Transtar Electric

INDUSTRY SAFETY MANUAL and ACCIDENT PREVENTION PROGRAM

(Revised April 2019)
Developed with

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OSHA ACT RESPONSIBILITIES

The Occupational Safety and Health Act of 1970 requires employers to provide a place of employment reasonably free of hazards that may cause illness, injury, or death. You must also comply with all rules and regulations issued under the Act.

There are Federal Regulations of OSHA that are enforced in the State of Ohio. However, there are other non-regulated states (for example, Michigan/MIOSHA) that have amended regulations similar to the Federal OSHA but mandate the law differently than Federal OSHA.

Federal OSHA requires under General Duty Clause Section 5(a)(1) states that:

(a) Each Employer –

> ***(1) shall furnish to each of his/her employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;***
>
> ***(2) Shall comply with occupational safety and health standards promulgated under this Act.***

(b) Each Employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to the Act which are applicable to his own actions and conduct.

Employer / Employee Responsibilities

It is the policy of this company to provide all of our employees a place of employment free from hazards that may cause illness, injury, or death. It is also the company's policy to establish an effective and continuous safety program incorporating educational and monitoring procedures maintained to teach safety, correct deficiencies, and provide a safe, clean working environment.

All company superintendents, job foremen, supervisors, managers, directors, and officers are responsible for the enforcement of safety policies and practices. They must ensure that:

- Their staff members are trained in appropriate safety procedures including specific training as required. Individual safety files are maintained through the Safety Director (or designee) or Human Resource Department.

- They notify the Safety Director (or designee) and complete the necessary forms if an accident or work-related health problem occurs in their department.

- Equipment and property within their area of responsibility is maintained in a safe, hazard-free condition.

All employees have a responsibility to themselves and to the company for their safety and the safety of co-workers. All employees are required to:

- Comply with all federal, state, and local rules and regulations relevant to their work.

- Observe all company rules and regulations related to the efficient and safe performance of their work.

- Integrate safety into each job function and live by this philosophy in the performance of job duties.

- Report or correct unsafe equipment and practices.

- Report any accidents that occur while on the job immediately to their foreman or designated company representative.

Notes of Changes

Front page added safety@agcnwo.com as email for questions coming from electrical contractors. That way we are not changing email every time there is a change of safety people at the AGC.

Added NECA Standing Policy to the front of the book. This is just a summary of the change philosophy of NECA.

Table of contents will change:

I combined Employer/Employee Responsibilities pages. This eliminated a page. I brought the OSHA General Duty Clause onto this page.

Moved the Injury and Illness Policy in front of the OSHA Inspection Process. To me, the more important items should be towards the front of the manual.

Job Site Security followed by Hazard Assessment and Emergency Action Plan moved to the front.

New HAZCOM section more in-line with the new SDS.

Health Hazards including Silica. Added Table 1 in Appendix D. There is still more to come regarding silica. Currently there are 37 lawsuits filed to block the standard. This may change some of the regulations within the standard. When we get a final determination, I will get a formal policy in place. Right now, the best way to reduce the hazard is wet cutting and drilling with a HEPA vac attachment. Enforcement of this standard will not go into effect until June 23, 2017.

Electrical Arc Flash Program with permits and tables in Appendix F.

Added language to inspect tools prior to use.

Hot work added Hot Work Permits to Appendix G.

Added type 1AA to ladder section.

Added every three years to forklift section. Also added papers to Appendix H.

Added language for testing of soil within excavations in Appendix L.

Added language to cranes for certification as of Nov. 17, 2017 in Appendix K.

New Confined Space Standard/Permits in Appendix J.

Appendix B is vehicle incidents.

Greg Burkhart,
Industry Safety Director

General Company Safety Policy Statement

This general company safety policy has been developed to reflect and communicate the proactive safety attitude maintained every day at this company.

The company will comply with appropriate safety laws and regulations such as those established by:

- The Occupational Safety and Health Act (OSHA)
- The Environmental Protection Agency (EPA)
- The Department of Transportation (DOT)
- All other applicable federal, state, and local safety and health regulations

We believe that the safety of employees is of utmost importance, along with quality, good workmanship, and cost-control. Maintenance of safe operating procedures at all times is of both monetary and human value, with the human value being far greater to the employer, the employee, and the community. The following principles support this philosophy:

- The prevention of bodily injury and safeguarding of health are the first considerations in all workplace actions and are the responsibility of every employee at every level.

- Written safety plans describing the safe work practices and procedures to be practiced in all workplace actions are an essential element of the overall workplace safety program. All employees at every level are responsible for knowing and following the safety practices described in the written safety plans.

- On and off the job, all employees should be safe and always demonstrate an awareness of potential hazards.

Because we care about our employees and strive to provide a safe workplace, we have put into place a number of written safety plans. These written plans provide guidance and direction for the safety issues they cover.

_____ Date:_____
Signature of President or Chief Executive Officer

_____
Printed name of President or Chief Executive Officer

NECA STANDING POLICY – SAFETY PROGRAMS AND SAFE WORKERS

National Electrical Contractors Association (NECA) believes that safety is an integral part of achieving excellence in the electrical contracting business by maintaining the highest productivity, quality and safety standards in a proactive, practical and cost effective approach to manage organizational loss control. NECA members demonstrate safety professionalism and responsibility through every aspect of work and services they provide including designing, planning, construction, service work and implementing operations with a minimum of disruption to customers. NECA's commitment to jobsite safety is reinforced by placing special emphasis in quality safety training programs that integrate safety into project pre-planning and project management.

NECA historically has supported and continues to support the highest safety standards in construction for the benefit of its members, the industry and the consuming public. NECA actively advocates maintaining the safest and most productive workplace possible. NECA members appreciate the benefits of a workplace free from injuries, the advantage of a productive work force, and responsibility of offering a safe working environment. To that end, NECA believes that to achieve *zero injuries* in the workplace, members must strive for *zero energy work environments* as the normal and best practice, whenever achievable.

NECA members understand jobsite safety is an important responsibility shared between employers and employees and affirms that implementing safe work practices is not optional. The association believes that a trained and qualified workforce has responsibility to recognize and avoid workplace hazards and, where necessary, employers provide appropriate personal protective equipment for workers exposed to workplace hazards.

NECA remains active in government relations and rulemaking processes related to worker safety. The association actively participates in electrical safety standard development, such as NFPA 70 the *National Electrical Code*, and NFPA 70 *Standard for Electrical Safety in the Workplace* and other safety legislation that affects the industry. NECA is committed to supporting collaborative effective efforts in industry alliances and partnerships sharing common safety objectives.

The goal of NECA members is to maintain a safe and healthy workplace for all employees and to foster efficient operations, thereby offering the best possible product and services to the construction customer. Effective safety related work practices and principles must be integrated into the planning and installation of electrical work as well as into design.

NECA members recognize that implementing effective safety programs and safe work practices is often challenged by cultural differences and other distractions that are not in the best interest of employees or employers and they are dedicated to solving these problems while establishing and maintaining safety in the workplace. Safety excellence results from safe work practices that continuously strive for *Zero Injuries*. NECA's commitment to safety excellence and safe work environments remains active, focused and constant.

INJURY AND ILLNESS PROCEDURES (FOR ALL EMPLOYEES ON JOB SITES)

Note: This is **not** to be used for vehicle accidents.
This is **not** to be used for general liability accidents or liability damage.

1. When an accident/incident occurs, make sure that the area is safe prior to anyone approaching the injured worker or the affected area.

2. Make the affected person as comfortable as possible, but do not move the person unless it is absolutely necessary.

3. The initial treatment for serious injuries or illnesses should be administered by someone trained in first aid safety.

4. Contact the local emergency services as soon as possible if the injury or illness is of a serious nature (use posted number at the job site).

5. Contact the company Safety Director (or designee) as soon as possible.

6. If the injury or illness is non-life threatening (such as a bruise, small cut or sprain), suggest the employee see an occupational health doctor. The supervisor may delegate someone to transport the employee to the occupational health facility. If this is a job-related injury or illness, the employee shall report to the supervisor, after medical treatment, as to the extent of the injury or illness.

7. At no time shall anyone who witnessed the incident speak with anyone or make any statement regarding the condition of the injured worker. This could be interpreted as a violation of the HIPPA law.

8. The Owner/Contractor or Safety Director (or designee) will handle all statements concerning any accident or illness.

9. The employee suffering from a job-related injury or illness treated by a medical provider will not be permitted to return to the work site without a written release signed by the treating physician.

10. The employee responsible for safety on the job site shall follow up the injury or illness, and make any corrections necessary to ensure that the incident cannot occur again, per the Safety Director (or designee)'s approval.

11. Accidents on the job may require drug testing. Follow the procedures of the GLCA MOST program for details. See the current NWOGLCA policy in ***Substance Abuse*** .

12. ***Any injury or illness, no matter how small, must be reported to the job foreman or superintendent prior to the end of the day the injury or illness occurs.***

13. When it is convenient for the injured worker, workers' compensation paperwork must be filled out. (FROI-1 for Ohio Bureau of Workers Compensation). There will also be reports required by the company for the injured worker to complete. This will aid in the investigation of the injury.

14. The FROI-1 form (Ohio BWC) satisfies the requirement for the OSHA 301.

*See Appendices A and B for additional assistance.

Disciplinary Policy

The employer is responsible for maintaining a safe work environment. Employees not adhering to all safety rules create an unsafe environment for both themselves and those working around them. The employer will discipline employees for unsafe work practices up to and including termination for cause. Small infractions shall be handled with a warning and instruction on proper procedures. More serious infractions shall be handled more severely. Anyone who refuses to adhere to the safety policies set forth by the employer shall be terminated for cause immediately.

A standard disciplinary policy is as follows:

Everyone recognizes that both the employee and the company benefit from an orderly and harmonious work environment. Rules and regulations defining certain improper employee actions exist to help maintain this environment. Disciplinary action including, but not limited to, warnings, discharge, or immediate discharge shall be taken if any employee engages in these actions.

First Offense – Verbal warning with documentation
Second Offense – Written warning with documentation
Third Offense – Time off
Fourth Offense – Potential discharge

In certain instances, depending upon the nature and severity of the improper action, certain steps of this disciplinary process may be deleted or bypassed.

EMERGENCY ACTION PLAN

Written Emergency Action Plan:

OSHA's Emergency Action Plan standard, found at 29 CFR 1926.35, requires companies to have a written emergency action plan (EAP). This plan applies to all operations in our company where employees may encounter an emergency situation.

The EAP notifies employees of the policies and procedures to follow in emergencies. This written plan is available, upon request, to employees and any OSHA officials who ask to see it.

Under this plan, employees will be informed of the plan's emergency escape procedures and route assignments. The plan will include instructions to be followed by employees before evacuation, how to account for all employees after emergency evacuation has been completed, and the preferred means of reporting fires and other emergencies, and the types of evacuations to be used in various emergency situations. The Safety Director (or designee) has overall responsibility for the plan and will review and update the plan as necessary.

After reading this program, if you find that improvements can be made, please contact the Safety Director (or designee). We encourage all suggestions that may enhance the success of our emergency action plan. We strive for clear understanding, safe behavior, and involvement in the program from every level of the company.

Our emergency escape procedures and assignments are designed to respond to many emergencies including accidents, fires, tornado, etc.

Employees need to know what to do when they discover or are alerted to a specific emergency. The Safety Director (or designee) has developed procedures for responding to an emergency, depending on what the emergency is. The following guidelines apply:

1. All employees should be trained in safe evacuation procedures, and refresher training is conducted whenever the employee's responsibilities or designated actions under the plan change, and whenever the plan itself is changed.
2. The training includes use of floor plans and workplace maps that clearly show the emergency escape routes included in the Emergency Action Plan. Color-coding aids employees in determining their route assignments. These floor plans and maps are available and appropriately posted to provide guidance in an emergency when necessary.
3. As a matter of general practice, stairwells are the primary means for evacuation. Elevators are used only when authorized by a fire or police officer, or to assist physically disabled personnel.

4. No employee is permitted to re-enter the building until advised by the Safety Director (or designee) and not until after determination has been made that such re-entry is safe.
5. A list of safe zones will be provided. A safe zone is a safe meeting area designated for each group of employees within each department.

Trained Personnel:

Trained evacuation personnel conduct head counts once evacuation has been completed. Supervisors are responsible for head counts and to ensure the employees under their direction are safely out of the building. The employees should be trained in the complete workplace layout and the various alternative escape routes from the workplace. All trained personnel are made aware of employees with disabilities who may need extra assistance and of hazardous areas to be avoided during emergencies. Before leaving, these employees check rooms and other enclosed spaces in the workplace for employees who may be trapped or otherwise unable to evacuate the area.

The Supervisors for each shift will be able to help evacuate personnel. Once each evacuated group of employees have reached their assigned destinations, each Supervisor will:

1. Take a roll call for his or her group.
2. Makes sure all persons are accounted for.
3. Report to a central checkpoint.
4. Assumes role of contact to answer questions any employees may have.

Local Rescue:

Local emergency services and rescue units responding to an emergency will direct all rescue and medical duty assignments upon their arrival on site.

In the Event of a Fire:

Not every job site or workplace will have the same system to handle a fire or other emergency. Therefore, either:

1. When a fire is detected go to the nearest fire alarm station and activate the alarm by pulling on the lever. The alarms will notify the local fire department closest to the facility. Fire alarms are located on each floor near the elevators, and also near each entry/exit door.

OR…

2. When a fire is detected, if applicable, sound the designated fire warning signal (bell, whistle, alarm, or horn, etc.), then contact the local fire department by calling 911. Exit the building immediately.

Upon arrival of the local fire department, head counts should be given to the Fire Chief or another fire official. No employees are to return into the buildings until the fire department gives the “all clear”.

