and reviews basic principles for the development of procedures to prevent potentially serious accidents involving cranes, hoists and lifting devices in order to ensure the safety of workers.

III. RESPONSIBILITY – Cranes

A. CRANE OPERATOR

Crane operators shall be certified/licensed for the equipment they are operating and shall always take the necessary precautions to ensure their safety and the safety of others including shutting down operations if necessary. Crane operators shall not eat, read, smoke or perform any other similar activity while operating the equipment and shall not operate the equipment when physically unfit or ill. Outdoor cranes and lifting equipment shall not be operated in high winds. The rig shall be secured whenever it is not in use.

B. RIGGERS AND SIGNALERS

Riggers and Signalers shall be qualified according to OSHA Standards and have joint responsibility with crane operators to secure all hitches and remove all loose material before loads are moved or lifted and shall take the following steps to ensure safe operation of the lift which includes but is not limited to:

- Do not use damaged equipment.
- Check all hardware, equipment, tackle and slings before use.
- Destroy defective equipment.
- Do not try to lengthen or repair damaged load chain.

IV. PROCEDURE – Cranes

A. OPERATING MANUAL

The Operating Manual for rig shall be in the cab at all times:

- Ensure that each crane is equipped with a fire extinguisher rated at least 5 BC.
- Ensure that crane hooks are equipped with a safety latch. Heat must never be applied to the hook (no welding or torch cutting). No modifications to the hook should be made without the manufacturer's written approval.
- Lighting in the cab shall be sufficient for safe operation.

B. CRANES, HOISTS AND LIFTING DEVICES

- The rated load capability of all cranes, hoists, and lifting devices shall be visibly marked on each side of the cab or boom and must never be exceeded. Operators shall pick up only those loads whose weight is known. Outriggers on mobile equipment must be used when lifting per manufacturer recommendations.
- Workers shall be warned of all overhead crane work before it begins. Work will be performed on level ground or on cribbing that will support the load. Loads should not be swung over workers. Workers should not work under overhead loads.
- Overhead crane electrical equipment shall not exceed 600 volts. Pendant pushbutton controls for overhead cranes shall not exceed 150 volts AC or 300 volts DC. Controls shall fail in the “safe” position and return to the “off” position when released. Guards for all electrical equipment in overhead cranes shall have the capacity to support a 200- pound person.
- The crane operator or his supervisor shall report all damage done to any part of a structure by the crane’s operation to the Competent Person for correction as soon as reasonably possible.

C. AERIAL BASKETS FOR ELECTRICAL WORK

All equipment using hydraulically operated booms to lift or raise aerial baskets or buckets in which employees work is considered aerial basket equipment. Users shall comply with the following safety precautions:

- When using the aerial basket as an insulating device, do not perform any work in which materials, tools or equipment could bypass any part of the insulation system.
- Do not use electric drills, electric soldering irons or similar corded tools. Use only hydraulic tools with approved insulated hoses that operate from the truck tool system or other hydraulic power source. Use only insulated tools on energized conductors and equipment.
- Gasoline-powered chain saws may be used from an aerial basket but must be started and stopped outside the aerial basket.
- Cover energized equipment with protective devices before allowing the aerial basket or boom to rest against it.
- When working from a vehicle boom, lower the boom insulator, ground the vehicle with the grounding cable supplied with the vehicle or isolate and barricade the vehicle.
- Always use a restraint device.
- Do not move the vehicle while boom is elevated, stand on the rim of the basket, use a ladder in the basket, or wear or use climbers in the basket.
- Ground-level controls shall be operated only at the request of the person in the basket, except in emergencies.

D. SIGNALS

Operator and Signal Person shall be in constant communication. When using signals (hand or verbal), the following shall be considered:

Each facility shall establish site-specific signals.

Signal information shall be posted prominently in appropriate locations at the facility.

Signals shall be given to the operator by a clearly trained and designated person with the ability to see the load.

E. LOAD CONTROL

The operator has responsibility for all safety matters concerning the equipment. The operator and rigger have joint responsibility to secure all hitches and remove all loose materials before loads are moved or lifted. Operators and riggers shall observe the following precautions:

- Suspended loads shall be controlled with tag lines whenever possible. Never use hands to control suspended loads and never leave a suspended load unattended.
- The swing radius of the counterweight must be barricaded at all times.
- Riggers must remain alert to shifting loads while hooking on and be alert to pinch points, keeping hands and feet clear of the sling while it is being tightened. Never guide lines by hand or foot onto drums. Always use a stick or an iron bar to guide lines onto drums.
- The sling angle shall be kept over 45°. If this is not possible, consult with the Competent person before proceeding with the lift.
- Gantry and overhead cranes shall have power control braking systems capable of maintaining safe lowering speeds of rated loads.
- Trolleys and bridges shall have effective braking systems.
- All persons working out of a cage being hoisted or supported by a crane must follow OSHA Safety Standards.

F. BOOMS

All booms must be kept at least twenty (20) feet from high voltage lines unless the lines have been de-energized or effectively guarded to prevent accidental contact. Booms shall be marked with a load capacity that shall not be exceeded. Never subject booms to side loads.

G. CRITICAL LIFT PLAN

A written procedure or “lift plan” shall be prepared prior to any heavy or otherwise critical lift. As a minimum the written procedure will include a plot plan showing entry of lifting equipment to the area, final location, and working radius of the lifting equipment, entry of items to be lifted, and position of items during the lift. The written procedure shall also include calculated weight of load to be lifted, sizes and certified ratings of all lifting equipment, including cranes, hoist, cables, slings, blocks, deadmen, etc. In addition, copies of certification for all cranes and operators to be used shall be presented.

H. INSPECTION OF CRANES, HOISTS, AERIAL BASKETS AND LIFTING DEVICES

The operator shall inspect the entire rig and equipment before each use to make adjustments to mechanisms that could interfere with operations and ensure that all parts of the crane or hoisting system are properly operational. This inspection shall check for the following:

- Loose gears
- Hoisting and lowering
- Trolley or bridge travel
- Keys
- Clear runways
- Railings
- Brakes
- Warning bells
- Rings
- Chain drives
- Limit switches
- Sheaves or drums
- Cables and similar items

The following inspections shall be performed prior to crane use:

- Ensure that there is no deterioration or leaks in lines, tanks, valves, drain pumps and other parts of the air or hydraulic system.
- Ensure that electrical testing is done for the dielectric integrity of the boom, basket and control assembly for insulating aerial basket equipment.
- Ensure that lifting hooks are not deformed, do not show excessive wear and are not cracked.
- Ensure that hoisting or load chains, including end connections, have no excessive wear, twist, or distorted links that interfere with proper function or are stretched beyond the manufacturer's recommendations.

Monthly Inspections

Monthly inspection shall be conducted as follows:

- Inspect cranes using Attachment 1, Crane Inspection Record.
- Inspect hooks using Attachment 2, Hook Replacement Criteria. The inspector's signature, hook serial number and date of the inspection shall be recorded.
- The load chain shall be inspected. The inspector's signature, chain identifier and date of the inspection shall be recorded.
- A visual inspection of the supporting structure shall be conducted.

Annual Inspections

A fully qualified licensed professional engineer or manufacturer's representative selected by the facility's Competent Person shall perform Annual Inspections. The Inspector shall file a record of the results at the facility with the facility's Competent Person and Safety Representative.

Return-to-Service Inspections

Return-to-Service Inspections shall be performed when a crane has been idle for an extended period. The crane shall be inspected prior to being returned to service. This inspection shall consider the following:

- If the crane is idle one (1) to six (6) months, perform a monthly inspection.
- If equipped, a wire rope inspection shall be performed for rope diameter, broken outside wires, worn outside wires and the condition of end connections as well as kinking, crushing, cutting or unstringing.
- If the crane is idle for over six (6) months, the facility's Competent Person shall perform all

checks contained in the annual inspection. If the annual inspection is out-of-date, it shall be performed at that time.

I. TRAINING - CRANES

Operators shall be certified/licensed to operate the equipment to which they are assigned with the license filed in personnel files. Furthermore, operators shall be trained in the facility-specific accepted signals for crane and hoisting equipment operation.

Riggers and Signal Persons shall be trained in the safe handling of slings, hitches, ropes, suspended loads and any other handling equipment as well as accepted hand signals for crane and hoisting equipment operation.

J. RECORDS - CRANES

All current operators' licenses shall be filed in personnel files.

Operator and rigger training records shall be retained at the facility for the duration of their employment in that capacity.

The following inspection records shall be retained for the previous calendar year and the current year:

- Monthly inspections for cranes and hoists.
- Monthly hoist hook inspections.
- Annual hoists crane and insulated aerial basket inspections.

V. REFERENCES - Cranes

Attachment 1 - Pre-Task Safety Checklist

Attachment 2 - Pre-Lift Plan (Day of Lift)

ATTACHMENT 1 – CRANES PRE-TASK SAFETY CHECKLIST

- ☐ Accurate weight and dimensions of equipment determined.
- ☐ Do pick points look adequate and sensible?
- ☐ If no pick point provided, what is manufacturer's recommendation?
- ☐ Lift heaviest piece of equipment last if possible.
- ☐ Any damage to frame or pick point due to handling during transport?
- ☐ Are sleepers, roof supports, and structural members adequate for load?
- ☐ Do the load designs match actual unit's on-site tags?
- ☐ Is the equipment weight distributed evenly?
- ☐ Do layout of anchor bolts or supports match dimensions of submittals and equipment?
- ☐ Do personnel know proper hand signals?
- ☐ Is a tag line needed?
- ☐ Is rigging in good condition and rated for intended load?
- ☐ Have fall protection needs for personnel on roof been addressed adequately?
- ☐ Are all roof openings properly covered or barricaded?
- ☐ Are radios needed for communication between flagman and crane operator?
- ☐ Is entire site aware of lift?
- ☐ Should any areas be "taped" or barricaded?
- ☐ Do areas need to be evacuated prior to lift?
- ☐ Do any local ordinances restrict time of lift?
- ☐ Will local permits and traffic control be needed?
- ☐ If at night, is there adequate illumination?
- ☐ What weather conditions do you expect? What impact will this have on lift?
- ☐ Can crane be set up in pre-planned point prior to lift?
- ☐ Will truck delivering equipment be able to get close as needed for lift?
- ☐ Does soil, slab, or whatever surface crane will operate on, have adequate load bearing capacity?
- ☐ Are mats needed for outriggers?
- ☐ Has crane certification been obtained?
- ☐ Is crane operator qualified?
- ☐ Has lift plan been prepared for lift?

Notes:

ATTACHMENT 2 – CRANES PRE-LIFT PLAN (DAY OF LIFT)

CRANE PRE-TASK ANALYSIS AND CHECKLIST

Page 1 of 2

Date: _____ Project Name _____

Crane Company _____ CCO Verification: YES NO

Crane Operator _____ Annual Crane Inspection Verified: YES NO

Crane lift task / procedure	YES	NO	NA	Potential Hazard / Solution If required
EARLY CRANE LIFT PLANNING				
Load weights verified				
Any unusual lifting procedures				
Crane setup area identified / communicated				
Swing path identified				
Evacuation plan of load swing path				
Any overhead utilities				
Any underground utilities, structures				
Nearby excavations				
Pedestrians or traffic near crane lift				
Staging area for equipment				
Roof Protection / Structural support for laydown				
COMMUNICATIONS				
Pre-Lift meeting with all lift personnel				
Who is the person responsible for lift				
Designated signal person				
The authority to make the go/no go				
Radios required (Two-way radios only)				
Hand signals to be used				
Back up communication plan				
Fall protection required				
DAY OF LIFT				
NYLON SLINGS				
Are slings cut, torn, or worn				
Are any red danger threads showing				
Slings a matched pair				
Proper rated slings being used for what is to be lifted				
WIRE ROPE CHOKERS / SLINGS				
Are there 6 or more broken wires in one lay				
3 or more broken wires in 1 strand in 1 lay				
Are chokers kinked or bent, corrosion				
Chokers a matched pair				

CRANES PRE-TASK ANALYSIS AND CHECKLIST

Page 2 of 2

Crane lift task / procedure	YES	NO	NA	Potential Hazard / Solution If required
CHAINS				
Are links elongated				
Any nicks or gouges present				
Severe corrosion				
Chains matched pair				
GENERAL REQUIREMENTS				
Tag lines to control lift in place				
Barricades / caution tape in place				
Safety vests				
Traffic control (if required)				
PPE gloves, hard hats, safety glasses, etc.				
Will weather affect lift				

Signature of person or persons completing document:

SEND COPY OF THIS DOCUMENT TO THE DEPARTMENT SAFETY REPRESENTATIVE WHEN COMPLETED.

VI. PURPOSE – Aerial Work Platforms

The purpose of this procedure is to provide guidance in the safe usage and operation of aerial work platforms.

VII. EQUIPMENT COVERED – Aerial Work Platforms

This procedure applies to equipment that has a primary function of elevating personnel, together with their tools and necessary materials, on a platform which is mechanically positioned. This equipment includes boom-supported elevating work platforms, manually propelled elevating work platforms, and self-propelled elevating work platforms.

The devices commonly referred to as “scissors-lift”, “JLG”, and “boom-lift” would be covered under this procedure.

VIII. DEFINITIONS – Aerial Work Platforms

Aerial work platform – An entire device that is designed and manufactured to raise personnel to an elevated work position on a platform supported by scissors, masts, or booms.

Authorized person – A person who is approved and assigned to perform specific types of duties because of his or her training or experience.

Mechanically positioned – The elevating assembly, whether a mechanical (cable or chain), hydraulic, pneumatic, electric or other powered mechanism, is used to raise or lower the platform.

Platform – The portion of an aerial work platform, such as bucket, basket, stand, cage, or the equivalent, that is designed to be occupied by personnel.

Qualified person – A person who possesses a recognized degree, certificate, professional standing, or skill and who, by knowledge, training, and experience, has demonstrated the ability to deal with problems relating to the subject matter, the work, or the project.

IX. PROCEDURE – Aerial Work Platforms

A. CONSTRUCTION AND DESIGN – AERIAL WORK PLATFORMS

- Aerial work platforms shall be designed, constructed, and tested so as to be in compliance with the requirements of the American National Standards Institute (ANSI).
- Aerial work platforms shall not be field-modified for uses other than those intended by the manufacturer, unless the manufacturer has certified the modification in writing.
- Directional controls shall be of the type that will automatically return to the off or neutral position when released, protected against inadvertent operation, and clearly marked as to their intended function.
- Special workings, cautions, restrictions, rated workload, and a clear statement of whether or not the aerial work platform is electrically insulated shall be clearly marked in a permanent manner on each aerial work platform.

- Rotating shaft, gears, and other moving parts that are exposed to contact shall be guarded.

B. MAINTENANCE AND REPAIR – AERIAL WORK PLATFORMS

- Each aerial work platform shall be maintained, repaired, and kept in proper working condition in accordance with the manufacturer's or owner's operating or maintenance and repair manual or manuals.
- Any aerial work platform found not to be in a safe operating condition shall have a tag affixed that reads "Do Not Use" or similar wording and be removed from service until repaired.
- All repairs shall be made by an authorized person in accordance with the manufacturer's or owner's operating or maintenance and repair manual or manuals.
- All danger, caution, and control markings and operational plates shall be legible and not obscured.
- The operating instructions shall be maintained on each aerial work platform.

C. OPERATOR CERTIFICATION – AERIAL WORK PLATFORMS

- The Company shall ensure that each employee who operates an aerial work platform has an aerial work platform operator's certification.
- A certification shall be carried by the operator or be available at the job site.
- A certification shall indicate the type of aerial work platforms an operator has been trained on and is qualified to operate.
- A certification shall be valid for a period of not more than three years.
- A certification shall contain the firm/company name, operator's name, name of issuing authority, the types of aerial work platforms the operator is authorized to use, date issued, and expiration date.

D. INSTRUCTION AND TRAINING – AERIAL WORK PLATFORMS

The Company shall ensure that each employee who will operate an aerial work platform has completed instruction and training regarding the equipment he or she will operate. Such instruction shall comply with and contain the following:

- A qualified person shall deliver the instruction and training. The qualified person shall ensure that the training is documented on file.
- Each operator shall be instructed in the intended purpose and function of each of the controls.
- Each operator shall understand by reading or by having a qualified person explain decals, warnings, and instructions displayed on the aerial work platform.
- Each operator shall understand by reading or by having a qualified person explain the requirements as outlined in this procedure.
- The training shall include a written test or opportunity for questions to ensure the operator comprehends the instruction and information presented.

E. PRE-OPERATION RULES AND PROCEDURES – AERIAL WORK PLATFORMS

- Before use on each shift, an aerial work platform shall be given a visual inspection by the

operator. The operator will look for cracked welds, bent or broken structural members, hydraulic or fuel leaks, damaged controls and cables, loose wires, tire condition, fuel and hydraulic fluid levels, and slippery conditions on the platform.

- Before use on each work shift, the operator will operate all platform and ground controls to ensure that they perform their intended function.
- Before the aerial work platform is used, and during use on the job site, the operator shall inspect the work area for ditches, drop-offs, holes, floor obstructions, debris, overhead obstructions, power lines, and any similar conditions that may present an unsafe condition.
- All unsafe items or conditions identified, as a result of the inspection of the aerial work platform and work area shall be corrected before further use of the aerial work platform.

F. OPERATING RULES AND PROCEDURES – AERIAL WORK PLATFORMS

- Aerial work platforms shall be used in accordance with the manufacturer or owner's operating instructions and safety rules.
- A minimum of 20 feet clearance shall be maintained between the aerial work platform and energized electric power lines operating at voltages up to 50 kV. The local Department Safety Representative should be consulted before working under or near electric power lines operating at voltages higher than 50kV.
- The manufacturer's rated load capacity shall not be exceeded.
- Only personnel, their tools, and necessary materials shall be on or in the platform.
- The platform guardrail system shall not be used to support materials, other work platforms, or employees.
- Personnel shall maintain firm footing on the platform while working on the platform.
- Personnel shall not stand on the platform guardrail system.
- The use of railings, planks, ladders, or any other devices on the platform for achieving additional height is prohibited.
- See the "Fall Protection/Restraint" of this Section for guidance in fall protection and restraint requirements when operating aerial work platforms.
- Small compressed gas cylinders, 24 inches or less in length, can be placed on the platform deck. These cylinders must be positioned upright, rest on the platform deck, be secured and totally contained within the platform.
- A fully charged and inspected fire extinguisher must be present on the platform deck when an aerial work platform is in use for the purpose of performing hot work such as welding, soldering, etc.
- Do not travel horizontally in the scissor-lift while the platform is in the extended position.
- The scissor-lift platform must be lowered to its lowest position before the lift can be moved, unless the lift is factory equipped to operate in elevated levels.
- Look in the direction of, and keep a clear view of, the path of travel and make sure that the path is firm and level.
- Maintain a safe distance from obstacles, debris, drop-offs, leading edges, holes, depressions, ramps, overhead obstructions, overhead electrical lines, and other hazards.
- Outriggers or stabilizers, when provided are to be used in accordance with the manufacturer's instruction. Outriggers and stabilizers shall be positioned on pads or a

solid surface.

- Aerial work platforms shall be elevated only when on a firm and level surface or within the slope limits allowed by the manufacturer's instructions.
- Platform gates or safety chains shall be closed while the platform is in the elevated position.
- Stunt driving and horseplay on aerial work platforms is prohibited.
- Altering, modifying or disabling safety devices or interlocks is prohibited.
- Care shall be taken to prevent hoses, cords, and ropes from becoming entangled in the aerial work platform.
- Platform operators shall ensure that the area surrounding the lift is clear of personnel and equipment before lowering the platform.
- If the scissors must be raised for maintenance work on the mechanism, blocks shall be placed in the scissors mechanism to prevent the platform from falling.
- Scissor lifts shall be completely lowered at the end of the work operation.

G. FALL PROTECTION/RESTRAINT – AERIAL WORK PLATFORMS

- When operating scissor lift platforms, fall protection in the form of a full body harness equipped with shock-absorbing lanyard shall be worn when the manufacturer instructions recommend such use or when required by customer, state, or local requirements or when required by the contract, and an approved anchorage point is provided as part of the platform.
- When operating boom type (articulating) platforms, a full-body harness equipped with a non-shock-absorbing lanyard shall be worn at all times.

X. REFERENCES – Aerial Work Platforms

Attachment 1 – Scissor Operated Lift Daily Inspection

Attachment 2 – Boom Operated Lift Daily Inspection

ATTACHMENT 3 – AERIAL SCISSOR OPERATED LIFT DAILY INSPECTION

Scissor Operated Lift Daily Inspection									
Operator: _____					Date: _____ Time: _____				
Location Of Use: _____					Supervisors Name _____				
Equipment Type: _____					Serial # _____				
Hour Meter: _____					Signature: _____				
Site Information									
	Ye	N	N		Ye	N	N		
HAZARD ASSESMENT OF				GROUNDMAN AVAILABLE FOR E					
CONTROLS IN PLACE FOR				EMERGENCY DECENT					
IDENTIFIED HAZARDS				TEST CONTROLS- INCUDING					
WORK AREAS PROPERLY				EMERGENCY DECENT VALVE					
AND BARRICADED				OPERATORS MANUAL ON LIFT					
Mechanical									
STRUCTURAL DAMAGE									
CRACKED WELDS									
TIRE/WHEELS (check operation and tightness)									
GUIDES/ROLLERS & SLIDER PADS									
RAILINGS AND RAIL LOCK PINS									
ENTRY CHAINS OR GATES									
SAFETY BAR - CHECK OPERATION									
WHEEL BEARINGS & KING PINS									
POTHOLE PROTECTION									
STEERING CYLINDER & TIE ROD (Visual inspection and lubricate)									
Hydraulics									
HYDRAULIC OIL RESERVE									
HYDRAULIC HOSES & FITTINGS									
CYLINDERS									
EMERGENCY LOWERING (check operation)									
LIFT CAPACITY (check relief valve setting and refer to specification tables)									
LIFT AND LOWERING TIME (check operation and refer to specification tables)									
Electrical									
BATTERY FLUID LEVEL									
BATTERY TERMINALS									
CONTROLS SWITCHES									
CABLES & WIRNG HARNESSSES									
TERMINALS & PLUGS									
GENERATOR/RECEPTACLE (visual & check operation)									
LIMIT SWITCHES (check operation)									
Operational Checks									
CHECK OVERHEAD CLEARANCES									
CHECK BATTERIES FOR FULL CHARGE & DISCONNECT THE AC CHARGER FROM THE POWER SOURCE									
MAKE SURE THE FREE WHEELING VALVE IS CLOSED									
MAKE SURE ALL GUARDRAILS & LOCKPINS ARE IN PLACE & LOCKED IN POSITION									
MAKE SURE BOTH SIDE BATTERY AND HYDRAULIC TRAYS ARE CLOSED AND LOCKED									

NO LIFT WHICH FAILS INSPECTION MAY BE OPERATED

ATTACHMENT 4 – AERIAL BOOM OPERATED LIFT DAILY INSPECTION

Boom Operated Lift Daily Inspection									
Operator: _____					Date: _____ Time: _____				
Location Of Use: _____					Supervisors Name _____				
Equipment Type: _____					Serial # _____				
Hour Meter: _____					Signature: _____				
Site Information									
	Ye s	N o	N A		Ye s	N o	N A		
HAZARD ASSESMENT OF JOBSITE				GROUNDMAN AVAILABLE FOR E					
CONTROLS IN PLACE FOR IDENTIFIED HAZARDS				EMERGENCY DECENT					
WORK AREAS PROPERLY SIGNED AND BARRICADED				TEST CONTROLS- INCUDING EMERGENCY DECENT VALVE					
				OPERATORS MANUAL ON LIFT					
Carrier Vehicle									
MOTOR				CAB					
OIL - CLEAN AND FULL				STEERING					
ENGINE COOLANT				LIGHTS					
CLUTCH / CONVERTER				TIRE PROPERLY INFLATED					
DRIVE LINE				CUTS OR BULDGES IN TIRES					
TRANSMISSION FLUID LEVEL				WHEELS AND LUG NUTS SECURE					
FRAME				FIRE EXTINGUISHER					
BRAKES				CAB GLASS					
DIFFERENTIALS				WARNING LIGHTS AND ALARMS					
OUTRIGGERS				ACCESS					
Hydraulics									
RELIEF VALVE(S)				PUMPS					
RESTRICTOR VALVES				BEARINGS					
PIPE LINES				HYDRAULIC OIL LEVEL					
HOSE LINES				MOUNTING BOLTS					
OUTRIGGER CYLINDERS				SWING GEAR					
BOOM CROWD CYLINDERS				SWING PINION					
CONTROL VALVES				HYDRAULIC SEALS					
SWING MOTOR				LEAKS					
Boom									
BOOM WELDS				SUPPORT ROLLER					
SHIPPER WELDS				BOOM PINS					
PINS-PIVOT BOOM				BOOM MAIN SECTION					
Operational Checks									
OPERATOR FAMILIAR WITH LOAD CHARTS				VEHICLE IS LEVELED					
BASKET TILT WORKING				BRAKES AND BRAKE SYSTEM					
OUTRIGGER PADS NOT CRACKED				SAFETY PRESSURE RELIEF VALVE					
CONDITION OF HYDRAULIC				BACK-UP ALARM WORKING					
BOOM SWING BREAK WORKS				HORN WORKING					
BOOM ANGLE INDICATOR AVAILABLE				OUTRIGGERS FULLY EXTENDED					
ENGINE RUNNING/ALL GUAGES WORKING				WITH BOOM EXTENDED ALL SECTIONS EXTEND EVENLY					

NO LIFT WHICH FAILS INSPECTION MAY BE OPERATED

XI. PURPOSE - Scaffolds

This guideline establishes the requirements to be followed for providing proper guidance for erecting, dismantling and using scaffolds to prevent injuries due to falls and falling objects due to unsteady work surfaces.

XII. GENERAL - Scaffolds

Scaffolds are used in various ways to facilitate work. Affected employees shall be knowledgeable in assembling, disassembling and working on scaffolds safely.

XIII. DEFINITIONS - Scaffolds

Boatswain chair - a seat from which a person can work while suspended or a seat used to transfer a person from vessel to vessel or between the dock and vessel.

Boards, decking or planking - material used for flooring the work surface of a scaffold.

Handrail - a single bar or pipe supported from a wall or partition to furnish a handhold. Mid-

Rail - a rail approximately midway between the guardrail and platform.

Railing - a barrier erected along exposed sides of stairways and platforms. The top rail usually serves as a handrail.

Scaffold - a temporary elevated platform and its supporting structure used to support for workers or materials, or both.

Toeboard - a vertical barrier at floor level erected along exposed edges of a working surface to prevent material from falling.

Working load - the load imposed by individuals, materials and equipment.

XIV. RESPONSIBILITY - Scaffolds

A. COMPETENT PERSON - SCAFFOLDS

The Competent Person for scaffolds is responsible for verifying the following tasks are completed:

- Daily inspection of all scaffolds prior to allowing employees to begin work.
- Authorization of the Scaffold Permit with signature.
- Maintenance of routine surveillance of work activities to assure that the scaffold is being used safely.
- Work with the Safety Representative to develop Asset-specific modifications to the scaffold permit system for Cable Splicers' Platforms.

B. EMPLOYEES - SCAFFOLDS

Employees shall never use a scaffold that has not been inspected or one that has not been

issued a Scaffold Permit by the Competent Person for scaffolds on that shift. Employees should be understanding and use precautions for working safely from scaffolds and shall never exceed the working load of a scaffold.

XV. PROCEDURE - Scaffolds

A. GENERAL REQUIREMENTS - SCAFFOLDS

General Requirements for working on scaffolds are as follows:

- Ladders shall be used for access to scaffold platforms. Scaffold rails or braces may only be used if specifically designed by the manufacturer as an access ladder.
- Scaffold boards shall not be used for skids, ramps, runways, workbenches or any purpose other than scaffold decking.
- The safe working load on a scaffold shall not be exceeded.
- Brick, tile, block or similar material may not be stacked higher than 24 inches on a scaffold deck.
- Employees should never rig from scaffold handrails or braces.
- Workers shall not stand on any object to increase reach when on a scaffold including ladders, step stools, etc.
- Before starting work, the jobsite shall be surveyed and cleared of debris that would endanger secure footing for the scaffold or cause a rolling scaffold to tip over.
- Where persons are required to work or pass under a scaffold, a screen of ½ inch wire mesh shall be installed between the toeboard and the guardrail to prevent objects from falling on those below.

B. SCAFFOLD PERMITS - SCAFFOLDS

Scaffold Permits shall be completed and signed by the Competent Person for scaffolds before the scaffold may be used. The signed permit is valid for one day only and shall be prominently displayed where workers can review it before using the scaffold:

- Scaffold permits shall be removed by the supervisor of the group using the scaffold and shall be returned to the Competent Person for scaffolds at the end of the shift or job, whichever comes first.

C. COLOR WARNING TAG SYSTEM - SCAFFOLDS

1. Identification

Due to the intricate design of scaffolding and the many individual parts needed for proper assembly, a tag system has been developed regarding the construction and modification of scaffolding that is widely recognized. It consists of three colored tags, and is described as follows:

- Green -- This color tag signifies the scaffold is safe for its intended use.
- Yellow -- A yellow tag placed on a scaffold indicates the scaffold was constructed in a manner outside the norm in order to meet specific work conditions or requirements.

All attempts should be made to restore a yellow tag to a green tag as soon as is practicable.

- Red -- This color tag indicates the scaffold is unfit for use.

2. Requirements

Green tags are often placed on scaffolding after each section has been constructed and inspected. Yellow tags must list the nature of the modifications made to the scaffold, what preventive measures should be taken to diminish risk, and the name of the individual or representative responsible for modification of the scaffolding. Red tags placed on scaffolding shall state "DANGER -- UNFIT FOR USE", and the tag shall list the project number and name and date of the inspection, as well as the reason for the red tag (i.e., "erection in progress," "dismantling in progress," "repairs required.")

3. Regulation

OSHA 1926 standards do not require the use of tags on scaffolding; however, ANSI (American National Standard Institute) standard does address the use of tags on scaffolding.

- ANSI 10.8-2001 "On scaffolds that will remain on projects for long durations in either a fully or partially erected state, or on scaffolds that may be potentially used by persons other than those responsible for their erection, dismantlement, alteration or modification, a notification system shall be used to inform workers of the status and condition of the scaffold that includes at least the following information:
 - 4.46.1: Completed, inspected by a competent person, and ready for use (date, inspector/competent person);
 - 4.46.2: Partially completed, not ready for use (why, date, inspector/competent person); or
 - 4.46.3: This scaffold is unsafe, not ready for use. Do not use without prior authorization from..." Then there is a reference to Appendix E.

4. Considerations

Before placing the appropriate tag, a competent person must inspect the scaffolding. According to OSHA, a competent person means one who is able to recognize hazardous conditions or situations and has the authority to take corrective measures. Hazardous conditions include nearby power lines, unstable ground, or damaged scaffold parts.

5. Warning

To ensure the proper colored safety tags are always in place, it is generally accepted that competent persons should inspect scaffolding every shift from erection until it is taken down, after any periods of wet weather or high winds which may have weakened the scaffolding, and after any modifications or additions.

D. EQUIPMENT REQUIREMENTS - SCAFFOLDS

Equipment Requirements for scaffolds are as follow:

- All manufactured scaffold systems must be used in compliance with the manufacturer's specifications. No alteration is permitted to any scaffold member by

welding, burning, cutting, drilling or bending. Unless specifically allowed by the manufacturer, parts and sections of patented metal scaffolding of different manufacturers are not to be interchanged.

- When space permits, scaffold platforms must be equipped with standard 42-inch high, rigidly secured handrails, midrails and 4-inch toeboards. Furthermore, scaffold platforms shall be completely decked with cleated or secured safety plank or manufactured scaffold decking. Workers shall not work from a deck that is less than two planks wide.
- Scaffolds shall be braced with diagonal as well as cross bracing.
- Scaffold boards shall have cleats to prevent slippage on the scaffold framework and shall extend at least 6 inches but not more than 18 inches over the end supports. Boards shall be secured to the framework to prevent movement.
- Wheeled scaffolds shall not have adjusting or leveling screws. Adjusting screws, where permitted, shall not have more than 12 inches of thread extended.

E. SECURING SCAFFOLDS

Scaffolds shall be erected level and plumb on a firm base. Other requirements for securing scaffolds are as follows:

- Scaffolds that are three times (3x) higher than the smallest base dimension shall be secured to the building or other solid structure at the second lift and every other lift thereafter.
- Running scaffolds shall be secured every thirty (30) feet of horizontal run at the same height as the other attachments to the building or other solid structure.

F. ROLLING SCAFFOLDS

Rolling Scaffolds shall be used only on smooth, level surfaces unless the wheels are contained in wooden or channel iron runners that are level and stabilized. The following precautions shall be observed when working on scaffolds:

- Overhead clearances shall be checked before moving scaffolds.
- Tools and materials shall be removed or secured on the deck before moving a rolling scaffold. Workers shall not ride a rolling scaffold while it is being moved.
- The force needed to move a rolling scaffold should be applied as close to the base as practical.
- The height of a rolling scaffold shall not exceed two times (2x) the smallest base dimension (including attached outriggers).

G. SCISSORS LIFTS

See "Aerial Work Platforms" Section

H. BOATSWAIN CHAIRS AND OTHER SUSPENDED SYSTEMS

Boatswain Chairs and Other Suspended Systems shall have a fall arrest system in place at all times as well as an anchor tackle attached to a securely installed object. These systems

require seat boards that are at least 12 x 24 x 1 inch. First-grade, 5/8-inch diameter fiber rope shall be used for the seat sling.

Other requirements include:

- Swing stages, toothpicks, boatswain chairs, floats and needle beams must be accepted by the Project Manager and inspected by the Competent Person for scaffolds.
- Tackle used for any suspended system shall employ only correctly sized ball bearings or bushed blocks and properly spliced, 5/8-inch diameter first-grade rope.

I. EMPLOYEE FALL PROTECTION - SCAFFOLDS

Employee Fall Protection is very important to the safety of the operation in progress. Therefore, employee shall practice the following precautions:

- Wear properly tied-off safety harnesses on scaffold platforms that are not equipped with standard handrails and completed decking.
- Tie off harnesses to a building or other fixed structure or to a scaffold that is firmly attached to a fixed structure. Each person tying off when working from a scaffold shall have a personal lifeline.

J. TRAINING - SCAFFOLDS

Employees who erect, use or dismantle scaffolds shall be trained in the following subjects:

- Scaffold Permit System
- Design of various types of scaffold used, with attention to safety limitations, proper assembling and securing of each type of scaffold
- Nature of fall hazards
- Use of body harnesses, lanyards, lifelines and other fall protection available
- Safe use of ladders
- Where to find working load limit markings on ladders and scaffolds
- Scaffold Tags will be coded as follows:
 - Green Tag = Approved
 - Yellow Tag = Caution/Fall Protection is required
 - Red Tag = DO NOT USE

Employees shall be retrained if there is a change in equipment or deficiencies are observed in the employee's scaffold-related work habits.

K. RECORDS - SCAFFOLDS

The most recent of employee training records shall be retained for the duration of employment.

I. REFERENCES - Scaffolds

A. ADDITIONAL INFORMATION SOURCES - SCAFFOLDS

- National Safety Council
- Scaffold manufacturers' specifications and instructions

B. CODE OF FEDERAL REGULATIONS - SCAFFOLDS

- 29 CFR 1926 Subpart L, Scaffolds

C. ATTACHMENTS

Attachment 1 - Working on Scaffolds

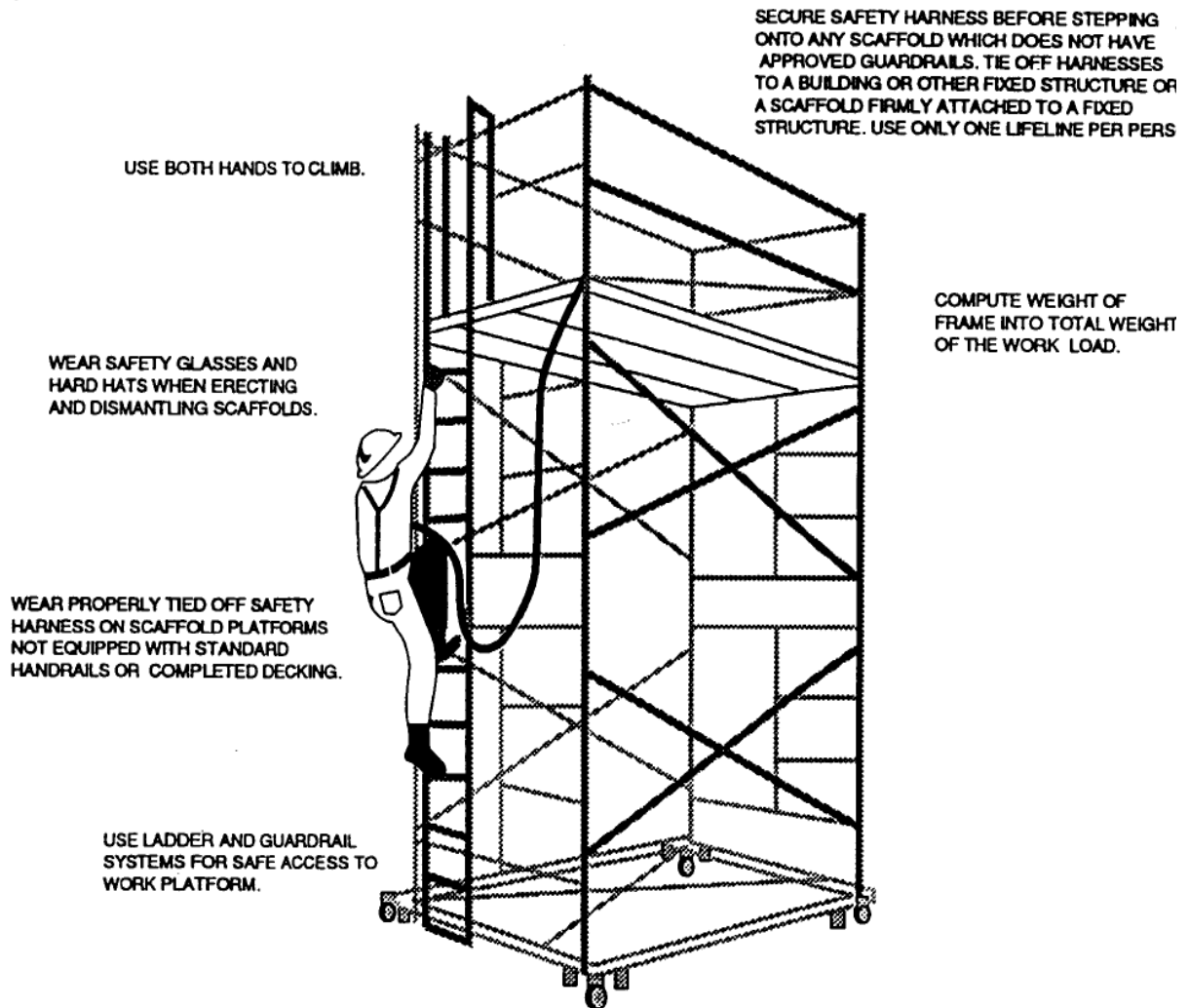
Attachment 2 - Moving Scaffolds

Attachment 3 - Scaffold Hazards to Avoid

Attachment 4 - Scaffold Permit

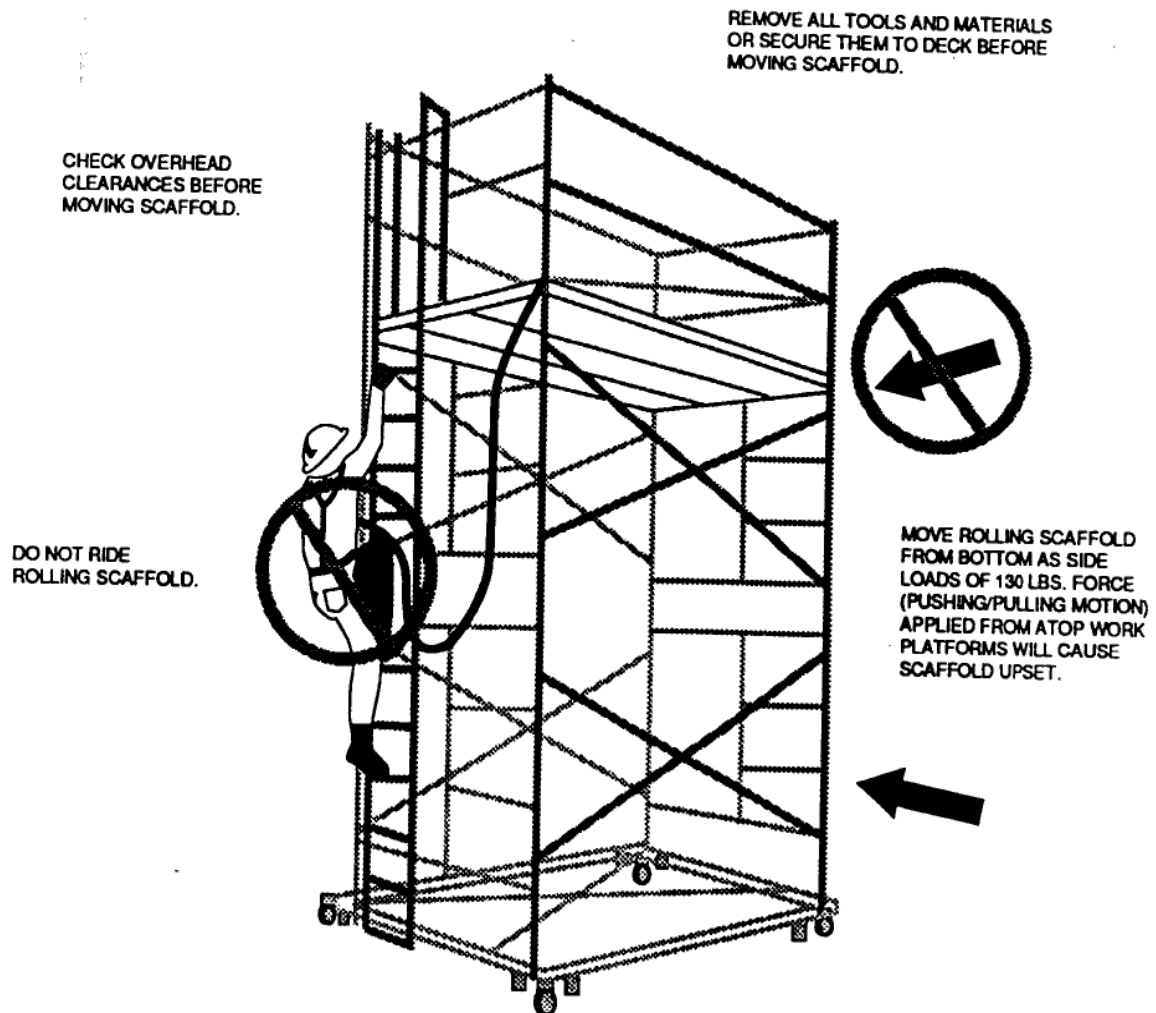
Attachment 5 - Color Coded Tags for Scaffold

ATTACHMENT 5- WORKING ON SCAFFOLDS

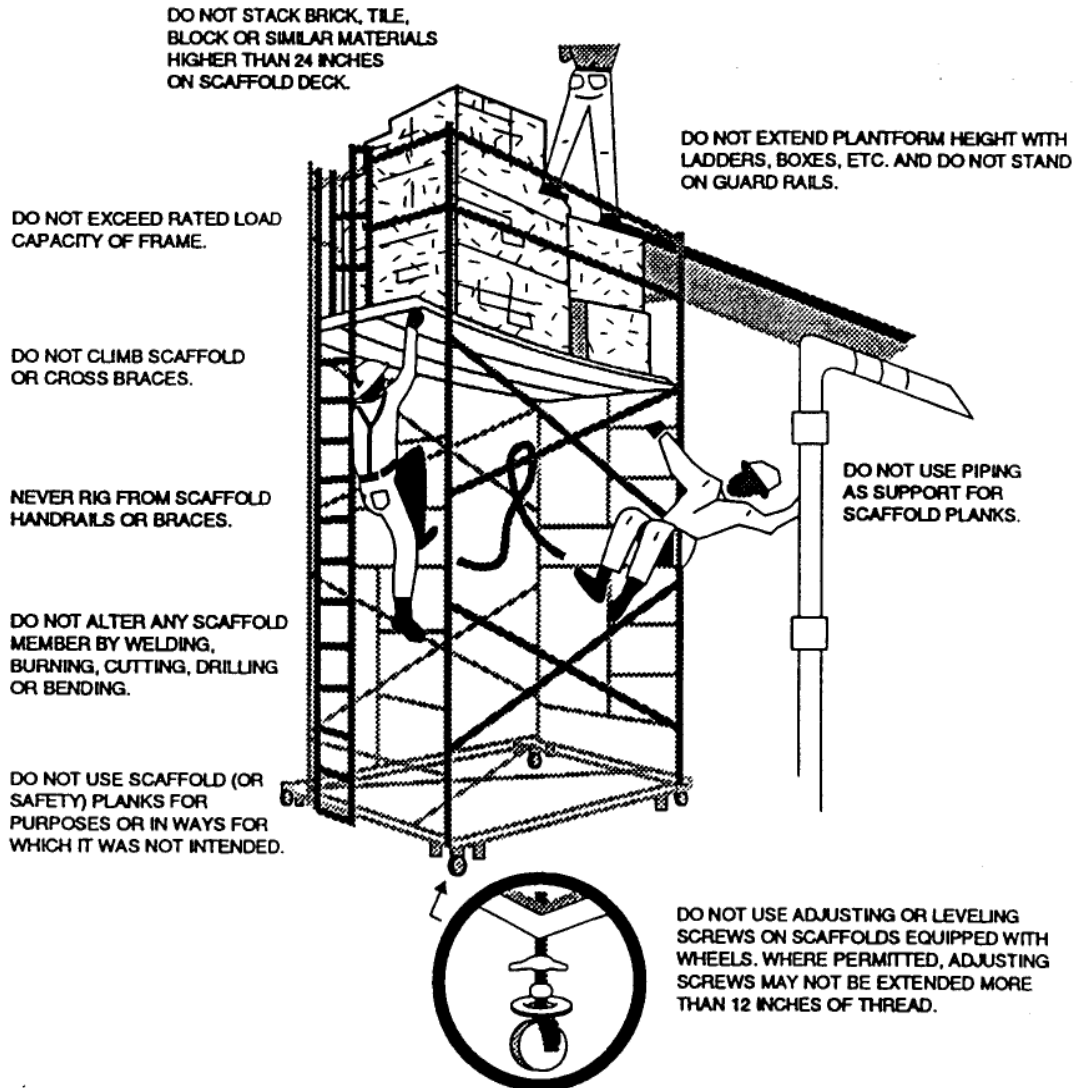


PROPER SAFETY PROCEDURES WILL PREVENT INJURIES FROM FALLS AND FALLING OBJECTS.

ATTACHMENT 6 - MOVING SCAFFOLDS



ATTACHMENT 7 - SCAFFOLD HAZARDS TO AVOID



IMPROPER SAFETY PROCEDURES WHEN WORKING ON SCAFFOLDS MAY CAUSE DEATH, INJURIES AND PROPERTY LOSS.

ATTACHMENT 8 - SCAFFOLD PERMIT

Issued to _____

to erect scaffold in area _____ section _____

Work Description _____

Work Order No. _____ Permit Ref. No. _____

Estimated time for scaffold use _____

		N/A	Yes	No
1.	Is jobsite prepared?			
2.	Is diagonal/cross bracing complete?			
3.	Is scaffold secured to structure if 3X higher than smallest base dimension?			
4.	Is scaffold plumb/level?			
5.	Are scaffold parts in good condition?			
6.	Are cleats on scaffold deck boards?			
7.	Do scaffold deck boards extend at least 6" but no more than 18"?			
8.	Are handrails (42" height) in place?			
9.	Are mid rails in place?			
10.	Are four-inch toe boards in place?			
11.	Has entire work surface been checked?			
12.	Is fall protection provided?			
13.	Is this an acceptable cable splicer's platform?			

This form is to be completed by Responsible Team Member or other Qualified Person prior to using Scaffolds. _____

Signature

Date

This permit is good for one working day only.

ATTACHMENT 9 - COLOR CODED TAGS FOR SCAFFOLD



SCAFFOLDING IDENTIFICATION TAG

SCAFFOLD # _____

Date Erected: _____

Expected Removal Date: _____

Job Number: _____

I have inspected and approved this Scaffold built and consider it to be safe and adequate for completion of the work specified.

Inspected By: _____

Date: _____

REINSPECTED	
NAME	DATE

MODIFICATION DATE	
NAME	DATE

Front



SCAFFOLDING IDENTIFICATION TAG

Erected by: _____

SAFE FOR USE

DO NOT ALTER

DO NOT OVERLOAD

Back



SCAFFOLD INSPECTION

This scaffolding has been constructed to support

☐ Construction ☐ Maintenance

Inspection is Required

☐ Daily ☐ Weekly

☐ Fall Arrest / Protection Equipment is required by trained users.
(As specified on the SWP/HWP)

Required Inspections by Competent Person:

INITIALS	DATE	INITIALS	DATE



DANGER

DO NOT USE THIS SCAFFOLD

KEEP OFF

This scaffold is being erected, taken down or has been found defective.

DO NOT ALTER

DATE: _____

COMPETENT PERSON SIGNATURE: _____

COMMENTS: _____

WARNING

ALL WORK AT THIS LOCATION MUST BE STOPPED IMMEDIATELY IF ANY PART OF THE SCAFFOLD IS FOUND TO BE DEFECTIVE OR UNSTABLE.

BY SUPERVISOR: _____

BY INSPECTOR: _____

BY AUTHORIZED PERSON: _____

SIGNATURE: _____

DATE: _____

TIME: _____

SECTION 16: Electrical Safety - General

I. PURPOSE

The purpose of the procedure is to establish guidelines whereby reasonable and adequate methods are utilized to assure adequate protection from electrical shock, arc and blast hazards for employees who are required to perform work in the vicinity of exposed, energized circuits.

Detailed procedures cannot be written to cover every conceivable situation that may arise. In the absence of such procedures, when there is question of safe working conditions or action, it shall be resolved before work begins and a job plan prepared.

Knowledge in the specifics of this procedure in itself does not make a person qualified to work in proximity of energized or potentially energized exposed electrical parts. Work practices shall be established at each work area, which would include, as a minimum, the specific electrical safety concerns/activities referenced by this guideline.

II. GENERAL

The following information deals with hazards and precautionary measures necessary to protect personnel when involved in general electrical operations. This guideline shall outline the terminology and responsibilities and review the basic principles to ensure safety and efficiency.

III. RESPONSIBILITY

A. RESPONSIBLE MANAGER

The Responsible Manager shall identify tasks to be completed only by qualified employees and communicate specialized tasks to all employees.

B. QUALIFIED EMPLOYEES

Qualified Employees shall perform their work according to established safe work practices and procedures.

C. DEPARTMENT SAFETY REPRESENTATIVE

The Department Safety Representative shall provide guidance on safe work practices and procedures.

IV. PROCEDURE

All electrical circuits shall be treated as live until their condition is known. Even low voltages shall be treated as dangerous. In addition, all work on systems involving more than 480 volts shall be performed by a Qualified Electrician.

A. RESCUE

When rescuing persons in contact with an electrical circuit, first disconnect the circuit, if possible, and ensure that rescuer is standing on a dry surface. Use a dry belt, coat, handkerchief, piece of rope or other non-conducting material to loop over the victim's feet, hand or head and drag them away from the contact to safety. Immediately summon emergency medical services and then assess the condition of the victim and the need for cardiopulmonary resuscitation (CPR) and first aid.

B. WORK ON OR NEAR EXPOSED ENERGIZED PARTS

It is the policy of the Company that parts operating at 50 volts or above to which an employee may be exposed shall be de-energized before work is done on or near them, unless it can be demonstrated that de-energizing introduces additional or increased hazards. Additional or increased hazards would mean it would be a threat to human life and not merely the equipment or process. Or they can demonstrate it is not feasible.

Before any work on or near any exposed energized parts commences, all persons involved shall be briefed on the safety concerns and precautions regarding their assignments. Whenever work conditions or methods change that could potentially compromise personnel safety, additional briefings shall be held.

Personnel performing work on exposed energized equipment and parts shall have at least one other qualified person present, within either sight or sound, who is knowledgeable of the hazards in the work area and applicable emergency procedures.

C. ELECTRICAL TESTING AND MEASUREMENT

Authorization to Perform Electrical Testing and Measurements

Employees are authorized to perform electrical testing and take electrical measurements only after they have met the following criteria:

- They are familiar with the design and hazards related to the equipment to be tested.
- Employees shall not perform any electrical testing or measurement that requires them to contact exposed energized parts or equipment operating at more than 480 volts nominal.

Safe Use of Test and Measurement Equipment

Test equipment should be checked for proper operation immediately before and immediately after this test.

Never perform any work, to include electrical testing, that you feel is unsafe.

D. PERSONAL PROTECTIVE EQUIPMENT

Protective equipment shall be maintained in a safe and reliable condition and shall be periodically inspected and/or tested as required. Damaged equipment, or equipment failing to pass test requirement, shall not be used.

E. SELECTION OF PERSONAL PROTECTIVE EQUIPMENT (PPE)

The Department Safety Representative should be consulted for guidance in minimal personal protective equipment required when performing electrical testing and measurements.

Configuration of the workspace and or other environmental factors may require wear of additional PPE.

PPE shall be applied according to adjacent electrical hazards if they are greater than the electrical hazards present in equipment being tested or measured.

F. HEAD PROTECTION

Employees shall wear non-conductive head protection whenever work is being performed in proximity to energized or potentially energized electrical conductors and parts. Head protection shall conform to ANSI Z89.1 Safety Requirements for Industrial Protective Headgear for Electrical Workers, Class E.

Hard hats shall be kept clean and in good condition and shall not be altered or defaced in any manner. Approved markings shall not contain conductive materials.

G. EYE AND FACE PROTECTION

Protective equipment for the eyes or face shall be used where there is danger of injury to the eyes or face from electrical arcs or flashes; or from flying objects or falling objects from an electrical explosion. Eye and face protection equipment shall conform to ANSI Z87.1 – 1989 Practice for Occupational and Educational Eye and Face Protection. If the eye or face protective device exhibits broken parts, heat distortion, or excessive scratches on the lens it shall not be used.

H. CLOTHING/APPAREL

It is recommended that all electrical employees wear 100% cotton clothing while engaged in all activities required in their job.

Refer to NFPA 70E for proper clothing and apparel requirements.

I. LIGHTING/ILLUMINATION

When working with light bulbs and lighting fixtures, use only approved lighting equipment when working in vessels, boilers, confined spaces and other hazardous areas. Disconnect the circuit before changing light bulbs. Do not use oversized lamps in vapor-proof globes or other fixtures. Do not remove the outer globes of vapor-proof lights except when cleaning or replacing bulbs.

Illumination levels shall be provided so that at no time will the level of illumination become a factor contributing to a potential electrical accident.

Employees may not enter spaces containing energized electrical equipment until adequate illumination is provided.

Only 12-volt explosion proof lighting equipped with a Ground Fault Circuit Interrupter (GFCI) may

be used in confined spaces.

When lighting is used in wet conditions, the lighting must be equipped with a Ground Fault Circuit Interrupter (GFCI).

Lighting to be used in areas that may contain explosive gases or vapors must be approved for such use.

J. CORDS

Visually inspect electrical cords before each use. Do not use worn or defective cords. Have damaged cords removed and replaced immediately. In addition, when the following precautions shall be taken when working with electrical cords:

- Do not use extension cords for permanent installations.
- Use only approved outlets and connections. Notify Maintenance of the need to move or add an outlet.
- Ensure that the cord is properly connected, grounded and protected from traffic. Test all utility extension cords for continuity and grounding quarterly.
- When grounded electrical systems are not available, use only double-insulated tools and equipment.
- Use care to prevent the cord from becoming a trip hazard by being wrapped around any part of the body.

K. LOCKOUT/TAGOUT

Follow Lockout/Tagout procedures whenever working on electrically operated equipment. See "Lockout/Tagout Procedure" for further guidance.

L. INSTALLATION AND REPAIR

Install generators, motors, control equipment and conductors in such a manner that exposed live parts are either properly guarded or insulated to provide adequate protection for all operating personnel. Guards and protective items removed during the repair of electrical equipment are to be replaced immediately after repair work is completed. Provide sufficient space (three feet minimum) for safe inspection, repair or replacement when installing electrical equipment.

M. GROUNDS

Appropriate grounds will be utilized for electrical equipment to ensure protection of employees, prevent damage to equipment, and maintain continuity of electrical service. Qualified electricians will determine what grounds are appropriate and perform the installation of such grounds.

N. TRAINING

Qualified Personnel

Whether an employee is considered to be a "qualified" 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 work place, but “unqualified” as to other equipment. For example, an employee may have received the necessary training to be considered qualified to test a particular piece of equipment. However, if that same employee were to test other types of equipment for which he or she had not received the necessary training, he or she would be considered unqualified for that other equipment.

All personnel to be qualified to perform work on electrical devices and systems shall be trained in, and be competent in all safety related work practices, procedures, and requirements that pertain to their respective work assignments. They shall also be trained in and be competent in any other safety practices including emergency procedures which are necessary for their safety. The training shall include, but not be limited to:

- Skills and techniques necessary to distinguish exposed energized parts from the other parts of electric equipment.
- Skills and techniques necessary to determine the nominal voltage of exposed live parts.
- Knowledge and understanding of the clearance distances corresponding to voltages which employees will be exposed.
- Proper use of the special precautionary techniques, PPE, insulating and shielding materials, and insulated tools associated with working on or near exposed parts of electric equipment.

Authorized Personnel

All non-qualified personnel who in the performance of their job would be required to enter a room or area containing exposed energized conductors or parts, or who must approach in proximity to exposed conductors must receive training to be “Authorized”. This training must contain the following:

- The ability to recognize potentially hazardous energy and its potential impact on workplace conditions.
- Skills and techniques necessary to distinguish exposed energized parts from the other parts of electrical equipment and machines, and how to avoid them.
- Knowledge and understanding of the clearance distances to be maintained.

Affected Personnel

Persons who in the course of performing their assigned tasks come in contact with electrical power sources, tools, and other portable electrical powered devices that are generally found in the public domain shall be trained in the following:

- The ability to recognize potentially hazardous energy and its potential impact on workplace conditions.
- Proper handling and use of portable electrical equipment.
- Proper techniques for opening and closing of circuits and necessary procedures to follow before replacing fuses or resetting breakers.

Training Type and Retraining

- Both lecture and hands-on training shall be used to deliver training.
- Schedules shall be established to provide retraining of personnel to stay current on any work techniques and procedural changes.
- Retraining shall not exceed three years.

O. RECORDS

The most recent of employee training records shall be retained for the duration of employment.

P. INSPECTIONS

Tool Inspections

Tools used in servicing or maintaining electrical equipment shall be inspected before each use and periodically to ensure that they are safe for use.

Tool Inspection shall include utility extension cords.

V. REFERENCES

A. ATTACHMENTS

Attachment 1 – Energized Work Permit

Attachment 2 – Hazard Analysis Procedure (Job Briefing Planning Checklist)

Attachment 3 – Electrical Personal Protective Equipment (NFPA 70E Table)

Attachment 4 – Approach Boundary for Shock / Flash Protection

ATTACHMENT 1 - ENERGIZED ELECTRICAL WORK PERMIT

Project # _____ Project Name _____

Supervisor/Project Manager _____ Date _____

PART I: TO BE COMPLETED BY THE REQUESTER:

(1) Description of circuit/equipment/job location:

(2) Description of work to be performed:

(3) Justification of why the circuit/equipment cannot be de-energized or the work deferred until the next scheduled outage:

Start Date: _____

Expiration Date: _____

Requester/Title/Signature _____

Date _____

PART II: TO BE COMPLETED BY THE ELECTRICALLY QUALIFIED PERSONS DOING THE WORK:

1 Detailed job description procedure to be used in performing the above detailed work including hazards, conditions, mechanical, environmental, space obstructions, other voltages:

2 Description of the Safe Work Practices: ☐ LOTO ☐ Two Workers ☐ Safety Watch ☐ Notify affected workers

Reason not to LOTO _____

Restart Checks Required: _____

3	Flash Hazard (0, 2, 4)		Shock Hazard (max IV)		Working Distance	
	Arc Flash Boundary		Limited Approach		Glove Class, minimum	
	Incident Energy (cal/cm ²)		Restricted Approach			

4 Protective Equipment

<input checked="" type="checkbox"/> Natural Fiber Clothing	<input checked="" type="checkbox"/> Safety Glasses/Goggles	<input checked="" type="checkbox"/> Ear Plugs	<input checked="" type="checkbox"/> Leather Shoes
<input checked="" type="checkbox"/> Arc-Rated Clothing	<input checked="" type="checkbox"/> Arc-rated Face Shield	<input checked="" type="checkbox"/> Leather Outer Gloves	<input checked="" type="checkbox"/> Voltage-rated Shoes
<input checked="" type="checkbox"/> Voltage-rated Tools	<input checked="" type="checkbox"/> Arc-rated Balaclava Hood	<input checked="" type="checkbox"/> Voltage-rated Gloves	<input checked="" type="checkbox"/> Hard Hat
<input checked="" type="checkbox"/> Voltage Testing Meter	<input checked="" type="checkbox"/> 2 Layer Switching Hood	<input checked="" type="checkbox"/> Arc Flash Suit	<input checked="" type="checkbox"/> Other

Other: _____

5 Means employed to restrict the access of unqualified persons from the work area: _____

6 Authorized Worker(s) Signature _____

Authorized Worker(s) Signature _____

PART III: APPROVAL(S) TO PERFORM THE WORK WHILE ELECTRICALLY ENERGIZED:

Supervision _____ Date _____ Client _____ Date _____

Project Manager _____ Date _____

PART IV: WORK

Evidence of completion of Job Briefing including discussion of any job-related hazards:

PART V: POST WORK-FEEDBACK _____ (Worker(s) Initials)

Send Copy of Energized Electrical Work Permit Department Safety Manager and Project Manager.

ATTACHMENT 2 - HAZARD ANALYSIS PROCEDURE (JOB BRIEFING PLANNING CHECKLIST)

All efforts shall be exhausted to work on the electrical systems de-energized. If de-energizing the system is not feasible then the employee(s) involved in work on or near electrically energized conductors or circuit parts shall be responsible for completing the Energized Hot Work Permit before any work may be performed. The Energized Electrical Hot Work Permit shall be completed and signed by all authorized employees that will be performing the work utilizing the following information:

Job Briefing Planning Checklist

Project Name: _____

Job #: _____

Completed by: _____

Date: _____

Identify

- ☐ The hazards
- ☐ The voltage levels involved
- ☐ Skills required
- ☐ Any "foreign" (secondary source) voltage source
- ☐ Any unusual conditions
- ☐ Number of people needed for the job
- ☐ The shock protection boundary
- ☐ The available incident energy
- ☐ Potential for arc flash (flash hazard analysis)
- ☐ Flash protection boundary

Ask

- ☐ Can the equipment be de-energized?
- ☐ Are back feeds of the circuits to be worked on possible?
- ☐ Is a "standby" person required?

Check

- ☐ Job plans
- ☐ Single-line diagrams and vendor print
- ☐ Status board
- ☐ Information on facility and vendor resources is up to date
- ☐ Safety Procedures
- ☐ Vendor information
- ☐ Individuals are familiar with the facility

Know

- ☐ What the job is
- ☐ Who else needs to know? - Communicate!
- ☐ Who is in charge?

Think

- ☐ About the unexpected event...What if?
- ☐ Lock-Tag-Test-Try
- ☐ Test for voltage—FIRST
- ☐ Use the right tools and equipment including PPE
- ☐ Install and remove grounds
- ☐ Install barriers and barricades
- ☐ What else?

Prepare for an emergency

- ☐ Is the standby person CPR trained?
- ☐ Is the required emergency equipment available?
- ☐ Where is the nearest telephone?
- ☐ Where is the fire alarm?
- ☐ Is confined space rescue available?
- ☐ What is the exact work location?
- ☐ How is equipment shut off in an emergency?
- ☐ What are the emergency phone numbers?
- ☐ Where is the fire extinguisher?
- ☐ Are radio communications available?

**ATTACHMENT 3 – ELECTRICAL PERSONAL PROTECTIVE EQUIPMENT (TABLE
130.7(C)(15)(A)(A), NFPA 70E 2015)**

Task	Equipment Condition*	Arc Flash PPE Required
Reading a panel meter while operating a meter switch	Any	No
Normal operation of a circuit breaker (CB), switch, contactor, or starter	All of the following: The equipment is properly installed The equipment is properly maintained All equipment doors are closed and secured All equipment covers are in place and secured There is no evidence of impending failure	No
	One or more of the following: The equipment is not properly installed The equipment is not properly maintained Equipment doors are open or not secured Equipment covers are off or not secured There is evidence of impending failure	Yes
For ac systems: Work on energized electrical conductors and circuit parts, including voltage testing	Any	Yes
For dc systems: Work on energized electrical conductors and circuit parts of series-connected battery cells, including voltage testing	Any	Yes
Voltage testing on individual battery cells or individual multi-cell units	All of the following: The equipment is properly installed The equipment is properly maintained Covers for all other equipment are in place and secured There is no evidence of impending failure	No
	One or more of the following: The equipment is not properly installed The equipment is not properly maintained Equipment doors are open or not secured Equipment covers are off or not secured There is evidence of impending failure	Yes
Removal or installation of CBs or switches	Any	Yes
Removal or installation of covers for equipment such as wireways, junction boxes, and cable trays that does not expose bare energized electrical conductors and circuit parts	All of the following: The equipment is properly installed The equipment is properly maintained There is no evidence of impending failure	No
	Any of the following: The equipment is not properly installed The equipment is not properly maintained There is evidence of impending failure	Yes
Removal of bolted covers (to expose bare energized electrical conductors and circuit parts). For dc systems, this includes bolted covers, such as battery terminal covers.	Any	Yes

Table 130.7(C)(15)(A)(a) Continued

Task	Equipment Condition*	Arc Flash PPE Required
Removal of battery intercell connector covers	All of the following: The equipment is properly installed. The equipment is properly maintained Covers for all other equipment are in place and secured There is no evidence of impending failure	No
	One or more of the following: The equipment is not properly installed The equipment is not properly maintained Equipment doors are open or not secured Equipment covers are off or not secured There is evidence of impending failure	Yes
Opening hinged door(s) or cover(s) (to expose bare energized electrical conductors and circuit parts)	Any	Yes
Perform infrared thermography and other noncontact inspections outside the restricted approach boundary. This activity does not include opening of doors or covers.	Any	No
Application of temporary protective grounding equipment after voltage test	Any	Yes
Work on control circuits with exposed energized electrical conductors and circuit parts, 120 volts or below without any other exposed energized equipment over 120 V including opening of hinged covers to gain access	Any	No
Work on control circuits with exposed energized electrical conductors and circuit parts, greater than 120 V	Any	Yes
Insertion or removal of individual starter buckets from motor control center (MCC)	Any	Yes
Insertion or removal (racking) of CBs or starters from cubicles, doors open or closed	Any	Yes
Insertion or removal of plug-in devices into or from busways	Any	Yes
Insulated cable examination with no manipulation of cable	Any	No
Insulated cable examination with manipulation of cable	Any	Yes
Work on exposed energized electrical conductors and circuit parts of equipment directly supplied by a panelboard or motor control center	Any	Yes
Insertion and removal of revenue meters (kW-hour, at primary voltage and current)	Any	Yes
For dc systems, insertion or removal of individual cells or multi-cell units of a battery system in an enclosure	Any	Yes
For dc systems, insertion or removal of individual cells or multi-cell units of a battery system in an open rack	Any	No

Table 130.7(C)(15)(A)(a) Continued

Task	Equipment Condition*	Arc Flash PPE Required
For dc systems, maintenance on a single cell of a battery system or multi-cell units in an open rack	Any	No
For dc systems, work on exposed energized electrical conductors and circuit parts of utilization equipment directly supplied by a dc source	Any	Yes
Arc-resistant switchgear Type 1 or 2 (for clearing times of <0.5 sec with a prospective fault current not to exceed the arc-resistant rating of the equipment) and metal enclosed interrupter switchgear, fused or unfused of arc resistant type construction, tested in accordance with IEEE C37.20.7: •Insertion or removal (racking) of CBs from cubicles •Insertion or removal (racking) of ground and test device •Insertion or removal (racking) of voltage transformers on or off the bus	All of the following: The equipment is properly installed The equipment is properly maintained All equipment doors are closed and secured All equipment covers are in place and secured There is no evidence of impending failure	No
	One or more of the following: The equipment is not properly installed The equipment is not properly maintained Equipment doors are open or not secured Equipment covers are off or not secured There is evidence of impending failure	Yes
Opening voltage transformer or control power transformer compartments	Any	Yes
Outdoor disconnect switch operation (hookstick operated) at 1 kV through 15 kV	Any	Yes
Outdoor disconnect switch operation (gang-operated, from grade) at 1 kV through 15 kV	Any	Yes

Note: Hazard identification is one component of risk assessment. Risk assessment involves a determination of the likelihood of occurrence of an incident, resulting from a hazard that could cause injury or damage to health. The assessment of the likelihood of occurrence contained in this table does not cover every possible condition or situation. Where this table indicates that arc flash PPE is not required, an arc flash is not likely to occur.

*The phrase *properly installed*, as used in this table, means that the equipment is installed in accordance with applicable industry codes and standards and the manufacturer's recommendations. The phrase *properly maintained*, as used in this table, means that the equipment has been maintained in accordance with the manufacturer's recommendations and applicable industry codes and standards. The phrase *evidence of impending failure*, as used in this table, means that there is evidence of arcing, overheating, loose or bound equipment parts, visible damage, deterioration, or other damage.

Table 130.7(C)(15)(A)(b) Arc-Flash Hazard PPE Categories for Alternating Current (ac) Systems

Equipment	Arc Flash PPE Category	Arc-Flash Boundary
Panelboards or other equipment rated 240 V and below Parameters: Maximum of 25 kA short-circuit current available; maximum of 0.03 sec (2 cycles) fault clearing time; working distance 455 mm (18 in.)	1	485 mm (19 in.)
Panelboards or other equipment rated >240 V and up to 600 V Parameters: Maximum of 25 kA short-circuit current available; maximum of 0.03 sec (2 cycles) fault clearing time; working distance 455 mm (18 in.)	2	900 mm (3 ft)
600-V class motor control centers (MCCs) Parameters: Maximum of 65 kA short-circuit current available; maximum of 0.03 sec (2 cycles) fault clearing time; working distance 455 mm (18 in.)	2	1.5 m (5 ft)
600-V class motor control centers (MCCs) Parameters: Maximum of 42 kA short-circuit current available; maximum of 0.33 sec (20 cycles) fault clearing time; working distance 455 mm (18 in.)	4	4.3 m (14 ft)
600-V class switchgear (with power circuit breakers or fused switches) and 600 V class switchboards Parameters: Maximum of 35 kA short-circuit current available; maximum of up to 0.5 sec (30 cycles) fault clearing time; working distance 455 mm (18 in.)	4	6 m (20 ft)
Other 600-V class (277 V through 600 V, nominal) equipment Parameters: Maximum of 65 kA short circuit current available; maximum of 0.03 sec (2 cycles) fault clearing time; working distance 455 mm (18 in.)	2	1.5 m (5 ft)
NEMA E2 (fused contactor) motor starters, 2.3 kV through 7.2 kV Parameters: Maximum of 35 kA short-circuit current available; maximum of up to 0.24 sec (15 cycles) fault clearing time; working distance 910 mm (36 in.)	4	12 m (40 ft)
Metal-clad switchgear, 1 kV through 15 kV Parameters: Maximum of 35 kA short-circuit current available; maximum of up to 0.24 sec (15 cycles) fault clearing time; working distance 910 mm (36 in.)	4	12 m (40 ft)
Arc-resistant switchgear Type 1 or 2 [for clearing times of < 0.5 sec (30 cycles) with a perspective fault current not to exceed the arc-resistant rating of the equipment], and metal-enclosed interrupter switchgear, fused or unfused of arc-resistant-type construction, tested in accordance with IEEE C37.20.7, 1 kV through 15 kV Parameters: Maximum of 35 kA short-circuit current available; maximum of up to 0.24 sec (15 cycles) fault clearing time; working distance 910 mm (36 in.)	N/A (doors closed)	N/A (doors closed)
	4 (doors open)	12 m (40 ft)
Other equipment 1 kV through 15 kV Parameters: Maximum of 35 kA short-circuit current available; maximum of up to 0.24 sec (15 cycles) fault clearing time; working distance 910 mm (36 in.)	4	12 m (40 ft)

Note: For equipment rated 600 volts and below, and protected by upstream current-limiting fuses or current-limiting circuit breakers sized at 200 amperes or less, the arc flash PPE category can be reduced by one number but not below arc flash PPE category 1.