In the event of a tornado:

The Safety Director (or designee) is responsible for monitoring local weather conditions. When the National Weather Service has issued a tornado watch, the Supervisor (or his designee) will closely monitor the National Weather Service reports. In the event of an announced tornado warning, the Supervisor will alert employees.

In the event of a tornado, it is policy to provide emergency warning and shelter.

1. At the time the tornado horn sounds, all employees will evacuate to their assigned shelters or areas away from all windows, etc.
2. Check with the Supervisor for possible safe zone locations.

Safety Director (or designee) Responsibilities:

1. Develop a written emergency action plan for regular and after hours work conditions.
2. Immediately notify the local fire or police departments, and the building owner/superintendent in the event of an emergency affecting the office.
3. Distribute to each affected employee procedures for reporting a fire, bomb threat, or other emergency, and the location of fire exits and evacuation routes.
4. Conduct drills to acquaint the employees with emergency procedures, and to judge the effectiveness of each plan.
5. Satisfy all local fire codes and regulations as specified.
6. Train designated employees in the use of fire extinguishers.
7. Keep key management personnel home telephone numbers in the office for immediate use in the event of an emergency. Distribute a copy of the list to key persons to be retained in their homes for use in communicating an emergency occurring during non-working hours.
8. Decide whether evacuation is warranted in the event of an emergency.
9. If evacuation is deemed necessary, the Safety Director (or designee) ensures that:
    a. All employees are notified and a head count is taken to confirm evacuation of all employees.
    b. When practical, equipment is placed and locked in storage rooms or desks for protection.

c. The building owner is contacted, informed of the action plan taken, and asked to assist in coordinating security protection.
d. In locations where the building owner is not available, security measures to protect employee records and property are arranged as necessary.

Training:

At the time of an emergency, employees should know what type of evacuation is necessary and what their role is in carrying out the plan. In cases of imminent danger, total and immediate evacuation of all employees is necessary. In other emergencies, a partial evacuation of nonessential employees with a delayed evacuation of others may be necessary for continued operation. We must be sure that employees know what is expected of them during an emergency to assure their safety.

This document is not one for which casual reading is intended or will suffice in getting the message across. If passed out as a statement to be read to oneself, some employees will choose not to read it, or will not understand the plan's importance. In addition, training on the plan's content is required by OSHA.

A better method of communicating the emergency action plan is to give all employees a thorough briefing and demonstration.

If the building houses several places of employment, if applicable, we will set up a plan coordinating all EAP's including all employers in the building to avoid confusion and conflicts during an emergency.

This is a suggested list to use for your company.

Sample information includes:

1. Travel plan to exit, showing floor plan via floor plans and drawings.
2. Location of fire extinguishers.
3. Location of safe refuge.
4. Local fire department telephone number.
5. Local police department telephone number.
6. Safety Director (or designee)'s telephone number and extension.
7. Company's telephone number and address.

EMERGENCY TELEPHONE NUMBERS

PLEASE POST IN ALL OBVIOUS LOCATIONS, AS REQUIRED

_____

COMPANY NAME

Police, Fire EMS:

_____

Hospital:

_____

Emergency Contact:

_____

Jobsite Address:

_____

_____

Supervisor Name :

_____

Contact Number:

_____

GENERAL LIABILITY ACCIDENT PROCEDURES

Procedures for: Injuries to Another Company's Employee
Damage to Another Company's Equipment
Damage to Another Company's Property
Insurance Claims Filed as a Result of Doing Business

Note: This is **not** for occupational illnesses or injuries.
This is **not** for vehicular accident procedures

1. Obtain the property owner's or insureds':
    a. Name
    b. Address
    c. Telephone number
2. Obtain all witnesses':
    a. Name
    b. Address
    c. Telephone Number
3. Be prepared to explain the following:
    a. Circumstances
    b. Extent of the damage
    c. Extent of the injury
    d. Number of fatalities, injuries (if applicable)
4. Secure the area until an investigation can be made.
5. Don't place blame, just get the facts.
6. Make the affected person as comfortable as possible, but do not move the affected person if at all possible.
7. Any treatment for serious injuries should be administered by someone trained in first aid safety.
8. Contact the local emergency services as soon as possible if the injury is of a serious nature.
9. Contact the Safety Director (or designee) as soon as possible.
10. The accident shall not be discussed or any statements made unless requested by a public official (police officer). The Owner/Contractor or Safety Director (or designee) will handle all statements concerning any accidents.

***See Appendix B**

HAZARD ASSESSMENT
(ANALYSIS AND JOB SITE SAFETY)

Many different regulations require that a hazard assessment be done. Some regulations call it a “hazard analysis”; some call it a “hazard assessment.” This written plan contains detailed hazard information that may be part of several different regulatory compliance programs.

Administrative Duties:

The Safety Director (or designee) is responsible for developing and maintaining our facility’s Hazard Assessment Plan. Hazard assessments are the best way to review the hazards in the work place, and protect employees from those hazards.

Job Foreman/Supervisor:

Job site checklists are used to determine if there are any deficiencies on the job. The job foreman will fill out this checklist and send a copy to the office to obtain assistance in correcting any deficiencies found. If no deficiencies are found on the job, then the foreman will file the checklist in the job file, on site.

General Conditions at the Work Site to Consider:

1. Materials on the floor that could trip a worker.
2. Adequate temporary lighting.
3. No electrical hazards associated with operations.
4. Tools, equipment, and hand tools are in good repair.
5. Make sure that fire protection equipment is readily accessible.
6. Emergency exits are clearly marked.
7. Trucks and motorized vehicles are safely equipped (horns, overhead guards, backup signals, etc.).
8. Employees have been trained to operate equipment and vehicles properly.
9. Employees are wearing proper Personal Protective Equipment (PPE) for the jobs they are performing.
10. Proper ventilation is available, especially in confined spaces.
11. Any chemical exposures on the job site are carefully and accurately recorded.
12. Double check your job site to make sure adequate safety gear is available for all employees. Some possible sources of hazards would be:
    a. Equipment guarding
    b. Lockout/tagout
    c. Objects that can be dropped, or fall from above.
    d. Light or radiation (brazing, welding, etc.)
    e. Sharp objects
    f. Pulling, pinching, crushing objects

Conclusion:

Obviously, human factors affect hazards too. It is everyone's responsibility to make sure that any known hazards be acted upon. A complete assessment of job site hazards is an important part of our safety procedures, after which our company can take the appropriate precautions.

We utilize the information that comes from the assessment to correct potential problems to ensure that a safe environment exists for our employees as well as the surrounding community.

*** A job site safety checklist sample and a JHA can be found in Appendix C**

LOCKOUT / TAGOUT

General Company Policy:

The purpose of this program is to ensure this company's compliance with the OSHA Electrical Safety Standard, by determining that this workplace needs written procedures for preventing electric shock or other injuries resulting from direct / indirect electrical contacts to employees working on or near energized or de-energized parts. This program applies to all work operations where employees may be exposed to live parts and/or those parts that have been de-energized.

Under this program, our employees receive instruction in the purpose and use of energy control procedures, as well as the other required elements of the Control of Hazardous Energy standard. This instruction includes the de-energizing of equipment, applying locks and tags, verifying de-energization, and equipment reenergizing.

If, after reading this program, you find that improvements can be made, please contact the Safety Director (or designee) or another company representative. We encourage all suggestions because we are committed to creating a safe workplace for all our employees and a successful electrical safety program is an important component of our overall safety plan. We strive for clear understanding, safe work practices, and involvement in the program from every level of the company.

Our company shall meet all requirements of the National Fire Protection Association Standard / National Electric Code, or the most current edition at the time.

The National Electric Code shall be interpreted by the authority having jurisdiction.

NOTE: The 1926, and 1910 OSHA Standards include wording similar to the NFPA Standard (NEC). In many cases, OSHA Standards may not be current with the National Electric Code (NEC). It is best to use the most stringent standard required. In this way, safety will always be assured.

In most cases, all electrically powered equipment should be de-energized before service or maintenance. Only qualified electricians shall be allowed to work on or near any energized circuits.

Every employee who faces the risk of electric shock from working on or near energized or de-energized electrical sources will receive training in electrical-related safety work practices pertaining to the individual's job assignment prior to work starting.

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

Our Electrical Training Program covers these basic elements:

1. Lockout / tagout of conductors and parts of electrical equipment.
2. Safe procedures for de-energizing circuits and equipment.
3. Application of locks and tags.
4. Verification that the equipment has been de-energized.
5. Procedures for reenergizing the circuits or equipment.
6. Other electrically related information that is necessary for employee safety (i.e. training through the electrical JATC.)

All personnel working on or near energized or de-energized electric sources are considered “qualified” to work safely with electrical energy and must have received the appropriate training and certification to do so. In addition to the basic training elements, our “qualified” employees are trained in the skills and techniques necessary to identify exposed live parts, determine nominal voltages, and clearance distances and corresponding voltages. This group of employees has also received additional training, which includes first aid, CPR, NFPA 70E and various other safety trainings in relation to their job and as required by Federal guidelines or the employer.

All new employees are provided with orientation of the policies for each work assignment, as required. Employees will not engage in any work assignment unless they have been informed of all required policies within the company for safety, etc.

When changes in our company occur that involve electrical elements (equipment or regulations), we will provide additional employee training to ensure the safety of all affected workers. All employees will be trained and kept up-to-date when there are changes in the workplace or new equipment is purchased which could affect the employee in connection with proper safety procedures or requirements.

The company Safety Director (or designee) shall have the responsibility for additional electrical training from the company. This can be accomplished by providing a professional to teach new techniques for new equipment or materials, or providing education through the local Joint Apprenticeship Program (JATC). Every employee who participates in the Electrical Safety Program receives a certificate, which they sign; verifying that they have completed the course, understand the information presented, and that they will follow all company policies and procedures regarding electrical safety.

It is the company’s policy that circuits and equipment must be disconnected from all electric energy sources before work on them begins (unless instructed otherwise). We use lockout and tagout devices to prevent the accidental re-energizing of equipment. These lockout/tagout procedures are the main component of our electrical safety program.

Only qualified electricians are authorized to de-energize, verify, and reenergize electric circuits and equipment in our company.

This procedure establishes the company's requirements for the lockout and tagout of energy isolating devices whenever maintenance or servicing is done on machines or equipment, in accordance with the requirements of OSHA's 1910.147. It is used to ensure that the machinery or equipment is stopped, isolated from all potentially hazardous energy sources, and locked out and tagged out before employees perform any service or maintenance where the unexpected start-up of the machinery or equipment or release of stored energy could cause injury.

The Safety Director (or designee) has the responsibility for coordinating this program, as required. The procedure establishes the company's requirements for lockout/tagout. Please contact the Safety Director (or designee) if you have any questions.

What Is Lockout / Tagout?

Lockout / Tagout is a method of keeping equipment from being started and to prevent injury to workers performing service and maintenance.

Lockout: Lockout procedures utilize locks or other positive means to hold energy disconnects in a safe position. Since lockout procedures actively prevent the flow of energy, they are the preferred method of energy control according to the OSHA standard.

Tagout: Tagout procedures use tags that warn against operating energy disconnects that have been placed in a safe position. Tagout procedures DO NOT actively prevent the passage of energy. According to OSHA, tagout procedures may only be used:

1. When a company can prove that a tagout will provide the same degree of protection as a lockout.
2. Until current equipment that has no provisions for applying a lock is rebuilt or replaced. Replaced or modified equipment must have lockout capabilities and lockout procedures must be established and followed.

Requirements of Lockout / Tagout:

1. Employer must develop an "Energy Control Program."
2. Lockouts must be used whenever possible.
3. When lockout cannot be used, a tagout may be used.
4. All new or rebuilt equipment must be capable of accepting a lock.
5. Identify and implement procedures for control of hazardous energy.
6. Periodic inspection (minimum annual).
7. Training and communication (must document).

When Should You Lockout / Tagout?

Lockout / Tagout whenever you are performing service or maintenance around any machine where you could be injured by:

1. Unexpected start-up of the equipment
2. Release of stored energy.

Situations Where Lockout / Tagout Is Most Likely Needed:

1. When you must remove a guard or safety device to perform service or maintenance.
2. When you must place any part of your body where it could be caught in moving machinery.

Types of Energy:

1. Electrical
2. Hydraulic
3. Pneumatic
4. Mechanical
5. Chemical
6. Thermal

How to Lockout / Tagout:

1. Announce the shutdown to all affected employees who work on or near the equipment.
2. Turn the equipment off, using the normal shut-down procedure.
3. Disconnect the energy source(s). In the case of electrically powered machines, this means taking action at the feeder disconnect or breaker, not just the push-button control or switch on the machine itself.

   Caution: *Always disconnect the energy source **after** turning off the machine. If you disconnect a machine under load, you risk the possibility of arcing and explosion.*

4. Apply lockout/tagout device. These shall be applied to each energy isolating device by the authorized employee. Before placing your tag on your lock, print your name, phone number, company you work for and the date and type of work being done on that tag.
5. Release stored energy: After you are sure all energy has been cut off to the equipment, release stored energy and bring the equipment to a “zero” mechanical state.

6. Verification of isolation. Prior to work on the machine or equipment, the authorized person shall verify that isolation and deenergization of the machine or equipment have been accomplished.

Examples of releasing stored energy:

1. Inspect system to insure all moving parts have stopped.
2. Discharge capacitors and install ground wires.
3. Relieve trapped pressure downstream.
4. Release tension on springs, or block movement of spring driven parts.
5. Block or brace parts that could fall because of gravity or loss of hydraulic or pneumatic pressure.
6. Drain process piping systems, and close valves to prevent flow of hazardous materials.
7. Use blank flange to block flow of hazardous materials if valve not available.
8. Purge reactor tanks and process lines.
9. Dissipate extreme cold or heat, or wear protective clothing.