Table 130.7(C)(15)(B) Arc-Flash Hazard PPE Categories for Direct Current (dc) Systems

Equipment	Arc Flash PPE Category	Arc-Flash Boundary
Storage batteries, dc switchboards, and other dc supply sources 100 V > Voltage < 250 V Parameters: Voltage: 250 V Maximum arc duration and working distance: 2 sec @ 455 mm (18 in.)		
Short-circuit current < 4 kA	1	900 mm (3 ft)
4 kA ≤ short-circuit current < 7 kA	2	1.2 m (4 ft)
7 kA ≤ short-circuit current < 15 kA	3	1.8 m (6 ft)
Storage batteries, dc switchboards, and other dc supply sources 250 V ≤ Voltage ≤ 600 V Parameters: Voltage: 600 V Maximum arc duration and working distance: 2 sec @ 455 mm (18 in.)		
Short-circuit current 1.5 kA	1	900 mm (3 ft)
1.5 kA ≤ short-circuit current < 3 kA	2	1.2 m (4 ft)
3 kA ≤ short-circuit current < 7 kA	3	1.8 m (6 ft.)
7 kA ≤ short-circuit current < 10 kA	4	2.5 m (8 ft)

Note: Apparel that can be expected to be exposed to electrolyte must meet both of the following conditions:

- (1) Be evaluated for electrolyte protection in accordance with ASTM F1296, *Standard Guide for Evaluating Chemical Protective Clothing*
- (2) Be arc-rated in accordance with ASTM F1891, *Standard Specification for Arc Rated and Flame Resistant Rainwear*, or equivalent

Table 130.7(C)(16) **Personal Protective Equipment (PPE)**

PPE Category	PPE
1	<p>Arc-Rated Clothing, Minimum Arc Rating of 4 cal/cm² (see Note 1)</p> <p>Arc-rated long-sleeve shirt and pants or arc-rated coverall</p> <p>Arc-rated face shield (see Note 2) or arc flash suit hood</p> <p>Arc-rated jacket, parka, rainwear, or hard hat liner (AN)</p> <p>Protective Equipment</p> <p>Hard hat</p> <p>Safety glasses or safety goggles (SR)</p> <p>Hearing protection (ear canal inserts)</p> <p>Heavy duty leather gloves (see Note 3)</p> <p>Leather <u>footwear</u> (AN)</p>
2	<p>Arc-Rated Clothing, Minimum Arc Rating of 8 cal/cm² (see Note 1)</p> <p>Arc-rated long-sleeve shirt and pants or arc-rated coverall</p> <p>Arc-rated flash suit hood or arc-rated face shield (see Note 2) and arc-rated balaclava</p> <p>Arc-rated jacket, parka, rainwear, or hard hat liner (AN)</p> <p>Protective Equipment</p> <p>Hard hat</p> <p>Safety glasses or safety goggles (SR)</p> <p>Hearing protection (ear canal inserts)</p> <p>Heavy duty leather gloves (see Note 3)</p> <p>Leather <u>footwear</u></p>
3	<p>Arc-Rated Clothing Selected so That the System Arc Rating Meets the Required Minimum Arc Rating of 25 cal/cm² (see Note 1)</p> <p>Arc-rated long-sleeve shirt (AR)</p> <p>Arc-rated pants (AR)</p> <p>Arc-rated coverall (AR)</p> <p>Arc-rated arc flash suit jacket (AR)</p> <p>Arc-rated arc flash suit pants (AR)</p> <p>Arc-rated arc flash suit hood</p> <p>Arc-rated gloves (see Note 1)</p> <p>Arc-rated jacket, parka, rainwear, or hard hat liner (AN)</p> <p>Protective Equipment</p> <p>Hard hat</p> <p>Safety glasses or safety goggles (SR)</p> <p>Hearing protection (ear canal inserts)</p> <p>Leather <u>footwear</u></p>

Table 130.7(C)(16) *Continued*

PPE Category	PPE
4	<p>Arc-Rated Clothing Selected so That the System Arc Rating Meets the Required Minimum Arc Rating of 40 cal/cm² (see Note 1)</p> <p>Arc-rated long-sleeve shirt (AR)</p> <p>Arc-rated pants (AR)</p> <p>Arc-rated coverall (AR)</p> <p>Arc-rated arc flash suit jacket (AR)</p> <p>Arc-rated arc flash suit pants (AR)</p> <p>Arc-rated arc flash suit hood</p> <p>Arc-rated gloves (see Note 1)</p> <p>Arc-rated jacket, parka, rainwear, or hard hat liner (AN)</p> <p>Protective Equipment</p> <p>Hard hat</p> <p>Safety glasses or safety goggles (SR)</p> <p>Hearing protection (ear canal inserts)</p> <p>Leather <u>footwear</u></p>

AN: as needed (optional). AR: as required. SR: selection required.
Notes:

(1) Arc rating is defined in Article 100.

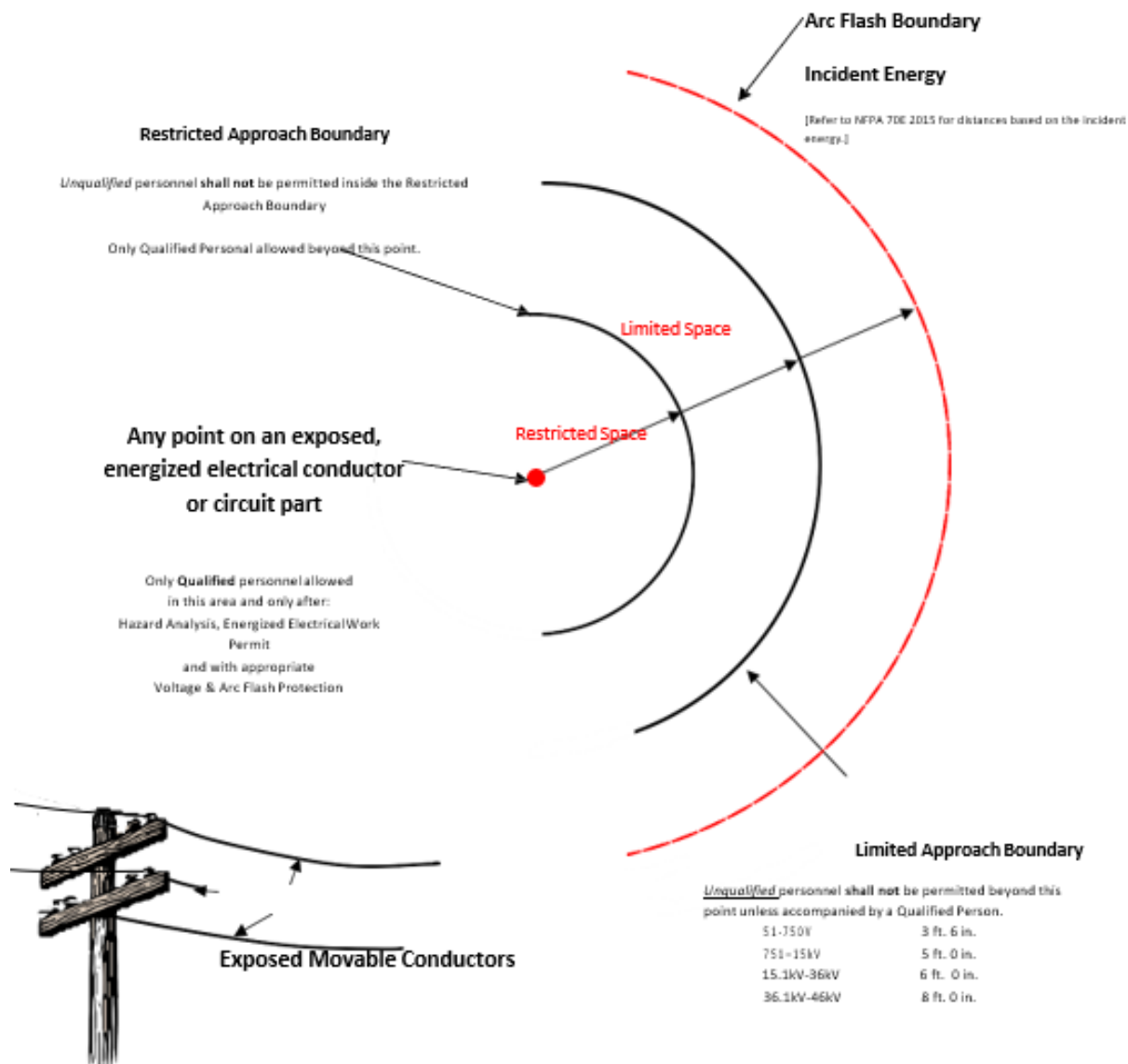
(2) Face shields are to have wrap-around guarding to protect not only the face but also the forehead, ears, and neck, or, alternatively, an arc-rated arc flash suit hood is required to be worn.

(3) If rubber insulating gloves with leather protectors are used, additional leather or arc-rated gloves are not required. The combination of rubber insulating gloves with leather protectors satisfies the arc flash protection requirement.

ATTACHMENT 4 – APPROACH BOUNDARY FOR SHOCK / FLASH PROTECTION

Refer to Annex C, NFPA 70E, 2015

Observing a safe approach distance from exposed electrical energized conductors or circuit parts is an effective means of maintaining electrical safety. As the distance between a person and the exposed energized conductor or circuit parts decreases, the potential for an electrical accident increases.



Limited Approach Distance

Unqualified personnel Scaffold, ladders, Lifts, Forklifts . . . 50 volts to 50kV = 10 Feet minimum clear distance.

> 50kV = 10 Ft. plus 4 inches for every 10kV over 50kV.

SECTION 17: Emergency Action Plans

I. PURPOSE

This document establishes the requirements to be followed to ensure that an effective Emergency Action Plan has been prepared and implemented. This document may be superseded by a project specific plan.

II. GENERAL

This document is intended to establish protocol for preparing and responding to an emergency that may arise out of business operations. This document outlines and reviews the basic principles for the development of an "emergency Action Plan" to ensure safety and efficiency when responding to emergencies.

This emergency action plan has the following objectives:

1. To provide for effective action to minimize injuries and loss of life among company personnel in the case of emergency during business hours.
2. To protect company property.
3. To implement, as soon as possible, recovery operations.
4. To provide effective education to all personnel in the area of preparedness in case of emergency during business hours.

III. PROCEDURE

A. EMERGENCY CALLING PROCEDURES

In case of an emergency, when outside emergency services are needed, these steps should be taken:

1. Pick up the nearest phone and dial 911 (for outside emergency services);
2. Give the following information:
 - a. Your Name
 - b. The Company's Name
 - c. Location (address)
 - d. Nearest Cross Street
 - e. Type of Emergency
 - i. Fire
 - ii. Medical Aid
 - iii. Chemical Spill
 - f. Telephone Number You Are Calling From
3. Do not hang up until you are sure the person receiving the call has all the information necessary.

B. EVACUATION PROCEDURES

1. For each office, develop an evacuation plan. Designate specific responsibility to employees and supervisors.
2. Develop a communication system, which will alert employees of the need to evacuate the building. Train employees in the communication process.
3. Designate specific reunion locations.

C. FIRE PROCEDURES

Duties of every employee:

1. Fire preparedness
 - a. Locate the fire extinguisher nearest to your workstation.
 - b. Be familiar with the locations of all emergency exits and evacuation routes. Keep exits and evacuation routes clear.
 - c. Know what action to take in the event of a fire.
2. In the event of a fire near you:
 - a. Follow your local Emergency Action Plan (EAP) to evacuate the facility.
 - Evacuate by the nearest safe exit and evacuation route.
 - Report to a designated muster point.
 - Render assistance only upon request from the fire department.
 - b. Notify the fire department by calling 911, giving them the following information:
 - Address you are calling from
 - Name
 - Phone Number
 - Type of Emergency
 - Stay on the phone until the emergency operator hangs up.

Duties of trained personnel:

1. In the event of a fire, if an authorized employee elects to fight the fire by use of a fire extinguisher, these steps must be considered:
 - Pull the pin off the fire extinguisher.
 - Aim the nozzle of the extinguisher so it discharges at the base of the fire.
 - Sweep the fire with a side-to-side motion across the entire width of the fire.
 - Always fight the fire with your back to an exit.
 - Do not allow yourself to become trapped.
2. After extinguishing the fire, move back and watch for a possible rekindle of the fire. Do not turn you back on the fire. Always back away.
3. After the extinguisher is discharged, remember to have the fire extinguisher re-serviced and re-hang it. Never re-hang a used extinguisher.
4. If it is safe to do so, the fire should be fought with portable extinguishers until the fire department arrives. Keep in mind that your personal safety is of prime importance.

D. TORNADO / SEVERE WEATHER PROCEDURES

Duties of every employee:

1. Tornado / severe weather preparedness
 - a. Locate the tornado / severe weather shelter nearest to your workstation.
 - b. Be familiar with the locations of all emergency exits and evacuation routes. Keep exits and evacuation routes clear.
 - c. Know what action to take in the event of a tornado / severe weather.
2. In the event of a tornado or severe weather, that may require evacuation to a designated shelter, near you:
 - a. Follow your local Emergency Action Plan (EAP) to go to the designated tornado / severe weather shelter.
 - Evacuate to the shelter by the nearest and safest route.
 - Report to a designated muster point.
 - Stay until cleared to return to the work station.
 - b. Notify the authorities, in cases of an emergency, by calling 911, giving them the following information:
 - Address you are calling from
 - Name
 - Phone Number
 - Type of Emergency
 - Stay on the phone until the emergency operator hangs up.

In the event of other emergencies, such as other natural disasters, violence in the workplace, bomb threats, etc., employees should call emergency personnel as applicable and ensure leadership is notified with the proper incident reports.

SECTION 18: Emergency and First Aid Medical Services

I. PURPOSE

This guideline provides information regarding the First Aid program, which handles emergency and non-emergency injuries.

II. GENERAL

The Company requires that emergency medical services be available on all project sites. A First Aid Kit will also be maintained at each office.

Services to be provided include:

- Employee access to emergency medical treatment.
- Posted written instructions, naming the person(s) to be notified in an emergency with their phone number(s), along with emergency numbers for the following:
 - Ambulance
 - Fire Department
 - Hospital
 - Police Department
 - Servicing Physician/Emergency Facility.

III. RESPONSIBILITY

First Aid/CPR Trained Person duties and responsibilities are as follows:

- Training in First Aid/CPR and participation in the medical response team is voluntary.
- First Aid/CPR trained employees will provide medical services to injured coworkers on a voluntary basis.
- First Aid/CPR trained employees will be designated at each project site where four or more Company employees are permanently assigned.
- First Aid/CPR trained employees must be certified by an accredited training entity, i.e., Red Cross, Hospital, etc., and such certification must be current.
- First Aid/CPR trained employees will complete a bloodborne pathogens course.

IV. PROCEDURE

First Aid Kits

First Aid Kit(s) must be maintained in a sanitary condition. First Aid dressings shall be sterile and contain individually sealed packages for each item.

The contents of the First Aid Kit(s) shall be inspected regularly to ensure replacement of the expended items promptly.

V. POLICY

The following guideline is written to comply with OSHA 29 CFR 1910.1030, Occupational Exposure to Bloodborne Pathogens. A potential for exposure to employees could exist and will be identified by management prior to commencement of work.

Any person designated to administer first aid has the potential for exposure to blood or other body fluids. All employees designated as First Aid Providers are instructed that it is only at that employee's discretion to choose whether to provide first aid in any situation.

A. BLOODBORNE PATHOGENS APPLICATION

First aid providers who are occupationally exposed to blood or other potentially infectious materials or body fluids.

An occupational exposure is: non-intact skin, eyes, mucous membranes (nose, eye or mouth) or parenteral (such as a needle stick or cut) contact with blood or potentially infectious materials.

Management/Supervision shall do the following:

- Identify of any workers that could have potential exposure.
- All of these employees should:
 - Be provided a copy of this policy. Employee may also be provided with a copy of the OSHA 29 C.F.R. 1910.1030 standard upon their request.
 - Have training and information in occupational exposure to bloodborne pathogens.
 - Be offered the Hepatitis B Vaccine at no cost to the employee at the initial time the employee is involved in an incident where blood or other body fluids are present.
 - Have training and information in contraindications, adverse reactions, and risks associated with the Hepatitis B Vaccine.
 - Sign acceptance or declination form for Hepatitis B Vaccine.
 - Have training and information on what to do if an exposure occurs.
 - Have personal protective equipment available at all times provided at no cost to the employee. This will include a rescue breathing mask with a one-way valve, disposable latex gloves, standard first aid kit and a bloodborne pathogen kit.

B. OCCUPATIONAL EXPOSURE

Should an occupational exposure occur, the following procedure MUST be followed:

- Flush the exposed area with water for 15 minutes.
- The Supervisor, Manager, Worker's Compensation Representatives, and Department Safety Representative shall be notified immediately of the incident and shall:
 - Record the information related to the exposure and the exposed employee.
 - Verify that the employee has been directed to seek medical attention.
 - Notify the appropriate management personnel of the incident.
- As with any other on-the-job injury or illness, the supervisor must complete First Report of Injury Form / Accident Report Form located on the Company's intranet and forward it to

the Managers, Workers Compensation Representative, and Department Safety Representative.

- The employee shall be directed to seek immediate medical attention from a licensed physician. The Company shall supply the physician with the following:
 - The exact nature of the accident, including the route of exposure and the circumstances under which the exposure incident occurred.
 - All medical records relevant to the appropriate treatment of the employee, if applicable.
- After obtaining the employee's consent, the physician shall obtain appropriate HBV and HIV serologic baseline studies on the exposed employee. The Company will pay for these tests.
- The employee's personnel file shall be annotated to indicate the name and address of the evaluating physician.
- If the employee has any questions concerning these results and/or treatment, the employee shall be instructed to direct such questions to his/her treating physician.
- All medical records will be kept confidential.
- OSHA regulations require that, within 15 days of the completion of the evaluation, the Company must provide to the employee, a copy of the physician's written opinion. The written opinion shall indicate:
 - Whether Hepatitis B Vaccine is indicated for the employee and if the employee has received such vaccination.
 - That the employee has been informed of the results of the evaluation.
 - That the employee has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials which require further evaluation or treatment. Any other findings or diagnoses shall remain confidential and shall not be included in the written report.

C. INFORMATION AND TRAINING

AIDS is perhaps one of the most devastating diseases known, and employees should be reminded that ALL body fluids, including but not limited to the blood, should be handled as though contaminated, and that personal protective equipment **MUST** be worn at all times when handling any body fluids.

- If an employee has a percutaneous (needle stick or cut) or mucous membrane (splash to eye, nasal mucous, or mouth) exposure to body fluids, the employee shall be informed to **IMMEDIATELY** take the following actions:
 - Bleed the puncture site freely by applying gentle pressure until the bleeding stops.
- Then wash thoroughly with disinfectant soap and bandage.
 - Wash the mucous membrane exposure with large amounts of water.
 - The employee and/or supervisor shall immediately notify the Manager, Workers Compensation Representative, and Department Safety Representative.

- Seek medical attention/treatment.
- All employees are encouraged to complete an approved “Bloodborne Pathogen Training Course”.

D. RECORDKEEPING

The Company will maintain appropriate documents in the employee’s medical file.

- A copy of the employee’s Hepatitis B Vaccination status including the dates of all Hepatitis B Vaccinations and any medical records relative to the employee’s ability to receive vaccination as described in the Hepatitis B section of this procedure.
- A copy of medical testing and the healthcare professional’s written opinion.
- These documents are to be kept confidential and are not to be disclosed or reported without the employee’s expressed written consent to any person within or outside the workplace, except as may be required by law.
- The most recent of employee training records shall be retained for the duration of employment.
- Workers’ compensation and exposure records, if necessary, shall be maintained for at least the duration of the employment plus 30 years.

VI. REFERENCES

Attachment 1 - Hepatitis B Vaccine Information/Consent or Rejection Form

Attachment 2 - Exposure Incident Investigation Form

Attachment 3 - Physician's Opinion

ATTACHMENT 1 - HEPATITIS B VACCINE - INFORMATION/CONSENT OR REJECTION FORM

Contraindications, Adverse Reactions and Risks Associated with Administration of Hepatitis B Vaccine (Recombinant)

The following information is presented to you so that you may make an informed decision regarding administration of a Hepatitis B vaccine, which may result in your becoming permanently immunized against Hepatitis B virus infections. This series of three (3) injections over six (6) months will not protect you against infection by the Hepatitis A or C viruses.

Program

A series of three (3) injections of vaccine are administered according to the following schedule:

- 1st injection - At election date
- 2nd injection - 1 month after election date
- 3rd injection - 6 months after election date

Prior to receiving your first injection, you will be screened for presence of Hepatitis B antibody. If you are found to be positive for Hepatitis B antibody, you need not undergo the injection series as you are already immunized against Hepatitis B.

Limitations

One (1) out of twenty (20) individuals who successfully complete this series of injections will fail to achieve immunization status. In this case, you would not be protected against Hepatitis B virus infection.

Product

The vaccine supplied is prepared using recombinant DNA techniques using the Hepatitis B Surface antigen extracted from disrupted yeast cells. The final product may contain up to 4% of yeast protein material. If you are allergic to yeast products, you should consult with your physician before consenting to this immunization program.

Contraindications and Adverse Reactions

In general, the Hepatitis B Vaccine is well tolerated. However, patients who have hypersensitivity to yeast products should not receive this vaccine.

1. Warnings - Patients who develop symptoms suggestive of hypersensitivity after an injection of Hepatitis B Vaccine should not receive further injections of the vaccine.
2. Precautions - Hepatitis B Vaccine should not be given (unless recommended by your physician) to:
 - a. Persons with active serious infections.
 - b. Pregnant women
 - c. Nursing mothers
 - d. Persons allergic to yeast
3. Adverse Reactions - During clinical trials, one or more of the following adverse reactions

were observed in various patients within five (5) days following approximately 15% of the injections.

- a. Injection site local reactions, consisting principally of soreness, and including pain, tenderness, itching, reddening, bruises, swelling, warmth and nodule formation.
- b. The most frequent reactions were: fatigue, headache, fever above 100°F, weakness, malaise, sweating, achiness, lightheadedness and chills.
- c. Digestive system reactions include: nausea and diarrhea, vomiting, abdominal pain/cramps, indigestion and diminished appetite.
- d. Respiratory system reactions include: pharyngitis (sore throat), upper respiratory infection, rhinitis (nasal congestion), influenza and cough.
- e. Nervous system reactions include: dizziness, tingling and/or numbness.
- f. Skin reactions include: itching, rash and hives.
- g. Musculoskeletal reactions include: joint pain, muscle pain, back pain, neck pain, shoulder pain and neck stiffness.
- h. Blood/lymphatic system reactions include: swelling of the lymph glands.
- i. Behavioral reactions include: insomnia and disturbed sleep.
- j. Special senses include: earache.
- k. Urogenital system reactions include: painful or infrequent urination.
- l. Cardiovascular system reactions include: hypotension (abnormally low blood pressure).

I understand that due to my occupational exposure to blood or other potentially infectious materials, I may be at risk if acquiring Hepatitis B Virus (HBV) infection. I have been given the opportunity to be vaccinated with Hepatitis B vaccine, at no charge to myself. However, I decline Hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring Hepatitis B, a serious disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with Hepatitis B Vaccine, I can receive the vaccination series at no charge to me.

Employee Name

Date

Witness

Date

I, the undersigned, have read the information contained herein and desire to begin the vaccination process.

Employee Name

Date

Witness

Date

ATTACHMENT 2 - EXPOSURE INCIDENT INVESTIGATION FORM

Date of Incident: _____ Time of Incident: _____

Location: _____

Potentially Infectious Material Involved:

Type: _____ Source: _____

Circumstances (work being performed, etc.): _____

How Incident was Caused (accident, equipment malfunction, etc.): _____

Personal Protective Equipment being used: _____

Action Taken (decontamination, clean-up, reporting, etc.): _____

Recommendations for Avoiding Repetition: _____

ATTACHMENT 3 - PHYSICIAN'S OPINION

Employee's Name: _____
Last First

Employed By: _____

Date of Completion of Evaluation: _____

1. Hepatitis vaccination is indicated.

Yes _____

No _____

2. The employee has received Hepatitis B Vaccination.

Yes _____

No _____

3. The employee has been informed of the results of the evaluation.

Yes _____

No _____

4. The employee has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials which require further evaluation and treatment.

Yes _____

No _____

5. All other findings have been kept confidential.

Signature

Printed Name, M.D.

Date

Phone Number

Lab Name/Org _____

Employee Name _____
(Please Print)

SECTION 19: Fall Protection

I. PURPOSE

This guideline establishes the requirements to be followed to safeguard employees from injuries due to falls, including falls over water.

II. GENERAL

This guideline is intended to prevent potentially serious fall accidents involving employees. This guideline outlines terminology and responsibilities and reviews basic principles to ensure safety and efficiency.

III. DEFINITIONS

Anchorage – A secure point of attachment for lifelines, lanyards or shock absorber devices. Shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached.

Body harnesses – Straps secured about the employee that will distribute the fall stopping forces over the body. The body harness has a means for attaching it to other components of a personal fall arrest system.

Connector – A device which is used to connect part of the personal arrest system, positioning or restraint systems together. It may be an independent component such as a carabiner or it may be an integral component of the body harness (D-rings) or lanyard (snap-hooks).

D-Ring – A connector located on the back of the body harness which is designed to be the connection point for lanyards and lifelines.

Leading Edge – The edge of a floor, roof or formwork for a floor or other walking/working surface which changes location as additional floor, roof, decking, or formwork sections are placed, formed or constructed.

Lanyard – A flexible line of rope, wire rope or strap that has a connector at each end for connecting a body harness to a shock absorbing device, lifeline or anchorage.

Lifeline – A flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline) or for connection to anchorage at both ends to stretch horizontally (horizontal lifeline).

Personal fall arrest system – A system used to stop an employee's fall consisting of an anchorage, connectors and a body harness and may include a lanyard, a shock absorbing device, a lifeline or a suitable combination of these.

Personal flotation device (PFD) – a life vest or life preserver that is capable of supporting a person and keeping them afloat in water.

Rope grab – A deceleration device that travels on a lifeline and automatically, by friction, engages

the lifeline and locks so as to arrest the fall of an employee.

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

Shock absorbing device - Any mechanism such as a rope grab, rip-stitch lanyard, specially woven lanyard, tearing or deforming lanyard and others, which serves to dissipate energy during a fall. These mechanisms will also arrest and limit the energy imposed on the employee as he is stopped.

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

100% Tie-Off Lanyard - Two-legged lanyard with an integral shock absorber, which allows workers to be "tied off" to one anchorage point all the time even when moving from one location to another. Each leg is terminated by a connector and a center connector (usually snap-hook) attaches to a back (dorsal) D-ring of a worker's harness.

IV. RESPONSIBILITY

A. DEPARTMENT SAFETY REPRESENTATIVE

The Department Safety Representative shall monitor the use of this guideline to assure compliance and understanding by employees. The Department Safety Representative shall also provide guidance in the selection and use of fall protection systems.

B. PROJECT MANAGER

The Project Manager shall ensure that a Project Fall Protection Assessment Checklist is completed prior to the start of his or her project. The Project Manager shall distribute copies of the checklist to all foremen and trade supervisors for review and use in the field.

C. FOREMEN AND TRADE SUPERVISORS

Foremen and Trade Supervisors shall ensure that employees under their supervision or direction are following safe work practices as outlined in this guideline and the Project Fall Protection Assessment Checklist.

D. EMPLOYEES

Employees shall exercise constant awareness of and respect for fall hazards and shall use fall protection devices when appropriate. Employees shall inspect fall protection equipment before every use and remove defective or damaged equipment from use.

V. PROCEDURE

A. GENERAL

Fall protection systems or practices such as guardrails, fall restraint systems, personal fall arrest systems, warning lines, or safety monitors are required under the following conditions:

- When a fall exposure hazard at a height of six (6) feet or more exists.
- When a fall exposure hazard at a height of less than six (6) feet exists under particularly hazardous circumstances such as work over objects or equipment that present physical hazards.

B. FALL EXPOSURE HAZARDS

The following are common fall exposure hazards in which employees may be exposed:

- Areas of metal deck during installation and when floor openings are made to accommodate elevators, ladder openings and mechanical or ventilation systems.
- Unprotected sides and edges such as on roofs, ramps, and platforms at elevations greater than six feet.
- Leading edges created during the installation of floor, roof, decking, or formwork.
- Excavations that are 6 feet or deeper.
- Wall openings where a fall exposure of 6 feet or more exist and the inside bottom edge of the wall opening is less than 39 inches above the walking/working surface.
- Skylights located on roofs or where a fall potential of six (6) feet exists.
- Work on articulating boom lifts (man-lifts, JLG's).

C. APPROVED FALL PROTECTION SYSTEMS AND PRACTICES

The systems and practices listed below are approved for use in protecting employees from fall exposure hazards:

- Personal fall arrest systems
- Safety monitoring systems
- Guardrail systems
- Covers for holes

Site conditions and configurations may require the use of multiple systems and practices to protect employees from fall exposure hazards. Fall protection systems and practices may be used in tandem to provide additional fall protection.

Reaction distance should be considered when selecting fall protection to ensure the length of the fall protection life line does not exceed the distance to the ground.

D. PERSONAL FALL ARREST SYSTEMS

Personal fall arrest systems and their use shall comply with the following requirements:

- Connectors shall be drop-forged, pressed or formed steel, or made of equivalent

materials.

- Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of the system.
- D-rings and snap hooks shall have a minimum tensile strength of 5,000 pounds (22.2 kN).
- D-rings and snap hooks shall be proof-tested to a minimum tensile load of 3,600 pounds (16 kN) without cracking, breaking, or taking permanent deformation.
- Snap hooks shall be a locking type snap hook designed and used to prevent disengagement of the snap hook by the contact of the snap hook keeper with the connected member.
- Horizontal lifelines shall 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.
- Vertical lifelines shall be 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.
- Vertical lifelines shall have a minimum breaking strength of 5,000 pounds.
- Vertical lifelines to which rope grabs will be attached shall be of synthetic material and 5/8 or 3/4 inches in diameter.
- Lifelines shall be protected from being cut or abraded.

Personal fall arrest systems are generally not required when working on the following structures or equipment:

- Permanent platforms enclosed by proper handrails.
- Complete and inspected scaffolding equipped with proper decking and handrails.
- Fixed cage ladders.
- Portable ladders that are properly placed and secured.

E. SAFETY MONITORING SYSTEMS

Safety monitoring systems and their use shall comply with the following requirements:

- A qualified person shall designate a competent person to monitor the safety of other employees.
- The safety monitor shall be competent to recognize fall hazards.
- The safety monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner.
- The safety monitor shall be close enough to communicate orally with the employee.
- The safety monitor shall not have other responsibilities, which could take the monitor's attention from the monitoring function.

F. GUARDRAIL SYSTEMS

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

- Top edge height of top rails, or equivalent guardrail system members, shall be 42 inches (1.1 m) plus or minus 3 inches (8 cm) above the walking/working level. When conditions

warrant, the height of the top edge may exceed the 45-inch height, provided the guardrail system meets all other criteria of this paragraph.

- Midrails, when used, shall be installed at a height midway between the top edge of the guardrail system and the walking/working level.
- Intermediate members (such as balusters), when used between posts, shall be not more than 19 inches (48 cm) apart.
- Other structural members (such as additional midrails and architectural panels) shall be installed such that there are no openings in the guardrail system that are more than 19 inches (.5 m) wide.
- Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds (890 N) applied within 2 inches (5.1 cm) of the top edge, in any outward or downward direction, at any point along the top edge.
- Midrails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members shall be capable of withstanding, without failure, a force of at least 150 pounds (666 N) applied in any downward or outward direction at any point along the midrail or other member.
- Guardrail systems shall 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 midrails shall not overhang the terminal posts, except where such overhang does not constitute a projection hazard.
- Steel banding and plastic banding shall not be used as top rails or midrails.
- Top rails and midrails shall be at least one-quarter inch (0.6 cm) nominal diameter or thickness to prevent cuts and lacerations. If wire rope is used for top rails, it shall 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 shall be placed across the access opening between guardrail sections when hoisting operations are not taking place.
- When guardrail systems are used at holes, they shall 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 shall 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 shall be closed over with a cover, or a guardrail system shall be provided along all unprotected sides or edges.
- When guardrail systems are used around holes, which are used as points of access (such as ladderways), they shall be provided with a gate, or be so offset that a person cannot walk directly into the hole.

G. COVERS FOR HOLES

Cover for holes in floors, roofs, and other walking/working surfaces shall meet the following requirements:

- Covers shall be capable of supporting, without failure, at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time.
- Covers shall be secured when installed so as to prevent accidental displacement by the

wind, equipment, or employees.

- Covers shall be marked with the word “HOLE” or “COVER” to provide warning of the hazard.

H. WORK OVER WATER

The potential for drowning is an additional hazard when working on a water intake, water discharge structures, dock facilities or any location over water. The following precautions shall be taken:

- A personal flotation device (PFD) capable of lifting the mouth of an exhausted or unconscious person out of the water shall be provided and worn by each person while working on docks, barges, watercraft or similar facilities.
- An observer shall be assigned whenever work is being done over water. The observer shall maintain communication with workers.
- Adequate illumination of the work area shall be provided at all times.

I. FALLING OBJECT PROTECTION

When the potential exists for employees to be exposed to falling objects, employees shall wear hardhats and one of the following measures shall be implemented:

- Toe boards, screens, and guardrail systems will be installed to prevent objects from falling from higher levels.
- Erect canopies that are strong enough to prevent collapse and penetration by objects that may fall from a higher level.
- Barricade the area, to which objects could fall and prohibit entry into the barricaded area.

J. RESCUE CONSIDERATIONS

Prior to the start of each project, the assigned Project Manager shall determine how employees will be rescued in the event of a fall or injury based on the Project Fall Protection Assessment Checklist. The availability of rescue personnel, ladders or another rescue equipment should be evaluated. The Company may utilize rescue plans established by the Construction Manager (CM) or General Contractor (GC) after coordinating such use with the CM or GC.

K. EQUIPMENT USE AND INSPECTION

Body harness

Body harnesses shall be inspected before each use. The body harness shall be removed from use if any of the defects listed below are present:

- Cracked, dry or rotten leather.
- Nylon or cords that have worn thin.
- Cuts or worn places deep enough to weaken the strap or belt.
- Broken stitches at buckles, D-rings or snaps.
- A snap with weak springs behind the tongue or defective tongues that have been bent or sprung.

- Loose tongues in buckles.
 - Cracked, bent or heavily worn buckles, D-rings or snaps.
 - Other wear, damage or defect that could affect the protection afforded by the assembly.
- No repair of safety harnesses, lanyards or fall protection equipment is allowed unless performed and guaranteed by the manufacturer.

After being removed from use the body harness shall be discarded.

- Adjust the body harness to fit the chest and under the arms and legs snugly before each use.
- Wear only harnesses that fit properly.
- Belts used to secure the harness to your legs must fit snugly and pass through both sides of the buckle.
- Position the “D” ring in the center of your back between your shoulder blades. The back “D” ring is the attachment point for the lanyard.

Self-retracting lifeline

Self-retracting lifelines shall be inspected prior to being installed and used for fall protection. The self-retracting lifeline shall be removed from service and returned to an authorized service center for repair if any of the defects listed below are present.

- Loose or missing bolts and bent or damaged parts.
- Distortion, cracks, or other damage to housing.
- The lifeline will not pull out and retract fully. Approximately $\frac{1}{4}$ of the lifeline length should be pulled from the housing and then released.
- The locking mechanism does not lock when the lifeline is sharply jerked. There should be no slipping.
- Cuts, corrosion, abrasions, or breaks on the wire rope.
- Broken or cracked ferrules.
- Bent, damaged, or broken snap hook or self-locking mechanism.
- The self-retracting lifeline has been subjected to impact loading from a fall or misuse.
- Additionally, each self-retracting lifeline shall be inspected and serviced according to the manufacturer’s instructions.
- Self-retracting life lines shall not be used in conjunction with shock absorbing lanyards.
- Self-retracting life lines shall be used exclusively when the fall distance is 18 feet or less.
- Self-retracting lifelines, which automatically limit free fall distance to 2 feet (0.61 m) or less shall be capable of sustaining a minimum tensile load of 3,000 pounds (13.3 kN), applied to the device with the lifeline or lanyard in the fully extended position.
- Self-retracting lifelines shall be installed under the supervision of a qualified person, as part of a complete personal fall arrest system.
- Self-retracting lifelines shall be installed so that the reel and housing are positioned perpendicular to the ground or lower level.
- Oil or any other lubricant shall never be applied to self-retracting lifelines.

Anchorage

- Anchorage used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds (22.2 kN) per employee attached.
- Guardrail systems to include wire rope guardrails should not be used as an anchorage for fall protection systems.

Lanyard

- Attach the lanyard as high above your head as possible as to reduce fall distance.
- Never tie a knot in a lanyard. This can reduce its strength by 50%.
- Use only approved lanyards. Do not use substitutes for lanyards such as wire or manila rope.
- Lanyards shall be attached above the point of operation and moved during work as necessary to ensure that the attachment point will not allow the harness wearer to reach the lower level before stopping the fall.
- Protect lanyards from sharp edges to reduce possibility of ripping or tearing.
- Lanyards shall be no longer than six (6) feet.
- Damaged lanyards should be removed from service immediately.

Rope grabs

- Rope grabs shall be used in accordance with manufacturer's recommendations and instructions.
- Environmental conditions such as rain, snow, and ice may affect the operation of rope grabs. Consult the manufacturer's instructions when these environmental conditions exist.
- Employees shall test the rope grab by moving the rope grab along the rope to ensure that it is locking properly. This test shall be done prior to attaching their body harness to the rope grab.

Snap hooks

- Snap hooks must be equipped with a double-lock mechanism that requires two movements to open the snap hook.
- When released the snap hook must return to the closed position.
- Never connect two snap hooks into one D -ring or connect snap hooks together.
- Snap hooks should be positioned vertically when attached to an anchorage point. The strength of a snap hook is greatly reduced when positioned horizontally or perpendicular to the lanyard.
- Never connect snap hooks directly to the body harness webbing, rope or wire rope.
- Never connect snap hooks to a D-ring to which another snap hook or other connector is attached.

L. TRAINING

All employees required to work at elevations shall be trained in the recognition of unsafe practices or working conditions that could lead to a fall. In addition, workers shall be instructed as

to the inspection, function, use and operation of body harness systems and other fall protection to be used including how to perform the work requiring body harnesses and how to adjust body harnesses to fit.

Employee training shall also include training in state or federal fall protection standards as they apply to the employee's work and exposure to fall hazards.

M. RECORDS

The Company shall keep a record of training. The training record shall contain the name of the employee trained, the dates of training, and the signature of the person who conducted the training or the employer.

•The most recent of employee training records shall be retained for the duration of employment.

VI. REFERENCES

Attachment 1 - Project Fall Protection Assessment Checklist

ATTACHMENT 1 – PROJECT FALL PROTECTION ASSESSMENT CHECKLIST

Project Name: _____ Project Manager: _____
Project Address: _____ Date Prepared: _____
Customer Name: _____ Prepared by: _____
Project scope of work description: _____

Place a check mark in the box next to each fall hazard that may be encountered during project activities:

☐ Unprotected Sides and Edges

Fall protection systems and/or practices to be used to protect employees from the hazard identified above:

- | | |
|---|--|
| <input type="checkbox"/> Personal Fall Arrest Systems | <input type="checkbox"/> Safety Monitoring Systems |
| <input type="checkbox"/> Warning Line Systems | <input type="checkbox"/> Guardrail Systems |

Notes: _____

☐ Leading Edge Work

Fall protection systems and/or practices to be used to protect employees from the hazard identified above:

- | | |
|---|--|
| <input type="checkbox"/> Personal Fall Arrest Systems | <input type="checkbox"/> Safety Monitoring Systems |
| <input type="checkbox"/> Warning Line Systems | <input type="checkbox"/> Guardrail Systems |

Notes: _____

☐ Hoist Areas

Fall protection systems and/or practices to be used to protect employees from the hazard identified above:

- | | |
|---|--|
| <input type="checkbox"/> Personal Fall Arrest Systems | <input type="checkbox"/> Hole Covers |
| <input type="checkbox"/> Warning Line Systems | <input type="checkbox"/> Guardrail Systems |
| <input type="checkbox"/> Safety Monitoring Systems | |

Notes: _____

☐ Holes and Floor Openings

Fall protection systems and/or practices to be used to protect employees from the hazard identified above:

- | | |
|---|--|
| <input type="checkbox"/> Personal Fall Arrest Systems | <input type="checkbox"/> Hole Covers |
| <input type="checkbox"/> Warning Line Systems | <input type="checkbox"/> Guardrail Systems |
| <input type="checkbox"/> Safety Monitoring Systems | |

Notes: _____

☐ Excavations

Fall protection systems and/or practices to be used to protect employees from the hazard identified above:

- | | |
|---|--|
| <input type="checkbox"/> Personal Fall Arrest Systems | <input type="checkbox"/> Hole Covers |
| <input type="checkbox"/> Warning Line Systems | <input type="checkbox"/> Guardrail Systems |
| <input type="checkbox"/> Safety Monitoring Systems | |

Notes: _____

☐ Work Above Dangerous Equipment

Fall protection systems and/or practices to be used to protect employees from the hazard identified above:

- | | |
|---|--|
| <input type="checkbox"/> Personal Fall Arrest Systems | <input type="checkbox"/> Safety Monitoring Systems |
| <input type="checkbox"/> Warning Line Systems | <input type="checkbox"/> Hole Covers |
| <input type="checkbox"/> Guardrail Systems | |

Notes: _____

☐ Work on Flat Roofs

Fall protection systems and/or practices to be used to protect employees from the hazard identified above:

- | | |
|---|---|
| <input type="checkbox"/> Personal Fall Arrest Systems | <input type="checkbox"/> Hole Covers |
| <input type="checkbox"/> Fall Restraint Systems | <input type="checkbox"/> Guardrail Systems |
| <input type="checkbox"/> Warning Line Systems | <input type="checkbox"/> Parapet wall 39" or higher |
| <input type="checkbox"/> Safety Monitoring Systems | |

Notes: _____

☐ Work on Low-Slope Roofs (4 in 12 or less, vertical to horizontal pitch)

Fall protection systems and/or practices to be used to protect employees from the hazard identified above:

- | | |
|---|--|
| <input type="checkbox"/> Personal Fall Arrest Systems | <input type="checkbox"/> Safety Monitoring Systems |
| <input type="checkbox"/> Fall Restraint Systems | <input type="checkbox"/> Hole Covers |
| <input type="checkbox"/> Warning Line Systems | <input type="checkbox"/> Guardrail Systems |

Notes: _____

☐ Work on Steep-Slope Roofs (greater than 4 in 12 vertical to horizontal pitch)

Fall protection systems and/or practices to be used to protect employees from the hazard identified above:

- | | |
|---|--|
| <input type="checkbox"/> Personal Fall Arrest Systems | <input type="checkbox"/> Safety Monitoring Systems |
| <input type="checkbox"/> Fall Restraint Systems | <input type="checkbox"/> Hole Covers |
| <input type="checkbox"/> Warning Line Systems | <input type="checkbox"/> Guardrail Systems |

Notes: _____

☐ Wall Openings

Fall protection systems and/or practices to be used to protect employees from the hazard identified above:

- | | |
|---|--|
| <input type="checkbox"/> Personal Fall Arrest Systems | <input type="checkbox"/> Safety Monitoring Systems |
| <input type="checkbox"/> Fall Restraint Systems | <input type="checkbox"/> Hole Covers |
| <input type="checkbox"/> Warning Line Systems | <input type="checkbox"/> Guardrail Systems |

Notes: _____

☐ Work In or Near Utility Shafts

Fall protection systems and/or practices to be used to protect employees from the hazard identified above:

- | | |
|---|--|
| <input type="checkbox"/> Personal Fall Arrest Systems | <input type="checkbox"/> Safety Monitoring Systems |
| <input type="checkbox"/> Fall Restraint Systems | <input type="checkbox"/> Hole Covers |
| <input type="checkbox"/> Warning Line Systems | <input type="checkbox"/> Guardrail Systems |

Notes: _____

☐ Work on Articulating Boom Lifts (JLG's)

Fall protection systems and/or practices to be used to protect employees from the hazard identified above:

- | | |
|---|---|
| <input type="checkbox"/> Personal Fall Arrest Systems | <input type="checkbox"/> Warning Line Systems |
| <input type="checkbox"/> Fall Restraint Systems | <input type="checkbox"/> Guardrail Systems |

Notes: _____

☐ Other _____

Fall protection systems and/or practices to be used to protect employees from the hazard identified above:

- | | |
|---|--|
| <input type="checkbox"/> Personal Fall Arrest Systems | <input type="checkbox"/> Safety Monitoring Systems |
| <input type="checkbox"/> Fall Restraint Systems | <input type="checkbox"/> Hole Covers |
| <input type="checkbox"/> Warning Line Systems | <input type="checkbox"/> Guardrail Systems |

Notes: _____

Method for Prompt, Safe Removal of Injured Worker:

- | | |
|--|---|
| <input type="checkbox"/> Utilize rescue plan established by General Contractor or Construction Manager | <input type="checkbox"/> Use lift truck with personnel basket |
| <input type="checkbox"/> Utilize local fire and rescue services | <input type="checkbox"/> Utilize articulating boom lift with personnel basket |
| <input type="checkbox"/> Other (explain): _____ | |

Notes and special precautions:

Keep completed checklists on file in property's office for 1 year.

SECTION 20: Fire Extinguisher Use & Fire Prevention Plan

I. PURPOSE

This guideline establishes the requirements to be followed for providing employees with the knowledge, skills and training to prevent fires and provide immediate response in controlling incipient fires with portable fire extinguishers.

II. GUIDELINE

A. GENERAL

This guideline is intended to prevent potentially serious incidents involving incipient fires by providing training in the proper use of portable fire extinguishers and fire prevention. All employees shall be informed about the uses and limitations of portable fire extinguishers. This guideline outlines terminology and responsibilities and reviews basic principles for the development of procedures to ensure safety and efficiency.

B. DEFINITIONS

Class "A" Fire: A fire involving ordinary combustible materials such as plastic, wood, cloth and paper.

Class "B" Fire: A fire involving combustible gases, liquids and grease.

Class "C" Fire: A fire involving energized electrical equipment requiring nonconductive extinguishing agents.

Class "D" and Class "K": Additional fire extinguisher classes may be required at certain locations, including some hospitals and other specialized facilities.

Combustible Gas, Liquid or Grease: Materials having a flashpoint at or above 100°F (37.8°C).

Flammable Gas, Liquid or Grease: Materials having a flashpoint below 100°F (37.8°C).

Incipient Stage Fire: A fire that is in the initial stage and can be controlled or extinguished by portable fire extinguishers without the need for protective clothing or breathing apparatus.

Inspection: A visual check of fire protection systems and equipment to ensure that they are in place, charged and ready for use in the event of a fire.

Maintenance: Checking internal fittings, devices and agent supplies of fire protection equipment and systems to assure that they will perform as expected in the event of a fire.

Maximum Travel Distance (MTD): The longest distance allowed for a person to walk from a potential fire hazard to the fire extinguisher protecting the area.

C. EXPECTATIONS/REQUIREMENTS

Procedure: General Rules for using portable fire extinguishers are as follows:

- Approved portable fire extinguishers shall be mounted, located and identified so that they are readily accessible.
- Portable fire extinguishers using carbon tetrachloride or chlorobromomethane extinguishing agents shall be removed from used and replaced with an approved model extinguisher.
- Use acceptable dry chemicals Do not mix chemicals (especially Foray) with any bicarbonate-based or B:C dry chemical.
- Portable fire extinguishers shall be maintained in a fully charged and operable condition and shall be kept in their designated places at all times. If removed for repair, testing or use, the extinguisher shall be replaced immediately with one of the reserve units of equal or greater capacity.
- Portable fire extinguishers shall be selected and distributed based on the classes of anticipated workplace fires and on the size and degree of expected hazard.

Inspections: The Department Safety Representative or designated representative shall visually inspect all fire extinguishers annually and document the inspection to determine that all portable fire extinguishers meet the following criteria:

- The extinguisher shall be in its designated place and shall not have been activated.
- If the extinguisher is pressurized, the gauge shall reflect that the unit is charged in the correct range.
- If the extinguisher is the dry powder type, ensure that the shift of the powder can be detected when the unit is inverted.
- If the extinguisher is a funnel nozzle equipped unit, ensure that the nozzle is clear.
- The extinguisher should not have any apparent physical damage or corrosion.

All fire extinguishers that do not pass the inspection will be removed and replaced immediately.

Maintenance and Testing: Only trained, qualified persons, contractors, or the manufacturer's representative shall maintain or test fire extinguishers.

Mounting Fire Extinguishers: Fire extinguishers shall be located along normal paths of travel. Access to portable fire extinguishers shall not be obstructed. The following shall be considered when mounting fire extinguishers:

- Fire extinguishers shall not be mounted on structures subject to vibration.
- The distance from the floor to the top of the fire extinguisher shall not exceed designated height limits.
- Fire extinguishers located outdoors shall be protected from the elements.
- Identify the location of fire extinguishers using one of the following methods:
 - a. Paint a twelve (12) inch red stripe on the column on which the fire extinguisher is mounted.
 - b. Paint a twelve- (12) inch red square on the wall above a mounted fire extinguisher.

- c. Install a "FIRE EXTINGUISHER" sign to the wall or column if the painted marking is not visible from twenty-five (25) feet.
- d. Install a "FIRE EXTINGUISHER" sign on any housing that protects a wheeled fire extinguisher.

Minimum Installation by Location: The location of fire extinguishers shall be based in part on the longest distance allowed for a person to walk from a potential fire hazard to the fire extinguisher protecting the area. Additional placements are discretionary. Placement shall ensure that the following Maximum Travel Distances (MTD) for these types of fire hazards are not exceeded:

- Class A Fire - 75 feet
- Class B Fire - 50 feet
- Class C Fire - 50 feet

D. FIRE PREVENTION

Procedures

The following are housekeeping techniques and procedures to prevent occurrences of fire:

- Keep storage and working areas free of trash.
- Place oily rags in covered containers and dispose of daily.
- Do not use gasoline or other flammable solvent or finish to clean floors.
- Use noncombustible oil-absorptive materials for sweeping floors consisting of sawdust or some other combustible material treated with oil.
- Dispose of materials in noncombustible containers that are emptied daily.
- Remove accumulation of combustible dust.
- Don't refuel gasoline-powered equipment in a confined space, especially in the presence of equipment such as furnaces or water heaters.
- Don't refuel gasoline-powered equipment while it is hot.
- Follow proper storage and handling procedures.
- Ensure combustible materials are present only in areas in quantities required for the work operation.
- Clean up any spill of flammable liquids immediately.
- Ensure that if a worker's clothing becomes contaminated with flammable liquids, these individuals change their clothing before continuing to work.
- Post "No Smoking" caution signs near the storage areas.
- Report any hazardous condition, such as old wiring, worn insulation and broken electrical equipment, to the supervisor.
- Keep motors clean and in good working order.
- Don't overload electrical outlets.
- Ensure all equipment is turned off at the end of the workday.
- Maintain the right type of fire extinguisher available for use.
- Ensure that all passageways and fire doors are unobstructed.
- Stairwell doors shall never be propped open, and materials shall not be stored in stairwells.
- Periodically remove over-spray residue from walls, floors, and ceilings of spray booths

and ventilation ducts.

- Remove contaminated spray booth filters from the building as soon as replaced or keep immersed in water until disposed.
- Don't allow materials to block automatic sprinkler systems, or to be piled around fire extinguisher locations.
- To obtain the proper distribution of water, a minimum of 18 inches of clear space must be maintained below sprinkler deflectors.
- If there are no sprinklers, a 3-foot clearance between piled material and the ceiling must be maintained to permit use of hose streams.
- These distances must be doubled when stock is piled higher than 15 feet.
- Check daily for any discarded lumber, broken pallets or pieces of material stored on site and remove properly.
- Reposition immediately any pile of material that falls into an aisle or clear space.
- Use weed killers that are not toxic and do not pose a fire hazard.

Storage and Handling Procedures

- The storage of material shall be arranged such that adequate clearance is maintained away from heating surfaces, air ducts, heaters, flue pipes, and lighting fixtures.
- All storage containers or areas shall prominently display signs to identify the material stored within. Storage of chemicals shall be separated from other materials in storage, from handling operations, and from incompatible materials.
- All individual containers shall be identified as to their contents.
- Only containers designed, constructed, and tested in accordance with the U.S. Department of Transportation specifications and regulations are used for storage of compressed or liquefied gases.
- Compressed gas storage rooms will be areas reserved exclusively for that purpose with good ventilation and at least 1-hour fire resistance rating.
- The gas cylinders shall be secured in place and stored away from any heat or ignition source.
- Pressurized gas cylinders shall never be used without pressure regulators.
- Wooden pallets will not be stacked over 6 feet tall. If feasible, extra pallets will be stored outside or in separate buildings to reduce the risk of fire hazards.
- Piles of combustible materials shall be stored away from buildings and located apart from each other sufficiently to allow fire-fighting efforts to control an existing fire.
- Bulk quantities of flammable liquids shall be stored outdoors and away from buildings.
- Flammable liquids shall be stored in, and dispensed from, approved safety containers equipped with vapor-tight, self-closing caps, screens or covers.
- Flammable liquids shall be stored away from sources that can produce sparks.
- Flammable liquids shall only be used in areas having adequate and, if feasible, positive ventilation. If the liquid is highly hazardous, the liquid shall only be used in areas with local exhaust ventilation.
- Flammable liquids shall never be transferred from one container to another by applying air pressure to the original container. Pressurizing such containers may cause them to rupture, creating a serious flammable liquid spill.

- When dangerous liquids are being handled, a warning sign will be posted near the operation, notifying other employees and giving warning that open flames are hazardous and are to be kept away.
- The storage and usage areas will include fire-resistive separations, and separation of incompatible materials, and the separation of flammable materials from other materials.

E. RECORDS

Equipment Inspections

- Records of the annual inspection shall be retained for the most recent year. The date of the annual inspection and the initials of the inspector shall be recorded on a tag attached to the fire extinguisher.
- Records of the annual maintenance specifying the date shall be retained for one year.

SECTION 21: Hazard Communication Program

I. PURPOSE

The purpose of this plan is to establish a program and procedures for the safe use of hazardous chemical substances at the Company.

II. GENERAL

We all use chemicals of one kind or another at work and at home. Some of the chemicals we use can cause physical or health hazards if they are used improperly or carelessly. Some chemical hazards are well known. For instance, most people realize that acid burns and that gasoline is flammable. But many chemical hazards are not common knowledge

The purpose of the Plan is to inform employees of chemicals known by the Company to be in their work places that may create a hazard if improperly or carelessly used, and to explain safety procedures the Company has adopted to protect employees against the health and physical risks posed by these chemicals.

III. DEFINITIONS

A. HAZARDOUS PRINCIPLES

Physical Hazard - A chemical is classified as a "Physical Hazard" if it poses one or more of the following hazardous effects.

- Explosive
- Flammable
- Oxidizer
- Self-reactive
- Pyrophoric
- Self-heating
- Organic Peroxide
- Corrosive to Metal
- Gas Under Pressure
- Water Reactive

Health Hazard - A chemical is classified as a "Health Hazard" if it poses one or more of the following hazardous effects:

- Acute Toxicity
- Skin corrosion or irritation
- Serious eye damage
- Respiratory Sensitization
- Mutagenicity
- Carcinogenicity
- Reproductive
- Organ Toxicity
- Aspiration Hazard

The effects of health hazards can be classified as "Acute" or "Chronic":

- Acute effects are severe and usually result from a short-term exposure
- Chronic effects are due to repeated, long term exposures and last longer










Environmental Hazards - These are chemicals that can affect water the aquatic environment.

Other hazards include:

- Simple and Chemical Asphyxiants
- Combustible dust

- Pyrophoric Gas
- Hazards not otherwise classified

Below is the HCS Pictogram Chart:

Pictograms MUST have RED borders	HCS Pictograms and Hazards	RED borders must have symbol inside.
Health Hazard  <ul style="list-style-type: none"> • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity 	Flame  <ul style="list-style-type: none"> • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides 	Exclamation Mark  <ul style="list-style-type: none"> • Irritant (skin or eye) • Skin Sensitizer • Acute toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (non-mandatory)
Gas Cylinder  <ul style="list-style-type: none"> • Gases under Pressure 	Corrosion  <ul style="list-style-type: none"> • Skin Corrosion/burns • Eye Damage 	Exploding Bomb  <ul style="list-style-type: none"> • Explosives • Self-Reactives • Organic Peroxides
Flame over Circle  <ul style="list-style-type: none"> • Oxidizers 	Environment (non-mandatory)  <ul style="list-style-type: none"> • Aquatic Toxicity 	Skull and Crossbones  <ul style="list-style-type: none"> • Acute Toxicity (fatal or toxic)

IV. RESPONSIBILITY

All questions or inquiries regarding the Plan or chemicals at your location should be directed to the Department Safety Representative.

This person is also responsible for:

- Maintaining a chemical inventory list
- Reviewing the potential hazards and safe use of chemicals
- Ensuring that all containers are labeled, tagged or marked properly
- Providing new-hire and annual training for employees
- Maintaining training records
- Properly selecting personal protective equipment
- Directing the cleanup and disposal operations of the spill control team
- Identifying hazardous chemicals used in non-routine tasks and assessing their risks
- Informing outside contractors who are performing work on company property about potential hazards
- Reviewing the effectiveness of the hazard communication program and making sure that the program satisfies the requirements of all applicable federal, state or local hazard communication requirements

Employees are responsible for the following aspects of the hazard communication program:

- Identifying hazards before starting a job
- Reading container labels and SDSs
- Ensuring containers, including secondary containers, have labels identifying the chemical and the hazard.
- Notifying the supervisor of torn, damaged or illegible labels or of unlabeled containers
- Using controls and/or personal protective equipment provided by the company to minimize exposure
- Following company instructions and warnings pertaining to chemical handling and usage
- Properly caring for personal protective equipment, including proper use, routine care and cleaning, storage, and replacement
- Knowing and understanding the consequences associated with not following company policy concerning the safe handling and use of chemicals
- Participating in training

V. PROCEDURE

A. LABELS AND OTHER FORMS OF WARNING

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

- Product identifier
- Hazard 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 label containing the following information:

- Product identifier
- Hazard statement(s)
- Precautionary statement(s)

Portable containers into which hazardous chemicals are transferred from labeled containers and that are intended for the immediate use of the employee who performs the transfer do not require a label. If the portable container will be used by more than one employee or used over the course of more than one shift, the container must be labeled. Food and beverage containers should never be used for chemical storage.

Signs, placards, process sheets, batch tickets, operating procedures or other such written materials may be used in lieu of affixing labels to individual, stationary process containers as long as the alternative method identifies the containers to which it is applicable and conveys the information required for workplace labeling.

Where an area may have a hazardous chemical in the atmosphere (e.g., where extensive welding occurs), the entire area will be labeled with a warning placard.

Pipes that contain hazardous chemicals should be labeled in accordance with ANSI/ASME A13.1 and indicate the direction of flow. (Please note that this not a requirement of the OSHA HCS but a best practice or requirement of local jurisdiction.)

Workplace labels or other forms of warning will be legible, in English and prominently displayed on the container or readily available in the work area throughout each work shift. If employees speak languages other than English, the information in the other language(s) may be added to the material presented as long as the information is presented in English as well.

B. SAFETY DATA SHEETS

Safety Data Sheets (SDSs) will be obtained and maintained for each hazardous chemical in the workplace. SDSs for each hazardous chemical will be readily accessible during each work shift to employees when they are in their work areas.

SDSs will be obtained from the chemical manufacturer, importer or distributor. The name on the SDS will be the same as that listed on the chemical inventory list. SDSs for chemicals or process streams produced by the company will be developed and provided by the safety coordinator.

Hazard Communication Safety Data Sheets

The Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, or importers to provide Safety Data Sheets (SDSs) (formerly known as Material Safety Data Sheets or MSDSs) to communicate the hazards of hazardous chemical products. As of June 1, 2015, new SDSs are to be in a uniform format, and include the section numbers, the headings, and associated information under the headings below:

Section 1. Identification includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.

Section 2. Hazard(s) identification includes all hazards regarding the chemical; required label elements.

Section 3. Composition/information on ingredients includes information on chemical ingredients; trade secret claims.

Section 4. First-aid measures includes important symptoms/effects, acute, delayed; required treatment.

Section 5. Fire-fighting measures lists suitable extinguishing techniques, equipment; chemical hazards from fire.

Section 6. Accidental release measures lists emergency procedures; protective equipment; proper methods of containment and cleanup.

Section 7. Handling and storage lists precautions for safe handling and storage, including incompatibilities.

Section 8. Exposure controls/personal protection lists OSHA's Permissible Exposure Limits (PELs); Threshold Limit Values (TLVs); appropriate engineering controls; personal protective equipment (PPE).

Section 9. Physical and chemical properties lists the chemical's characteristics.

Section 10. Stability and reactivity lists chemical stability and possibility of hazardous

reactions.

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

*Section 12, Ecological information**

*Section 13, Disposal considerations**

*Section 14, Transport information**

*Section 15, Regulatory information**

Section 16, Other information, includes the date of preparation or last revision.

C. EMPLOYEE INFORMATION AND TRAINING

Employees included in the hazard communication program will receive the following information and training prior to exposure to hazardous chemicals and when new chemical hazards are introduced to their work area:

- Requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200 (General Industry) or 29 CFR 1926.59 (Construction Industry)
- Operations in the work area where hazardous chemicals are present
- Location and availability of the hazard communication program, chemical inventory list and SDSs
- Methods and observations used to detect the presence or release of a hazardous chemical in the work area, such as monitoring devices, visual appearance or odor of hazardous chemicals when being released
- Physical, health, simple asphyxiation, combustible dust and pyrophoric gas hazards, as well as hazards not otherwise classified of the chemicals in the work area
- Measures employees can take to protect themselves from hazards, such as appropriate controls, work practices, emergency and spill cleanup procedures, and personal protective equipment to be used
- Explanation of the labels received on shipped containers
- Explanation of the workplace labeling system
- Explanation of the SDS, including order of information and how employees can obtain and use the appropriate hazard information

D. NON-ROUTINE TASKS

The safety coordinator and the immediate supervisor of an employee performing a non-routine task, such as cleaning machinery and other process equipment, are responsible for ensuring that adequate training has been provided to the employee on any hazards associated with the non-routine task. Employees share in this responsibility by ensuring that their immediate supervisor knows that the non-routine task will be performed.

Special work permits are required for the performance of certain non-routine tasks, such as entry to confined spaces, breaking and opening piping systems, and welding and burning. For some special tasks, employees are required to follow special lockout/tagout procedures to ensure that all machinery motion has stopped, and energy sources are isolated prior to and

during the performance of such tasks.

E. CONTRACTORS

Prior to beginning work, the project/site manager will inform contractors with employees working on company property of any hazardous chemicals that the contractors' employees may be exposed to while performing their work. The project/site manager will also inform contractors of engineering or work practice control measures to be employed by the contractor, personal protective equipment to be worn by the contractors' employees, and any other precautionary measures that need to be taken to protect their employees during the workplace's normal operating conditions and in foreseeable emergencies.

Furthermore, the project/site manager will advise contractors that they must comply with all OSHA standards while working on company property. Appropriate controls will be established with the contractor to ensure that company employees are not exposed to safety and health hazards from work being performed by the contractor and that company operations do not expose contractors' employees to hazards.

The project/site manager will inform contractors of the workplace labeling system and the availability and location of SDSs for any chemical to which contractors' employees may be exposed while performing their work.

F. RECORDKEEPING

Records pertaining to the hazard communication program will be maintained by the Department Safety Representative. The Department Safety Representative will keep the following records:

- Chemical inventory list
- Safety Data Sheets
- Employee training records
- Warnings issued to employees for not following the hazard communication program

VI. REFERENCES

Attachment 1 – List of Hazardous Chemicals

ATTACHMENT1 - LIST OF HAZARDOUS CHEMICALS

Date of Preparation: _____

Completed By: _____

Chemical Name	Common Name if Different	Used by which Contractor or Subcontractor	MSDS/SDS obtained Yes or No

SECTION 22: Exposure Control Plan for Work at Hospitals and Other Medical Facilities

I. PURPOSE

The purpose of this exposure control plan is to eliminate or minimize employee occupational exposure to blood or other infectious materials that may contain bloodborne pathogens.

Note: Exposure control guidelines for employees administering first aid can be found in the Section "Emergency & First Aid Medical Services".

II. SCOPE

This plan applies to all work that involves direct contact with existing plumbing and regulated waste handling systems at hospitals and other medical facilities except where superseded by more stringent local standard or client requirements.

III. GENERAL

In the course of performing work that involves direct contact with existing plumbing and regulated waste handling systems at hospitals and other medical facilities, employees could be exposed to blood or other infectious materials.

This exposure control plan must be utilized when work that involves direct contact with existing plumbing and regulated waste handling systems is performed at hospitals and other medical facilities.

IV. DEFINITIONS

Blood - Means human blood, human blood components, and products made from human blood.

Bloodborne Pathogen - Pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

Contaminated - The presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

Decontamination - The use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.

Exposure Incident - A specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties.

Hepatitis B - Hepatitis B is the most common serious liver infection in the world. The hepatitis B virus (HBV) that attacks the liver causes it. The virus is transmitted through blood and bodily fluids that contain blood.

Occupational Exposure - Reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

Parenteral - Piercing mucous membranes or the skin barrier through such events as needlesticks, human bites, cuts, and abrasions.

Regulated Waste - Liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.

Sharps - A non-needle sharp or a needle device used for withdrawing body fluids, accessing a vein or artery, or administering medications or other fluids. Examples of sharps include syringes and intravenous needles.

Universal Precautions - An approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.

V. RESPONSIBILITY

A. RESPONSIBLE MANAGER/SUPERVISOR/FOREMAN

The Responsible Manager/Supervisor/Foreman shall ensure that employees comply with the provisions of this plan.

B. EMPLOYEES

Employees shall comply with the provisions of this plan and exercise constant awareness of potential exposure when performing work that involves direct contact with existing plumbing and regulated waste handling systems in hospitals and other medical facilities.

C. DEPARTMENT SAFETY REPRESENTATIVE

The Department Safety Representative shall monitor the use of this guideline to assure compliance and understanding by employees. The Department Safety Representative shall also provide guidance in implementation of this plan.

VI. PROCEDURE

A. OCCUPATIONAL EXPOSURE DETERMINATION

Employees

The work of plumbers, pipe fitters, welders, sheet metal workers, helpers, laborers, apprentices, and foreman may on occasion involve direct contact with existing plumbing and regulated waste handling systems at hospitals and other medical facilities. Not all employees of a particular category can reasonably be expected to perform such work however. Therefore, the department manager and Department Safety Representative shall make a determination of which employees at their operating company can reasonably be expected to perform work that involves direct contact with existing plumbing and regulated waste systems at hospitals and other medical facilities. The employees identified will be considered as having occupational exposure and therefore should receive exposure control training and be offered the Hepatitis B vaccine series at no cost to the employee.

Tasks

Tasks that involve direct contact with existing plumbing and regulated waste handling systems at hospitals or other medical facilities such as laboratories and clinics have been identified as having a potential for occupational exposure to blood and other infectious materials. These tasks include the following:

- Installation of fixtures on existing plumbing and regulated waste handling systems
- Line breaks on existing plumbing and regulated waste handling systems
- Removal of fixtures on existing plumbing and regulated waste handling systems

B. UNIVERSAL PRECAUTIONS

All human blood and potentially infectious materials will be considered to be infectious for bloodborne pathogens regardless of the perceived status of the source or individual.

C. ENGINEERING CONTROLS AND WORK PRACTICES

Engineering and work practice controls will be utilized to eliminate or minimize exposure to employees. The following engineering and work practice controls will be utilized:

Hygiene & Sanitation

- After removal of personal protective gloves, employees shall wash hands and any other potentially contaminated skin area IMMEDIATELY or soon as feasibly possible with soap and water.
- Where practical, the area and equipment to be serviced will be cleaned and decontaminated by the facility owner prior to starting work activities.
- Hand washing facilities will be accessible to employees.
- The use of hand sanitizing products in addition to hand washing is encouraged.
- Employees that encounter any waste or other material that they know or expect to contain

human blood or other infectious materials should stop work and notify the facility owner immediately.

- The use of disposable coveralls is encouraged to minimize soiling of clothing.
- All personal protective equipment will be removed prior to leaving the work area for the end of shift, breaks, and meals.

Tools & Equipment

- All tools and equipment used in work that involves direct contact with existing plumbing and regulated waste handling systems in hospitals or other medical facilities will be disinfected after use. The following procedure will be used:
 1. While wearing required personal protective equipment, such as safety glasses and latex gloves, tools and equipment will be placed in same proximity.
 2. Disinfect the tools or equipment on either of these two methods:
 - Apply Lysol or other EPA-registered disinfectant to the tools or equipment. Ensure the disinfectant is applied to all sides of the tool or equipment.
 - Soak the tools or equipment in a 10% (minimum) solution of chlorine bleach for 10 minutes.
- Tools and equipment will not be placed back into boxes or cases until they have been disinfected.

Work Area Restrictions

In work areas where there is a reasonable likelihood of exposure to blood or other potentially infectious material, employees are not to eat, drink, apply cosmetics or lip balm, smoke, or handle contact lenses. Food and beverages are not to be kept in refrigerators, freezers, shelves, cabinets, or on counter tops where blood or other potentially infectious materials are present.

Housekeeping

All work areas and equipment will be maintained in a clean and sanitary condition. Work activities will stop if blood or other potentially infectious materials is identified. Work will not commence until cleaning and decontamination has been completed.

Contaminated Laundry or Clothing

All laundry or clothing contaminated with blood or other potentially infectious material will be disposed of in a regulated waste container.

D. PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment will be provided without cost to employees. Personal protective equipment will be chosen based on the anticipated exposure to blood or other potentially infectious materials.

The protective equipment will be considered appropriate only if it does not permit blood or other potentially infectious materials to pass through or reach the employees' clothing, skin, eyes, mouth, or other mucous membranes under normal conditions of use.

Protective clothing will be distributed to employees by their immediate supervisor. An adequate supply of personal protective equipment will be maintained at the office or work location.

Personal protective equipment used in the elimination or minimization of exposure will include but not be limited to the following:

- Impervious gloves
- Face shields
- Safety glasses
- Goggles
- Aprons
- Disposable coveralls

Employees are expected to utilize personal protective equipment in occupational exposure situations.

E. HEPATITIS B VACCINE

Those employees identified as having occupational exposure, due to their work involving direct contact with existing plumbing and regulated waste handling systems at hospitals or other medical facilities, will be offered the Hepatitis B vaccine series. The vaccine will be offered within 10 working days of an employee being identified as having potential for occupational exposure to blood or other potentially infectious materials. The vaccine will be provided at no cost to the employee.

- The vaccination shall be administered only after the identified employee has had training as outlined in this procedure.
- All employees who are offered the Hepatitis B vaccine must read and sign a Consent or Rejection Form that indicates their choice in regard to receiving the vaccination.
- Employees who initially decline the vaccine but who later wish to have it may then have the vaccine provided at no cost to the employee.
- The Department Safety Representative shall ensure that the vaccine is offered, and related paperwork is completed and filed.
- The Hepatitis B vaccine series will be administered by a local clinic or licensed physician.