Release from lockout/tagout:

1. The machine or equipment. The work area shall be inspected to ensure nonessential items have been removed and to ensure that machine or equipment components are operationally intact.
2. Employees. The work area shall be inspected to ensure that all employees have been safely positioned or removed.
3. Removal of lockout/tagout devices. Each lockout or tagout device shall be removed from each energy device by the employee who applied the device. When the authorized employee who applied the device is not available to remove it. That device may be removed under the direction of the employer, provided that specific procedures and training for such removal have been developed, documented and incorporated into the employer's energy control program. 29CFR1910.147(e)

Lockout / Tagout for Outside Personnel (Contractors):

1. The on-site employer and the contractor shall inform each other of their lockout / tagout procedures.
2. The on-site employer shall insure that his/her personnel understand and comply with the outside employer's procedures.

Group Lockout / Tagout:

1. If more than one individual is required to work on a machine:
    a. A group lock box shall be used. A lock shall be placed on the machine. That key is then placed in the lock box. All employees working on that

machine shall then place their lock on the outside of the lockbox. They will then put their key in their pocket.

b. At no time shall anyone give their key to anyone else to remove their lock.
c. There shall be only one key per lock within a lockout/tagout program.

Before you place equipment back in service, you must:

1. Announce that equipment is being turned on again.
2. Remove your lock and tag.
3. Restore energy.
4. Test run equipment

Locks:

Everyone shall remove his/her own lock. Consult your company policies before doing anything. If you are the last one to unlock, notify your supervisor before restoring energy. Tags should be turned in immediately after the job is finished.

When your shift is over, remove your lock *after* the next shift arrives. Let the new shift snap their locks in place before you remove your own lock.

Lock Types:

1. Must be able durable enough to withstand all temperatures, elements, etc.
2. Must be standardized with one of the following criteria:
    a. Color
    b. Shape
    c. size
3. Must have ***one*** key (properly identified, such as color coding or brass tags).

Tag Types:

1. Must be easy to read.
2. Must feature clear warning.
3. Must be secure enough to withstand accidental removal (nylon cable tie that is self-locking by hand, and must resist more than 50 lbs. pressure).
4. Must be durable to withstand extreme temperatures, fumes, chemicals and conditions.
5. **NO MATTER HOW GOOD THE TAG IS, IT IS STRICTLY A VISUAL WARNING AND DOES NOT PROVIDE PHYSICAL PROTECTION!!!**

HAZARD COMMUNICATION

The purpose of this program is to ensure our company and our employees comply with the OSHA Hazard Communication Standard by compiling a hazardous chemicals list, using safety data sheets (SDSs), ensuring that containers are labeled, and by providing our employees with training and information availability.

This program applies to all work operations in our company where employees may be exposed to hazardous substances under normal working conditions or during an emergency situation.

The Safety Director (or designee), who has overall responsibility for the program, will review and update the program, as necessary. Copies of the written program may be obtained from the Safety Director (or designee).

All employees can obtain the applicable safety data sheets (SDSs) and chemical information lists from the Safety Director (or designee). Under this program, our employees will be informed of the contents of the Hazard Communication Standard, the hazardous properties of chemicals with which they work, safe handling procedures, and measures to take to protect themselves from these chemicals. Our employees will also be informed of the hazards associated with non-routine tasks, such as working in reactor vessels, and the hazards associated with chemicals in unlabeled pipes.

If after reading this program, you find that improvements can be made, please contact the Safety Director (or designee). We encourage all suggestions because we are committed to the success of our written hazard communication program. We strive for clear understanding, safe behavior, and involvement in the program from every level of the company.

Chemical Inventory List:

Our chemical inventory is a list of hazardous chemicals known to be present in our workplace. Anyone who has contact with the hazardous chemicals on the list needs to know what those chemicals are and how to protect themselves. That is why it is so important to have SDSs available to our workers.

The chemical inventory list identifies and evaluates each hazardous chemical in the workplace whether it is found in a container or generated in work operations (for example, welding fumes, dusts, and exhaust fumes). Sometimes hazardous chemicals can be identified using purchase orders. The hazardous chemicals on the list can cover a variety of physical forms including liquids, solids, gases, vapors, fumes, and mists. The Safety Director (or designee) updates the inventory as necessary.

The company will develop the chemical inventory list and place it with the written safety manual. It shall be available at the office and on all job sites, as required.

SDSs provide our employees with specific information on the chemicals they use.

The Safety Director (or designee) is responsible for obtaining / maintaining of the SDSs. He/she will contact the chemical manufacturer or vendor if additional research is necessary.

The safety data sheets (SDSs) are kept with the written safety manual at all job sites as required, and at the office, so that employees will have ready access to them. They shall be readily accessible and in an easy to use order.

Procedures if SDS are not received in a Shipment:

If the SDS is not received at time of first shipment, attach a list to the written program of those chemicals without SDSs and copies of request letters you have sent to the manufacturer or supplier. Those attachments will remain with the written safety program until the SDSs have been secured. Most SDSs can be located on the internet and for free.

Labeling:

The labels on containers help identity the chemical, appropriate hazard warnings, and the name and address of the manufacturer, importer, or other responsible party for quick review. The chemical identity is found on the label, the SDS, and the chemical inventory. Labels for a hazardous chemical must contain:

- Name, Address and telephone number
- Product identifier
- Signal word
- Hazard statements
- Precautionary statements
- Pictograms

The Safety Director (or designee) is responsible for ensuring that all hazardous chemicals are properly labeled and updated, as necessary. The Purchasing Agent should ensure that newly purchased materials are checked for labels prior to use, or does not allow their use until approved by the Safety Director (or designee).

The Purchasing Agent will refer to the corresponding SDS to assist employees in verifying label information.

Employees may transfer chemicals from a labeled container to a portable container which is not labeled, however, that chemical must remain in the possession of that employee and is intended for immediate use. No alternatives to labeling are used in this workplace.

Labels That Fall Off Containers:

All containers shall be checked to ensure that labels stay affixed and completely legible. If labels are missing or are unreadable, they should be relabeled or have the appropriate SDS laminated and attached for review.

Training:

Everyone who works with, or has the potential for exposure to, hazardous chemicals will receive training. This training shall include initial training, training whenever a new chemical hazard has been introduced into their work area and any necessary retraining due to job performance issues regarding this Hazard Communication Standard.

"Exposure" means an employee is subjected to a hazardous chemical in the course of employment through any route of entry (inhalation, ingestion, skin contact or absorption, etc.) and includes potential (e.g., accidental or possible) exposure. Whenever a new hazard is introduced or an old hazard changes, additional training is provided.

Information and training is a critical part of the hazard communication program. We train our employees to read and understand the information on labels and SDS's, determine how to obtain and use the information in their daily work, to understand the risks of exposure to the chemicals in their work environments, and the methods to protect themselves.

Our goal is to ensure employee comprehension and understanding including awareness of exposure to hazardous chemicals, knowing how to read and use labels and SDS's, and appropriately following the established protective measures. We encourage our employees to submit questions to the Safety Director (or designee). As part of the assessment of the training program, the Safety Director (or designee) asks for input from employees regarding the training they have received and their suggestions for improving it. In this way, we hope to reduce the possibility of chemical related illness or injury.

Training Format:

The training program format used includes Audiovisual, classroom instruction, etc.

The training plan emphasizes these elements:

1. Summary of the standard and the written program.
2. Chemical and physical properties of hazardous materials (e.g., flash point, reactivity) and methods that can be used to detect the presence or release of chemicals (including chemicals in unlabeled pipes).
3. Physical hazards of chemicals (e.g., potential for fire, explosion, etc.)

4. Health hazards, including signs and symptoms of exposure, associated with exposure to chemicals and any medical condition known to be aggravated by exposure to the chemical.
5. Procedures to protect against hazards (e.g., personal protective equipment required, proper use and maintenance, work practices or methods to assure proper use and handling of chemicals, and procedures for emergency response).
6. Procedures to follow to assure protection when cleaning hazardous chemical spills or leaks.
7. Where SDSs are located, how to read and interpret the information on both labels and SDS's, and how employees may obtain additional hazard information.

All new employees shall be trained before job assignment. The Safety Director (or designee) or Human Resource Dept. shall keep track of their training.

Hazard Advisement:

We will inform employees of chemical hazards. Any unlabeled containers shall be considered hazardous, unless advised to the contrary by the Supervisor.

When a contractor's or any other employer's personnel (i.e. Painters, electricians, or plumbers) will be working at any job site, the Safety Director (or designee), will provide the other employer(s) with SDSs for any of our chemicals to which their employees may be exposed in the following manner:

1. On the multi-employer sites, we shall provide the SDS information at one location so that all employees can be informed of possible exposure to chemicals in use at the site.

2. Relay necessary label and/or emergency precautionary information to the other employer(s) verbally to the supervisor responsible for multi-employer contractors.

Each contractor bringing chemicals on site must provide all contractors (general and sub-contractors) with the appropriate hazard information on these substances including the SDS's, the labels used and the precautionary measures to be taken in working with these chemicals.

SAFETY DATA SHEET (SDS) SHOULD BE AVAILABLE AT THE OFFICE AND JOB SITES.

KNOW THE HAZARDS AND PROTECT YOURSELF!

OSHA INSPECTIONS

Upon first mobilizing on a site, ask the controlling contractor to immediately notify your company if OSHA shows up on the site.

There are certain minimum OSHA requirements that may be requested by the compliance officer to review on site. Be prepared to assist the inspector as much as possible. ***The job foreman is required to accompany the compliance officer at all times. The job foreman should fill out the OSHA Inspection Site Documentation Form before a job walk-around on the site is allowed (this form is located in the Appendix M of this manual.)***

It is the responsibility of the job foreman to contact the Safety Director (or designee) as soon as possible after identifying OSHA is on site.

The following is a list of items that the OSHA compliance officer may request for inspection. This information should always be ready and available for reference:

1. Written company safety manual
2. HAZCOM program as well as an SDS Book
3. Required postings of federal and state required documents
4. OSHA 300 summary posted (February 1 thru April 30 only)
5. Any training records, tool box talks or supporting documents
6. Site inspections

**** Please refer to Job Site Check List and additional OSHA information in Appendix M.**

Job foreman procedures during an OSHA inspection:

1. Check the credentials of the OSHA compliance officer.
2. Make sure the OSHA Site Inspection Documentation form is completed and signed (please refer to Appendix C.)
3. When an OSHA compliance officer arrives on the job site, contact the Safety Director (or designee) immediately.
4. Inform all company employees that an OSHA compliance officer is on the job site.
5. Inform all other subcontractors on the job site that an OSHA compliance officer is on the site.
6. Be accommodating and courteous at all times.
7. Answer questions only when asked to do so.

   Questions you should not answer:
   - How long has this condition existed?
   - How long have you known about it?
   - What employees work in this area?
   - What have you done to fix the condition before we arrived?

8. Take Inspector on direct route to where he/she needs to view.
9. Take notes during the walk-around inspection, as well as during the conference, on what was done and said.
10. Take photos if necessary. Photos taken by a compliance officer must be duplicated from the same angle and from both sides. Multiple picture angles help to get a better look at the situation in question.

* See Appendix M for additional help with OSHA

JOB SITE SECURITY

(EQUIPMENT, TOOLS, TRAILERS, BOXES)

It is the company's policy that all company owned or leased tools, equipment, etc. will be utilized by company employees only. Personal use of company owned or leased tools and equipment will not be permitted. This policy is firm and will be strictly enforced.

1. The job trailer should be secured with proper and safe leveling, and the temporary steps in place.

2. Once the job trailer has been set in place and has been secured, the job foreman should contact the local authorities and request that the site is patrolled on a routine basis in the evening if necessary. The job foreman should provide the correct emergency/security number, as well as the owner/contractor telephone number to the local authority for this purpose.

3. It is the responsibility of all company employees to make sure that all tool boxes, trailers, vehicles, storage sheds, etc., are secured or locked prior to closing the job site down for the day.

4. It is the responsibility of all company employees to safely lock all tools in their proper storage cabinets:
    a. De-energize all tools, cords, and equipment, etc.
    b. Remove all regulators and welding hoses from cylinders, etc.
    c. Shut down all heating equipment, if applicable.
    d. Check the security lighting and alarm system, if applicable.
    e. Secure all ladders, scaffolds, etc.

5. If any equipment or tools are stolen or vandalized, it shall be reported to the company's owner or designee immediately.

FIRST AID KITS

Basic Requirements:

1. First aid kits shall be available at all jobsites. Refer to 29 CFR 1926.50 Appendix (A) regarding the Minimum Requirements for Industrial Unit Type First Aid Kits.
2. The amount and types of supplies in these kits will be determined by the size and nature of the job.
3. **Contents of all first aid kits shall be checked on a weekly basis**.
4. Typical supplies which may be found in a job site first aid kit are:
    - Latex gloves
    - Tweezers
    - Scissors
    - Arm and leg splints
    - Cotton compresses
    - Two-ounce bottle of antiseptic
    - Plastic bottle of eye irrigation solution
    - Two-ounce package of sterile cotton
    - One package of small paper cups
    - One package of cleansing tissues
    - Cotton tipped applicators
    - Disposable mask for mouth-to-mouth resuscitation
    - 3” x 3” sterile gauze compresses
    - 1” x 5-yard roll of adhesive
    - 2” x 5-yard roll of adhesive
    - 2” elastic bandage
    - 1” elastic bandages (Band-Aids)
    - 1” roll of gauze bandages
    - 2” roll of gauze bandages
    - One magnifying glass

PERSONAL PROTECTIVE EQUIPMENT
(General Requirements)

While OSHA's Personal Protective Equipment regulation does not explicitly require a written program, we have decided to develop a written PPE program to document and specify all information relative to our PPE needs. The Safety Director (or designee) will review and update the program as necessary.