F. EXPOSURE INCIDENTS

Should an exposure incident occur, the following procedure MUST be followed:

- Flush the exposed area with water for 15 minutes.
- The Department Safety Representative shall be notified immediately of the incident and shall:
 - Record the information related to the exposure incident and the exposed employee.
 - Verify that the employee has been directed to seek medical attention.
 - Notify the appropriate management personnel of the incident.
- The supervisor of the exposed employee must complete an Exposure Incident Report Form and forward it to the Department Safety Representative, department leaders, and the Company's Workers Compensation Representative.
- The employee shall be directed to seek immediate medical attention from a licensed

physician. The Company's Workers Compensation Representative shall supply the physician with the following:

- A description of the employee's duties as they relate to the exposure incident.
 - The exact nature of the accident, including the route of exposure and the circumstances under which the exposure incident occurred.
 - All medical records relevant to the appropriate treatment of the employee.
- After obtaining the employee's consent, the physician shall obtain appropriate HBV and HIV serologic baseline studies on the exposed employee.
- The employee's personnel file shall be annotated to indicate the name and address of the evaluating physician.
- If the employee has any questions concerning these results and/or treatment, the employee shall be instructed to direct such questions to his/her treating physician.
- All medical records will be kept confidential.

G. POST-EXPOSURE EVALUATION & FOLLOW-UP

All employees who incur an exposure incident will be offered post-exposure evaluation and follow-up in accordance with the OSHA standard.

This follow-up will include the following:

- Documentation of the route of exposure and the circumstances related to the incident.
- Results of testing of exposed employee or source material.
- The employee will be offered the option of having their blood collected for testing of the employee HIV/HBV serological status.
- The employee will be offered post exposure prophylaxis in accordance with the current recommendations of the U.S. Public Health Service.
- The employee will be given appropriate counseling concerning precautions to take during the period after the exposure incident. The employee will also be given information on what potential illnesses to be alert for and to report any related experiences to appropriate personnel.
- The Department Safety Representative has been designated to assure that the policy outlined here is effectively carried out as well as to maintain records related to this policy.

H. TRAINING

Training for employees identified as having occupational exposure will be conducted prior to initial assignment to tasks where occupational exposure may occur.

The training will be documented.

I. RECORDKEEPING

All records required by the OSHA Bloodborne Pathogen standard will be managed and maintained by the Department Safety Representative.

VII. REFERENCES

Refer to Section "Emergency & First Aid Medical Services" to access the following:

- Attachment 1 - Hepatitis B Vaccine Information/Consent or Rejection Form
- Attachment 2 - Exposure Incident Investigation Form
- Attachment 3 - Physician's Opinion

SECTION 23: Hot Work Procedure - Welding & Cutting

I. PURPOSE

This guideline is intended to minimize potential hazards created by sources of ignition while working in areas where the potential for fire or explosion exist.

II. DEFINITIONS

Hot work - Any work or the operation of any equipment that may create a source of ignition such as, but not limited to:

- Electric or gas welding.
- Gas cutting torch, gas torch soldering, brazing.
- High speed grinding with abrasive disk (electric or pneumatic).
- Sandblasting on tanks or equipment that have a vapor space and are in service or have not been cleared of flammable or combustible materials.
- Any use of open flame.

Note: If you are unsure if the work you are doing is hot work, contact the Department Safety Representative to help you make a determination.

Fire watch - The person(s) required to stand by and watch for and prevent situations that might develop into fires or other hazardous conditions during the course of and immediately after hot work activities. The fire watch is also required to attempt to extinguish fires that are in their incipient stages.

III. PROCEDURE

A. HOT WORK OPERATIONS

All hot work operations performed in areas where the potential for fire or explosion exist may require the following:

- A hot work permit that authorizes hot work operations. The permit must be specific in the scope of work authorized and precautions to be taken to prevent fire and explosion.
- A gas test must be performed on the equipment and area that will be exposed to hot work to determine that explosive gases/vapors are not present.
- At a minimum, one Class ABC 20-pound dry chemical fire extinguisher, sealed, fully charged and inspected, must be present at the site where hot work will occur.
- All drains, trenches, vents, and sewer openings in the area of the hot work will be covered with fire retardant material to prevent sparks/slag from entering them and to prevent the escape of explosive gases or vapors from the sewer.
- Flammable/combustible materials such as wood, cloth, and paper must be removed from the work area or protected.
- A fire watch must be provided to monitor hot slag, sparks, and other fire hazards of the job.
- The equipment to be exposed to hot work must be properly isolated and cleared.

- Spark containment fire blankets must be used as needed or required.
- A fire watch shall remain at the location of hot work activities for one half-hour after hot work activities stop.

B. ARC WELDING SAFETY

Arc welding safety rules consist of the following:

- Make sure your welding equipment is installed properly and grounded and in good working condition.
- Always wear protective clothing suitable for welding.
- Always wear proper eye protection when welding or cutting.
- Keep your work area clean and free of hazards. Make sure that no flammable, volatile or explosive materials are in or near the work area.
- Handle all compressed gas cylinders with extreme care. Replace protective caps when the cylinder is not in use.
- Make sure that compressed gas cylinders are secured to the equipment carriage, wall or other structural supports.
- When compressed gas cylinders are empty, close the valve, install the cap, and return to correct bottle storage area.
- Do not weld in confined spaces without special precautions and/or supervisor's authorization.
- Do not weld on containers that have held combustibles without special precautions and/or supervisor's authorization.
- Use mechanical exhaust at the point of welding when welding lead, cadmium, chromium, manganese, brass, bronze, zinc or galvanized metals.
- Make sure all electrical connections are tight and insulated. Do not use cables with frayed, cracked or bare spots in the insulation.
- When the electrode holder or welding torch is not in use, hang it on brackets provided.
- Never let it touch a compressed gas cylinder.
- Dispose of electrode and wire stubs in proper container since stubs and rods on the floor are a safety hazard.
- Use weld curtains to shield others from the light rays produced by your arc.
- When using water-cooled equipment, check for water leaks.
- Make sure all compressed gas connections are tight and check for leaks. Do not use hoses that are frayed or cracked.
- Keep your leads orderly and out of walkways. Suspend them whenever possible.
- Do not weld if your leads or machine is in or near water.
- Make sure a portable fire extinguisher is nearby.
- Once you remove your welding helmet, put on safety glasses.

C. OXY-FUEL CUTTING AND WELDING SAFETY

Oxy-fuel cutting and welding safety rules consist of the following:

- Make sure that all of your gas welding equipment is installed properly and is in good

working condition. Make sure that all connections are tight before lighting the torch. Do not use the flame to inspect for tight joints. Use soap solution to detect leaks.

- Always wear protective clothing suitable for welding, brazing, soldering or flame cutting.
- Always wear proper eye protection when welding, brazing, soldering or flame cutting.
- Keep your work area clean and free of hazards. Flame cutting sparks can travel 30–40 feet. Do not allow flame cut sparks to hit hoses, regulators or cylinders.
- Handle all compressed gas cylinders with extreme care. Keep caps on when not in use.
- Make sure that compressed gas cylinders are secured to the equipment carriage, wall or other structural supports.
- Store compressed gas cylinders in a safe place with good ventilation. Acetylene cylinders and oxygen cylinders should be kept at least 20 feet apart.
- When compressed gas cylinders or fuel gas cylinders are empty, close the valve, install the cap, and return to correct bottle storage area.
- Use oxygen, acetylene or other fuel gases with only the appropriate torches and tips.
- Oxygen should not be used for 'AIR' in any way.
- Never use acetylene at a pressure in excess of 15 pounds per square inch. Higher pressure can cause an explosion.
- Never use oil, grease or any other material on any apparatus or thread fitting in the oxyacetylene or oxyfuel gas system. Oil and grease in contact with oxygen will cause spontaneous combustion.
- Do not turn valve tee handle using excessive force.
- When assembling apparatus, crack gas cylinder valve before attaching regulators. This blows out accumulated foreign material. Make sure all threaded fittings are clean and tight.
- Always use the correct sequence and technique for assembling and lighting the torch.
- Always use the correct sequence and technique for shutting off a torch.
- Use mechanical exhaust at the point of welding when welding lead, cadmium, chromium, manganese, brass, bronze, zinc or galvanized metals.
- Do not weld in confined spaces without special precautions and/or supervisor's authorization and a confined space permit.
- Do not weld on containers that have held combustibles without special precautions and/or supervisor's authorization.
- Use weld curtains to shield others from the light rays produced by your gas welding.

D. RESISTANCE WELDING SAFETY

Resistance welding safety rules consist of the following:

- Make sure your resistance welding equipment is installed properly, grounded and in good working condition.
- Always wear protective clothing suitable for welding.
- Always wear proper eye and hand protection when operating the welding equipment.
- Keep your work area clean and free of hazards.
- Keep your fingers and hands clear of electrodes.
- Do not touch the weld spot until it has had time to cool.

- Position weld screens to protect.

IV. REFERENCES

Attachment 1 - Hot Work Permit

ATTACHMENT 1 - HOT WORK PERMIT

Permit #: _____

Issued to _____ To perform work in area _____

On equipment _____ Work description _____

*Date _____ *Permit valid from _____ to _____

Revalidation Date _____ Time _____ to _____

Revalidation Authorization: _____

*Permit valid only for the date and time stated. Revalidation good for one shift or 12 hours.

	Yes	No/NA	Initials
1. Is the equipment properly isolated or blinded?	<input type="checkbox"/>	<input type="checkbox"/>	_____
2. Is the equipment depressurized and drained?	<input type="checkbox"/>	<input type="checkbox"/>	_____
3. Has equipment been steamed or flushed?	<input type="checkbox"/>	<input type="checkbox"/>	_____
4. Is equipment free of flammables?	<input type="checkbox"/>	<input type="checkbox"/>	_____
5. Have sewers been covered?	<input type="checkbox"/>	<input type="checkbox"/>	_____
6. Have all combustible materials been moved from area?	<input type="checkbox"/>	<input type="checkbox"/>	_____
7. Is fire extinguisher available?	<input type="checkbox"/>	<input type="checkbox"/>	_____
8. Is the firewatch required and assigned?	<input type="checkbox"/>	<input type="checkbox"/>	_____
9. Has toxicity of hazardous atmospheres been tested for?	<input type="checkbox"/>	<input type="checkbox"/>	_____

10. Special instructions to be followed are: _____

The following protective equipment is required but not restricted to: _____

Explosimeter test results _____ % LEL (Reading must be 10% LEL or lower). If above 10% LEL, management must approve and sign the permit.

Firewatch: _____
(Full name- No initials)

Permit issued to: _____
(Full name- No initials)

Permit issued by: _____
(Full name- No initials)

Permit is canceled in the event of fire or gas release and must then be revalidated before work resumes.

SECTION 24: Ladder Safety

I. PURPOSE

This guideline establishes the requirements to be followed to prevent injury from improper use of ladders by Company personnel.

II. GENERAL

Ladders are used for many purposes. This guideline outlines terminology and responsibilities and reviews basic principles to ensure safety and efficiency when using ladders.

III. DEFINITIONS

Extension (trestle) ladder - A portable ladder that is adjustable in length and has a suitable means for locking the ladder sections together.

Job-built ladder - A ladder that is fabricated at the facility and not manufactured.

Stepladder - A self-supporting, foldable ladder that is not adjustable in length.

Straight ladder - A non-adjustable ladder.

IV. PROCEDURE

A. GENERAL GUIDELINES

General Guidelines to be followed when using ladders:

- Defective or damaged ladders shall not be used. Before each use, ladders shall be inspected for the following:
 - Missing non-skid feet
 - Worn or frayed ropes
 - Cracks in sides or rungs
 - Missing rivets or other fasteners
 - Bent or missing spreaders
 - Bowed or distorted members
 - Loose rungs
 - Any condition that could cause a safety problem
- Ladders shall not be painted, as paint can hide damage to the ladder and defects in the materials of construction.
- The correct type of ladder shall be selected for the job. Only fiberglass ladders shall be used at electricity generating facilities. Only non-conductive ladders shall be used for work involving electricity or the use of electrically powered tools.
- Ladders shall be secured by tying the top or bottom rung to a fixed structure that will support more than the anticipated total load of the ladder. Ensure that an adequate slope is maintained where the base is placed at least 1/4 the length of the ladder away from the

supporting structure.

- The feet of the ladder shall be placed securely on the ground or work floor and not on other objects in an attempt to extend the reach of a ladder.
- Ladders shall not be lengthened by splicing additional sections to it.
- Always face a ladder while ascending or descending it.
- Ladders shall be positioned so that work can be performed without leaning and shall be moved as work progresses.
- Ladders shall not be placed near power lines or against movable objects or vehicles.
- Ladders shall not be placed in front of doors that open toward the ladder unless the door is locked in the open position, locked shut or guarded by another employee. If the door is locked shut because of ladder work, post the locked door with a “DO NOT OPEN—WORK IN PROGRESS” (or similar sign).
- Unattended step or straight ladders shall not be left standing but should be closed, lowered to the ground and placed where they do not present tripping hazards.
- The area around the base and top of the ladder shall be kept free of tripping hazards and barricaded if the base or top projects into a passageway.
- Ensure that shoes are free of mud, oil or grease before ascending or descending a ladder. Ladder rungs shall be cleaned immediately if they become soiled to reduce slipping hazards.
- Workers shall use a tool pouch or raise or lower materials using a line or line and bucket rather than carrying them while ascending or descending a ladder.
- Only one employee shall work from a ladder at a time so that the design load capacity of the ladder is not exceeded.
- Every excavation, bell hole or trench that is more than 4 feet deep shall have a ladder (or ladders) that extends at least 3 feet above the ground surface that is placed so that personnel shall not travel more than 25 feet to get to a ladder.
- Employees should tie off the top of the ladder when using it to enter a roof access.
- Do not overextend sideways. Use the belt buckle rule: keep your belt buckle positioned between the side rails at all times, which will maintain your center of gravity.
- Employees should maintain 3 points of contact at all times when utilizing ladders.
- Employees should watch carefully for the last step before stepping off a ladder.

B. STEPLADDERS

Stepladders that wobble shall be removed from use, marked “DO NOT USE—DEFECTIVE” (or similar sign) and repaired (if possible) or replaced. The following precautions shall be taken when using stepladders:

- Spreaders shall be fully opened and locked before using the ladder.
- The top step of a stepladder shall never be used. Rather, use a longer stepladder, a longer straight ladder or another method of reaching the work.
- Tools or materials shall not be left on the top shelf of a stepladder but shall be removed before descending a ladder and/or moving it.

C. STRAIGHT LADDERS

Straight Ladders shall be leaned against the structure being climbed so that the distance from the ladder's feet to the base of the structure is one-fourth ($1/4$) the distance along the ladder's length to its upper contact point with the structure in order to assure a safe slope. Easy Method: Count the ladder rungs from the feet to the point of contact and divide by four (4)—the feet of the ladder should be that many feet from the structure base. In addition, the following precautions shall be taken when using straight ladders:

- At least three (3) feet of ladder should extend above the upper point of contact with the structure being climbed.
- Use a ladder that is the length needed. Never work from the top two rungs of a straight ladder.
- When either the length or the weight of a ladder makes it difficult to handle, two people shall raise and secure the ladder. One should secure the feet while the other walks under the ladder from the opposite end until it is raised enough to place or move. Raise the extension, if needed. Reverse the process for lowering the ladder.
- When the ladder extends more than 4 feet above the top tie-off, a barrier or flag shall be placed on the ladder to prevent personnel from climbing beyond a safe point.

D. EXTENSION LADDERS

Extension Ladders shall be equipped with necessary irons, locks and hooks and shall be assembled so the sliding (upper) section is on top of the base (lower) section. In addition, extension ladder sections should overlap at least 3 feet. If the ladder extends more than 4 feet above the top tie-off, a barrier or flag shall be placed on the ladder to prevent personnel from climbing beyond a safe point.

When either the length or the weight of a ladder makes it difficult to handle, two people should raise and secure the ladder. One should secure the feet while the other walks under the ladder from the opposite end until it is raised enough to place or move. Raise the extension, if needed. Reverse the process for lowering the ladder.

E. STORING LADDERS

When Storing Ladders, take the following precautions:

- Support ladders stored or hung horizontally in a sufficient number of places to prevent sagging and permanent set.
- Tie together or otherwise secure ladders that are stored vertically to keep them from falling into aisles or equipment.
- Wood ladders shall not be stored near radiators, stoves or other heat sources that could dry the wood and cause deterioration.
- Wood ladders shall not be stored near steam lines or other placed where they are kept wet or damp enough to rot the wood.
- Ladders shall be cleaned after every use before being returned to storage. All mud, oil and grease shall be removed.

F. FIXED LADDERS

Fixed Ladders more than 20 feet high shall be caged unless other fall prevention safety devices are installed and used. Fixed ladders with cages exceeding 20 feet in height shall have landing platforms installed every 30 feet. Fixed ladders should be securely attached to an immovable structure and attachments shall be inspected annually for signs of deterioration or detachment. Repairs shall be made immediately.

G. SECURING LADDERS

Ladders that are stored vertically shall be tied together or otherwise secure to keep them from falling into aisles or equipment. All ladders that are not self-supporting shall have an adequate tie-off rope securely attached to the top section of the ladder and to the fixed structure at all times. Have a co-worker hold the ladder in place when the ladder cannot be tied off at the top, when the feet are on a slanting or slippery surface or when the ladder feet cannot be placed between 1/4 and 1/3 of the length away from the structure.

H. INSPECTIONS

Ladders shall be kept in good condition at all times and shall be inspected before each use. Regular inspections help ensure that ladders are safe to use. Ladders found to have defects shall be removed from service for repair or destruction and tagged or marked "DANGER—DO NOT USE". Proper ladder inspection includes the following steps:

- Ensure that there are no broken or missing steps or rungs, broken or split side rails or other defects.
- Ensure that the connections between the rungs and side rails are not loose.
- Ladders that have fallen or been misused shall be checked for excessive dents or damage.
- Ensure that tie-off rope is attached and in good condition.
- Ensure that the spreaders and locking mechanism on stepladders are in good condition.
- Ensure that hinges move easily and are in good condition.

I. TRAINING

All employees using ladders shall be trained in safe ladder use.

J. RECORDKEEPING

The most recent of employee training records shall be retained for the duration of employment.

SECTION 25: Lockout/Tagout - Energy Isolation

I. PURPOSE

This guideline establishes the requirements to be followed to ensure that employees performing maintenance, testing or servicing equipment are fully protected from unexpected energizing, startup or release of stored energy that could cause injury.

II. GENERAL

This guideline is intended to prevent accidents and injuries due to the unexpected release of energy. This guideline outlines terminology and responsibilities and reviews basic principles to ensure safety and efficiency.

III. DEFINITIONS

Affected employee - An employee whose job requires him/her to operate or use a machine or equipment on which servicing, or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

Authorized employee - A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance

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

Energy isolating device - A mechanical device that physically prevents the transmission or release of energy including but not limited to the following:

- Manual electrical circuit breaker
- Disconnect switch
- Switch disconnecting the conductors of a circuit from all ungrounded supply conductors (and no pole can be operated independently)
- Slide gate
- Blind flange
- Line valve
- Block/blind or other device
- Any similar device used to block or isolate energy sources

Lockout - The placement of a lock or a lock-out device on an energy isolating device according to an established procedure to ensure that the energy isolating device and the equipment being controlled cannot be operated intentionally or accidentally.

Lockout device - A device that utilizes a keyed lock to hold an energy isolating device in the safe

position and prevent unsafe energizing of the equipment.

IV. RESPONSIBILITY

A. RESPONSIBLE MANAGER/SUPERVISOR

The Responsible Manager/Supervisor shall ensure that this guideline is fully implemented and lockout/tagout procedures are followed.

B. EMPLOYEES

Employees shall have a full understanding of the energy isolating devices in use. Employees shall not work on equipment that he or she has not personally locked out with his or her own keyed lock and shall never remove a lock placed by others.

C. DEPARTMENT SAFETY REPRESENTATIVE

The Department Safety Representative shall train employees on the lockout/tagout safeguard procedures to ensure the safety of employees. The Department Safety Representative shall ensure that lockout/tagout procedures are implemented and that necessary supplies and equipment are available.

V. PROCEDURE

A. EQUIPMENT REQUIREMENTS

Equipment Requirements are as follows:

- Equipment shall be locked with personally assigned locks, group locks that hold several personally assigned locks or a lock box system (box holding the key to the single lock on the equipment and secured close by several personally assigned locks).
- A lock must be used if the energy-isolating device can physically be held in the safe position by a lock.
- Each lock shall have only one key and shall be clearly identified as the property of the specific employee.
- If an energy-isolating device cannot physically be locked out with a lock, a tag may be used only if used in conjunction with an additional control such as disconnect or in clear view of personnel performing work.

B. PREPARATION FOR SHUTDOWN

The equipment owner or his representative shall approve shutdown of equipment. The person shutting down the equipment must have a complete understanding of the equipment or system and the energy sources involved. All energy isolating devices shall be identified, and the equipment needed to lock out these devices shall be determined and collected. All remote, emergency, timed and automatic override controls shall be identified and included in the lockout.

C. SHUTDOWN REMOVING EQUIPMENT FROM SERVICE

All affected employees shall be made aware of the shutdown. Before lockout begins, equipment or system shall be shut down in an orderly manner.

D. ISOLATION

Locate, isolate or relieve all stored energy such as air pressure, springs, hydraulic systems and similar residual energy sources. Ensure isolation from all process and utility lines. Place all valves in a safe position, open drains and vents and perform other tasks necessary to de-energize the equipment or system.

E. LOCKOUT/TAGOUT

Before beginning work on the equipment or system, the following actions to verify lockout/tagout shall be taken:

- All energy isolating devices shall be set in the safe position and locked in position. Tags reading "DANGER - DO NOT OPERATE" shall be filled out and attached to each locked isolating device.
- Each person who will work on the equipment must apply his or her personal lock to each locked out isolating device or the lockout device in use.

F. VERIFICATION OF ISOLATION

Before beginning work on the equipment or system, the following actions to verify isolation shall be taken:

- The audit checklist in attachment 2 shall be completed.
- Ensure that personnel are at a safe distance from the equipment or system.
- Attempt to start the equipment or system. If the equipment does not start, return all controls to the "OFF" position. If the equipment starts, begin the process again from Preparation for Shutdown, locate the energy source that is not isolated and isolate it. Continue through the steps until the equipment does not start.
- The equipment or system is now locked out.
- Notify affected employees that the lockout is complete.
- Review all energy isolation device locations and the work to be performed with all members of the team before beginning work.

G. REMOVING LOCKS AND TAGS TO RETURN EQUIPMENT TO SERVICE

After the planned work has been completed, the following actions to safely return the equipment to service shall be taken:

- Inspect the area to ensure that non-essential items and all waste and debris have been removed and the equipment or system components are intact.
- Ensure that all machine safety guards have been replaced.
- Ensure that all members of the team have been notified that the work has been completed and the locks have been removed.

- When the person who applied the lock or tag is unavailable, another employee designated by the person responsible for administering the lockout/tagout program if the following conditions are met may remove it:
 - A reasonable attempt has been made to contact the person who applied devices.
 - A thorough inspection of the process has taken place.
 - The person who applied the devices is notified of the lockout/tagout release before he/she resumes work.
 - A thorough search of the work area for the exposed personnel is accomplished.

H. TESTING EQUIPMENT OR SYSTEM FOR RETURN TO SERVICE

Before returning equipment to service, testing shall be completed as follows:

- All work on the equipment or system shall have ceased before the lock owner removes each lock from all energy isolating devices. Lockout devices and tags shall be removed.
- The equipment or system is no longer locked out.
- The equipment or system may now be tested. Ensure that all employees are at a safe distance from the equipment or system and start the equipment or system to test proper operation. If no further work is required on the equipment or system, the lockout is complete. If further work is required, a complete lockout shall be reinitiated for the system or equipment to be worked on.
- When the equipment or system passes the test or when testing is not required, members of the team shall be notified that the work has been completed. The equipment owner shall be notified that the work has been completed and that the equipment or system is operational.
- The equipment or system has now been returned to service.

I. SHIFT OR PERSONNEL CHANGES

Specific procedures shall be utilized during shift or personnel changes to ensure the continuity of energy isolation, including provisions for orderly transfer of lockout devices between off-going and on-coming shifts or personnel.

- Off-going personnel shall brief on-coming personnel on progress relating to the locked out/tagged out equipment.
- Off-going personnel will remove their lockout device, to be replaced immediately by on-coming personnel's lockout device.
- These steps will continue with subsequent personnel/shift changes until adjustment or repair to the equipment is complete.

J. USE OF MULTIPLE LOCKOUT/TAGOUT PROCEDURES DURING PROJECT ACTIVITIES

When multiple lockout/tagout procedures are used during project activities the following shall be done:

- Each employer (e.g. Company, subcontractor, and customer) shall inform each other of their respective lockout/tagout procedures.
- Each employer (e.g. Company, subcontractor, and customer) shall ensure that his or her

employees understand and comply with the restrictions and prohibitions of each employer's lockout/tagout procedure.

K. USE OF CUSTOMER OR EQUIPMENT OWNER LOCKOUT/TAGOUT PROCEDURE DURING PROJECT ACTIVITIES

When it is determined that the customer's or equipment owner's lockout/tagout procedure will be used by all employers during project activities the following shall be done:

- Each employer (e.g. Company, and subcontractor) shall obtain a copy of the customer's or equipment owner's lockout/tagout procedure.
- Each employer (e.g. Company, and subcontractor) shall ensure that his or her employees, engaged in activities covered by the scope and application of the OSHA Lockout/Tagout standard, understand and comply with the customer's or equipment owner's lockout/tagout procedure.

L. ANNUAL PROGRAM REVIEW

The written lockout/tagout procedure shall be reviewed annually and all appropriate improvements to the program shall be made.

M. TRAINING

Authorized and affected employees shall be trained in lockout/tagout procedures. Employees shall be retrained whenever the following conditions exist:

- There is a change in equipment, machinery or systems
- The control procedures are changed
- The lockout/tagout procedures are revised
- The annual review reveals deficiencies in employees' knowledge or use of the procedure

N. RECORDS

The most recent of employee training records shall be retained for the duration of employment.

The lockout/tagout program shall be reviewed annually and retained at the facility until superseded plus one year.

VI. REFERENCES

A. CODE OF FEDERAL REGULATIONS

- 29 CFR 1910.147, The Control of Hazardous Energy (lockout/tagout).



Attachment 1 - Lockout Tag (front and back)

Attachment 2 - Lockout/Tagout Checklist (Audit Form)

Attachment 3 - Examples of Multi-lock Devices

ATTACHMENT1 - LOCKOUT TAG

EXAMPLE - LOCK OUT TAG

 DANGER DO NOT REMOVE THIS TAG Remarks: _____ _____ _____ _____ _____ _____ SEE OTHER SIDE	 DANGER DO NOT OPERATE CLEARANCE # _____ DATE _____ LOCATION _____ _____ _____ BY _____
---	--

ATTACHMENT 2 - LOCKOUT/TAGOUT CHECKLIST (AUDIT FORM)

	Yes/No	Comments
Shutdown/Isolation performed correctly?		
Locks/Tags applied where required?		
Tags initialed and dated?		
Locks designated for lockout program only?		
All energy sources: de-pressured, de-energized, drained?		
Testing completed to ensure isolated and de-energized?		
Employees demonstrate specific knowledge of the lock-out procedures?		
Is immediate retraining required?		

Names of employees participating in this lockout:

Name and location of machine, equipment, or system locked out.

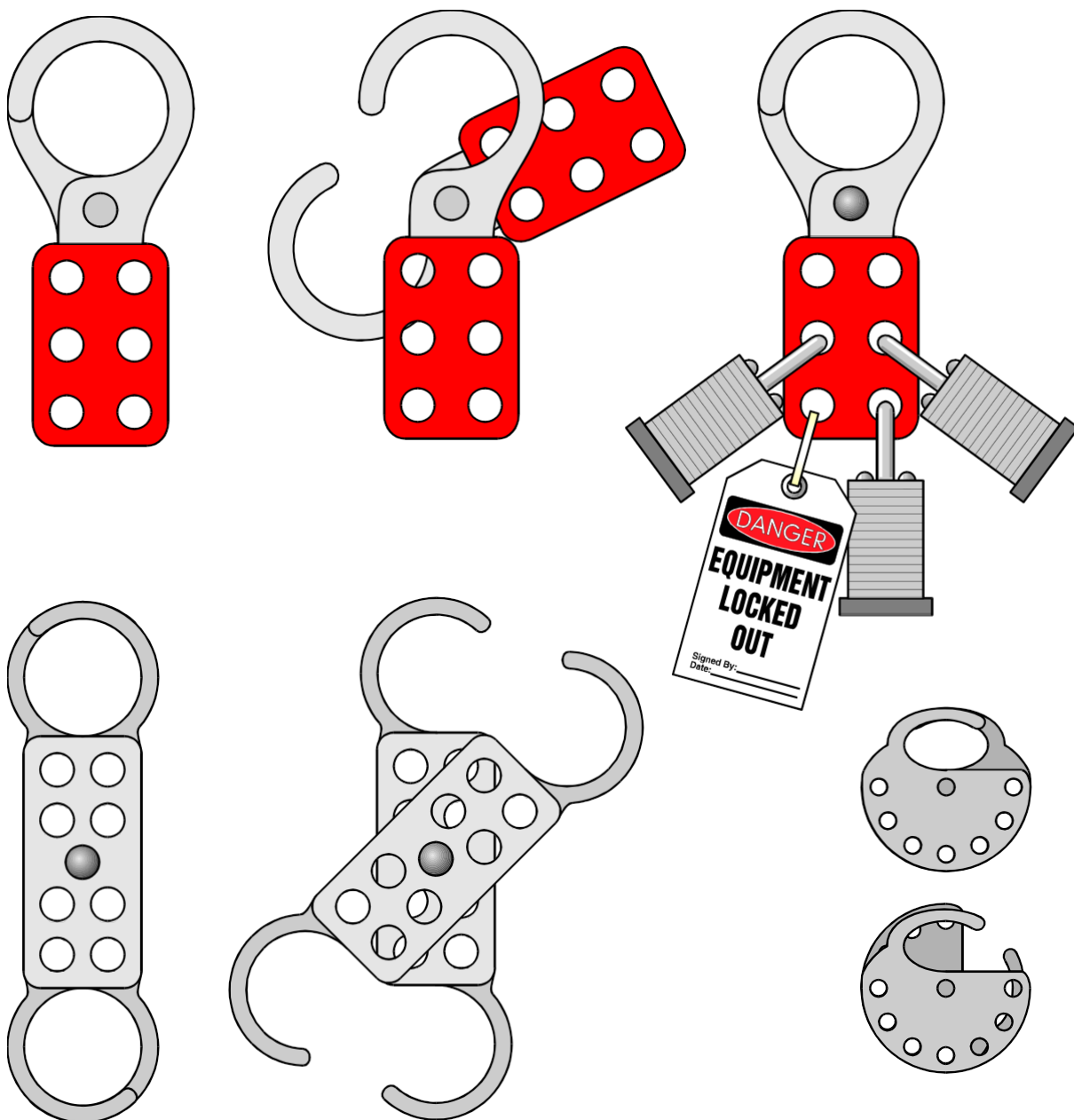
Reviewer's* signature

Date of review

It is recommended that a review of an actual lock and tag procedure should be conducted annually to verify the program is being complied with and employees can demonstrate that the training they receive is adequate. Any deviation or inadequacy found must be corrected through immediate retraining.

* Reviewer will be designated by the Corporate Safety Committee and not involved in the lockout under review.

ATTACHMENT 3 - EXAMPLES OF MULTILOCK DEVICES



SECTION 26: Office Ergonomics

I. PURPOSE

This guideline provides information that will help prevent office-related injuries resulting from improper body position.

II. DEFINITIONS

Backrest - a properly adjusted backrest reduces pressure on your spine and supports your lower back.

Chair height - the correct chair height helps relieve cramping and stiffness in your neck and shoulders.

Display - correctly adjusting the height and viewing distance of your display can reduce eyestrain and muscle tension in your neck, shoulder, and upper back.

Keyboard - the proper keyboard height can help keep you from bending your wrists while typing. This improves the comfort of your hands, wrists, and forearms, and helps you avoid injury.

Outside light - controlling light from uncovered windows and adjusting the angle of your display will help you eliminate or reduce glare on your screen.

Inside light - controlling light from overhead or task lamps can also help eliminate glare on your screen.

III. PROCEDURE

A. CHAIR ADJUSTMENTS

Because you spend most of your day sitting, your chair is the main support for your body. A well-adjusted chair improves circulation and helps prevent backaches and fatigue. You can make yourself more comfortable in your chair by adjusting the backrest position and chair height to fit your body.

Backrest

- Sit at your workstation and lean back slightly with your back firmly against the chair. The backrest should fit snugly against your lower back.
- If it doesn't, adjust the backrest until your lower back is fully supported.
- If you can't adjust the backrest, use a small, thin, firm pillow or rolled towel to support your lower back.

Arm Position

- Place your fingers on the middle row of your keyboard, with your upper arms hanging comfortably at your sides. Your forearms should be parallel to the floor.
- If they are not, adjust your chair height up or down until your forearms are parallel to the floor.

Foot Position

- Move your feet forward until your knees are at a 90-110-degree angle. Your feet should rest firmly on the floor with 3-6 inches of legroom between your lap and desk or keyboard tray.
- If you have less than 3 inches of legroom, raise your desk or keyboard tray height, if possible.
- If you can't adjust your chair height and your feet don't reach the floor, use a footrest or wedge-shaped item such as a 3-ring binder to support your feet.

B. ORGANIZING THE WORK AREA

Is your work area arranged so you can work most efficiently? When your display, keyboard, and work station props - such as your telephone and document holder - are well arranged and adjusted, you'll feel better and probably get more accomplished.

Screen Height

- With your lower back supported and feet firmly on the floor or footrest, hold your head upright and look straight at your screen. The top of your monitor should be at or below eye level.
- If it isn't, raise or lower your monitor until it is at a viewing height that will allow you to maintain your head in an upright position.

Screen Distance

- Measure the distance from your eyes to the screen. The screen should be 18-30 inches from your eyes, or at about arms' length.
- If not, move your monitor forward or backward to the desired distance.

Hand Position

- Place your fingers on the middle row of your keyboard. Your wrists should be straight and relaxed.
- If they aren't, adjust your keyboard height up or down until your wrists are straight.
- To help keep your wrists relaxed, try a wrist rest or padded support.
- If your wrists still are not straight, readjust your chair height, making sure your feet remain on the floor or footrest.

C. WORKSTATION PROPS

- Arrange your props so those items that you use the most are within easy reach.
- Place your document holder and screen at the same height and distance.
- Consider a headset if you use the telephone a lot.

D. CHECK THE LIGHTING

Glare is the reflection on your screen that makes it hard to see the screen clearly. Glare may be caused by sunlight on your screen or by inside light, such as overhead and task lamps. Simple lighting adjustments can help you minimize glare and reduce strain on your eyes. Adjusting your screen's contrast and brightness can also help improve viewing comfort.

Outside Light

- While sitting at your workstation, look at your screen. It should be free of glare from light coming through outside windows.
- If it isn't, close the blinds or pull the shades to help reduce glare.
- Because outside light hits your screen differently at different times of the day, you may need to readjust periodically to help keep glare off your screen.
- If you can't adjust window coverings, move your display until it is at a right angle to the window.

Inside Light

- While sitting at your workstation, look at your screen. It should be free of glare from overhead lighting.
- If it isn't, reduce overhead lighting, tilt or swivel your screen, or see about getting antiglare filters.

Task Light

- If you use a task lamp, turn it on and look at your screen.
- If it causes glare on your screen, adjust the angle of your task lamp to aim the light at your document instead of your screen.

E. LIGHT FROM YOUR COMPUTER

To help improve viewing comfort, you may also need to fine-tune your display's contrast and brightness. Adjust contrast and brightness together to get the maximum possible brightness without blurring.

F. MICRO-BREAKS

Throughout the day, readjust your sitting posture and take thirty-second micro-breaks right at your workstation. These exercises can help energize your body and relieve muscle tension.

Palm Your Eyes

- Lean your elbows on your desk. Cup your hands and place them lightly over your closed eyes.
- Hold for a minute, while breathing deeply in and out. Slowly uncover your eyes.

Squeeze Your Shoulders

- Put your hands up, with forearms raised.
- Push your arms back, squeezing your shoulder blades. Hold for a few seconds.
- Relax and repeat three times.

Stretch Your Back

- Sit up straight and imagine you have a cable attached to the top of your head.
- Feel the cable slowly pull you up higher and higher. Hold for a few seconds.
- Relax and repeat three times.

Shake Your Arms

- Drop your arms and hands to your sides.
- Shake them out gently for a few seconds.
- Relax and repeat three times.

SECTION 27: Personal Protective Equipment (PPE)

I. PURPOSE

This guideline establishes the requirements to be followed to prevent injury by providing the proper personal protective equipment (PPE), identifying where it is to be used and enforcing its required use.

II. GENERAL

Precautions shall be taken to prevent personal injury due to hazards associated with the performance of jobs under hazardous conditions. This guideline outlines terminology and responsibilities and reviews basic principles to ensure safety and efficiency through the proper use of personal protective equipment (PPE).

III. DEFINITIONS

dBA – A unit of sound measurement closest to the manner in which humans perceive the degree of loudness of sound.

Flame-Resistant Clothing (FRC) – Clothing made of fabric that retards burning (i.e., Nomex).

Metatarsal – The middle section (or instep) of the foot, not the toe or the heel.

IV. RESPONSIBILITY

A. RESPONSIBLE MANAGER/SUPERVISOR

The Responsible Manager/Supervisor shall ensure that adequate supplies of PPE are on hand and enforce the use of required PPE

B. EMPLOYEES

Employees shall be trained to know when to use PPE and shall use the appropriate PPE at all times. Employees shall remove damaged PPE from use and report the need for replacement.

C. DEPARTMENT SAFETY REPRESENTATIVE

The Department Safety Representative shall perform job/task safety analyses in order to identify PPE needs. Additional responsibilities include:

- Ensuring that the inspection of personally-assigned PPE is performed.
- Ensuring that adequate supplies of appropriate PPE are available for use.
- Performing an analysis of the possible need for Flame Retardant Clothing (FRC).
- Marking areas with signs to identify special PPE needs.
- Training employees (or arranging training) on the proper use of PPE.

V. PROCEDURE

A. GENERAL REQUIREMENTS

General Requirements for personal protection equipment (PPE) are as follows:

- PPE shall meet ANSI standards (or equivalent), meet NIOSH or MSHA or equivalent requirements.
- Affected employees shall be trained in the selection, use, care and limitations of the PPE they use and shall wear PPE that is appropriate to the job or that is required for the area in which they are working.
- Electrical work shall require compliance with NFPA 70E.
- PPE shall be inspected by the user before each use and defective or damaged PPE shall be replaced immediately.
- Areas with specific PPE requirements shall be marked appropriately.
- The Company shall supply employees with all required PPE.
- Necessary PPE shall be provided to visitors during their visit to Company projects or facilities.

B. CLOTHING

Clothing shall be reasonably clean. Clothing contaminated with oil, dirt or other materials can cause skin irritation by holding those materials in contact with the wearer's skin. Flammable substances on clothing constitute a fire hazard. Additional precautions are as follows:

- The use of Flame Retardant Clothing (FRC) shall be evaluated by the Department Safety Representative for the specific facility. Identified FRC requirements shall be met with the appropriate grade of Nomex or equivalent. Areas requiring FRC shall be posted.
- Clothing shall be kept close to the body so that it does not snag or get caught in machinery. Long-sleeved shirts shall be buttoned at the wrist and shirt tails shall be tucked into trousers.
- Sleeveless shirts and blouses, tank tops, muscle shirts, mesh fabric shirts, uncontrolled long sleeves and similar inappropriate non-work clothing shall not be worn in construction project areas.
- Clothing shall not be used to clean welding torch tips, as acetylene-impregnated clothing is highly flammable. Following are requirements for welding apparel:
 - Clothing shall protect the skin from hot sparks, electric arc and welding rays.
 - Leather chaps, aprons and sleeve guards shall be worn when necessary.
 - Clothing with synthetic fabrics, open shirt pockets or pant cuffs that can catch sparks or slag shall not be worn.

C. JEWELRY AND HAIR

Employees shall review the tasks to be performed and consider whether there is a danger of catching jewelry on equipment. This can result not only in loss of the jewelry but in personal injury.

During fieldwork employees shall remove any item that could present a hazard during fieldwork

(i.e., finger rings, watches, bracelets, necklaces and other jewelry).

Long, uncontrolled hair can be caught in machinery and result in severe injury. Hair shall be maintained short or controlled in a manner that does not pose a hazard where appropriate.

D. EYE AND FACE PROTECTION

Eye and Face Protection requirements include the following:

- Eye and face protection should be worn where applicable.
- Eye and face protection is not required in offices, meeting rooms, parking lots and enclosed cab vehicles.
- Fixed-tint or shaded lenses shall not be worn inside buildings, enclosures or at night. Photo gray glasses are acceptable.
- Tasks requiring additional eye and face protection (regardless of where the task is performed) shall be identified and eye and face protection made available.
- Eye and face protection shall be cleaned and returned to the storage area after use.
- When wearing Safety Glasses, the following precautions shall be taken:
 - Rigid side shields shall be required on all safety glasses. The side shields shall be manufactured for the specific frames but need not be permanently attached.
 - Glasses damaged in the course of work shall be replaced at Company expense.
 - Visitors shall be furnished with safety glasses during visits. Non-safety prescription glasses wearers shall be required to wear goggles over the prescription glasses.
- Goggles generally provide more complete protection than safety glasses for both impact and chemical exposure and shall be required in the following circumstances:
 - On windy days when working with dry materials out of doors
 - When working with trimmers or edgers
 - When working with chemicals
- Welding Goggles or safety glasses shall be worn by welders and welders' helpers with American Optical Caliber Super Armor Plate lenses with the Breeze Catcher side shields and Comfort Cable temples or the equivalent. The protection level of these goggles is required and comfort of this model of welder's goggle is highly recommended. Lens shades shall be selected based on the type of welding to be done.

E. FACE SHIELDS

Following are requirements for protection when wearing face shields:

- Face shields shall be equipped with a means of firmly attaching them to the appropriate head protection.
- Shields shall be used with safety glasses or goggles when working at grinders or drill presses and when handling caustics, acids, epoxies, other chemicals and wet cell batteries.
- Face shields shall never be used as primary eye protection. Safety glasses or goggles shall be worn with them at all times.

F. HEAD PROTECTION

Head Protection requirements include the following:

- Head protection must meet ANSI Class E standards or the equivalent.
- Head protection shall be inspected by the wearer regularly to ensure that the suspension system is secure and undamaged. In addition, the shell shall be free of gouges, dents and other damage and not brittle from age or exposure to chemicals. Damaged head protection shall be replaced immediately.
- Aluminum or other metal head protection (Class C) shall not be worn.
- When there is danger of the head protection falling off or being blown off, a chin strap shall be provided and worn.
- Employees should adhere to the following when wearing welding helmets:
 - Welding helmets must be worn when performing electric arc welding.
 - Welding helmets shall be worn when performing electric arc gouging.
 - Welding helmets used for electric arc welding or gouging should be equipped with lenses rated from 10-14.
 - Welding helmets shall be the type that attach to a hard hat when working on a construction site.

G. FOOT PROTECTION

Foot Protection shall be used in the following manner:

- Approved safety shoes must meet ANSI standard or equivalent standards and be suitable for field work.
- Toe and/or metatarsal guards that meet ANSI standard or equivalent are approved for use as foot protection. These guards shall be provided by the Company for the use of employees who are unable to wear safety shoes or who, due to the nature of their jobs, need added foot protection.

H. HAND PROTECTION

Hand Protection shall be used in the following manner:

- Gloves shall be worn at all times when the hands are exposed to potential injury.
- Gloves shall not be worn when working on or around rotating equipment such as lathes, mills, drill presses and similar equipment.
- Employees shall request gloves based on the work to be done and/or the chemicals they shall handle. The Material Safety Data Sheet (MSDS/SDS) for the chemicals to be handled shall be consulted to determine the type of glove needed.
- Several types of gloves shall be stocked at all times. Unusual (not usually stocked) gloves shall be requisitioned for a given task.
- Requirements for care of electrical protection rubber gloves are as follows:
 - Gloves shall be stored in glove bags with the cuffs down.
 - Gloves shall not be stored or worn inside out.
 - Employees shall inspect the gloves before each use using the air test method for

detection of holes. Look for scratches, cracked rubber, snags, blisters, embedded foreign matter or other defects. Defective gloves and their protectors shall be returned to the supply point or other location, as appropriate.

- Gloves shall be electrically tested every 6 months. Records of the issue and test dates shall be kept with the gloves.
- Leather protectors shall be worn over rubber gloves when there is a possibility of making contact with a wire or when on a pole or structure carrying a wire.

I. HEARING PROTECTION

Hearing Protection shall be worn by employees and visitors in areas marked as high noise areas and when exposed to noise levels equal to or greater than 85 dBA (decibels on the A-weighted scale). Following are additional requirements for using hearing protection:

- Hearing protection is recommended whenever the employee thinks the noise level may be over 85 dBA, whether the area is marked or not.
- Specific hearing protection is required when exposed to hot sparks or molten metal.
- Certain noise sources are necessarily extremely loud. These sources include compressors and turbines. When working with or near these noise sources, compliance with the following is required:
 - Work as far away as possible from the noise source.
 - Increase hearing protection by wearing both earplugs and ear muffs.

J. RESPIRATORY PROTECTION

Respiratory Protection requirements are as follows:

- Respiratory protection shall be NIOSH-approved or equivalent.
- Respiratory protection shall be selected based on the work to be performed and the information contained in the MSDS/SDS when using chemicals or welding materials.
- The Respiratory Protection Program shall be consulted and followed. See the section "Respiratory Protection Program".

K. FALL PROTECTION

Fall Protection is required whenever there is a possibility of falling more than 6 feet to the ground or another surface. Requirements for fall protection are contained in Safety Guideline "Fall Protection".

L. FLOTATION DEVICES

Flotation Devices requirements are as follows:

- Flotation devices shall be fire retardant and capable of keeping an unconscious person's head out of the water. A flotation device shall retain 95% of its buoyancy for at least 24 hours in fresh water.
- Personal flotation devices shall be worn whenever working near or over water or from

the deck of a watercraft.

- Additional information on the use of flotation devices is found in Safety Guideline "Fall Protection".

M. SEATBELTS

Seat Belts shall be available in powered equipment and over-the-road vehicles having a standard operator's seat and shall be used at all times while the equipment or vehicle is in operation.

N. TRAINING

Affected employees shall be trained in the selection, use, care and limitations of PPE required while performing their duties.

O. RECORDS

- The most recent record of employee training in the selection, use, care and limitations of PPE shall be retained.
- Any Job/Task Safety Analyses reports shall be retained.

SECTION 28: Respiratory Protection Program

I. PURPOSE

Employees of the Company, during their regular course of duty, may be required to enter environments where airborne contaminants, toxins, or sufficants are present; as such, a comprehensive respirator protection program is mandatory. It is the purpose of this document to establish guidelines that are in compliance with OSHA regulations as they apply to respiratory protection.

II. RESPONSIBILITY

A. COMPANY

The Company shall make available to all employees, whose work requires entrance into a potentially hazardous environment, an appropriate respirator for use for protection against the potential hazards encountered.

The Company shall provide training in proper use and care of the respiratory protection devices including refresher training. A qualified technician shall perform maintenance, other than routine preventative maintenance. There shall be no interchange of parts between respirators of differing brands or models.

The Company will ensure that no employee is assigned a respirator unless it has been determined that the employee is physically able to perform the work and use the respirator. Prior to fit testing, employees shall have successfully completed a pulmonary functions test and be certified medically fit to wear a respirator. The respirator user's medical status will be reviewed annually by a local physician.

B. EMPLOYEES

Employees shall wear the respiratory protective device when performing tasks in areas where the potential for exposure to airborne contaminants, sufficants, or toxins exist. Employees shall maintain a facial surface consistent with a proper fit if the respiratory protective device (i.e., no beards and be clean-shaven).

Employees shall be required to read this respiratory protection program and literature pertaining to the use and care of the respirator device to be used by them. Employees shall be responsible for routine care and maintenance of the respiratory protective device. Employees shall use the respiratory protective equipment in accordance with instructions and training received.

C. PROJECT MANAGERS/SUPERVISORS

Project Managers/Supervisors shall be available to resolve questions related to respirator use and care. If a Project Manager/Supervisor cannot resolve the question or problem, the supervisor shall refer the matter to the Department Safety Representative.

D. DEPARTMENT SAFETY REPRESENTATIVE

The Department Safety Representative is designated as the administrator for the Respiratory Protection Program. As administrator for the program, the Department Safety Representative has the authority to make decisions and implement changes to the Respiratory Protection Program as necessary.

The responsibilities of the administrator shall include but not be limited to the following:

- Identification of areas requiring respiratory protection.
- Determining the level of protection necessary to accomplish a specific task.
- Respirator selection, purchases, and inventory.
- Employee training.
- Establishment of continuing program of cleaning and inspection of respiratory equipment.
- Designation of proper storage areas for respiratory equipment.
- Evaluation of program to determine effectiveness.
- Maintenance of records related to the program.

III. PROCEDURE

A. FIT TESTING

Fit testing is as follows:

- Fit testing will be the method used by the Company to ensure that the respirator assigned to an employee will provide the proper level of protection against air contaminants.
- The Department Safety Representative will control the fit testing process.
- Fit testing records will be maintained at in Human Resources.
- Employees must be clean-shaven when undergoing fit testing.

B. SELECTION OF RESPIRATORS

Choosing the correct respiratory protection equipment involves three steps:

- Determination of the hazard.
- Choosing equipment that is certified for the function.
- Assuring the device is performing the function it is intended to do.

Proper selection of respirators must be made according to the OSHA requirements set forth in 29 CFR 1910.134 and the ANSI publication "Practices for Respiratory Protection," ANSI Z88.2-1990.

Chemical and physical properties of the contaminant as well as the toxicity and concentration of the hazardous material and the amount of oxygen present must be considered in selecting the proper respirator.

The nature and extent of the hazard, the work rate, the area to be covered, mobility, work conditions, as well as the limitations of the available respirators must also be considered.

There are two basic types of respirators:

- Air-Purifying Respirators - Devices designed to remove contaminants from the air by either mechanical or chemical means. These devices do not add oxygen to the breathing atmosphere and therefore should not be used in oxygen deficient atmospheres.
- Air-Supplying Respirators - Devices that supply the user with a safe supply of breathing air independent of the ambient atmosphere. They are designed to be used in atmospheres that contain contaminants above the safe limits of air-purifying respirators or where the atmosphere is oxygen deficient.

The Program Administrator or designated customer health and safety representatives will determine the respirator required for the job.

High breathing resistance of air-purifying respirators under conditions of heavy work can result in distressed breathing.

A person working in an area of high temperature is under stress. Using a respirator with minimum weight and breathing resistance should minimize additional stress.

C. USE OF RESPIRATORY PROTECTION EQUIPMENT

Respiratory equipment will be provided for employees to use in oxygen deficient environments and environments containing harmful vapors when engineering controls are not feasible or during emergency situations with high exposure. Respiratory equipment guidelines are as follows:

- Where practical, respirators should be assigned to individual employees for their exclusive use.
- Only those respirators approved by NIOSH shall be used.
- Respirators shall not be used when conditions such as facial hair prevent a good seal of the respirator.
- Corrective lenses present a problem in maintaining a proper seal. If corrective lenses are needed, a qualified technician must fit the face-piece and lens.
- Cartridges shall be changed at intervals not to exceed two weeks.
- It is mandatory that employees wear the appropriate respirator when working where the air contains regulated substances in concentrations exceeding the Permissible Exposure Limit (PEL).
- Any employee wearing a respirator must immediately stop work, leave the area and report the matter to their supervisor whenever any of the following conditions exist: dizziness, difficulty breathing, or other physical stress; damage to, or ineffectiveness of the respirator being worn; the taste or smell of any contaminant or any unfamiliar smell or taste that troubles or concerns such employee.

D. INSPECTION, MAINTENANCE, CARE AND STORAGE OF RESPIRATORY PROTECTION EQUIPMENT

Inspection, Maintenance, Care and Storage of Respiratory Protection Equipment should consist

of:

- The user, before and after each use, shall inspect all respirators.
- Respirators that are not used routinely shall be inspected monthly and after each use.
- Routinely used respirators shall be cleaned and disinfected at least weekly and as frequently as necessary to insure proper protection for the wearer. The respirator user shall do cleaning and disinfecting.
- All worn or deteriorated respirator parts shall be repaired or replaced, using only parts designated for the respirator.
- Qualified technicians shall perform non-routine maintenance only.
- Respirators shall be stored in a manner that will protect them against dust, sunlight, temperature extremes, excessive moisture and contamination.
- Respirators shall not be stored in such a manner that they will become deformed or otherwise damaged so as to impair its performance.
- Involved supervisors and the Department Safety Representative will continuously monitor cleaning and disinfecting practices.

E. TRAINING

All respirator users shall receive training in the proper use, care and maintenance of respirators. Training shall be conducted annually or as required by use of a different respirator.

Training records will be maintained that includes employee name, date of training, and type of training.

Training shall include: handling the respirator, proper fitting, testing seal integrity, and wear in a test environment.

F. PROGRAM REVIEW

The Respiratory Protection Program shall be reviewed periodically to ensure its adequacy. The Program Administrator will conduct the review.

G. OUTSIDE SERVICES

Many qualified and competent subcontractors are available to provide complete and appropriate respiratory protection services. Their services should be considered when multiple employee, large exposure areas or times, or confined space entry considerations are applicable.

IV. REFERENCES

A. ADDITIONAL INFORMATION SOURCES

- Compressed Gas Association
- National Safety Council

B. CODE OF FEDERAL REGULATIONS

- 29 CFR 1910.134, Respiratory Protection

SECTION 29: Testing - Pneumatic

I. PURPOSE

This guideline establishes the general safety requirements to be followed to protect personnel and equipment during the pneumatic pressure testing of piping, vessels and associated equipment.

I. REQUIREMENT

Prior to any testing, approval by the Department Manager and Department Safety Representative is required.

II. GENERAL

The pressure testing of piping, vessels, and associated equipment is a standard practice in the mechanical construction industry. The safer method of pressure testing is hydrostatic testing which uses water as the test medium. In some applications however, pneumatic testing is used because of equipment design and operation limits or hazards created by the potential leaking of water from the tested system. In pneumatic testing, air or an inert gas such as nitrogen is used as the test medium. The use of air or an inert gas as a test medium is more hazardous than the use of water as a test medium. Air or an inert gas is compressible and therefore can produce significant potential energy as they are compressed, and pressure increases in a closed system. The potential energy of pressurized water in a closed system, as compared to air or inert gas, is minimal in comparison.

NOTE

The use of air or an inert gas as a test medium in pressure testing is far more dangerous than testing with water.

The use of an inert gas, such as nitrogen, as a test medium involves additional hazards. Nitrogen or other inert gases displace air when introduced into piping, vessels, or confined spaces such as a pit. This can create an oxygen-deficient atmosphere that can be hazardous or fatal to humans.

III. PNEUMATIC PRESSURE TESTING

A. GENERAL

Pneumatic pressure testing may be used in the following situations:

- When pressure testing with water or other liquid is impractical or may result in contamination or damage to the tested system.
- When required by design or engineering specifications.
- In systems designed for vacuum service in which testing will be done under vacuum.

B. PRESSURE TEST MEDIUM

The gas used as the test medium shall be nonflammable and nontoxic. When a gas other than

ambient air is used as the test medium a Material Safety Data Sheet shall be available for review by test personnel.

C. PERSONAL PROTECTIVE EQUIPMENT

The minimum required personal protective equipment to be worn during pneumatic pressure testing shall be:

- Hardhat
- Safety glasses
- Safety shoes
- Gloves
- Hearing Protection

The Company test personnel operating test equipment or working inside the immediate test area shall wear a full-face shield in addition to the requirements listed above.

Additional personal protective requirements may be required as determined by the safety representative or test supervisor.

Lockout/Tagout – Energy Isolation

D. LOCKOUT/TAGOUT – ENERGY ISOLATION

All mechanical devices such as valves and blinds used to isolate the tested system shall have a lock and tag or tag affixed as required to prevent the accidental release of system pressure. See Lockout/Tagout – Energy Isolation section for guidance.

E. CAST IRON, FIBERGLASS, PLASTIC OR PVC EQUIPMENT OR PIPING

Air or gas should not be used to pressure test equipment or piping constructed of cast iron, fiberglass, plastic, or PVC material. These materials are subject to brittle failure when exposed to compressed gases.

Pressure testing of equipment or piping constructed of cast iron, fiberglass, plastic, or PVC shall require approval of the Operations Manager and the Department Safety Representative. If required, the manufacturer of the equipment to be tested should be consulted prior to approval.

F. TESTING IN SUB-FREEZING AMBIENT TEMPERATURES

Appropriate industry standards and manufacturer's data should be reviewed prior to performing pneumatic pressure testing in sub-freezing ambient temperatures. Sub-freezing temperatures can cause steel and other material to be brittle, thus causing failure during pressure testing.

G. TEST PRESSURES UP TO 300 PSIG

Pneumatic testing at pressures up to 300 psig shall require the following precautions:

- A Trade Supervisor or Foreman, who is qualified and experienced in pneumatic pressure testing, shall be assigned to supervise and be present for the testing operation.

- The Foreman shall prepare a pneumatic pressure test checklist. The Department Safety Representative shall be consulted for recommendations as to required personal protective equipment and hazard controls.
- The Foreman shall inspect the test gauges for proper operation and compatibility for use with air or gas.
- The test equipment shall be examined before pressure is applied to ensure that it is tightly connected.
- Information related to the test will be communicated to the customer and subcontractors. The information will include at a minimum the following:
 - Company supervisor for the pressure test along with contact information.
 - Date and time of pressure test.
 - Equipment to be tested.
 - Area and/or location of equipment to be tested.
 - Maximum test pressure to be reached during test.
- Warning signs shall be posted and will read "Danger - High Pressure Test in Progress- Keep Out".
- A pre-test briefing shall be conducted by the test Foreman or Trade Supervisor for all personnel included in the testing operations. Safety precautions and the pneumatic pressure test checklist shall be reviewed.
- Testing shall be done under strict supervision by the trade supervisor.

H. TEST PRESSURES GREATER THAN 300 PSIG

In addition to the above precautions, pneumatic testing at pressures greater than 300 psig shall require the following:

- Specifications stating the maximum allowable working pressure of the systems and/or equipment to be pressure tested.
- Documentation from the customer or equipment owner authorizing or requesting pneumatic pressure testing of the equipment.
- Consultation with the department safety representative.

I. PRESSURING SYSTEMS WITH AIR OR GAS

The pressuring of systems with air or gas shall be conducted as follows:

- The test pressure shall not be more than 1.25 times the design pressure of building service systems being tested.
- The test pressure shall not be more than 1.5 times the design pressure of power piping systems being tested.
- The test pressure shall not exceed the maximum allowable pneumatic test pressure for any vessels, pumps, valves, or other component in the system under test.
- The system shall be equipped with a pressure relieving device set to relieve at a pressure no greater than 120% of the test pressure.
- The system shall be initially be pressured to no more than 25 psig for initial visible inspection of welds, connections, and valves.

- The pressure shall then be increased to 60 % of the test pressure. This pressure shall be maintained for at least ten minutes.
- The pressure shall be increased in increments or steps of approximately 10% of the test pressure until the test pressure is attained. The pressure shall then be maintained for the specified period while the system is checked for leaks.
- All repairs or adjustments to the system being tested shall be done only after the system pressure is relieved and the test gauge indicates a system pressure of 0 psig.
- Pressuring of the system after repair or adjustment shall follow same sequence as initial pressuring.

J. DEPRESSURIZING OF TESTED SYSTEMS

When depressurizing tested systems, the following precautions shall be followed at a minimum:

- All Company test personnel shall wear the personal protective equipment as outlined in the PPE Section of this document.
- Company test personnel shall position themselves so that they are not exposed to the pressure as it is released from the tested system.
- All personnel not directly involved in the depressurizing of the tested system shall be kept out of the test area.
- Only mechanical devices such as gate or ball valves, which allow for incremental release or flow, shall be used in the depressurizing of tested systems. The opening or “breaking” of flanges shall never be used as the means to depressurize a tested system.
- The release of pressure shall be done gradually as not to create additional hazards.

K. VENTING OF INERT TEST GASES

When inert test gases such as argon and nitrogen are released from a tested system these gases shall be vented in a manner that does not expose persons to the gas or allow the gas to accumulate in a confined space or depression.

IV. TRAINING

All Company employees that shall perform pneumatic pressure testing shall receive training in pneumatic pressure testing. At a minimum, the training shall include a review of this document.

V. REFERENCES

Attachment 1 - Pneumatic Pressure Test Checklist

ATTACHMENT 1 - PNEUMATIC PRESSURE TEST CHECKLIST

Trade Supervisor: _____ Test Foreman: _____

Contact Information for above: _____

Date & Time of Test: _____ Test Number: _____

Location of Equipment to be Tested: _____

Equipment to be Tested: _____

Maximum Test Pressure: _____ Pressure Test Medium: _____

Safety Checklist:

- ☐ Pneumatic pressure testing is being used because of the following: _____
- ☐ Test information communicated to the customer and affected subcontractors
- ☐ Pressure Test Medium is nontoxic and nonflammable
- ☐ Approval of operations manager and Department Safety Representative obtained for pressure test of cast iron, fiberglass, plastic, or PVC material _____ not applicable
- ☐ Personal protective equipment requirements met
- ☐ Lockout/Tagout – Energy Isolation complete
- ☐ Warning signs posted
- ☐ Test equipment examined to ensure secure connection
- ☐ Equipment or components not being tested are isolated from test pressure
- ☐ Tested system equipped with a pressure relieving device set no greater than 120% of the test pressure
- ☐ Venting procedure established for inert test gases _____ not applicable
- ☐ All Company test personnel have reviewed Pneumatic Test Guidelines document
- ☐ Pre-test briefing conducted with affected Company test personnel in attendance

Notes or special precautions:

Checklist completed by: _____ Date: _____

SECTION 30: Rigging Safety - General

I. PURPOSE

This guideline provides information regarding general rigging safety.

II. PROCEDURE

A. RIGGING PRACTICES

- All Riggers and Signalers shall be qualified in accordance with OSHA regulations.
- Do not damage machines and soft surfaces with the lifting apparatus.
- Avoid sharp bends in slings and protect slings from sharp edges and abrasions.
- Set loads down on proper blocking - never directly on a sling.
- Do not side load.
- Maintain an angle between the sling and the load horizontal greater than 45 degrees to reduce stress on the sling.
- Attach cable clips properly. The saddle should be on the load cable, the U-bolt on the dead end. Remember: "Never saddle a dead horse."
- Do not stand or walk under suspended loads.
- Do not leave loads unattended at any time. Use tag lines of sufficient length to control the lift.

B. RIGGING EQUIPMENT

- Know the safe carrying capacity of sling chains, wire rope, and other lifting apparatus and do not overload them. All rigging equipment must be properly tagged with the correct load rating.
- Inspect all rigging equipment before each use.
- Immediately discard defective lifting equipment.
- Do not tie knots in sling chains, rope slings, or wire cables to shorten them.
- Do not place bolts or other material between links of chain to shorten or splice it.
- Do not exceed the crane load capacity.
- Do not use rope for rigging or lifting loads except where it is impractical to use other methods.
- Modify lifting equipment only after receiving Department Manager and Department Safety Representative, and engineering approval.

SECTION 31: Tools and Equipment Safety

I. PURPOSE

This guideline presents requirements for the use and selection of tools and equipment.

II. GENERAL

Tools and equipment used to perform a job should be inspected daily to determine that they are safe to use before starting the job. Certain tools and equipment are inspected on a periodic basis; however, this does not guarantee that these tools or equipment will be safe to use all the time. It is the responsibility of the employee to visually inspect tools and equipment daily for defects or conditions that could cause injury before attempting to use them.

Use the proper tool for the job and use tools to perform only the work for which it was intended. Should a question arise as to what tools or equipment to use, the employee should contact his/her supervisor or the Department Safety Representative. Inspect all tools daily before use. Let your supervisor know immediately of any defects.

III. PROCEDURE

A. HAND TOOLS

Hand tools guide is as follows:

- Use the right tool for the right job.
- Tools with defects that make them unsafe are not to be used. The tools should be repaired by qualified personnel or replaced. Common examples of this are mushroom heads on chisels and hammers, split handles, worn screwdriver blades, etc.
- Cheater bars or hammers should not be used on adjustable wrenches.
- Pipe wrench jaws should be kept sharp and in good condition.
- Extreme caution should be used when working with knife-edges or sharp pointed tools.
- Never carry these tools in your pocket.
- Modifications are not to be made to any tools.
- Tools should be carried in tool pouches or toolboxes.
- Never use wrenches, screwdrivers, chisels, etc. as levers.
- Cutting tools should be kept sharp.
- Tools should be cleaned up at the end of the day.

B. ELECTRIC POWER TOOLS

Electric power tools guide is as follows:

- All electric power tools will be safely grounded when in use.
- Do not remove any guards from electric power tools.
- Disconnect the tools from the power supply before attempting to repair or adjust it.
- Extension cords should be strung overhead to avoid a tripping hazard.

- Use only those power tools that you are qualified to use.
- If any question arises concerning the safety of power tools, contact your supervisor or Department Safety Representative.

C. POWDER ACTUATED TOOLS

Powder-actuated tools operate like a loaded gun and must be treated with extreme caution. In fact, they are so dangerous that they must be operated only by specially trained employees.

When using powder-actuated tools, an employee must wear suitable ear, eye, and face protection. The user must select a powder level—high or low velocity—that is appropriate for the powder-actuated tool and necessary to do the work without excessive force.

The muzzle end of the tool must have a protective shield or guard centered perpendicular to and concentric with the barrel to confine any fragments or particles that are projected when the tool is fired. A tool containing a high-velocity load must be designed not to fire unless it has this kind of safety device.

To prevent the tool from firing accidentally, two separate motions are required for firing. The first motion is to bring the tool into the firing position, and the second motion is to pull the trigger. The tool must not be able to operate until it is pressed against the work surface with a force of at least 5 pounds (2.2 kg) greater than the total weight of the tool.

If a powder-actuated tool misfires, the user must hold the tool in the operating position for at least 30 seconds before trying to fire it again. If it still will not fire, the user must hold the tool in the operating position for another 30 seconds and then carefully remove the load in accordance with the manufacturer's instructions. This procedure will make the faulty cartridge less likely to explode. The bad cartridge should then be put in water immediately after removal. If the tool develops a defect during use, it should be tagged and must be taken out of service immediately until it is properly repaired.

Safety precautions that must be followed when using powder- actuated tools include the following:

- Do not use a tool in an explosive or flammable atmosphere.
- Inspect the tool before using it to determine that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions and has the proper shield, guard, and attachments recommended by the manufacturer.
- Do not load the tool unless it is to be used immediately.
- Do not leave a loaded tool unattended, especially where it would be available to unauthorized persons.
- Keep hands clear of the barrel end.
- Never point the tool at anyone.

When using powder-actuated tools to apply fasteners, several additional procedures must be followed:

- Do not fire fasteners into material that would allow the fasteners to pass through to the

other side.

- Do not drive fasteners into very hard or brittle material that might chip or splatter or make the fasteners ricochet.
- Always use an alignment guide when shooting fasteners into existing holes.
- When using a high-velocity tool, do not drive fasteners more than 3 inches (7.62 centimeters) from an unsupported edge or corner of material such as brick or concrete.
- When using a high velocity tool, do not place fasteners in steel any closer than 1/2-inch (1.27 centimeters) from an unsupported corner edge unless a special guard, fixture, or jig is used.

D. GRINDERS AND BUFFERS

Grinders and buffers guide is as follows:

- Grinders and buffers must be equipped with the proper guards. Tool rests on pedestal grinding wheels should be adjusted to within 1/8" of the wheel.
- Never use a grinding wheel that is rated at fewer R.P.M. than the driver.
- Never use a grinding wheel that has a hole larger than the arbor of the driver.
- Long hair and beards must be protected when working around rotating machinery.
- Work must be securely held.
- Faceshield or mono-goggles must be worn when using any chip producing tools.
- Grinding wheels must be kept properly dressed at all times. Cracked, defective, or dropped grinding wheels should be discarded immediately.
- Grinders and buffers must be electrically disconnected before changing wheels or attempting any adjustments.

E. MACHINE TOOLS

Machine tools guide is as follows:

- Machine tools are to be operated by qualified employees only.
- Never remove any safety guards.
- All drill press and radial drill work pieces must be securely bolted or clamped to the table.
- A brush or stick should be used to remove metal cuttings.
- Chuck keys and wrenches are not to be left in drill or lathe chucks, or in spindles or pipe machines.
- Long hair and beards must be protected (contained) when working on machine tools.
- Gloves and long or baggy sleeves should not be worn when operating machine tools.
- All machine tools should be electrically disconnected before performing maintenance on them or adjusting them.
- Never leave machine tools running when not in use.

F. HOISTING EQUIPMENT

Hoisting equipment guide is as follows:

- Inspect all hoisting equipment before using.

- Never exceed the rated capacity of blocks, slings, cables, ropes, or other hoisting equipment.
- Never lift a load with the tip of the load chain hook.
- The load chain on chain falls should never be run “full out.” This makes the load totally dependent on the bolt holding the dead end of the chain.
- Suspended loads should not be left on chain hoists any longer than necessary.
- Use clevises in the end of slings whenever practical.
- The pull of a clevis must always be from pin to eye and not from side to side.
- Do not shorten chain slings by twisting or tying knots in it.
- Never add two or more slings together by threading the eyes. Use clevises to connect slings or use a longer sling.

SECTION 32: Excavations and Trenches

I. PURPOSE

This guideline establishes the requirements to be followed to protect the safety and health of employees during work requiring excavation.

II. GENERAL

This guideline is intended to prevent potentially serious accidents involving workers from being engulfed by the unsupported sides of an excavation. The proper preparation of earth support of the open sides of the excavation is outlined. This guideline outlines the terminology and responsibilities and reviews the basic principles to ensure safety and efficiency.

III. DEFINITIONS

Benching - cutting the sides of an excavation to form one or a series of horizontal levels or steps.

Competent Person - one who can identify existing and predictable hazards in the surroundings or working conditions. This person is authorized to take prompt corrective measures to eliminate such hazards.

Excavation - any man-made cut, cavity, trench or depression in an earth surface formed by earth removal.

Protective system - any support, sloping, benching or shield system used to protect employees from cave-ins caused by material that could fall or roll from an excavation face into an excavation and cause the collapse of adjacent structures into the excavation.

Shoring - any metal, hydraulic, mechanical, timber or other structures supporting the sides of an excavation and is designed to prevent cave-ins.

Sloping - cutting excavation sides in a manner in which they are inclined away from the excavation to prevent cave-ins. The angle of the incline required to prevent a cave-in varies with soil type, environmental conditions of exposure and application of surcharge loads.

Soil classification system - a method of categorizing soil and rock deposits in a hierarchy including Stable Rock, Type A, Type B and Type C in decreasing order of stability. The categories are determined based on an analysis of the properties and performance characteristics of the deposits and on the characteristics of the deposits and the environmental conditions of exposure.

Support system - the underpinning, bracing, shoring or other structures supporting an adjacent structure, underground installation or side of an excavation.

Trench - a narrow excavation less than 15 feet wide (measured at the bottom) and generally deeper than its width.

IV. RESPONSIBILITY

A. RESPONSIBLE MANAGER

The Responsible Manager is responsible for designating, in writing, a Competent Person for the safe oversight of excavations.

B. PROJECT MANAGER

The Project Manager is responsible for gathering all available information on utilities and structures in the area of the excavation and notifying landowners, utilities and owners of any underground structures that may be affected by the excavation. The Project Manager shall provide the group performing the excavation with all pertinent information.

C. COMPETENT PERSON

The Competent Person shall determine whether or not the excavation constitutes a permit-required confined space. A daily inspection of the excavation site shall be performed to assess current conditions, following which the Competent Person shall declare the excavation safe for employees to enter at the beginning of each shift. The Competent Person is also responsible for ensuring the following tasks are accomplished:

- Determine the classification of the soil in each layer of the excavation.
- Perform air quality tests for excavations deeper than four (4) feet to establish that there is adequate oxygen and no toxic gases and vapors.
- Obtain a licensed, professional engineer's assistance when an excavation is deeper than twenty (20) feet.
- Determine if Emergency Rescue Services will be needed for each excavation and if so, arrange for rescue services to be "on call". All members of the excavation team shall be informed of the proper method for summoning emergency help.