We believe it is our obligation to safeguard the work environment for our employees. Any employee performing work in potentially dangerous conditions must be protected against the potential hazards. The purpose of protective clothing and equipment (PPE) is to shield or isolate individuals from chemical, physical, biological, or other hazards that may be present in the workplace.

Establishing a written PPE program, which details how employees use PPE, helps ensure that the protection equipment is used properly in the workplace and documents our PPE efforts in the event of an OSHA inspection. Our program covers:

1. Purpose
2. Hazard Assessment PPE selection
3. Employee training
4. Cleaning and maintenance of PPE
5. PPE specific information

If after reading this program, you find that improvements can be made, please contact the Safety Director (or designee). We encourage all suggestions because we are committed to the success of our Personal Protective Equipment Program. We strive for clear understanding, safe behavior, and involvement in the program from every level of the company.

Purpose of Program:

The basic element of any PPE program is an in-depth evaluation of the equipment needed to protect against the hazards at the workplace. The two objectives of any PPE program should be to protect the wearer from incorrect use and/or malfunction of PPE. The purpose of this Personal Protective Equipment (PPE) program is to document the hazard assessment, the protective measures in place, and the PPE available for use at this company. PPE devices are not to be relied on as the only means to provide protection against hazards, but are used in conjunction with guards, engineering controls, and sound manufacturing practices on job sites.

PPE will be provided by the employer and at no cost to the employee. It is the employee's responsibility to notify the company that their PPE is defective or damaged.

Hazard Assessment:

In order to assess the need for PPE, the following consideration should be given to the basic hazard categories:

1. Impact
2. Heat
3. Penetration
4. Harmful dust
5. Compression (roll over)
6. Light (optical) radiation
7. Chemical

During the walk-through on job sites, the Safety Director (or designee) shall observe the following hazards along with PPE currently in use (type and purpose).

1. Sources of motion, i.e. machinery or processes where any movement of tools, machine elements or particles could exist, or movement of personnel that could result in collision with stationary objects.
2. Sources of high temperatures that could result in burns, eye injury or ignition of protective equipment, i.e. drilling and welding.
3. Types of chemical exposure.
4. Sources of harmful dust on construction sites.
5. Sources of light radiation, i.e. welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc.
6. Sources of falling objects or potential for dropping objects.
7. Sources of sharp objects that could pierce the feet or cut the hands.
8. Sources of rolling or pinching objects that could crush the feet.
9. Layout of workplace and location of co-workers.
10. Identify possible electrical hazards.

Following the walk-through, the Safety Director (or designee) will analyze the hazards to enable proper selection of protective equipment.

Selection Guidelines:

The general procedure for selecting protective equipment is to:

1. Become familiar with the potential hazards and the type of protective equipment (PPE) available.
2. Compare types of equipment to the hazards associated with the environment.
3. Select the PPE that ensures a level of protection greater than the minimum required to protect employees from the hazards.
4. Fit the user with proper, comfortable, well-fitting protection and instruct employees on care and use of the PPE. It is very important that the users are aware of all warning labels and limitations of their PPE.

It is the responsibility of the Safety Director (or designee) to reassess workplace hazards as necessary, to identify and evaluate new equipment and processes, to review accident records, and reevaluate the suitability of previously selected PPE. This reassessment will take place as frequently as possible.

Elements which should be considered in the reassessment include:

1. Adequacy of PPE program
2. Accidents and illness experience
3. Levels of exposure (this implies appropriate exposure monitoring)
4. Adequacy of equipment selection
5. Number of hours that workers wear various protective ensembles
6. Adequacy of training and fitting of PPE

Employee Training:

1. The Safety Director (or designee) provides training for each employee who is required to use personal protective equipment. Training includes:

    a. When PPE is necessary
    b. What PPE should be used for various situations
    c. How to wear the assigned PPE
    d. Limitations of PPE
    e. The proper, maintenance, useful life, and disposal of assigned PPE

Employees shall not perform work without donning appropriate PPE to protect them from the hazards they will encounter in the course of that work. If the Safety Director (or designee) has reason to believe an employee does not have the understanding or skill required, the employee must be retrained. Since an employee's supervisor is in the best position to observe any problems with PPE use by individual employees, the Safety Director (or designee) will seek the supervisor's input when making this determination. Circumstances where retraining may be required include changes in the workplace or changes in the types of PPE to be used, which would render previous training obsolete. Also, inadequacies in an affected employee's knowledge or use of the assigned PPE will indicate that the employee has not retained the necessary understanding of skills.

Cleaning and Maintenance: (Does not pertain to Arc Flash Garments)

It is important that all PPE be kept clean and properly maintained by the employee to whom it is assigned per manufacturer's instructions. Cleaning is particularly important for eye and face protection because dirty or fogged lenses could impair vision. PPE is to be inspected, cleaned, and maintained by employees at regular intervals as part of their normal job duties so that the PPE provides the proper protection. Supervisors are responsible for ensuring compliance with cleaning responsibilities by employees. If a

piece of PPE is in need of repair or replacement, it is the responsibility of the employee to bring it to the immediate attention of his or her supervisor. It is against work rules to use PPE that is damaged or not able to perform its intended function. Contaminated PPE, which cannot be decontaminated, will be disposed of in a manner that protects employees from exposure to hazards.

PPE SPECIFIC INFORMATION:

Eye and Face Protection – Goggles and Face Shields

It is the policy of the company that as a condition of employment, all employees working on job assignments which require the use of eye protection shall wear ANSI approved safety glasses or goggles. If face protection is needed employees should utilize face shields.

All supervisors and managers are responsible for ensuring employees under their charge comply with this policy.

All employees who work in designated work areas and/or job assignments are responsible for wearing company provided glasses, goggles or face shields to comply with this policy.

All employees required to wear eye protection must routinely inspect and properly care for them.

Arm and Hand Protection

It is the policy of the company that all employees on job assignments that require protection from hand injuries (including cuts, burns, chemical exposures, electrical exposures, etc.), shall wear approved gloves.

All supervisors and managers are responsible for ensuring employees under their charge comply with this policy.

All employees who work in designated work areas and/or job assignments are responsible for wearing company provided gloves to comply with this policy.

All employees required to wear protective gloves must routinely inspect and properly care for them.

Head Protection – Hard Hats

It is the policy of the company that all employees on job assignments which require the use of hard hats to help prevent head injuries (including those resulting from falling

objects, bumping the head against a fixed object, or electrical shock), shall wear hard hats at all times.

All supervisors and managers are responsible for ensuring employees under their charge comply with this policy.

Hard hats shall be worn in accordance with the manufacturer.

Hard hats shall not be painted, altered nor have conductive, metallic stickers applied to them.

Hard hats shall be approved for Class G and E.

Torso Protection

It is the policy of the company that all employees on job assignments which require the use of approved torso protection to help prevent torso injuries (including protection from heat, hot splashes, acids, cuts, and bruises), shall wear said protection at all times.

All supervisors and managers are responsible for ensuring employees under their charge comply with this policy.

All employees who work in designated work areas and/or job assignments are responsible for wearing company provided torso protection to comply with this policy.

All employees required to wear torso protection must routinely inspect and properly care for their torso protection.

Foot Protection

It is the policy of the company that all employees on all job assignments shall wear appropriate foot wear consisting of a hard soled work boot which is over the ankle, offering support and protection. Typical non safety toe foot wear is the responsibility of the worker to provide and maintain.

Those jobs which require the use of safety toe foot wear shall have employees wear the appropriate protection at all times while on that project. Depending on the nature of the project and the requirements, safety toe foot wear may be the responsibility of the employer to provide for their employees.

All supervisors and managers are responsible for ensuring employees under their charge comply with this policy.

All employees wearing foot protection must routinely inspect and properly care for their foot protection.

Hearing Protection

When information indicates that an employee's exposure to noise may equal or exceed an 8-hour time-weighted average of 90 decibels, the company will identify all employees for inclusion in the hearing conservation program and to select proper hearing protection.

There are two different types of hearing protection: The plug or insert type and the cup or muff type. It is suggested to have both types of protection available for selection by the user.

It is the policy of the company that all employees on job assignments that require the use of approved hearing protection to help prevent hearing injuries shall wear hearing protection at all times.

All supervisors and managers are responsible for ensuring employees under their charge comply with this policy.

All employees who work in designated work areas and/or job assignments are responsible for wearing company provided hearing protection to comply with this policy.

All employees required to wear hearing protection must routinely inspect and properly care for their hearing equipment.

Respiratory Protection

This respirator program lays out standard operating procedures to ensure the protection of all employees from respiratory hazards, through proper selection and use of respirators. The Safety Director (or designee) is responsible for the respirator program.

Respirators are selected on the basis of the potential exposure hazards. All equipment selections are made by the Safety Director (or designee). Outside consultation, manufacturer's assistance, and other recognized authorities will be consulted if there is any doubt regarding proper selection and use of equipment. Respirators should be used only where engineering control of respiratory hazards is not feasible, or in emergencies.

Choosing the right equipment is complex and involves several steps: Determining the hazards, choosing equipment that is certified for the function, and assuring that the device is performing as intended.

Chemical and physical properties of the contaminant, as well as the toxicity and concentration of the hazardous material and amount of oxygen present, must be considered in selecting the proper respirators. The nature and extent of the hazard, work rate, area to be covered, mobility, work requirements and conditions, as well as the limitations and characteristics of the available respirators also are selection factors.

Employees that need to utilize respiratory protection must first complete a medical questionnaire to be evaluated by a Licensed Health Care Practitioner who authorizes the employee to wear a particular type or kind of respirator.

Employees that are cleared from the Practitioner must then undergo a fit testing and training on how to wear, maintain, inspect, repair and use a respirator.

It is the policy of the company that all employees on job assignments which require the use of approved respiratory protection shall wear respiratory protection at all times. Those employees required to wear approved respiratory protection shall have an effective facial seal by being clean shaven. Beards, goatee's, long side burns or stubble commonly older than 24 hourrs are all prohibited while wearing a respirator.

All supervisors and managers are responsible for ensuring employees under their charge comply with this policy.

All employees who work in designated work areas and/or job assignments are responsible for wearing company provided respiratory protection to comply with this policy.

All employees required to wear respiratory protection must routinely inspect and properly care for their respiratory equipment.

Two basic classes of respirators:

1. Air purifying: filters air to remove the contaminants
2. Air supplying: provides breathable air from a clean air source
    a. Supplied air respirator (SAR) line to outside, uses hose
    b. Self-contained breathing apparatus (SCBA), uses cylinder

*** Make sure you can fit through openings with gear!**

An effective respirator program must cover the following factors:

1. Written standard operating procedures
2. Program evaluation
3. Equipment selection
4. Training
5. Fit testing
6. Inspection, cleaning, maintenance and storage
7. Medical examinations
8. Work area surveillance
9. Air quality standards
10. Approved respirators

Special Protection

It is the policy of the company that all employees on job assignments that require the use of approved special protection to help prevent injuries (including those resulting from working near water, roads, bridges, etc.), shall wear the approved protection at all times.

All supervisors and managers are responsible for ensuring employees under their charge comply with this policy.

All employees who work in designated work areas and/or job assignments are responsible for wearing company provided special protection equipment to comply with this policy.

All employees required to wear special protection equipment must routinely inspect and properly care for their special protection equipment.

Special equipment for working near water or on bridges may include life jackets, ring buoys with 90’ of rope, and an emergency lifeboat or skiff.

Special equipment for all workers in the road way work includes high visibility safety apparel that meets the Performance Class 2 or 3 requirements of ANSI/ISEA 17-2004. Proper zone work or road shut downs shall comply with the Manual of Uniform Traffic Control Devices (MUTCD).

PPE Risks - Heat Stress

Wearing PPE puts a worker at considerable risk of developing heat stress. This can result in health effects ranging from transient heat fatigue to serious illness or death. Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, workload, and the individual characteristics of the worker.

Individuals vary in their susceptibility to heat stress. Factors that may increase the chances for heat stress include:

a) Lack of physical fitness
b) Lack of acclimatization
c) Age
d) Dehydration
e) Obesity
f) Alcohol and drug use
g) Infection
h) Sunburn
i) Diarrhea
j) Chronic Disease

Reduced work tolerance and the increased risk of excessive heat stress are directly influenced by the amount and type of PPE. PPE adds weight and bulk, severely reduces the body's access to normal heat exchange mechanisms (evaporation, convection, and radiation), and increases energy expenditure.

Therefore, when selecting PPE, each item's benefit should be carefully evaluated in relation to its potential for increasing the risk of heat stress.

Once PPE is selected, the safe duration of work and rest periods should be determined based on the:

a) Anticipated work rate
b) Ambient Temperature and other environmental factors
c) Type of protective ensemble
d) Individual worker characteristics and fitness

FALL PROTECTION

All employees will determine if walking and working surfaces are inspected and have the strength and structural integrity to support their safety. Our employees will not be allowed to work on these surfaces until they have the requisite strength and structural integrity.

Our Duty to Provide Fall Protection:

To prevent falls, we have a duty to anticipate the need to work at heights and to plan our work activities accordingly. Careful planning and preparation lay the necessary groundwork for an accident-free job site.