D. EMPLOYEES

Employees shall be familiar with the Competent Person for the excavation by name and by sight and shall enter the excavation only after the Competent Person has given approval. Employees shall report any of the following conditions to the Competent Person immediately:

- Water accumulation.
- Cracks in sidewalls.
- Sloughing of sidewall material.
- Changes in air quality in the excavation.

E. DEPARTMENT SAFETY REPRESENTATIVE

The Safety Representative Manager is responsible for ensuring that this guideline is being followed. Further responsibilities include:

- Provide (or locate an acceptable source for) training for the Competent Person for excavations.

- Provide awareness level training for all Company employees entering the excavation.
- Assist the Competent Person in locating an appropriately trained Emergency Rescue Team, if needed.

V. PROCEDURE

A. GENERAL RULES

The rules shall be considered when working around excavation:

- No one shall be allowed in the excavation until the Competent Person has approved entry for that shift.
- The Competent Person shall determine the classification of the soil at each layer that is uncovered. The classification shall be updated, as needed.
- All excavations deeper than five (5) feet must be shored or sloped according to the drawings in Attachment 1 based on the classification of the soil as determined by the Competent Person.
- The quality of the air in excavations deeper than four (4) feet shall be tested before each work shift with particular attention to oxygen and heavier-than-air toxic gases and vapors.
- A means of egress (ladder, stairs or walkable ramp) shall be available within twenty-five (25) feet of all personnel who enter the excavation. Extension ladders must be used. Folded step ladders are not acceptable means of egress.
- Water accumulation shall not be allowed. Personnel shall not work in standing water in an excavation without specific approval from the Competent Person. Pumps shall be used to remove water that enters the excavation and their operation shall be continuously monitored. If the excavation interferes with the natural drainage of surface water (streams or storm water runoff) dikes or diversion ditches shall be used to prevent surface water from entering the excavation.
- Barricading, signal guards, stop logs or other warning systems shall be in place if mobile equipment will be used around the excavation.
- Nothing shall be stockpiled within two (2) feet of the edge of the excavation. Spoils (loose soil) must be laid back more than two (2) feet from the edge.
- Pedestrian and vehicle traffic shall be kept from the edge of the excavation at a distance to be adjusted to reflect the weight and frequency of the traffic.
- Where employees or equipment is allowed to cross over the excavation, adequate walkways with guardrails and toe boards are required.
- Materials for sheeting, shoring or bracing the sidewalls shall be in good condition. Timbers shall be sound, free of large or loose knots and of adequate dimension.
- Mechanical support systems shall be removed from the bottom first when the excavation is being backfilled.

B. SOIL CLASSIFICATION AND IDENTIFICATION

The Competent Person shall classify soils in the field based on the results of at least one visual and at least one manual analysis performed by the Competent Person.

1. Visual Analysis

Visual Analysis shall be conducted to determine qualitative information regarding the excavation site and the soil as follows:

- Identify excavated soil and the surface area adjacent to the excavation, as well as the soil in the sides of the excavation. Estimate the range of particle sizes and the relative amounts of the particle sizes. Soil that is primarily fine-grained material that remains in clumps when excavated is cohesive material. Soil that is coarse-grained sand or gravel that breaks up easily and does not stay in clumps is granular material. Crack-like openings indicate fissured material. If chunks of soil spall off a vertical side, the soil could be fissured. Small spalls are evidence of moving ground and are indications of potentially hazardous situations. Identify previously disturbed soil.
- Observe the opened side of the excavation to identify layered systems to determine if the layers slope toward the excavation. Estimate the degree of slope of the layers.
- Examine the area adjacent to the excavation and the area within the excavation for evidence of the following:
 - Existing utility and other underground structures.
 - Surface water, water seeping from the sides of the excavation or the location of the level of the water table.
 - Sources of vibration that may affect the stability of the excavation face.

2. Manual Analysis

Manual Analysis shall be conducted to determine the quantitative as well as qualitative properties of soil and to provide more information to classify soil properly as follows:

- Plasticity - mold a moist sample of soil into a ball and attempt to roll it into threads as thin as 1/8-inch in diameter. Cohesive material can be successfully rolled into threads without crumbling and can be held on one end without tearing.
- Dry strength - if the soil is dry and crumbles on its own or with moderate pressure into individual grains or fine powder, it is granular. If the soil is dry and falls into clumps that break up into smaller clumps, but the smaller clumps can only be broken up with difficulty, it may be clay in any combination with gravel, sand or silt. If the soil breaks into clumps that do not break up into small clumps that can only be broken with difficulty and if there is no visual indication that the soil is fissured, the soil may be considered unfissured.
- Thumb penetration - used to estimate the unconfined compressive strength of cohesive soils. The thumb can readily indent type A soils; however, the thumb only with very great effort can penetrate them. Type C soils can be easily penetrated several inches by the thumb and can be molded by light finger pressure. (Thumb penetration should be conducted on an undisturbed soil sample as soon as practicable after excavation to minimize the effects of exposure to drying influences. If the excavation is later exposed to wetting influences such as rain or flooding, the classification of the soil must be changed accordingly).
- Other strength tests - estimates of unconfined compressive strength of soils can be obtained by the use of a pocket penetrometer or by using a hand-operated shearvane.
- Drying tests - used to differentiate among cohesive material with fissures, unfissured

cohesive material and granular material. Dry a sample of soil that is one-inch thick (2.54 cm) and six inches (15.24 cm) in diameter until it is thoroughly dry and make the following determinations:

- If the sample develops cracks as it dries, significant fissures are indicated.
- Samples that dry without cracking are to be broken by hand. If considerable force is necessary to break a sample, the soil has significant cohesive material content. The soil can be classified as an unfissured cohesive material and the unconfined compressive strength should be determined.
- If a sample breaks easily by hand, it is a fissured cohesive material or a granular material. Pulverize the dried clumps of the sample by hand or by stepping on them. If the clumps do not pulverize easily, the material is cohesive with fissures. If they pulverize easily into very small fragments, the material is granular.

3. Soil Classification

Each soil type encountered in excavation shall be classified as follows:

- Rock - presents the most stable excavation walls. No wall support is needed.
- Type "A" Soil - includes cohesive soils such as clay, silty clay, sandy clay, clay loam and in some cases, silty clay loam. Cemented soils such as hard pan are Type A soils. Soil is NOT Type A if it falls in any of the following categories:
 - Fissure soil
 - Soil subject to vibration from heavy traffic, pile driving or similar effects
 - Soil that is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater
 - Soil subject to other factors requiring it to be classified as less stable material
- Type "B" Soil - includes cohesive soil and granular cohesionless soils including angular gravel (similar to crushed rock), silt, silt loam, sandy loam and in some cases, silty clay loam and sandy clay loam. Type B soil includes material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V) but only if the material would otherwise be classified Type B.
- Type "C" Soil - includes granular soils such as gravel and sand (alone or mixed), loamy sand, submerged soil or soil from which water is freely seeping as well as submerged rock that is unstable.

4. Maximum Slope by Soil Type

The following table presents the maximum slope by soil type allowed for the sidewalls of excavations less than twenty (20) feet deep, based on the soil classification. If this degree of sloping is not possible, support systems must be used. (Note: Sloping requirements may vary in states that have state OSHA plans.)

Soil Classification	Maximum Allowable Slope	
Stable Rock	Vertical	90 degrees
Type A	3/4:1	53 degrees
Type B	1:1	45 degrees
Type C	1 1/2:1	34 degrees

C. SUBCONTRACTORS INVOLVED IN EXCAVATIONS

Subcontractors involved in excavations either through creation of or work in excavations shall utilize their own excavation procedure and competent person. The subcontractor's procedure should be submitted to the Company Department Safety Representative for review prior to start of work.

D. TRAINING

The Competent Person (for excavations) shall receive initial training in excavations, air monitoring, soil classifications, support systems and rescue teams.

All Excavation Entrants shall receive awareness training on excavation safety prior to entering any excavation.

Emergency Rescue Teams, whether in-house or external, shall be specifically trained in excavation rescue. The Competent Person, working with the Safety Representative, shall determine the adequacy of the training of external Emergency Rescue Teams for responding to excavation emergencies. This training shall as a minimum include:

- Hazards of using equipment for recovery.
- Maintenance of air supply to the trapped.
- Continuance of water removal measures.
- Red Cross Emergency First Aid (or equivalent).
- Cardiopulmonary resuscitation (CPR).

E. RECORDS

When there has been an incident, records of the Competent Person's daily inspection notes shall be retained for the duration of the investigation and an additional three (3) years thereafter. When there has been no incident, the records shall be retained only until the excavation has been backfilled.

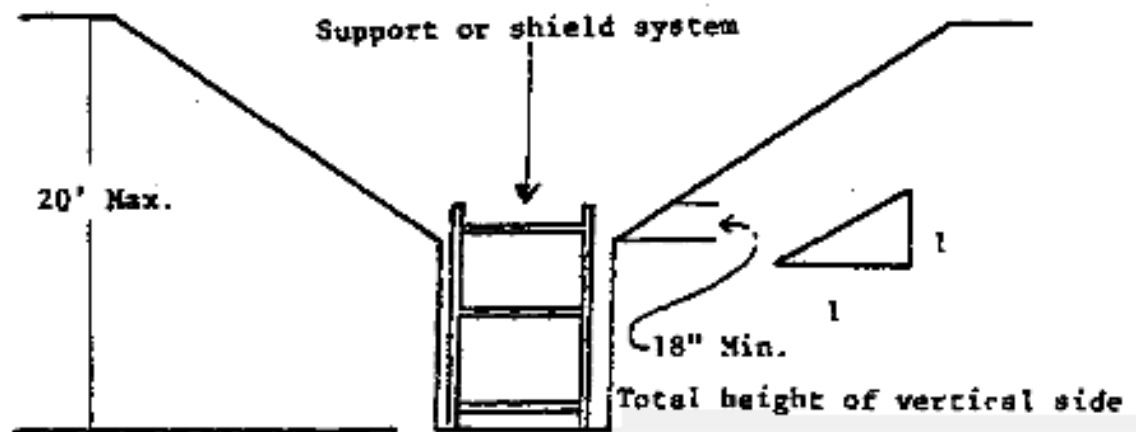
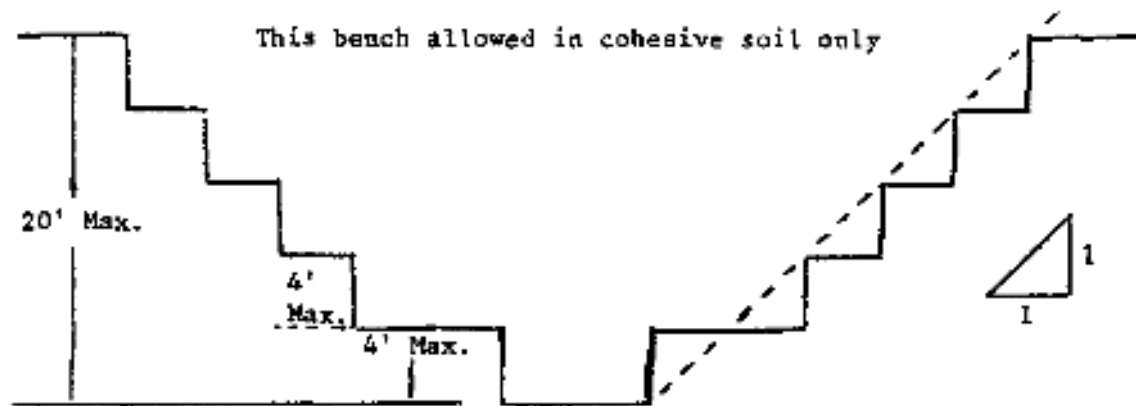
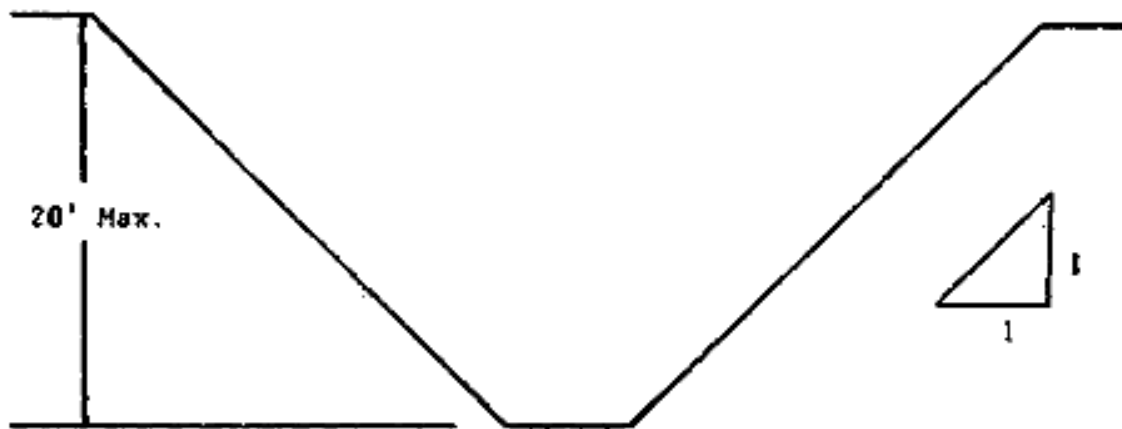
VI. REFERENCES

Attachment 1 - Examples of Sloping, Benching and Shielding.

Attachment 2 - Examples of Aluminum Hydraulic Shoring for Trenches.

Attachment 3 - Alternatives to Timber Shoring.

ATTACHMENT 1 - EXAMPLES OF SLOPING, BENCHING AND SHIELDING



ATTACHMENT 2 - EXAMPLES OF SLOPING, BENCHING AND SHIELDING

FIGURE NO. 1

VERTICAL ALUMINUM
HYDRAULIC SHORING
(SPOT BRACING)

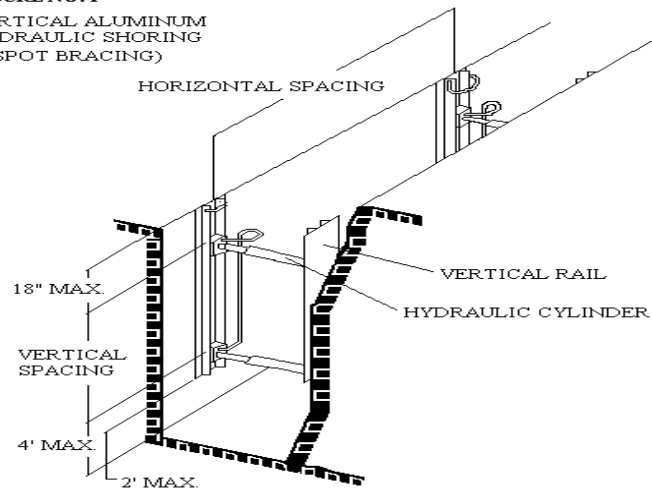


FIGURE NO. 3

VERTICAL ALUMINUM
HYDRAULIC SHORING
(STACKED)

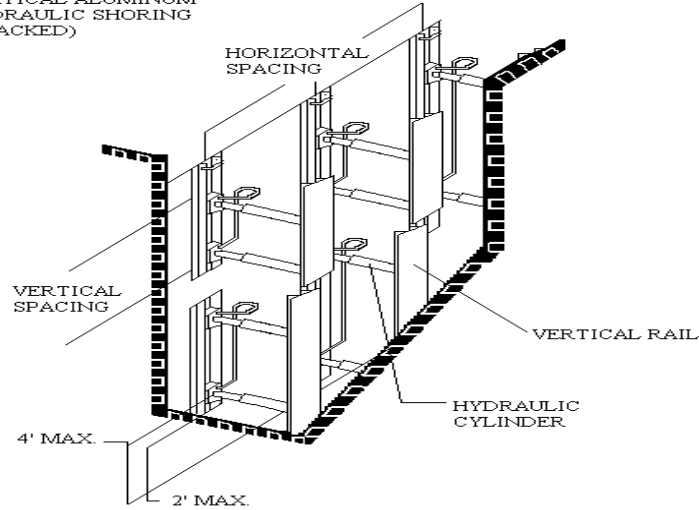
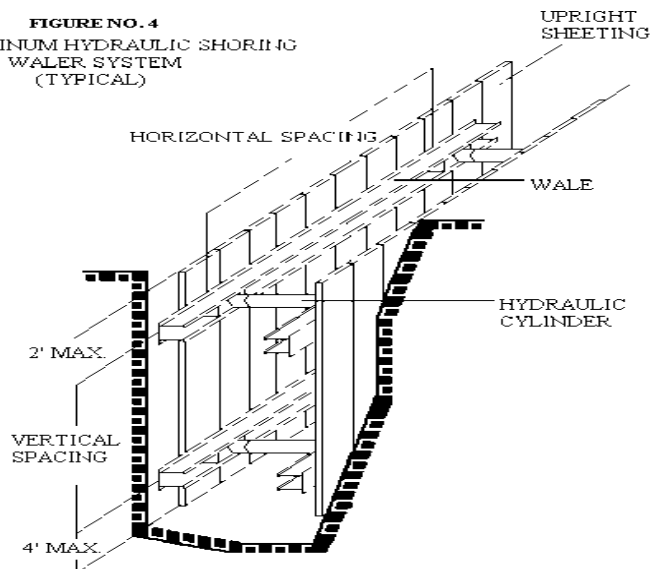


FIGURE NO. 4
ALUMINUM HYDRAULIC SHORING
WALER SYSTEM
(TYPICAL)



ATTACHMENT 3 - ALTERNATIVES TO TIMBER SHORING

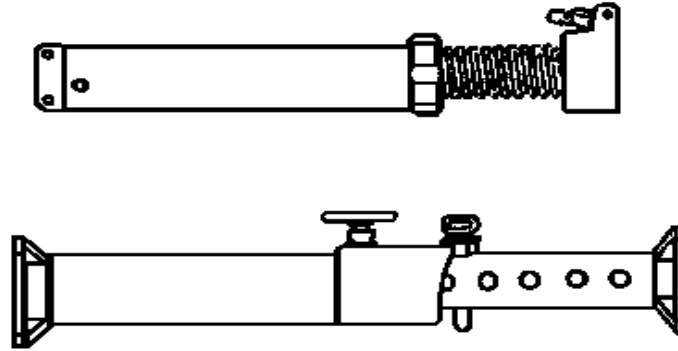


Figure 2. Pneumatic/hydraulic Shoring

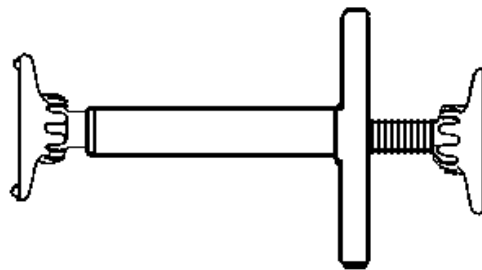


Figure 3. Trench Jacks (Screw Jacks)

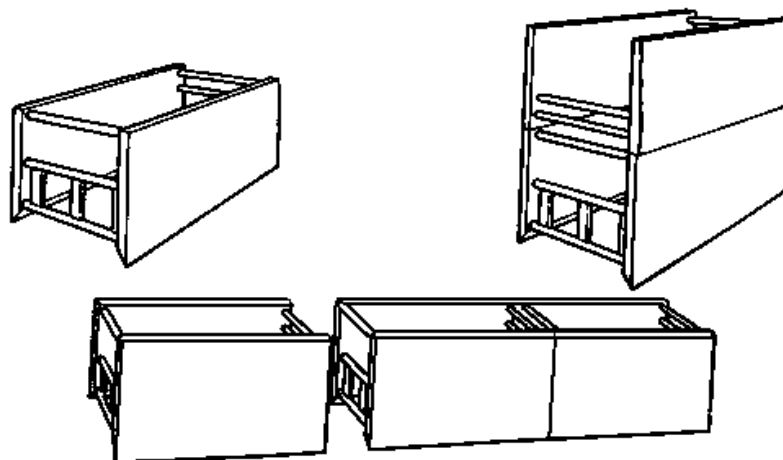


Figure 4. Trench Shields

SECTION 33: Postings and Record-Keeping

I. POSTING REQUIREMENTS - JOBSITE SAFETY

As soon as practical, after the arrival on a new jobsite, the Project Manager should place a bulletin board in or near the Company project office. If the Project Manager is stationed offsite, the Supervisor should install this board. Should the board be located outside, it shall be adequately protected from the weather.

The bulletin board will carry information regarding project specific doctor and ambulance services, safety bulletins, and all applicable federal, state, local and OSHA regulatory posters/information.

II. INJURY AND ILLNESS RECORD KEEPING REQUIREMENTS

Forms - Jobsite Injuries/Illnesses

The following forms are to be filled out after every reportable injury or illness. A reportable injury is one that requires medical attention and/or follow up treatment and as defined by OSHA or state regulations:

1. Medical Treatment Authorization forms.
2. Foreman's and Supervisor's Accident Investigation Report.
3. Injury and Illness Incident Report.

SECTION 34: Pollution Prevention

I. PURPOSE

This guideline provides information regarding pollution prevention.

II. GENERAL

It is the policy of the Company to provide the necessary resources to fully support pollution prevention in its operations. Each employee shall be responsible for contributing to the pollution prevention effort.

Pollution prevention and protection of the environment can be accomplished through the following:

- Reduce material usage where feasible.
- Adopt a “first in, first out” policy so that older materials are used up before new ones are opened.
- Reuse materials in operations where feasible.
- Recycle waste material where feasible. Scrap metals, oils, and paper are examples of waste streams that can be recycled.
- Locate and repair leaks to prevent loss. Practice preventive maintenance to avoid future loss.
- Immediately return unacceptable materials to the supplier.
- Maintain good housekeeping.
- Never pour waste chemicals down the drain. Dispose of waste according to local, state, and federal regulations.
- Keep waste streams separate. Don't allow non-hazardous waste to become contaminated with hazardous waste.
- Waste oil drums should be stored in an area equipped with spill containment.
- Minimize water usage in all operations.
- Do not overstock paints and solvents.
- Use efficient equipment in all processes.
- Use environmentally safe products where feasible.
- Immediately clean-up all spills.
- Do not over-order materials.

SECTION 35: Safety Inspections

I. PURPOSE

The purpose of this section is to ensure that comprehensive, documented inspections are completed of sites and also projects.

II. PERFORMANCE

A. RESPONSIBILITY

Each supervisor will be responsible for making a daily informal tour of the area(s) under his/her supervision.

Periodically, the supervisor will make a formal documented safety and health inspection of his/her area of responsibility.

B. INSPECTION PROCEDURES

The supervisor will observe work methods as well as work conditions. Prior to the inspection, the supervisor should review past accidents to determine specific causes and high hazard areas or operations. Such areas will be given special attention during each inspection.

In addition to the contents of an inspection check sheet, the supervisor will note unsafe acts such as:

- Using equipment without authority
- Insecure or disorderly piling or arranging of material
- Operating equipment at an unsafe speed
- Using defective tools or equipment
- Unsafe loading or unloading of trucks, skids, racks, etc.
- Lifting improperly, or handling loads that are too heavy
- Using improper tools, equipment, or vehicles
- Using tools, equipment, or vehicles improperly
- Making guards or safety devices inoperative
- Failure to use personal protective equipment
- Repairing or adjusting machinery in motion or equipment that is under pressure or energized
- Horseplay

C. DOCUMENTATION

Safety Inspection checklists will be submitted to the Department Safety Representative.

The completed checklist will be handled in the following manner:

1. Once the supervisor completes the checklist a copy should be forwarded to the Department Manager. An additional copy will be forwarded to the Department Safety Representative to initiate follow-up assistance.
2. The completed checklists may be discussed as part of the Safety Committee agenda.

D. CORRECTIVE ACTION AND FOLLOW-UP

Whenever possible, the supervisor will correct unsafe work methods and conditions immediately upon recognition.

Each Safety Inspection Checklist will be updated during the next scheduled tour. Items not yet corrected will be repeated on the new checklist with asterisks (*) indicating a "repeat" item and a notation of the date originally identified.

Hazardous conditions or procedures detected during inspections for which no corrective action can be determined by the supervisor will be brought to the attention of the Department Safety Representative. The Department Safety Representative will consult with the supervisor, maintenance, immediate manager, Safety Committee, and outside consultants, as appropriate to determine suitable corrective action.

Recommendations submitted by insurance company representatives and/or outside consultants will be handled in the same manner as the Safety Inspection Checklists.

III. REFERENCES

Attachment 1 – Safety Inspection Report

Attachment 2 – Project Safety Checklist

ATTACHMENT 1 - SAFETY INSPECTION REPORT

PROJECT: _____

DATE: _____

	SATISFACTORY (Check)	CORRECTIVE ACTION
1. HOUSEKEEPING: a. General appearance - neat/orderly b. Passageways and walkways clear c. Regular disposal of waste and trash	 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
2. EXCAVATION AND SHORING: a. Banks shored or sloped - spoils away from opening b. Open areas barricaded with warning signs c. Adequate access and exit ladders	 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
3. BARRICADES: a. Work areas roped off b. Floor, roof & wall openings protected c. Stair rails on stairways	 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
4. SCAFFOLDING: a. Footing sound & level & frame tied to structure b. Sound boards and work platforms c. Ladder access, guard rails, and toe boards in place	 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
5. LADDERS: a. Secured top & bottom & extended 3' - 0" b. Rails and rungs in good condition and repair c. Step ladders in good condition	 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
6. POWER/HAND TOOLS: a. Proper grounding checked & cords inspected b. Mechanical safeguards in use c. All hand tools in good condition and repair	 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
7. TEMPORARY ELECTRICAL: a. GFI or Assured Grounding Systems checked b. All cords in good repair and tagged	 <input type="checkbox"/> <input type="checkbox"/>	
8. CHOKERS AND RIGGING: a. Chokers, straps, & shackles in good condition b. Visual check of chain falls and come-a-longs	 <input type="checkbox"/> <input type="checkbox"/>	
9. WELDING AND CUTTING: a. Weld leads and cable in good condition and repair b. Torches and gas hoses in good condition c. Bottles stored and properly labeled d. Weld screens in place & fire extinguishers inspected	 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
10. GENERAL: a. Personal protective equipment being used	 <input type="checkbox"/>	

- b. First aid kits available and stocked ☐
- c. Emergency phone numbers posted ☐
- d. Hazardous materials labeled & MSDS/SDS on file ☐
- e. Safety locks and tags in place ☐
- f. Subcontractors safety practices ☐

INSPECTION COMPLETED BY: _____

ATTACHMENT 2 – PROJECT SAFETY CHECKLIST

PROJECT: _____ Legend: _____
 PROJECT MANAGER: _____
 DATE: _____

SITE ACCESS/SECURITY

- | | | | |
|--|--------------------|-------------------------------|------------------------------|
| <input type="checkbox"/> Entrance for contractors identified and communicated | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Badge requirements for subcontractors identified and communicated | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Subcontractor parking area identified and communicated | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Access for visitors and deliveries identified and communicated | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Vehicle entry permits process identified and communicated | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |

CUSTOMER/SITE ORIENTATION

- | | | | |
|--|--------------------|-------------------------------|------------------------------|
| <input type="checkbox"/> Orientations for subcontractors coordinated with customer | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Orientation process communicated to subcontractors | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |

PPE REQUIREMENTS

- | | | | |
|---|--------------------|-------------------------------|------------------------------|
| <input type="checkbox"/> Minimum PPE requirements identified and communicated to subcontractors | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Sign posted at site entrance to communicate minimum PPE requirements | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> PPE assessments performed by subcontractor for their work scope | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> PPE available onsite for Company employees | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |

SUBCONTRACTOR SAFETY CONTACT/OFFICER

- | | | | |
|---|--------------------|-------------------------------|------------------------------|
| <input type="checkbox"/> Subcontractor safety contact/officer identified | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> List of Safety Contacts/Officers maintained by Project Manager | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |

SUBCONTRACTOR SAFETY EXECUTION PLAN

- | | | | |
|---|--------------------|-------------------------------|------------------------------|
| <input type="checkbox"/> Verify copy of plan maintained by each subcontractor | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Copies of plans reviewed by Project Manager | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |

INFORMATION

- | | | | |
|--|--------------------|-------------------------------|------------------------------|
| <input type="checkbox"/> Entrance for contractors identified and communicated | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Badge requirements for subcontractors identified and communicated | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Subcontractor parking area identified and communicated | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Access for visitors and deliveries identified and communicated | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |

- | | | | | |
|--------------------------|--|--------------------|-------------------------------|------------------------------|
| <input type="checkbox"/> | communicated | _____ | ____/____/____ | |
| <input type="checkbox"/> | Vehicle entry permits process identified and communicated | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Subcontractor parking area identified and communicated | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Access for visitors and deliveries identified and communicated | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Vehicle entry permits process identified and communicated | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |

FACILITIES

- | | | | | |
|--------------------------|---|--------------------|-------------------------------|------------------------------|
| <input type="checkbox"/> | Project Office/Trailer | | | |
| <input type="checkbox"/> | Location determined/coordinated with customer | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Telephone service installed | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Electrical power hooked-up | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Water and sewer service | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Toilets Facilities | | | |
| <input type="checkbox"/> | Use of customer facilities established | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Portable toilets ordered and set-up | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | 20 or less workers onsite (one toilet) | | | |
| <input type="checkbox"/> | More than 20 workers onsite (one toilet/40 workers) | | | |
| <input type="checkbox"/> | Location identified and communicated | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Maintenance schedule set-up | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Hand-washing facilities identified and communicated to subcontractors | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Drinking Water | | | |
| <input type="checkbox"/> | Source identified | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Party responsible for refreshing coolers each day identified | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Trash bins | | | |
| <input type="checkbox"/> | Locations determined | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Party responsible for maintenance and emptying bins determined | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Segregated bins i.e. scrap metal, lumber set-up and marked | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Lighting | | | |
| <input type="checkbox"/> | Survey work area for proper illumination/lighting | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Install portable lighting where needed | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | Lunch area | | | |
| <input type="checkbox"/> | Location identified and communicated to subcontractors | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |

SITE EMERGENCY PROCEDURES

- | | | | | |
|--------------------------|--|--------------------|-------------------------------|------------------------------|
| <input type="checkbox"/> | MEDICAL: Procedure identified and communicated | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | FIRE: Procedure identified and communicated | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> | GAS/VAPOR RELEASE: Procedure identified | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |

- and communicated
- | | | | |
|---|--------------------|-------------------------------|------------------------------|
| <input type="checkbox"/> Emergency phone numbers posted | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
|---|--------------------|-------------------------------|------------------------------|

HAZARDOUS MATERIALS

- | | | | |
|--|--------------------|-------------------------------|------------------------------|
| <input type="checkbox"/> Verify that subcontractors have MSDS/SDS for hazardous material brought on site | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Identify and communicate location of customer MSDS/SDS book | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Identify process equipment in work scope that contains hazardous mtl. | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Communicate above process information to subcontractors | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Communicate labeling and storage requirements to subcontractor | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |

HOUSEKEEPING

- | | | | |
|---|--------------------|-------------------------------|------------------------------|
| <input type="checkbox"/> Housekeeping schedule set and communicated to subcontractors | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Daily walkthrough inspection requirement communicated | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |

HAZARDOUS WASTE MANAGEMENT

Any hazardous waste generated out of project activities should be managed and manifested by the customer.

- | | | | |
|---|--------------------|-------------------------------|------------------------------|
| <input type="checkbox"/> Identify possible hazardous waste | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Asbestos insulation | | | |
| <input type="checkbox"/> Asbestos ceiling tile | | | |
| <input type="checkbox"/> Asbestos flooring | | | |
| <input type="checkbox"/> Asbestos cooling tower panels | | | |
| <input type="checkbox"/> PCB ballast | | | |
| <input type="checkbox"/> Lead | | | |
| <input type="checkbox"/> Product contaminated material | | | |
| <input type="checkbox"/> Other | | | |
| <input type="checkbox"/> Establish responsibility for abatement of asbestos | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Establish responsibility for abatement of lead | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Establish responsibility for handling of hazardous waste | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Establish hazardous waste collection area | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |

AUDITS

- | | | | |
|---|--------------------|-------------------------------|------------------------------|
| <input type="checkbox"/> Weekly audit schedule set and communicated to subcontractors | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Weekly audit protocol communicated to subcontractors | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> File established for tracking follow-up/corrective action | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |

GASOLINE AND OIL

- | | | | |
|--|--------------------|-------------------------------|------------------------------|
| <input type="checkbox"/> Refueling procedures established | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Storage area established | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> No Smoking Signs posted | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |
| <input type="checkbox"/> Fire extinguisher available at storage area | Responsible: _____ | Date Complete: ____/____/____ | N/A <input type="checkbox"/> |

MATERIAL CONTROL

- | | | | | |
|--|--------------------|-------------------------------|-----|--------------------------|
| <input type="checkbox"/> Material lay-down yard established | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Area within yard for specific components established | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Responsibility for transport from lay-down yard established | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Receiving process established and communicated to all | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |

COMPRESSED GAS CYLINDERS

- | | | | | |
|--|--------------------|-------------------------------|-----|--------------------------|
| <input type="checkbox"/> Proper storage area established | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
|--|--------------------|-------------------------------|-----|--------------------------|

FABRICATION/HOTWORK AREA

- | | | | | |
|---|--------------------|-------------------------------|-----|--------------------------|
| <input type="checkbox"/> Area for pipe fabrication, welding, etc. established | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Hotwork permit procedure determined | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Hotwork procedure communicated to subcontractor | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Drains and sewers in area covered | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Fire extinguisher available in area | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Welding machines properly grounded | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Welding shields put in place | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |

CONFINED SPACE

- | | | | | |
|---|--------------------|-------------------------------|-----|--------------------------|
| <input type="checkbox"/> Identify Confined Spaces that will be entered | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Identify hazards associated with entry | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Identify energy isolation points for confined space | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Determine confined space permit procedure to be used | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Communicate confined space procedure to subcontractors | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |

CRITICAL LIFTS

- | | | | | |
|--|--------------------|-------------------------------|-----|--------------------------|
| <input type="checkbox"/> Lift and rigging plan obtained from subcontractor | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Review lift and rigging plan | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Record weight of object to be lifted and height above elevation | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Area of lift surveyed for potential conflicts/problems | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Verify cranes used have annual OSHA certification | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Verify qualifications of operators | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Coordinate lift with customer personnel | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Notify public officials if necessary (road closures, crowd control) | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Notify utility company if necessary (lift near electrical lines) | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Obtain necessary permits | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |

SCAFFOLDING

- | | | | | |
|---|--------------------|-------------------------------|-----|--------------------------|
| <input type="checkbox"/> Identify areas where scaffolding will be required for access to work | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Identify areas where manlifts/elevated platforms will be needed | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Verify subcontractors have fall protection plan | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Survey work area and determine need for fall protection | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |

EXCAVATION AND DIGGING

- | | | | | |
|---|--------------------|-------------------------------|-----|--------------------------|
| <input type="checkbox"/> Obtain underground utility drawings from customer | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Obtain necessary customer/municipal permits | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Locate and mark underground utility lines | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Mandate probing procedure for digs near lines | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Verify "competent person" for subcontractor making entry into excavation | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |

LOCKOUT/TAGOUT

- | | | | | |
|---|--------------------|-------------------------------|-----|--------------------------|
| <input type="checkbox"/> Collect and communicate customer Lockout/Tagout requirements
If use of customer LOTO procedure not mandatory. | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Review subcontractor LOTO procedure to ensure effectiveness | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Identify and verify line location and content with customer | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Mark line as to content & location | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Mark isolation points with tag or marker | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Review work scope with subcontractor and customer contact | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Coordinate and notify customer/subcontractors of possible utility disruptions | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Electrical | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Water | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Steam | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Gas | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> Air | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |

FALL PROTECTION

- | | | | | |
|--|--------------------|-------------------------------|-----|--------------------------|
| <input type="checkbox"/> Inspect harness:
• webbing, d ring, buckles, eyelets, stitching, load indicator | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> inspect lanyards:
• webbing, snap hooks, shock absorber, splicing/stitching | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |
| <input type="checkbox"/> inspect anchorage:
• Webbing, d ring, mechanical parts, pins and locking device, | Responsible: _____ | Date Complete: ____/____/____ | N/A | <input type="checkbox"/> |

function, load indicator

Inspect retractables:

- ☐ • outer case, webbing, snap hook, load indicator Responsible: _____ Date Complete: ____/____/____ N/A ☐

Inspect Tripod:

- ☐ • legs, head frame, feet, chain, pins/locking device, pulleys, accessories Responsible: _____ Date Complete: ____/____/____ N/A ☐

REVIEW/PREPARE RESCUE PLAN

- ☐ Local authorities informed? Responsible: _____ Date Complete: ____/____/____ N/A ☐
- ☐ Chain of Command established Responsible: _____ Date Complete: ____/____/____ N/A ☐
- ☐ Reporting procedures established (who, how, where)? Responsible: _____ Date Complete: ____/____/____ N/A ☐
- ☐ Action plan for quick response of employee Responsible: _____ Date Complete: ____/____/____ N/A ☐
- ☐ Self-rescue or assisted? - How? (ladder? man lift? Fork lift?) Responsible: _____ Date Complete: ____/____/____ N/A ☐
- ☐ Can you reach suspended worker? Responsible: _____ Date Complete: ____/____/____ N/A ☐

For your information

Suspension Trauma - is an effect which occurs when the human body is held upright without any movement for a period of time.