Worksite Assessment and Fall Protection System Selection:

This plan will be used at all work sites, and as required by OSHA. There will be situations on work sites that require fall protection. This fall protection plan is implemented with reasonable effort to anticipate exposure to hazards. The company (or its designee) will:

1. Inspect the area to determine what hazards exist or may arise during the work.
2. Identify the hazards and select the appropriate measures and equipment.
3. Give specific and appropriate instructions to workers to prevent exposure to unsafe conditions.
4. Will ensure employees follow the procedures given and understand the training provided.
5. Determine the safety efforts our specialty subcontractors have implemented in completing their fall protection requirements.

The fall protection rules allow us to make choices for each fall situation that may be present at this worksite. Our fall protection systems criteria will follow the requirements established in 29 CFR 1926.502—Fall protection systems criteria and practices. Each employee that may be exposed to these situations will be trained prior to working in that environment. Training certificates will be kept on file at the office and certificate training cards will be issued to each successfully trained employee.

Unprotected Sides and Edges:

Our employees must be protected when they are exposed to falls from unprotected sides and edges of walking/working surfaces (horizontal and vertical surfaces) that are six feet or more above lower levels. We know that OSHA has determined that there is no “safe” distance from an unprotected side or edge that would render fall protection unnecessary. We will maintain the system(s) chosen until all work has been completed or until the permanent elements of the structure are in place that eliminate the exposure to falling hazards.

Written Safety Plan:

We have chosen a number of fall protection systems for unprotected sides and edges. Generally, if we can provide proper guardrails for protection of unprotected sides and edges, we will do so. If that is not possible, we will use personal fall arrest systems as a second option.

Leading Edge Work:

Leading edges are defined as the edge of a floor, roof, or formwork that changes location as additional floor, roof, or formwork sections are placed, formed, or constructed. If work stops on a leading edge, it will be considered an “unprotected side or edge” and will be covered by the section of this plan on unprotected sides and edges.

When we are constructing leading edges six-feet or more above lower levels, we will protect our workers by the following methods for each specific location. Generally, if we can provide proper guardrails for protection of unprotected sides and edges, we will do so. If that is not possible, we will use personal fall arrest systems as a second option, with safety nets as the last option.

When we have employees on walking/working surfaces where leading edges are under construction, but who are not constructing the leading edge, we will protect our workers by one of the following methods for each specific location.

Any leading edge work required by the company shall be done with the use of guardrails or personal fall arrest systems. If a guardrail system is chosen to provide the fall protection, and a controlled access zone has already been established for leading edge work, the control line may be used instead of a guardrail along the edge that parallels the leading edge.

Equipment/Material Hoisting:

In all situations where equipment and material hoisting operations occur, we will provide fall protection equipment for our employees. If our operations do not require an employee to lean through the access opening or out over the edge to receive or guide materials, but the materials are being lifted by crane to a landing zone, we will select either personal fall arrest equipment or a guardrail system. When we are involved in hoisting operations, we will use the following fall protection systems at these specific locations: For all hoist areas, if guardrails are used with a gate system, this will be the type of fall protection to be used. If the hoist area is not provided with a gate area, a personal fall arrest system will be used, such as a retractable lifeline, etc.

When guardrails, chains, or gates are removed to facilitate hoisting operations, and one of our employees must lean through the access opening or out over the edge to receive or guide materials, they will be protected by a personal fall arrest system.

We recognize the importance of protecting employees from:

1. Tripping in or stepping into or through holes (including skylights).
2. Objects falling through holes (including skylights).

We understand that OSHA does not intend that a guardrail be erected around holes while employees are working at or passing materials through an opening.

When we are involved in operations where there are holes present, we will use the following fall protection systems at these specific locations: On most hole openings, the hole will be covered, secured and marked “Hole Opening”, or we will provide the proper barrier or guardrail around the hole opening.

There are situations at this worksite where an employee could trip or step into or through a hole (including skylights) or an object could fall through a hole and strike a worker. In these instances, we will use covers or barricades to prevent accidents.

Ramps/Runways:

We will equip all ramps, runways, and other walkways with guardrails when employees are subject to falling six feet or more to lower levels.

Excavations:

If there will be an excavation six feet or more in depth, which will not be readily seen, fall protection will be provided. Any location excavated shall be provided with the proper fencing, guardrail, or barricade, as required. Any personnel not directly associated with the work at the excavation shall stay at least 15 feet away from the edge of the excavation.

Pits/Shafts, Etc.:

All wells, pits, shafts, etc., six feet or more in depth shall be provided with the proper guardrails, fences, barricades, or covers as required.

Dangerous Equipment:

We are committed to protecting our employees from falling onto dangerous equipment. When employees are working directly above dangerous equipment, no matter how high above the equipment they are, they shall be protected from falling into this equipment. In general, if a work site is above a dangerous area, it shall be protected with a guardrail, and if that can’t be achieved, then a personal fall arrest system or safety net shall be used.

Controlled Access Zones:

We realize that we cannot expose our workers to fall hazards, such as holes, or hoist areas, within a controlled access zone. If these hazards exist, the employee will be protected by a fall protection means addressing the specific hazard.

In areas in which employees must reach more than ten inches below a working and walking surface where they could fall, we shall provide a guardrail, personal fall arrest, or safety net.

Roofs:

Employees engaged in roofing activities shall use fall protection, or alternatives, as required by the OSHA standards (example, alternative is a warning line or safety monitoring, etc.) Typical fall protection includes guardrails on all sides or full body harness, lanyard and approved anchor system.

Wall Openings, Etc.:

Employees exposed to the hazard of falling out or through wall openings (including those with chutes attached), where the outside bottom edge of the wall opening is six feet or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches above the walking/working surface, must be protected from falls. We have selected more than one method of protection: Guardrails will be used as a first selection. If necessary, a personal fall arrest system or safety nets will be used as alternate options.

Other Situations:

We realize there will be situations that are not covered by our written safety plan, that we have the duty to provide fall protection. The OSHA rules clearly state that all employees exposed to falls of six feet or more to lower levels must be protected by a guardrail system, safety net system, or personal fall arrest system except where otherwise provided in Section 1926.501(b), or by fall protection standards in other subparts of Part 1926.

Falling Objects:

Employees working in areas where there is a possible danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns, shall be protected by protective helmets.

Other ways to protect employees and others from falling objects include:

1. Erect toe boards, screens, or guardrail systems to prevent objects from falling from higher levels.

2. Erect a canopy structure.
3. Barricade the area to which objects could fall, prohibit employees from entering the barricaded area, and keep objects that may fall far enough away from the edge of a higher level so that those objects would not go over the edge if they were accidentally moved.
4. Cover all holes in the walking and working surfaces, (including skylight openings) or erect a guardrail system around the hole. Covers must be secured and labeled “hole” or “cover”.

Training:

The Safety Director (or designee) will be responsible for each aspect of the training program, and will train each employee who could be exposed to fall hazards.

The Company’s Safety Director (or designee) has overall responsibility for the safety of employees and will verify training compliance.

The Safety Director (or designee) has the responsibility of determining when an employee, who has already been trained, does not appear to have the understanding and skill required. At this time, the employee shall be retrained.

TOOLS

GENERAL REQUIREMENTS

When using any kind of a tool, you shall use the correct Personal Protective Equipment (PPE) with that tool. The suggested PPE for typical work might include:

1. Hard hats.
2. Safety glasses.
3. Face shields (for protection against flying chips or sparks).
4. Hearing protection.
5. Proper approved foot wear for protection.
6. Fall protection for elevations.
7. Loose clothing should not be worn when using equipment (could get caught in the equipment).
8. Jewelry should not be worn (rings, chains, etc., could get caught in the equipment).
9. Possibly an appropriate respirator depending on the task.

Hand Tools:

1. Tools shall be inspected prior to use by the employee using it to ensure they are in a safe working condition. If any tool is found to be defective, it must be tagged out of service and supervisor or foreman immediately notified.
2. Do not use dull tools, as they could contribute to accidents.
3. When finished using a tool, don't leave it lying around. This could create a tripping hazard. Put the tool back where it belongs.
4. All guards, handles and safety devices shall be maintained at all times (never removed).
5. Common sense items to think about:
    a. Use constant pressure switches.
    b. Don't use your hand for a drill guide.
    c. Don't use leg for support (vise).
    d. Clamp material properly.
    e. Don't remove safety guards.
    f. Don't blow off equipment with air hoses on sites (over 30 PSI can cut into skin).
    g. Don't hold tools by cord.
    h. Watch cords – can be cut by tools.
    i. Don't drag cords over rough areas (concrete is an abrasive).
    j. No tension on cords.

Fuel-Powered Tools:

1. Tools shall be inspected prior to use by the employee using it to ensure they are in a safe working condition. If any tool is found to be defective, it must be tagged out of service and supervisor or foreman immediately notified.
2. Tools should be filled prior to starting.
3. Tools shall be shut off while refueling and should not be hot to the touch.
4. Fuel shall be stored in an approved container.
5. Combustion engines should not be used in a confined area unless a well-ventilated air supply is maintained. Be cautious with possible carbon monoxide from **all** combustion engines.

Power Tools:

1. Tools shall be inspected prior to use by the employee using it to ensure they are in a safe working condition. If any tool is found to be defective, it must be tagged out of service and supervisor or foreman immediately notified.
2. Remember – **speed kills!** Recognize and know the tool's speed of operation.
3. Understand the functions of the tool as well as the hazards.
4. Tools shall be kept clean and lubricated. Check the cords for any breaks or fraying, etc.
5. Always be aware of possible shock hazards:
    a. Use GFCI's on all power sources at all times, not just new construction.
    b. Watch for wet areas.
    c. Use double insulation if possible.
    d. Check the plug for reverse polarity.
6. Tool Storage:
    a. Store safely (not in damp or wet areas, etc.)

Powder-Actuated Tools

1. Only trained employees will be permitted to operate any powder-actuated power tool. When operating any powder-actuated power tool, the operator must adhere to all manufacturers' requirements.
2. The tool shall be tested daily (before loading) to make sure all safety devices are in proper working order.
3. If any tool is found to be defective, it must be removed from service immediately, tagged, and turned in for repair.
4. All operators must use the required Personal Protective Equipment (PPE) specified by OSHA and the manufacturer.
5. Any power actuated tool will not be left unattended, regardless if it is loaded or unloaded.
6. Tools will be loaded **only** just before they are used.
7. Regardless of whether the tool is loaded, it will not be pointed at any employee, for any reason.

8. Hands will be kept clear of the barrel end of the tool.
9. Fasteners cannot be used on very hard or brittle materials (no case iron, glazed tile, surface-hardened steel, face brick, or hollow tile, etc.)
10. Tools cannot be used on soft areas to create a missile.
11. Tools cannot be used in explosive or flammable atmospheres.
12. Tools requiring special operator training shall be provided to employees using those tools.
13. Operators shall carry their training cards at all times.

LADDERS AND STAIRWAYS

Stairways:

1. Stairs are needed when elevation changes by 19” or more.
    a. No temporary spiral stairs in construction. Spiral stairs in tanks wider than 5’ are okay.
    b. Two or more ladders or a double-cleated ladder is needed on projects with 25 or more employees.
    c. Keep access to ladder / stairway clear of obstructions.
    d. One access point shall be kept clear at all times.
2. Employers must provide safe ladders / stairways prior to any other work at the elevated areas.
3. When you provide temporary stairways on job sites, you must provide a minimum 22” x 30” landing for every 12’ of steps.
4. Stairways must be installed with a 30 to 50-degree horizontal.
5. When providing temporary stairways for a job trailer:
    a. The steps shall be even.
    b. A top platform is needed.
    c. An additional 20” must be provided beyond the door swing radius on the platform to avoid anyone backing down a step to open the door.
    d. A 36” handrail must be provided.
    e. If the temporary stairway is less than 30” high or less than four risers, guardrails will not be required.
    f. If guardrails are needed, you must provide a 42” high guardrail with a midrail.
    g. Openings between any guardrails or midrails shall be no larger than 19”.
6. All metal pan stairs/landings shall be filled with solid materials the full width and depth of the stairs (temporary treads).
7. All parts of a stairway shall be free of obstructions and projections.
8. Eliminate slippery conditions before use (snow, grease, oil, etc.).
9. Guardrails and stair rails must be provided for stairways with four or more risers or at least 30” high.
10. Handrails shall be installed parallel with the steps and at a height of 36” from the front of the step.
11. On open sides of stairs, you may use screens, mesh, vertical members, or horizontal members, but the openings shall not be larger than 19”.
12. The handrail must start with the first step and end with the last step.
13. Rails must be adequate as a hand-hold.
14. The minimum handrail distance away from the wall shall be 3”.
15. Stairway landings must be guarded.

Ladders:

1. Ladders shall be capable of supporting the loads without failure.
2. Ladders shall not be tied or fastened together unless specifically designed for such use.
3. Where access requires using two or more portable ladders, there must be an offset platform.
4. Required types of ladders and respective weight limits:
    a. Type 1AA/ Super heavy duty ladder: 375 lbs.
    b. Type 1A / extra heavy industrial ladder: 300 lbs.
    c. Type 1 / heavy-duty industrial ladder: 250 lbs.

NOTE: Your weight plus the weight of any tools and materials you carry should not exceed limits. In construction a typical ladder is a Type 1 minimum rating.

Stepladders:

1. All ladders must be used according to the manufacturer's specifications.
2. Do not climb, stand, or sit on the top two rungs.
3. Provide a barrier or warning around your ladder when working in a hallway or exit way.

Extension Ladders:

1. Have a co-worker help you raise and lower the ladder.
2. Never raise or lower the ladder with the fly section extended (second section).
3. Be sure to secure or foot the ladder firmly before extending it.
4. Calculate and use the correct setup angle or pitch. The foot of ladder should be set from the base of the wall at a distance of ¼ of the height of the ladder.
5. The ladder should extend approximately three feet above the working surface.