Conclusions and Recommendations

Prolonged suspension from fall arrest systems can cause orthostatic intolerance, which, in turn, can result in serious physical injury, or potentially, death. Research indicates that suspension in a fall arrest device can result in unconsciousness, followed by death, in less than 30 minutes. To reduce the risk associated with prolonged suspension in fall arrest systems, employers should implement plans to prevent prolonged suspension in fall protection devices. The plan should include procedures for: preventing prolonged suspension, identifying orthostatic intolerance signs and symptoms, and performing rescue and treatment as quickly as possible.

SECTION 36: OSHA Inspections

I. PURPOSE

The purpose of this document is to present information regarding basic rules to comply with an OSHA Inspection.

II. OSHA Inspection

A. GENERAL INFORMATION AND RULES

Under the Occupational Safety and Health Act of 1970 (the Act), the Occupational Safety and Health Administration (OSHA) is authorized to conduct workplace inspections and investigations to determine whether employers are complying with the standards issued by the agency for the safe healthful workplace.

It is the policy of the Company to allow the Occupational Safety and Health Administration (OSHA) to conduct an inspection of any project. A Company employee must accompany the OSHA Compliance Officer at all times and make arrangements for the meeting between OSHA, General Contractors, and Subcontractors, as needed.

The Department Safety Representative must be notified immediately of all OSHA inspection. Should the Department Safety Representative be unreachable, the Senior Managing Director of the Department and the Human Resources Director should be notified. All efforts to reach some level of management must be exhausted prior to accompanying the OSHA Compliance Officer.

OSHA inspectors are to be given full cooperation to carry out all of their inspection duties.

OSHA compliance safety and health officers, who are safety and health professionals trained in the disciplines of safety and industrial hygiene, conduct workplace inspections, and investigation.

States administering their own occupational safety and health program through plans approved under section 18(b) of the Act must adopt standard and enforce requirements, which are at least as effective as the federal requirements.

B. INSPECTION NOTICE

Inspections are always conducted without advance notice. There are, however, special circumstances under which OSHA may give notice to the employer, but such notice will normally be less than 24 hours. These circumstances include the following:

- Imminent danger situations that require correction as soon as possible;
- Accident investigations where the employer has notified the agency of a fatality or catastrophe;
- Inspections that must take place after regular business hours or that require special preparation;
- Cases where notice is required to ensure that the employer and employee representative

- or other personnel will be present;
- Cases where an inspection must be delayed for more than 5 working days when there is good cause; and
- Situation in which the OSHA Area Director determines that advance notice would produce a more thorough or effective inspection.

Employers who receive advance notice of an inspection must inform their employees' representative or arrange for OSHA to do so.

C. INSPECTION PRIORITIES

OSHA has established a system of inspection priorities.

- Imminent danger situations receive top priority. An imminent danger is any condition where there is reasonable certainty that a danger exists that can be expected to cause death or serious physical harm immediately or before the danger can be eliminated through normal enforcement procedures.
- Second priority goes to the investigation of fatalities and accidents resulting in death or hospitalization of three or more employees. Such catastrophes must be reported to OSHA within 8 hours.
- Third priority goes to formal employee complaints of unsafe or unhealthy working conditions and to referrals from any source about a workplace hazard. Each employee has the right to request an OSHA inspection, confidentially, when they believe they are in imminent danger from a hazard or when they think there is a violation of an OSHA standard that threatens physical harm.
- Next in priority are programmed inspections aimed at specific high-hazard industries, workplaces, occupations, or health substances, or other industries identified in OSHA's current inspection procedures.

D. FOLLOW-UP INSPECTION

A follow up inspection determines if the employer has corrected the previously cited violations. If an employer has failed to abate a violation, the compliance officer informs the employer that he or she is subject to "Failure to Abate" alleged violations. This involves proposed additional daily penalties until the employer corrects the violation.

E. THE OSHA INSPECTION PROCESS

Inspector Credentials

- When an OSHA Compliance Officer arrives at the establishment, he or she displays official credentials and ask to meet an appropriate employer representative.
- Always ask for and examine the Compliance Officer's credentials. Calling the nearest federal or state OSHA office can be done to verify credentials.
- Compliance officers may not collect a penalty at the time of inspection or promote the sale of a product or service at any time; anyone who attempts to do so is impersonating a government inspector and the FBI or local law enforcement officials should be contacted

immediately.

Opening Conference

- In the opening conference, the Compliance Officer explains how the establishment was selected and what the likely scope of the inspection will be.
- The Compliance Officer explains the purpose of the visit, the scope of the inspection, and the standards that apply.
- The Compliance Officer gives the employer information on how to get a copy of the applicable safety and health standards, as well as a copy of any employee complaint that may be involved (with the employee's name deleted, if the employee requests anonymity).
- The Compliance Officer asks the employer to select an employer representative to accompany the compliance officer during the inspection. Ideally the Department Safety Representative, or the available manager, will be available to accompany the Compliance Officer. Under no circumstances should the Compliance Officer go unaccompanied without someone of authority from the Company.
- The Act does not require an employee representative for each inspection. Where there is no representative, however, the Compliance Officer must consult with a reasonable number of employees concerning safety and health matters in the workplace walkthrough.

Inspection

- After the opening conference, the Compliance Officer and accompanying representatives proceed through the establishment to inspect work areas for safety and health hazards.
- The Compliance Officer determines the route and duration of the inspection.
- The Compliance Officer observes safety and health conditions and practices; consults with employees privately, if necessary; takes photos, video tapes, and instrument readings; examines records, collects air samples; measures noise levels; surveys existing engineering controls; and monitors employee exposure to toxic fumes, gases, and dust.
- OSHA places special importance on posting and record keeping requirements. The Compliance Officer will inspect records of deaths, injuries, and illnesses that the employer is required to keep. He or she will check to see that a copy of the total from the last page of the OSHA Form Number 300 are posted as required and that the OSHA workplace poster (OSHA 3165), which explains employees' safety and health rights, is prominently displayed.
- The Compliance Officer also requests a copy of the employer's Hazard Communication Program.
- During the course of the inspection, the Compliance Officer will point out to the employer any unsafe or unhealthful working conditions observed. At the same time, the Compliance Officer will discuss possible corrective action.
- All efforts should be made to correct any apparent violations detected by the Compliance Officer. The Compliance Officer records such corrections to help in judging the employer's good faith in compliance.

Closing Conference

- At the conclusion of the inspection, the Compliance Officer conducts a closing conference with the employer, employee and/or the employees' representative.
- The Compliance Officer gives the employer and all other parties involved a copy of the Employer Rights and Responsibilities Following an OSHA Inspection (OSHA 3000) for their review.
- The Compliance Officer discusses all unsafe or unhealthy conditions observed during the inspection and indicates all apparent violations for which he or she may issue or recommend a citation and a proposed penalty. The Compliance Officer will not indicate any specific proposed penalties but will inform the employer of appeal rights.

SECTION 37: Silica Safety

I. PURPOSE

The purpose of this document is to establish and implement a written exposure control plan that identifies tasks involving silica exposure and methods used to protect employees. Employees are required to implement the components of the Plan to ensure compliance with the following applicable state and federal regulations. The following Occupational Safety and Health Administration (OSHA) standards are applicable for respirable crystalline silica.

- General Standard 29 CFR 1910.1053
- Construction Standard 29 CFR 1926.1153

II. SCOPE

The Silica Exposure Control Plan applies to all employees who are expected to be exposed to respirable crystalline silica as outlined in section 4; or through other means, which are determined by their supervisor.

III. RESPONSIBILITIES

Managers

- Ensure supervisor(s) understand their responsibilities for the preparation and implementation of the Silica Exposure Control Plan within each work unit.
- Actively support this Plan within individual units.
- Ensure an environment where all employees are required to follow this Plan.

Supervisors

- Implement and ensure procedures are followed in accordance with this Plan.
- Ensure that staff is aware of this Plan, instructed on the details of implementation, and provided with equipment, and methods of control (e.g. engineering controls, work practice controls and respirators).
- Contact safety department to request technical assistance, and to evaluate health and safety concerns within their department.

Employee

- Comply with this Plan and any further safety recommendations provided by supervisors and/or safety department regarding the Silica Exposure Control Plan.
- Contact supervisor or safety department to request technical assistance, and to evaluate health and safety concerns within their department.

IV. SPECIFIED EXPOSURE CONTROL METHODS

For each employee working with materials containing crystalline silica and engaged in a task using the equipment and machines listed below, the employer shall fully and properly implement the engineering controls, work practices, and respiratory protections specified.

Stationary Masonry Saws

- *Engineering Control:* Water continuously fed to the blade
- *Respiratory Protection:* None Required

Drivable Saws

- *Engineering Control:* Water continuously fed to the blade
- *Respiratory Protection:*
 - Enclosed Area: Can Not Use Saw in Enclosed Areas
 - Outside Area: None Required

Handheld Power Saws

- *Engineering Control:* Water continuously fed to the blade
- *Respiratory Protection (less than 4 hours per shift):*
 - Enclosed Area: N95 Dust Mask
 - Outside Area: None Required
- *Respiratory Protection (more than 4 hours per shift):*
 - Enclosed Area: N95 Dust Mask
 - Outside Area: N95 Dust Mask

Walk Behind Saws

- *Engineering Control:* Water continuously fed to the blade
- *Respiratory Protection (less than 4 hours per shift):*
 - Enclosed Area: N95 Dust Mask
 - Outside Area: None Required
- *Respiratory Protection (more than 4 hours per shift):*
 - Enclosed Area: N95 Dust Mask
 - Outside Area: None Required

Ring Mounted Core Saw or Drill

- *Engineering Control:* Water continuously fed to the cutting surface
- *Respiratory Protection:* None Required

Handheld and Stand-Mounted Drills

- *Engineering Control:* Commercial shroud or cowl with dust collection system
- *Respiratory Protection:* None Required

Dow Drilling Rigs for Concrete

- *Engineering Control:* Commercial shroud or cowl with dust collection system
- *Respiratory Protection (less than 4 hours per shift):*
 - Enclosed Area: Can Not Use Drill in Enclosed Areas
 - Outside Area: N95 Dust Mask
- *Respiratory Protection (more than 4 hours per shift):*
 - Enclosed Area: Can Not Use Drill in Enclosed Areas
 - Outside Area: N95 Dust Mask

Vehicle-Mounted Drilling Rigs

- *Engineering Control:* 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.
- *Respiratory Protection:* None Required

Jackhammers and Handheld Power Chipping Tools

- *Engineering Control:* Water continuously fed to the point of impact – OR – Commercial shroud or cowl with dust collection system
- *Respiratory Protection (less than 4 hours per shift):*
 - Enclosed Area: N95 Dust Mask
 - Outside Area: None Required
- *Respiratory Protection (more than 4 hours per shift):*
 - Enclosed Area: N95 Dust Mask
 - Outside Area: N95 Dust Mask

Walk-Behind Milling Machines and Floor Grinders

- *Engineering Control:* Water continuously fed to the point of impact – OR – Commercial shroud or cowl with dust collection system
- *Respiratory Protection:* None Required

Small Drivable Milling Machines (Less than Half-Lane)

- *Engineering Control:* Use a machine equipped with supplemental water sprays designed to suppress dust. Water must be combined with a surfactant.
- *Respiratory Protection:* None Required

Large Drivable Milling Machines (Half-Lane and Larger)

- *Engineering Control:* Use a machine equipped with exhaust ventilation on drum enclosure and supplemental water spray designed to suppress dust. – OR – Use a machine equipped with supplemental water spray designed to suppress dust. Water must be combined with a surfactant.
- *Respiratory Protection:* None Required

Crushing Machines

- *Engineering Control:* Use equipment designed to deliver water spray or mist at crusher and other points where dust is generated. – AND – Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote control station.
- *Respiratory Protection:* None Required

Heavy Equipment (Hoe-Ramming, Rock Ripping, and Demolition)

- *Engineering Control:* Operate equipment from within an enclosed cab. – AND – When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions.
- *Respiratory Protection:* None Required

Heavy Equipment (Grading and Excavating)

- *Engineering Control:* 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.
- *Respiratory Protection:* None Required

Handheld Grinders for Mortar Removal

- *Engineering Control:* Commercial shroud or cowl with dust collection system
- *Respiratory Protection (less than 4 hours per shift):*
 - Enclosed Area: N95 Dust Mask
 - Outside Area: N95 Dust Mask
- *Respiratory Protection (more than 4 hours per shift):*
 - Enclosed Area: Full Face Air Purifying Respirator

- Outside Area: Full Face Air Purifying Respirator

Handheld Grinders for Uses Other than Mortar Removal

- *Engineering Control:* Water continuously fed to the grinding surface – OR – Commercial shroud or cowl with dust collection system
- *Respiratory Protection (less than 4 hours per shift):*
 - Enclosed Area: None Required
 - Outside Area: None Required
- *Respiratory Protection (more than 4 hours per shift):*
 - Enclosed Area: N95 Dust Mask
 - Outside Area: None Required

V. HOUSEKEEPING

The employer shall not allow dry sweeping or dry brushing where such activity could contribute to employee exposure to respirable crystalline silica

- Use Wet Sweeping
- Use HEPA-Filtered Vacuuming

The employer shall not allow compressed air to be used to clean clothing or surfaces where such activity could contribute to employee exposure to respirable crystalline silica.

If you're exposed to respirable crystalline silica and engaged in a task using equipment and machines not identified in the list above, contact safety department for an exposure assessment to determine the engineering controls, work practices, and respiratory protection requirements to safely do your job

VI. REFERENCES

Attachment 1 – Silica Exposure Control Plan (template for projects)



Silica Exposure Control Plan

For

(Key in the Job Name Here)

Located at

Overview

For the silica dust producing task(s) described below FRIEDMAN will use *Alternative Exposure Control Methods* to protect its workers from overexposure to respirable crystalline silica. *Alternative Exposure Control Methods* are necessary because effective engineering controls required by “Table 1” of OSHA’s *Respirable Crystalline Silica Standard* are not achievable for the respirable crystalline silica dust producing tasks within our scope of work on this project.

Purpose

The purpose of this written silica exposure control plan is to protect workers from overexposure to respirable crystalline silica. Overexposure can lead to series health problems such as silicosis, lung cancer, chronic bronchitis, kidney disease, and autoimmune diseases. Therefore, (Company Name) will ensure that:

No worker is exposed to respirable crystalline silica above the Permissible Exposure Limit (PEL) of 50 ug/m³;

An exposure assessment is performed for each worker who could be exposed to respirable crystalline silica at or above the Action Level (AL) 25 ug/m³.

Worker exposure will be reassessed whenever a change in production, process, control equipment, personnel, work practices, or any other reason that becomes apparent could change exposures to measure at or above the AL.

Whenever they are feasible engineering and work practice controls will be established and implemented to reduce and maintain exposures at or below the PEL.

Responsibilities

(Name of Designated Competent Person) is (Company Name’s) designated competent person for silica related activities that affect (Company Name) workers on this project. (Name of Designated Competent Person) is responsible for implementation of this exposure control plan and will perform frequent and regular inspections of applicable areas of the jobsite, materials, and equipment to ensure that it is being properly implemented. (His/her) responsibilities include, but are not necessarily limited to ensuring that:

An acceptable exposure assessment has been completed and documented for each applicable silica related task affecting (Company Name) workers;

The results of the exposure assessments are made available to affected workers and their designated representatives;

Affected workers have received appropriate safety and health training on respirable crystalline silica generating tasks, accompanying hazards, and effective protective measures;

Appropriate engineering controls are established whenever they are feasible;

Appropriate safe work practices are established and implemented as needed;

Respiratory protection is used when needed, and respirator use is in compliance with applicable respiratory protection standards;

Housekeeping practices limit exposure to respirable crystalline silica as much as possible; and

The effectiveness of this exposure control plan is evaluated usually annually where applicable and updated as necessary to keep affected workers from overexposure to respirable crystalline silica.

Silica Dust Producing Tasks

On this project (Company Name) will perform or may perform work in close proximity to the following silica dust producing task(s).

(Delete all that do not apply and add any that apply, but which are not already listed. Also, add detail such as where on the project the task(s) will be performed, how many of your workers will be directly affected, how many holes or what size cuts you'll be making, etc. 1st. example... "Use of handheld impact drill by one worker in the corridor leading to the mechanical room. The worker will drill thirty 3/8" pipe hanger holes 2 3/4" deep into the poured concrete ceiling. 2nd example... "Working in close proximity to masons operating a stationary masonry saw intermittently throughout the day. The masons are using the room to cut brick and block as needed.")

Handheld drill work on concrete (add details)

Handheld impact drill work on concrete (add details)

Handheld rotary hammer drill work on concrete (add details)

Stand mounted drill work on concrete (add details)

Stand mounted impact drill work on concrete (add details)

Stand mounted rotary hammer drill work on concrete (add details)

Rig mounted core drill/saw work on concrete (add details)

Handheld power saw work on concrete (add details)

Walk-behind saw work on concrete (add details)

Jackhammer work on concrete (add details)

Handheld powered chipping tool work on concrete (add details)

Working in close proximity to stationary masonry saw work on concrete (add details)

Working in close proximity to handheld power saw work on fiber cement board with a blade diameter of 8" or less (add details)

Working in close proximity to drivable saw work on concrete (add details)

Working in close proximity to dowel drilling rig work on concrete (add details)

Working in close proximity to vehicle mounted drilling rig work for rock / concrete (add details)

Working in close proximity to handheld grinders for mortar removal work (add details)

Working in close proximity to handheld grinders for concrete work (add details)

Working in close proximity to walk-behind milling machine work on concrete (add details)

Working in close proximity to walk-behind floor grinder work on concrete (add details)

Working in close proximity to small drivable milling machine work on concrete (add details)

Working in close proximity to large drivable milling machine work on concrete (add details)

Working in close proximity to crushing machine work on stone (add details)

Working in close proximity to heavy equipment/utility vehicle work on silica containing materials (add details)

Working in close proximity to heavy equipment/utility vehicle work on excavating (add details)

Engineering Controls

Acceptably effective engineering controls are not feasible for the respirable crystalline silica generating task(s) within (Company Name's) scope of work on this project. When acceptable, engineering controls are feasible (Company Name) will always defer to, and comply with "Table 1" of OSHA's *Respirable Crystalline Silica Standard*.

Safe Work Practices

All affected (Company Name) workers and supervisors will follow designated safe work practices for tasks and exposures within our scope of work to help prevent overexposure to respirable crystalline silica on this project. The safe work practices include, but are not necessarily limited to the following:

Affected workers will wear appropriate respirators unless, and until the results of the exposure assessment(s) indicate that overexposure to respirable crystalline silica will not occur without respiratory protection.

When engineering controls, such as the wet method, HEPA filtered dust collection systems, and local exhaust ventilation are by themselves inadequate for worker protection from overexposure, but feasible to use, they will be implemented in conjunction with respirator use to help control respirable crystalline silica concentrations.

Only sharp masonry drill bits and saw blades will be used when drilling or cutting into concrete.

Affected workers are not permitted to eat, drink, smoke, or apply cosmetics in affected work areas.

Affected workers are required to wash their hands and faces before eating, drinking, smoking, or applying cosmetics.

Affected workers are not permitted to dry sweep, dry brush, or use compressed air to clean their clothes or surfaces in affected work areas. Cleanup will be performed only with HEPA filtered vacuums.

Respiratory Protection

Affected workers are required to use respiratory protection unless, and until the results of the exposure assessment(s) indicate that overexposure to respirable crystalline silica will not occur without respiratory protection. (Name of Designated Competent Person) will ensure that each affected worker has, prior to respirator use:

Received appropriate training on respiratory protection, including the contents of OSHA's *Respiratory Protection Standard*, and proper respirator selection, use, maintenance, storage;

Completed a medical evaluation and been approved to work while wearing a respirator; and

Completed fit testing procedures that have established an appropriate size, brand, and style of respirator for adequate protection from overexposure to respirable crystalline silica on this project.

Housekeeping Measures to Limit Worker Exposure

Dry sweeping, and dry brushing are not permitted by (Company Name) workers on this project.

Use of compressed air to clean clothing or surfaces in affected work areas are not permitted by (Company Name) workers on this project.

A HEPA vacuum will be used for all silica containing dust cleanup.

Affected Area Access Restrictions

(Company Name) restricts access by all others to areas where (Company Name) workers are performing (insert task(s) you selected from *Silica Dust Producing Tasks* above) and restricts access to its own affected workers who must perform work in areas where other trades are pulverizing silica containing building materials.

Prior to starting work on any project where respirable crystalline silica exposure is a concern (Name of Designated Competent Person) will meet with all other affected employers to determine whether (Company Name) workers could be exposed to respirable crystalline silica from the work of other trades on the project. Where potential exposures are identified (Name of Designated Competent Person) will document the operations, their locations on the project, and when they will be performed.

Prior to starting work on any project where respirable crystalline silica exposure is a concern (Name of Designated Competent Person) will meet with all (Company Name) workers to inform them about the silica exposures on the project and the necessary affected area restrictions.

When (Company Name) workers are performing tasks that Generate Respirable Crystalline Silica:

The affected work area will be barricaded with stanchions, and yellow and black caution tape.

The barricaded area will be large enough to prevent other trades in the area from overexposure to respirable crystalline silica, provided that they do not breach the barricade.

Signs stating, "Caution – Silica" will be posted around the perimeter of the barricaded areas so that other trades will know why they should not to breach the barricade.

(Name of Designated Competent Person) will inform all other affected employers on the project about the silica generating tasks that will be performed by (Company Name), their locations on the project, and when they will be performed.

When (Company Name) workers must work in close proximity to other trades that are pulverizing silica containing building materials:

Affected (Company Name) workers will not enter the work area but will report the issue to (Name of Designated Competent Person).

(Name of Designated Competent Person) will reschedule the mechanical construction work in the affected area to another time when exposure to respirable crystalline silica is not a concern.

When work in the affected area can't be rescheduled, access to affected (Company Name) workers will not be restricted, but (Name of Designated Competent Person) will ensure that they are implementing the necessary safe work practices and protective measures to prevent overexposure to respirable crystalline silica in those work areas.

Review/Evaluation of This Silica Exposure Control Plan

(Name of Designated Competent Person) will evaluate the effectiveness of this written silica exposure control plan at least annually and update it as necessary to keep affected workers from overexposure to respirable crystalline silica on this project.

SECTION 38: Propane Powered Floor Care Equipment

I. PURPOSE

Propane is a flammable gas whose vapors are heavier than air. As is the case with gasoline, propane can explode if the proper cautions are not heeded. Propane is odorized with an agent having a distinct odor that is recognizable at very low concentrations. This helps in identifying leaks, even when they are small.

Awareness and basic safety precautions are required when working with propane. If these precautions are followed, risk is negligible. Ignorance, however, could pose needless risk.

The two greatest hazards with propane powered floor care machines are:

Carbon Monoxide Poisoning: This is the most frequently reported incident associated with propane powered floor care machines and is caused by excessive exhaust emissions. The symptoms are headache, dizziness and nausea. A major cause involves engines with poor preventive maintenance practices, usually those with dirty air filters and machines operated in confined areas without adequate ventilation. Another cause may be substandard, inexpensive machines with no emissions control technology and improperly set carburetion. **Overfilled Fuel Cylinders:** Nearly all fire related incidents reported result from bringing a cylinder into a building without first checking for overfill. This action is dangerous, unwise, and unnecessary.

Operating a propane powered floor care machine is not difficult and is safe. However, as in operating any piece of equipment, whether it be an automobile, lawnmower, power boat, etc., safely operating a propane powered floor care machine does require a basic knowledge of the equipment, it's safety features, safe work practices and routine maintenance of the machine.

II. SCOPE

Why Use Propane?

1. Propane is a clean burning, efficient and reliable fuel. 2. It has the unique characteristic of being a gas at atmospheric pressure and liquid when stored in a cylinder under moderate pressure. Upon release of the pressure it easily vaporizes to become a gas. It is in the gaseous state that it mixes with air and can power vapor draw engines used on floor care machines.
2. Propane is economical. It is also portable, which makes it preferable over electric units for locations having few electrical outlets.
3. Propane is extremely concentrated in its liquid state. One cubic foot of liquid propane will expand to 270 feet (82 m) of gaseous vapor at atmospheric pressure.
4. Propane is environmentally friendly. Because of its molecular structure it burns cleanly and produces low hydrocarbon and carbon monoxide emissions, far below the standards set by EPA. The OSHA limit is 50 parts per million of carbon monoxide over an 8-hour period. A properly maintained propane powered floor machine produces less than 10 parts per million carbon monoxide in the ambient or surrounding air, much less than is experienced in normal automobile traffic.

5. Propane gas is heavier than air. If it leaks or vents from the cylinder it will settle close to the floor and stay there.
6. Propane is non-toxic, unlike gasoline, diesel, methanol and ethanol. Propane is only a slight risk to health.
7. Propane has odor added for easy detection. Since raw propane has no odor, a small amount of an odorant, ethyl mercaptan, is added to give propane its characteristic pungent odor.

III. SAFE WORK PRACTICES

Fire Safety

Be aware of the potential dangers of fire or explosion when using propane and take normal fire-safety precautions.

- Fire: There is a possibility of fire from LPG vapor leaking or venting from fuel cylinders or carburetion equipment.
- Explosion: LPG vapor concentrated or confined to a small, restricted space may explode or ignite.
- Propane may experience a BLEVE, a boiling liquid expanding vapor explosion.

Emissions

All propane powered floor care machines produce emissions. Most are harmless, but some are dangerous and can be fatal. Carbon monoxide (CO) poses the greatest risk, since CO can be lethal within as little as 30 minutes exposure at 3,000 parts per million (ppm) concentration. Carbon monoxide is an invisible, odorless, colorless gas created when fossil fuels (such as gasoline, wood, coal, propane, oil and methane) burn incompletely. In the home, heating and cooking equipment are possible sources of carbon monoxide. Vehicles running in an attached garage could also produce dangerous levels of carbon monoxide. Any internal combustion engine not maintained properly can also produce harmful levels of CO.

Regulations NFPA

Operating a propane powered floor care machine requires compliance with certain safety regulations. The National Fire Protection Agency (NFPA) Standard for Storage and Handling of LP Gas is the appropriate authority for safe propane use.

Among its regulations, NFPA #58 requires that all personnel employed in the handling of propane gas be trained in its proper handling and operating procedures. It also requires them to carry a written certification from their employer or training supervisor to attest to such training. Although this is directed mainly to those who fill and transport liquid propane gas, we recommend that operators of propane powered floor care machines in public places be trained and certified as well.

With regard to operation of propane powered floor care equipment, even though NFPA 58 8-4.5 says “these machines shall be permitted to be used in buildings frequented by the public, including the times when such buildings are occupied by the public,” Onyx Environmental Solutions suggests usage when occupancy of a given work area is minimal.

NFPA is a non-profit organization that was established in 1896 to create fire protection standards. Today, it is nationally recognized as the final authority in fire safety related matters. In fact, NFPA #58 regulations have been adopted by virtually all municipalities and stand as the basis for the propane gas safety regulations.

CARB/EPA

The California Air Resource Board (CARB) and Environmental Protection Agency (EPA) also set limits for propane powered engines used outdoors, but CARB/EPA approval does not signify that the engine is safe to use indoors.

CGA

The Canadian Gas Association (CGA) has set a limit of 1500 ppm CO in exhaust flow.

OSHA

For propane powered machines used indoors, the Occupational Health and Safety Administration (OSHA) has established a limit of 50 ppm CO for 8-hour time weighted average (TWA) in ambient air and is considering a limit of 800 ppm CO in exhaust flow.

DOT

The Department of Transportation (DOT) has established regulations regarding the safety of fuel cylinders including the ones used on propane powered floor care machines.

Local Agencies

Local law enforcement agencies such as the local Fire Marshall also rely on independent testing labs such as UL and CGA before giving their approval of the use of some equipment. These labs thoroughly test equipment and submit their stamp of approval only after rigorous testing. While not being required by all law enforcement agencies, the stamp of approval by these agencies further assures the operator that he or she is working with and around safe equipment.

CO Detectors for Technicians

We recommend that all operators of propane powered equipment wear Carbon Monoxide Indicator badges as an extra precaution. The plastic indicator contains a colored indicator

button which darkens in the presence of Carbon Monoxide. The relative darkness of the indicator button indicates the level of CO in the ambient atmosphere. Most indicator badges have a useful life of 30 days, depending on the concentration of contaminants, humidity, and temperature.

Testing

There are a great number of instruments offered on the market to test for toxic gases. Only those designed to read carbon monoxide resulting from combustion engines are considered acceptable for testing exhaust emissions from propane powered floor machines. Some instruments are used to read "ambient air" and may be damaged if used to take readings in the muffler or tail pipe. Selecting the proper instrument is an important part of meeting the testing requirements.

Generally speaking, units capable of reading in ppm, (parts per million), at ranges from 0 to 1000 are adequate for checking ambient air (air in the breathing zone of the operator). Instruments capable of testing carbon monoxide in the exhaust should be able to read from 0 to at least 2000 ppm and should be certified by the manufacturer for that purpose.

Some instruments and systems used for these purposes are:

Ambient Air Monitoring

All instruments used for testing must be calibrated at intervals recommended by the manufacturer. The monitor, model number and date of calibration will be recorded with all test results.

Hazard Communication

It is necessary to post a Material Safety Data Sheet for propane. You will notice on this sheet that propane is highly flammable, and it has a slight health risk. Because propane is odorized, it is easily detected at levels of just a few parts per million, which is much less than the exposure limit of 1000 parts per million.

If you smell propane while operating a propane floor care machine, do the following:

1. Stop the engine: Pull the throttle to the stop position (if present) or turn the key switch to the off position.
2. Shut off the service valve on the propane cylinder.
3. Move the floor machine to a well-ventilated area.
4. Remove the cylinder from the machine and take it outside the building.
5. If the cylinder is leaking, contact a DOT approved repair shop to determine the cause of the leak and have the shop, not you, repair it.

If a fire occurs while the machine is being operated do the following:

1. Stop the engine: pull the throttle to the stop position (if present) or turn the key switch to the off position.
2. Shut off the service valve on the propane cylinder if possible. Be careful not to get burned.
3. Move the machine outside if possible. If not possible, move it to a well-ventilated area away from flammable materials.
4. Do not attempt to extinguish the flame from a gas leak. If you do, the gas will build up in the area and could re-ignite. Starve the fire by shutting off the supply of gas.

5. Have the machine and cylinder inspected before using them again.

Storing Cylinder

When not in use, propane cylinders always should be stored outside in an upright position in a secure, tamperproof, steel mesh storage cabinet. This cabinet may be located next to the building but with at least five feet (1.5 m) of space between the cabinet and the nearest building opening (door or window).

Do not install the cabinet near a stairway or street elevator as vented propane gas will seek a lower level since it is heavier than air and could find its way into the basement of the building. Do not store cylinders full or empty inside a building or inside a vehicle. Although it is unlikely that propane will vent from a stored cylinder, if it should, the vapor could come in contact with an ignition source such as a spark from a power tool or other appliance and create a flash fire. Do not smoke or use a device with an open flame when handling or transporting propane cylinders.

Transporting Cylinders

When transporting cylinders to a propane dealer or to a job, make sure the cylinders are securely fastened and standing in an upright position with the service valve closed. A cylinder rattling around in the back of a vehicle and banging into other objects constitutes a hazard. Avoid dropping or banging cylinders against sharp objects. The propane cylinders are sturdily constructed but a series of hard jolts could cause damage.

Please note that any cylinder that has been filled is always considered full, no matter how little propane gas remains in it. This is because even when all liquid has evaporated into vapor there is still some propane gas vapor left in the cylinder. Because this remaining fuel is flammable, an empty cylinder should be treated with the same careful procedures as one that is filled to the 80% level with liquid propane. The only time that a cylinder is considered empty is when it is new before it has been filled with propane.

When transporting a propane powered floor care machine, the propane cylinder may be strapped onto the machine as long as the machine itself is firmly secured in the vehicle. Of course, spare cylinders should always be secured in an upright position.

SECTION 39: Golf Cart Safety

I. PURPOSE

The three main causes of risk from golf car operations are the car, the operator, and the public. Maintaining the golf car in top condition is probably the easiest element of a golf cart safety program. Changing the behavior of the people driving golf cars is difficult and following the rout can be risky.

II. SCOPE AND SAFE WORK PRACTICES

The Golf Cart

- Set up a preventive maintenance program.
- Check the vehicles daily, including the steering system, brakes/parking brake, suspension, shift control, accelerator, and backup alarm.
- Tag vehicles identified as having problems. Do not rent vehicles until they have been repaired.
- Document your prevention maintenance checks for each vehicle. Records should include the checks made, completion dates of repairs and by whom, and the replacement parts used.
- Electric Powered Golf Cars:
 - * Provide ventilation in the battery changing area. Make sure the building is wired for the loads required.
 - * Provide an eye wash fountain and deluge shower close athand.
 - * Provide aprons, shield, and acid-resistant gloves withgauntlets.
 - * Do not allow smoking in the battery area.
- Gas Powered Golf Cars:
 - * Provide adequate ventilation in the gasoline storage area.
 - * Use only UL listed cans, pumps, hoses, and nozzles with automatic shut-offs.
 - * Keep a fire extinguisher rated for flammable liquids close at hand.
 - * Protect gasoline pumps and above ground tanks with a barrier.
 - * Do not allow smoking in the fueling area.
- Secure golf cars to the trailer according to golf care and trailer manufacturer's requirements. Secure or remove accessories, such as windshields and canopies, before towing at highway speeds.
- Provide security for golf cars since they are frequent targets of vandals.
- Provide adequate lighting so the area is visible to people patrolling the area.
- Fence and lock outdoor storage areas and monitor indoor storage facilities using burglar alarm system when available.

The Operator

- The driver must hold a valid driver's license.
- Instruction and training to employees must be held with your brand or model of golf car.
- Communicate any known hazards of the area such as steep hills or blind spots.
- Establish rules that you can communicate and enforce, including:
 - * No golf car will be operated by an intoxicated person.
 - * Only authorized people may drive the golf car.
 - * Golf cars should carry no more than manufacturers recommendations.
 - * Do not start the golf car until all occupants are seated.
 - * Prior to starting, check to see if the golf car is set to go forward or backward and make the require adjustments if necessary.

- * Start the golf car only after all others are prepared.
- * Drive straight up and down a hill. Driving across can cause the position of the golf car to tilt and overturn.
- * Never make a sharp turn, even on a straight-away. Approach a hill or rise in a straight line. To turn at the bottom of a hill, go straight and turn slowly at a large angle.
- * Don't stand up in a moving golf car.
- * Slow down and drive with extra caution when the grass is wet.
- * Turn off the golf car while others are in area and you are waiting to proceed.
- * Set the parking brake before leaving the car.
- * Remove the keys when the golf car is left unattended.
- Keep records of each person who has been issued or uses a golf car. The record should indicate that instruction/training was given in the operation of the car and that the person was informed of potential trouble spots such as steep hills, bridges and blind spots.

The Area

- Review the area for potential hazards including steep hills, bridges without curbing or railings, bridges at the bottom of hills, drop-offs along the paths, water hazards near the path, rough terrain on paths, blind spots, places where carts and foot traffic mix, and places where golf car traffic and automobile traffic mix.
- Install railings, curbs or barriers on elevated paths or bridges and near drop-offs or other hazards.
- Place speed bumps on cart paths in areas where speed should be restricted.
- Landscape the abutments of bridges to provide cushioning if bridges are located at the bottom of hills. Landscaping can also be used to channel golf cars to desired paths.