General Ladder Safety Tips:

1. Always inspect your ladder every time before you use it.
2. If there is anything wrong with the ladder, tag it out or service.
3. Must be on firm/level surface.
4. Use both hands in climbing.
5. Don't stretch to reach something, always keep your belt buckle between the rails – climb down and move your ladder.
6. Properly tie off the ladder and secure it from displacement.
7. Use wood or fiberglass ladders for electrical work, NEVER METAL.
8. Fixed ladders:
    a. They are very dangerous to climb.
    b. Longer than 24 feet – must have a cage.
    c. <u>Qualified Climbers</u> (climbing silos and towers – special training, etc.).

Inspection and Maintenance:

1. Look for broken rungs.
2. Look for split side rails or other defects.
3. Look for soft wood.
4. Check for rust or weakness in the rungs.
5. Look for corrosion on the inside of hollow, metal rungs.
6. Check fallen ladders for excessive dents or damage.
7. Make sure the connection between rungs and side rails have not come loose.
8. TAG DEFECTIVE LADDERS OUT OF ORDER AND DO NOT USE!

WELDING, CUTTING, BRAZING (Hot Work)

Employees performing any welding, cutting, brazing or spark producing activities shall adhere to all manufacturers specifications as well as OSHA rules and regulations. All equipment shall be safe and in good working condition at all times.

Employees shall have a Hot Work Permit in hand prior to initiating any of the above mentioned Hot Work Activities.

General Rules and Hazards:

1. Hot Work Permits are required for any work activity that will be spark or flame producing.
2. Welding in hazardous areas will not be permitted without written instructions, etc.
3. When welding operations are suspended, all power will be shut down, all valves and regulators will be turned off, all hose and cables, etc., will be properly stored.
4. An approved fire extinguisher that is properly charged shall be provided adjacent to the immediate work area (commonly within arm's reach).
5. Fire watch shall remain for 30 minutes after flame or spark producing activity is completed.
6. Keep all combustibles away from the work area.
7. Scaffolds, etc., must be shielded from any sparks or flames.
8. Closed containers must be maintained (monitored) for explosives and oxygen depletion.
9. Use of proper Personal Protective Equipment (PPE) shall be used and enforced (eye and face protection, gloves, welding helmets, filter lenses, etc.)
10. Shielding shall be provided for protection against arcing and rays.
11. Fire buckets should be provided for welding stubs at the welding site.
12. Welding of lead, zinc, cadmium, or other toxic materials shall be done in accordance with all OSHA rules and regulations (ventilation, gloves, respirators, etc.)
13. Defective torches shall be tagged, declared out of service, and removed from the welding site.
14. Torches shall be lit by friction devices only (no matches, butane lighters, cigarettes etc. are permitted).
15. All torches and hoses shall be protected when in use and lying across the floor at the welding site, or put away in a storage area.
16. Oxygen cylinders and fittings shall be kept away from all oil and grease (these are explosive). Do not handle with oily hands or gloves.
17. Inspect all hoses at the start of each shift, to assure safety.
18. All current-carrying arc welding equipment and cables shall be properly insulated and grounded.

*See Appendix G

FIRE PREVENTION

Purpose:

OSHA's Fire Prevention Plan regulation requires the company to have a written fire prevention plan (FPP). This plan applies to all operations in our company where employees may encounter a fire.

This FPP is in place at the company to control and reduce the possibility of fire and to specify the type of equipment to use in case of fire. This plan lists the following information:

1. Major workplace fire hazards and their proper handling and storage procedures.
2. Potential ignition sources for fires and their control procedures.
3. The type of fire protection equipment or systems, which can control a fire involving them.
4. Personnel responsible for maintenance of equipment and systems installed to prevent or control ignition of fires and for control of fuel source hazards.

Under this plan, our employees will be informed of the plan's purpose, preferred means of reporting fires and other emergencies, types of evacuations to be used in various emergency situations, and the alarm system.

The plan is closely tied to our emergency action plan where procedures are described for emergency escape procedures and route assignments, procedures to account for all employees after emergency evacuation has been completed, rescue and medical duties for those employees who perform them. **Please see the Emergency Action Plan section for this information also.**

The Safety Director (or designee) will review and update the plan as necessary.

The FPP communicates to employees the policies and procedures to follow in case of a fire. This written plan is available upon request to employees, their designated representatives, and any OSHA officials who ask to see it.

If, after reading this program, you find that improvements can be made, please contact the Safety Director (or designee). We encourage all suggestions because we are committed to the success of our emergency action plan. We strive for clear understanding, safe behavior, and involvement in the program from every level of the company.

The Safety Director (or designee) is responsible for the following activities:

1. Develop a written fire prevention plan for regular and after-hours work conditions.
2. Distribute procedures for reporting a fire, the location of fire exits, and evacuation routes to each employee.

3. Integrate the fire prevention plan with the existing general emergency plan covering the building.
4. Conduct drills to acquaint the employees with fire procedures.
5. Satisfy all local fire codes and regulations as specified.
6. Train designated employees in the use of fire extinguishers.
7. Notify key management personnel in the event of a fire.
8. When in doubt about the danger of fire evacuate the workplace.
9. If evacuation is deemed necessary, the Supervisor ensures that:
    a. All employees are notified and a head count is taken to confirm total evacuation of all employees.
    b. When practical, equipment is placed and locked in storage rooms or desks for protection.
    c. The building owner/superintendent is contacted, informed of the action taken, and asked to assist in coordinating security / protection.
    d. In locations where the building owner / superintendent is not available, security measures to protect employee records and property are arranged as necessary.

Work Area/Fire Hazard:

Fire prevention measures must be developed for all identified hazards. Once employees are made aware of the fire hazards in their work areas, they must be trained in the fire prevention measures developed and use them in the course of their work. For example, oil soaked rags must be treated differently than general paper trash in office areas. In addition, large accumulations of waste paper or corrugated boxes, etc., can pose a significant fire hazard. Accumulations of materials that can cause large fires, generate dense smoke, that are easily ignited, or may start from spontaneous combustion are the types of materials with which this fire prevention plan is concerned. Such combustible materials may be easily ignited by matches, welder's sparks, cigarettes, or similar low-level energy ignition sources. It is the intent of this company to prevent accumulation of such materials.

Flammable/Combustible Material Work Area Fire Prevention Steps:

Fuel, oxygen, and heat are the basic ingredients of fire; the objective is to keep these factors from coming together in dangerous amounts. Extinguishing a fire requires the reduction or removal of the fuel, oxygen, or heat.

1. Keep aisles clear and exits marked so people inside can readily exit the building in an emergency and fire department personnel have ready access to all areas.
2. Store materials with regard to their fire hazard characteristics (keep to a minimum).
3. No smoking signs should be prominently displayed where appropriate. Careless disposal of smoking materials has caused many fires.
4. Cardboard, wood, and paper should be kept at a minimum (scrap).
5. Spills of gasoline, oil, or flammable solvents must be cleaned up promptly.

6. Keep areas around furnaces free from combustible materials.
7. Provide adequate trash containers and empty them regularly.
8. Monitor potential fire causing activities such as welding. Make sure that no potential fire condition exists after the operation is completed.
9. Emergency telephone numbers, etc. shall be posted in a prominent place.
10. Fire extinguishers shall be maintained in a good working condition, and employees shall be trained on their proper use. Fire extinguishers shall be immediately available at all open flame sources.
11. Yard area must be kept clean (i.e. dry grass and weeds, paper, etc.)

Fire Protection Equipment:

Fire protection equipment will be selected and purchased by Safety Director (or designee). The extinguishers to use when combating various sources of fire are:

	TYPE OF FIRE/HAZARD	TYPE OF EXTINGUISHER
A	Combustibles such as wood, paper, etc.	Water or dry chemical: Type A or ABC
B	Flammable liquids, gases and greases	Foam, carbon dioxide, dry chemical: Type B or ABC
C	Electrical fires	Non-conducting agent such as carbon dioxide or dry chemical: Type C or ABC
D	Combustible metals	Type D. Dry Powder.

NOTE: When using a fire extinguisher, follow these rules:

A. Select the correct extinguisher. (See table above)
B. Keep 8’ to 10’ away when extinguishing a fire.
C. Point extinguisher to the base of the fire.
D. Use side-to-side motions.
E. Extinguishers may only last 15 seconds.
F. Lay extinguisher on its side after use.
G. If at all possible, keep your back to the exit. Never put the fire between you and your exit.

How to use a fire extinguisher: Remember the acronym PASS

P pull the pin

A aim extinguisher or the nozzle at the base of the fire

S squeeze handle of the extinguisher

S sweep nozzle or the extinguisher from side to side

Maintenance of Fire Protection Equipment:

Once hazards are evaluated and equipment is installed to control them (i.e., smoke detectors, etc.), that equipment must be regularly monitored to make sure it continues to function properly.

Fire Extinguishers must be:

- Inspected monthly by a competent person. They shall initial the inspection tag monthly
- Inspected annually by a company that is certified to inspect and maintain fire extinguishers
- Readily available when needed
    - They must be easily accessible to all individuals

The Safety Director (or designee) is responsible for choosing an appropriate system and developing a maintenance schedule for fire prevention equipment and systems.

Fire Prevention Plan:

At the time of a fire, employees should know what type of evacuation is necessary and what their role is in carrying out the plan. In cases where the fire is large, total and immediate evacuation of all employees is necessary. In smaller fires, a partial evacuation of nonessential employees with a delayed evacuation of others may be necessary for continued operation. We must be sure that employees know what is expected of them during a fire to assure their safety.

Training on the plan's content is required by OSHA.

The method for communicating our fire prevention plan is to give our managers / supervisors a thorough briefing and demonstration. The Safety Director (or designee) has all managers / supervisors present the plan to their staffs in small meetings.

Training, conducted on initial assignment, includes:

1. What to do if employee discovers a fire.

    - If a fire is detected, go to the nearest fire alarm station and activate the alarm by pulling on the lever. The alarms will notify the local fire department closest to the facility. Fire alarms are located on each floor near the elevators, and also near each entry/exit door.
      OR:
    - If a fire is detected, sound the designated fire warning signal (bell, whistle, alarm, or horn, etc.), then contact the local fire department by calling 9-1-1. Exit the building immediately.

Check your site specific requirements as they may supersede this plan. (for example Refineries or quarries)

2. Upon arrival of the local fire department, head counts should be given to the Fire Chief or fire official in charge. No employees are to return to the buildings until the local fire department gives the “all clear”.
3. If the Safety Director (or designee) has reason to believe an employee does not have a thorough understanding of the fire prevention plan, the employee must be retrained.
4. The Safety Director (or designee) will provide training and make sure the employee understands the fire prevention plan.
5. Because failure to comply with company policy concerning fire prevention can result in employee injury in addition to OSHA citations and, an employee who does not comply with this program will be disciplined.

Fire Prevention Equipment:

The Safety Director (or designee) provides training for each employee who is required to use fire prevention equipment. Employees shall not use fire prevention equipment without appropriate training. Training, before an individual is assigned responsibility to fight a fire, includes:

1. Types of fires
2. Types of fire prevention equipment
3. Location of fire prevention equipment
4. How to use fire prevention equipment
5. Limitations of fire prevention equipment
6. Where the emergency telephone numbers are posted
7. Proper care and maintenance of assigned fire prevention equipment

FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE

Indoor Storage:

1. No more than 25 gallons of flammables and combustibles can be stored per room, outside of an approved storage cabinet.
2. Only approved containers shall be used (metal safety cans).
3. Only approved metal storage cabinets shall be used, or see the OSHA regulations for wood storage cabinets.
4. All approved metal storage cabinets shall be labeled “Flammable, Keep Fire Away”.
5. No more than 60 gallons of flammable or 120 gallons of combustible liquids shall be stored in any one approved storage cabinet.
6. No more than three cabinets shall be in any one storage area.
7. Please refer to OSHA requirements for using a storage room (one-hour fire resistance rating, etc.).
8. Storage of LP gas within a structure is prohibited.

“No Smoking” signs shall be posted in areas where flammable and/or combustible liquid is stored.

Outdoor Storage:

1. No more than 60 gallons can be contained.
2. Minimum 20’ away from any building or structure.
3. Grade is to be sloped away from the building or structure.
4. Only approved containers shall be used (metal safety cans).
5. No combustibles shall be located near any storage tanks, etc.
6. Grass and weeds must be kept down.
7. Approved fire extinguisher must be located within 50’ of travel.

“No Smoking” signs shall be posted in areas where flammable and/or combustible liquid is stored.

COMPRESSED GAS CYLINDERS
USE AND STORAGE GENERAL REQUIREMENTS

1. Caps shall be in place before moving and placing in storage.
2. Cylinders shall always be secured and transported in the vertical position.
3. Cylinders shall be legibly marked for gas content.
4. Keep away from flames and sparks (use shield).
5. Keep away from all electrical power.
6. Oxygen cylinder storage shall be separated from fuel gas cylinders or combustible materials by 20' or noncombustible barrier 5' high with a 1/2-hour fire resistance rating.
7. Cylinders shall not be used in confined spaces.
8. All empty cylinders shall have valves closed, caps in place and marked empty.
9. Cylinders shall be closed with hand wheels only (no wrenches, pliers, etc.).
10. If cylinders leak, take them outside **immediately**. Slowly empty the cylinder and tag it out of service.
11. Leaks can be detected by using soapy water.
12. All cylinders must be secured upright when stored or used with a suitable chain, hand truck, etc.
13. No compressed gas cylinders shall be stored within 20 feet of building exits.
14. "No Smoking" signs shall be posted in areas where cylinders are stored.

FORKLIFT SAFETY
(General Requirements)

Statistics say that the drivers themselves cause 90% of all forklift accidents. Tipping over is the leading hazard.

OSHA requires that drivers must be trained before operating a forklift. Following are some general guidelines:

1. Check all controls and lighting before using.
2. When you are driving with a load, you must have an unobstructed view, or drive backwards.
3. When going around corners or areas you cannot see when crossing, stop and sound the horn.
4. Watch out for people working around you.
5. Always secure all loads from movement.
6. Make sure you know the weight and capacity of your load before driving.
7. Haul all loads as low as possible to the ground.
8. If the vehicle is equipped with seat belts and a rollover protection system, **USE THE SEAT BELTS. They are mandatory**.

The Occupational Safety and Health Administration (OSHA) require that all employees operating a forklift be trained and authorized. Training is required:

1. Any time the operator is seen operating unsafely
2. Any time the operator has been involved in an accident or near miss
3. Any evaluation showing the operator is not operating the forklift safely
4. When the operator is assigned to a different type of truck
5. Whenever a condition in the workplace changes in a manner that could affect the safe operation
6. Every three years. OSHA 29 CFR 1910.178(l)(4)(iii).

Evaluations will be completed once every three years.
Forklift training should include the following:

1. Operating instructions, warnings and precautions for the specific types of truck the operator will be authorized to operate.
2. The differences between the truck and the automobile.
3. Truck controls and instrumentation: Where they are located, what they do, and how they work.
4. Engine or motor operation.
5. Steering and maneuvering.
6. Visibility (including restrictions due to loading.)
7. Fork and attachment adaptation, operation, and use limitations.
8. Vehicle capacity

9. Vehicle stability
10. Any vehicle inspection and maintenance that the operator will be required to perform.
11. Refueling and/or charging of batteries.
12. Operating limitations of the lift
13. Any operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicles that the employee will operate.
14. Workplace related topics.
15. Surface conditions where the vehicle will be operated.
16. Composition of loads to be carried and load stability.
17. Load manipulation, stacking and un-stacking.
18. Pedestrian traffic in areas of vehicle operation.
19. Narrow aisle and other restricted places of vehicle operation.
20. Hazardous (classified) locations of vehicle operation.
21. Ramps and other sloped surfaces that could affect the vehicle's stability.
22. Closed environments and the other areas where sufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust.
23. Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.
24. The requirements of 29 CFR 1910.178.

*** A forklift operator evaluation form is in Appendix H.**

MATERIAL HANDLING GENERAL REQUIREMENTS

1. Rigging requires specialized training. Consult with your Union or employer for help.
2. Prior to unloading material, examine the load to make sure it hasn't shifted, which would cause a hazard.
3. A warning label (red flag, etc.) shall be attached to any load trailing out of a vehicle or trailer, and an illuminated warning device shall be used in the event of darkness.
4. Do not try to move materials alone. If there is any question concerning the material being either too heavy or unsafe ask for help.
5. Use your legs and back muscles together. Keep your back straight and lift with your legs.
6. If any lifting device is to be used, you shall apply all manufacturer's specifications and OSHA safety requirements.
7. All lifting devices (chokers, slings, chains etc.) must be inspected prior to use by a qualified person. Any defects must be noted and taken out of service. All devices must be properly rated for the load or task.
8. All rigging shall be done by a qualified person to prevent failure.
9. All operators of the equipment must be qualified to operate the machine.
10. All temporary buildings used for storage must be at least 10' away from other buildings or structures.
11. Any temporary storage area located inside a building must be constructed with a one-hour fire resistance rated assembly.

Open Yard Storage (Outside):

1. Materials must be stacked safely, no higher than 20 feet.
2. Materials cannot be closer than 10' from any building or structure.
3. Driveways around the material must be 15' wide for firefighting purposes.
4. Materials shall be in piles no larger than 50' by 150' maximum.
5. Area used for storage must be free of high grass, weeds, or combustibles.
6. Approved portable fire extinguishers must be within 100' travel distance of the storage pile.

Indoor Storage:

1. Cannot obstruct exits or means of egress.
2. Incompatible materials which could create a fire hazard must be separated with a one-hour fire resistance barrier.
3. Material cannot be piled higher than proper firefighting purposes permits (any questions on this point, contact the local fire department for details).
4. Material must be piled no higher than 3' below the sprinklers.
5. Clearance of combustible materials must be maintained around lighting, etc.
6. A travel path of 24" wide must be maintained next to doors. Material cannot be stored within 36" of a fire door.

TEMPORARY HEATING DEVICES

1. Proper ventilation is required.

2. Clearances shall be per manufacturer's specifications.

3. Can only be placed on noncombustible floors, or per manufacturer's specifications.

4. Must be kept 10' away from tarps, or other combustible materials, etc.

5. Must be placed in a stable location.

6. Fuel must be stored in a proper container, as required.

7. Only safety cans shall be used for refueling purposes. This container shall be an approved container of no more than five gallons, with a spring-closing lid, and safety pressure relief and properly labeled.

8. Wood burners (solid fuel) will not be used for any reason.

9. A properly rated fire extinguisher shall be provided at all points of open flames, such as welding, cutting, propane torches, butane torches and propane heaters.

SCAFFOLDING
(General Requirements)

It is very important to use safe working practices to prevent accidents and injuries on scaffolds. Before working on a scaffold, a competent person must determine the following:

1. Rigid footing on anchorage. Don't use concrete block or loose bricks
2. Must erect or move under supervision of competent person
3. Guardrails and toe boards for over 10' above ground (all sides)
4. Scaffolds should have guardrails all the way around and on all sides
5. When required to work under scaffolding:
    a. Screen must be between toe boards and guard rail
    b. #18 ½ mesh or equivalent
6. Must support four times maximum load
7. All braces, screw legs, etc. must be immediately repaired
8. All planking – scaffold grade (refer to table in OSHA Book)
    a. 2 x 10 planks or wider
    b. Overlap 12" minimum or secured
    c. Overhang no less than 6" and no more than 18" on ends
    d. Access shall be provided on all scaffolding with a step over 24"
9. Poles, legs, etc. must be plumb and rigid
10. Overhead protection for people exposed to overhead hazards
11. Eliminate slippery conditions as quickly as possible
12. No welding or open flames on staging suspended by fiber/synthetic ropes. Watch out for corrosives or chemicals.
13. Wire, etc. must be able to support six times load
14. No shoring or lean-to scaffolds
15. Can't work on scaffolds during storms or high winds
16. Can't accumulate tools/debris to cause a hazard

Scaffolds Overview:

1. Shall bear on solid foundation and spread the load evenly
2. Set as near to wall of building as possible
3. Diagonal bracing needed horizontally on mobile scaffolds
4. Cross bracing is required on all sections
5. Planking lapped 12" or butted and supported – separate bearers
6. Guardrails:
    - Over 10' high
    - 8' on center
    - Toe boards 4"
7. Must be tied and secured every 26' high and 30' long.
8. Plumb and rigid

Manually Propelled:

1. Height shall not exceed 4 times its base dimension
2. Casters support four times load and locking
3. Proper cross bracing
4. Planking – tight, full width except for entrance opening
5. Platforms secured
6. Ladder on stairway must be provided
    - Affixed or build into
    - No tendency to tip
    - Landings provided every 35’ maximum
7. Move on level floors at base area.
8. Can’t ride the scaffolding. When grade is more than three degrees out of horizontal, and if there are holes or pits in the area.
9. ½ height of base for moving the scaffold is a good idea.
10. Secure tools before moving
11. Must lock casters before using
12. Guardrails / toe boards same as all other scaffold types

AERIAL LIFTS – SCISSORS, BOOMS, ETC.
(General Requirements)

The definition of the phrase “aerial work platform” includes a wide variety of lifts. There are several types of aerial work platforms. Each type is referenced by OSHA, and you must apply each standard to the correct type of platform used.

The purpose of the OSHA standard is to achieve the following objectives:

- Prevent accidents and injuries.
- Establish criteria for design, manufacture, testing, performance, inspection, training, maintenance and operation.
- Establish understanding and responsibilities for operators and owners, etc.

Scissors lifts that travel straight up and down and where the work platform does not travel outside of the wheel base commonly do not require fall protection to be used in the basket. The only time fall protection would be required is when the manufacturer requires it or the employer requires it. Working in the basket does require that the chain or gate is latched at the access area at all times.

Aerial lifts such as JLG or Articulating Boom Lifts require fall protection at all times in the basket and is mandatory under OSHA.

Employees must be able to provide an Operator card signifying their training on that particular type of lift.

Training:

As you know, certain states require you to be trained on the equipment and may also require you to carry a license to operate an aerial lift.

The general requirements:

1. Employees need to be trained prior to operating any aerial lifts.

2. Ladder and tower trucks shall be secured and locked on top of the truck cab before moving down the highway, etc. (booms secured, outriggers stowed).

3. Aerial lifts shall be tested each day, prior to use, to make sure the controls are working properly and safely.

4. Only authorized personnel shall be permitted to operate any aerial lift.

5. Anchoring (belting off) to an adjacent pole, structure, or equipment shall not be permitted.

6. Employees shall stand firmly on the floor of the basket (not allowed to sit, climb, or use planks, ladders, or other devices, for work positioning).

7. Full body restraint systems or harnesses and lanyards may be attached to the boom or basket when working in a lift. (NOTE: See the manufacturer's specs on where to anchor restraints.)

8. Do not exceed load limits of the manufacturer.

9. Brakes shall be set if installed.

10. Outriggers shall be positioned on pads or a solid surface if applicable.

11. If you are on an incline, you must chock the wheels.

12. Do not move an aerial lift when the boom is elevated, unless it is designed to be moved when the platform is extended.

13. If aerial lifts are used, and designed as personnel carriers, they shall have controls located on top (within the operator's reach) and at the bottom (to override the upper controls, and marked accordingly). The lower controls shall not be used unless permission was obtained or an emergency arises.

14. All electrical tests shall be performed by the ANSI A92.2-1969 standard, or the manufacturer's current equivalent.

15. Welding or repairs must conform to OSHA recommended standards.

16. All aerial lifts shall have the manufacturer's equipment manual located with the aerial lift at all times.

17. All operators must be familiar with the equipment specs (know what to check before startup, maintenance, and use.)

18. Check the ANSI standards for specific equipment requirements. Always, this is a <u>minimum</u> standard. Exceeding the standard is encouraged.

19. Employees should not use aerial lifts as an anchor and climb from the lift onto another structure. Double leg lanyards should be used to gain access to other structures and immediately disconnect from the aerial lift.

For Aerial Lift Checklist example, see Appendix I.

OPERATION OF COMPANY OWNED MOTOR VEHICLES

Driving vehicles safely is a priority. You can protect yourself as well as the general public.

Requirements for all drivers:

1. Only company authorized and trained employees are permitted to drive company motor vehicles.
2. All employees must abide by all rules and regulations concerning motor vehicles and motor vehicle laws.
3. All personnel in vehicles must wear seat belts at all times.
4. All employees operating a motor vehicle shall have a current and valid driver's license.
5. All employees shall be able to demonstrate an ability to handle the vehicle safely.
6. In case of an accident, all drivers are instructed to refer to the accident kit provided in the vehicle, and complete the required accident report form. (Note: See Motor Vehicle Accidents)
7. All employees driving a company motor vehicle shall extend all road courtesies and follow all safety procedures.
8. All vehicles shall be driven reasonably, according to road conditions.
9. If an employee discovers any unsafe vehicle conditions, they are instructed to contact the Foreman or Safety Director (or designee) immediately.
10. All vehicles shall be used for company business only (no personal use).
11. Any materials hauled or carried to a job must be properly secured.
12. All vehicles shall be able to stop within an assured clear distance.
13. Employees as operators are not permitted to talk on a cell phone, text, email or other dangerous activities while operating a motor vehicle of any type.
14. Employees should not be eating while operating a motor vehicle of any type.
15. If your windshield wipers are on in inclement weather your headlights must be on also!

Note: Certain materials for jobs are very heavy and, if loaded into a motor vehicle, you will need additional room to stop because of the weight. SLOW DOWN and drive with care.

This motor vehicle section also applies to golf carts, utility vehicles such as Gators, Cushman scooters etc.

1. At no time is an employee permitted to ride in the back of any vehicle that is not equipped with a seat and belt and is approved for a rider.
2. Seat belts must be worn at all times.
3. All equipment such as horns, lights, signals, wind shields etc. must be in proper working order.

4. All vehicles must be inspected at the beginning of each shift by the operator.
5. Maintenance sheets should be used to track inspections and repairs.
6. At no time is a vehicle to be used for purposes other than which it was intended such as using a utility vehicle to pull wire or a bucket truck to lift or pull a pole.
7. The operator must obey speed limits at all times. If no speed limit is posted it must be used according to the conditions and the terrain.
8. Vehicles should be shut off when refueling.
9. Fire extinguishers should be located on all motor vehicles.
10. Slow moving vehicle triangles and flashing lights should be used on all motor vehicles driven on roadways.

See Appendix B for additional help.

MAINTENANCE OF COMPANY OWNED MOTOR VEHICLES

1. All vehicles will be provided with a maintenance program.
2. If a vehicle is believed to be unsafe, it shall be removed from service until it can be repaired and Supervision notified.
3. Before repairs are made to company owned vehicles, prior company authorization must be received.
4. All vehicles should be equipped with the following:
    a. Accident report kit (motor vehicle)
    b. Accident kit – first aid kits
    c. Emergency equipment as required by law, including
        i. Small fire extinguisher, type ABC
        ii. Approved first aid kit
        iii. 12” square red flag with stand
        iv. Three flares or lanterns or reflectors
        v. One jack and wrench to change flat tires
        vi. One spare tire
        vii. Other items as needed
5. All service vehicles should also be further equipped with the company’s safety program and the SDS’s for the company.

*** See Appendix B for Accident Forms and Motor Vehicle Info.**

MOTOR VEHICLE ACCIDENT PROCEDURES

The purpose of these procedures is not to lay blame against anyone but to determine the cause of the accident and to prevent any future occurrences. Accident kits shall be in every vehicle, at all times.

Note: This is **not** for occupational illnesses or injuries.
This is **not** for general liability accidents or liability damage.

1. Stop the vehicle immediately.
2. Make sure scene is secure and safe then call the authorities.
3. Don't move the vehicle unless instructed by the authorities.
4. Contact the Safety Director (or designee).
5. Don't place blame – just get the facts.
6. The accident shall not be discussed or any statements made unless requested by a public official (police officer). The Owner/Contractor or Safety Director (or designee) will handle all statements concerning any accidents.
7. Obtain the following information from all drivers:
    a. Name
    b. Address
    c. Telephone number
    d. Insurance company information
    e. Driver's license number
    f. Vehicle description (year, model, etc.)
    g. License plate number
    h. Hospital taken to, if applicable.
8. Detail the accident report with as much information as possible.
9. One person shall be responsible for obtaining the accident report.
10. Be courteous
11. Don't sign any statement, except as required by the local authorities (police).
12. Take pictures if possible of multiple different angles.

* See Appendix B for a Motor Vehicle Accident form

CONFINED SPACE ENTRY

General Company Policy:

The purpose of this program is to ensure company compliance with the OSHA Confined Space Standard, Title 29 Code of Federal Regulations 1910 and 1926 Standards. We have determined that this workplace needs written procedures for the evaluation of confined spaces. Where permit-required spaces are identified, we have developed and implemented a permit-required confined space entry program. This program applies to all work operations where employees must enter a permit-required confined space as part of their job duties.

The Safety Director (or designee) has overall responsibility for coordinating safety and health programs in this company. The Safety Director (or designee) is the person having overall responsibility for the Permit-Required Confined Space Program. The Safety Director (or designee) will review and update the program as necessary. Copies of the written program may be obtained from the Safety Director (or designee), as required.

Under this program, we identify permit-required spaces and provide training for our employees according to their responsibilities in the permit space. These employees receive instructions for safe entry into our specific type of confined spaces, including testing and monitoring, appropriate personal protective equipment, rescue procedures, and attendant responsibilities. This program is designed to ensure that safe work practices are utilized during all activities regarding the permit space to prevent personal injuries and illnesses. After reading this program, if you find that improvements can be made, please contact the Safety Director (or designee). We encourage all suggestions because we are committed to creating a safe workplace for our employees. A safe and effective permit-required confined space entry program is an important component of our overall safety plan. We strive for clear understanding, safe work practices, and involvement in the program from every level of the company.

To provide a safe work environment and to prevent exposed employees from accidentally entering a permit space, we have implemented the following procedures to inform all employees of the existence, location, and danger posed by permit spaces at the work place or on the job site. To inform our employees of the existence of a permit space, we will provide training to them.

To ensure that unauthorized employees do not enter and work in permit spaces, we will provide barriers and signs, as required, around the space indicating a hazard.

The Safety Director (or designee) will designate the Entry Supervisor responsible for authorizing entry and issuing entry permits for work in our permit spaces. The file of permits and related documents will be kept with the written safety manual located at the office, or on the job site, as required (see Confined Space Entry Permit forms at the end

of this section). The procedures we follow for preparing, issuing, and canceling entry permits include the following elements.

PERMIT REQUIRED CONFINED SPACE PROGRAM

OBJECTIVE

The objective of this program is to maintain a safe and injury/illness free workplace while working in confined spaces on construction sites. In order to comply with the federal Occupational Safety and Health Administration (OSHA) standard, (29 CFR 1926.1200) this written program has been established for ***CONTRACTOR NAME*** (hereafter referred to as "the Company"). All company projects and facilities are included and comply with this program. Copies of this written program, including a copy of the OSHA Standard, are available for review by any employee.

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

Due to the nature of the work the Company performs, it is possible that employees may be required to enter areas or spaces defined by OSHA as "confined spaces." This program sets forth the requirements for practices and procedures to protect employees engaged in construction activities at a worksite with one or more confined spaces.

BACKGROUND

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

> **Note**: All OSHA standard references are Federal OSHA standards.

If uncertainly still exists as to the differences between the OSHA general industry standard (maintenance) and construction standard, as well as whether the work being performed is construction or maintenance, see Appendix M. Exceptions to this program include (1) Construction work regulated by §1926 subpart P—Excavations. (2) Construction work regulated by §1926 subpart S—Underground Construction,

Caissons, Cofferdams and Compressed Air. (3) Construction work regulated by §1926 subpart Y—Diving.

KEY DEFINITIONS

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

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

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

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

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

1. Is large enough and so configured that an employee can bodily enter it (any part of the body breaks the plane of the opening);
2. Has limited or restricted means for entry and exit; and
3. Is not designed for continuous occupancy.

Examples of the types of confined spaces that may be found on construction sites include, but are not necessarily limited to:

- bins
- pits (such as elevator, escalator, pump, valve or other equipment)
- tanks (such as fuel, chemical, water or other liquid, solid or gas)
- scrubbers
- sewers
- heating, ventilation & air conditioning (HVAC) ducts
- precast concrete and other pre-formed manhole units
- digesters
- lift stations
- air receivers
- sludge gates
- step up transformers
- attics & crawl spaces
- manholes (such as sewer, storm drain, electrical, communication or other utility)
- incinerators
- concrete pier columns
- transformer vaults
- storm drains
- water mains
- drilled shafts
- enclosed beams
- vessels
- cesspools
- silos
- air preheaters
- turbines

- bag houses
- mixers/reactors
- open top spaces more than 4 feet in depths such as: pits, tubs, vaults and vessels
- chillers
- boilers

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

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

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

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

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

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

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

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

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

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

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

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

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

1. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);

2. Airborne combustible dust at a concentration that meets or exceeds its LFL;

   Note: This concentration may be approximated as a condition in which the combustible dust obscures vision at a distance of 5 feet (1.52 meters) or less.

3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;

4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart D—Occupational Health and Environmental Control, or in Subpart Z—Toxic and Hazardous Substances, of applicable OSHA regulations and which could result in employee exposure in excess of its dose or permissible exposure limit;

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

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

   Note. For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Safety Data Sheets that comply with the Hazard Communication Standard, §1926.59 of applicable OSHA regulations, published information and internal documents can provide guidance in establishing acceptable atmospheric conditions.

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

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

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

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

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

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

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

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

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

1. Contains or has the potential to contain a hazardous atmosphere;

2. Contains a material that has potential for engulfing an entrant;

3. Has an internal configuration such that an entrant could be trapped or asphyxiated by the inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross section; and/or

4. Contains any other recognized serious safety or health hazards.

Important Notes:

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

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

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

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

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

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

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

Permit Confined Space Program

Key Components of a Written Permit Required Confined Space Program (1926.1204)

1. Identify measures necessary to prevent unauthorized entry into a permit required confined space, as well as unintentional entry by workers and the public.

2. Identify steps of how potential hazards of permit spaces will be evaluated.

3. Develop & implement the means, procedures, and practices necessary for safe permit space entry operations.

   Note: A written permit that includes the unique hazards and practices applicable to each space may be used in conjunction with a written program.

4. Topics include but not limited to:

   a. Identify company specific acceptable entry conditions that must be met to initiate and conduct the entry safely. Considerations should be given to existing/ potential atmospheric and physical hazards and hazards that maybe introduced during work activities.

   b. Provide authorized entrant or authorized representative with the opportunity to observe monitoring or testing of permit spaces.

   c. Methods for isolating the permit space and physical hazards within the space such as but not limited to lock out tag out, physical barriers, blocking.

   d. Methods to eliminate or control atmospheric hazards such as purging, inerting, flushing, or ventilating the permit space as necessary.

   e. Monitoring procedure(s) that will detect an increase in atmospheric hazard levels in sufficient time for the entrants to safely exit the permit space in the event the ventilation system stops.

   f. Protection of entrants and others from external hazards including but not limited to pedestrian/vehicular traffic, other unauthorized entry or falling object protection by means of covers, guardrails, barricades and signs or other means.

   g. Ensure that employees are not allowed to enter into or remain in a permit space with a hazardous atmosphere (unless the employer can demonstrate that PPE will provide effective protection for each employee in the permits space and proceed the appropriate PPE to each employee)

   h. Identification and elimination of any conditions that could make it unsafe to remove an entrance cover (ex. high pressure, temperature and toxic gases or vessel contents).

5. Provide and train employees on the following equipment at no cost to the employee and ensure that the equipment listed below is properly maintained, and properly used by employees.

    a. Testing and monitoring equipment;

    b. Ventilating equipment needed to obtain acceptable entry conditions;

    c. Communications equipment;

    d. PPE to the extent that as feasible engineering and work-practice controls do not adequately protect employees;

    e. Lighting equipment that meets minimum illumination requirements of 1926.56, that is approved for the ignitable or combustible conditions that will be present.

    Note: If required, backup power supply or flashlights should be provided to allow employees to exit in the event of a power failure;

    f. Other equipment for safe entry into and safe exit from, and rescue from, permit spaces as identified by assessment.

6. Monitor the permit space prior to entry to determine if acceptable entry conditions exist before changes to the space's natural ventilation are made, and before entry is authorized to begin. When isolation of the space is infeasible because the space is large or is part of a continuous system (ex. sewer) employer must:

    a. Perform pre-entry testing and any other testing feasible before entry is authorized; and

    b. Continuously monitor entry conditions in the non-isolated permit space areas where authorized entrant is working; and

    c. Provide an early-warning system that continuously monitors for non-isolated engulfment hazards. The system must alert authorized entrants and attendants in sufficient time for the authorized entrants to safely exit the space.

    d. Continuously monitor atmospheric hazards unless the equipment for continuously monitoring a hazard is not commercially available, or perform periodic monitoring with sufficient frequency to ensure that acceptable entry conditions are being maintained during the course of entry operations.

    e. Atmospheric hazards must be tested in the following order oxygen, combustible gases and vapors, and then toxic gases and vapors.

f. Provide authorized entrant or authorized representative with the opportunity to observe monitoring or testing of permit spaces.
g. Allow for reevaluation of the permit space in the presence of any authorized entrant/ representative who requested the reevaluation.

h. Immediately provide each authorized entrant or that employee's authorized representative with the results of any testing conducted.

7. Provide at least one attendant outside a permit space(s) into which entry is authorized for the duration of entry operations. Attendants may be assigned to more than one permit space provided the duties described in 1926.1209 are fulfilled.

    a. If monitoring multiple spaces and the attendant needs to devote his/her entire attention to one of the spaces or conduct non entry retrieval, a backup attendant must be available for the other space(s) or entrants must be removed from the confined space(s).

8. Designate each person who is to have an active role in entry operations, identify the duties of each such employee and provide each employee with the training required (list on permit).

9. Develop a rescue plan including but not limited to: procedures for summoning rescue and emergency services, and for preventing unauthorized personnel from attempting a rescue.

    a. Summoning emergency and rescue services, including summoning emergency assistance in case of a failed non entry rescue;

    b. Rescuing entrants from permit spaces;

    c. Providing necessary emergency services to rescued employees; and

    d. Preventing unauthorized personnel from attempting a rescue.

10. Develop and implement a system for the preparation, issuance, use and cancellation of entry permits, including the safe termination of entry operations under both planned and emergency conditions.

11. Develop and implement procedures to coordinate entry operation, in consultation with the controlling contractor when employees of more than one employer are working simultaneously in a permit space

    a. Multiple employers are performing work simultaneously inside that could affect conditions in a permit space.

b. Employers are performing work outside the permit space that could affect conditions inside of permit space.

12. Develop and implement procedure for concluding the entry after entry operations have been completed.

13. Review entry operations when the measures taken under the permit program may not protect employees and revise the program to correct deficiencies found to exist before subsequent entries are authorized.

14. Review the permits confined space program, using canceled permits retained within 1 year after each entry and revised the program as necessary. ****If no entry is performed during a 12-month period no review is necessary.

Identification of Permit Required Confined Space

1. Prior to start of work each employer must ensure that a competent person identifies all confined space Hazards or potential hazards in each space or the reason it is a permit space.

    a. Complete confined space checklist

2. If workplace contains one or more permit space the employer who identifies, or who receives notice of, a permit space must:

    a. Inform exposed employees by posting danger signs or by any other equally effective means, of the existence and location of, and the danger posed by, each space.

    b. Signs reading "danger--permit-required confined space, do not enter"

3. Each employer who identifies or receive notice of a permit space must take effective measures to prevent those employees from entering that permit. Isolate the permit space and physical hazards within the space.

Classification of a Space

Date: _____ Project: _____

Form Completed by: _____ Company: _____

Location of Space: _____

Is the space planned to be or may be unintentionally entered? YES NO

If yes continue completing the form.

After answering the questions below this space is classified as:

- Non Permit Required Confined Space
- Permit Required Confined Space

Prior to entry, the space must be reevaluated to ensure the conditions identified on this form are accurate. If conditions have changed, the space may have to be reclassified. Consideration should be given to the elimination, isolation, or control of atmospheric, engulfment, physical or any other type of hazard which would allow reclassification to a non-permit confined space, or the use of alternate entry procedures.

If ALL the following questions are answered in the gray, the space must be classified as a confined space.	**YES**	**NO**
Is the space large enough and so configured that an employee can bodily enter the space? (entry is defined as any part of the body breaking the plane of the opening)		
Does the space have limited or restricted means for entry and exit?		
Is the space designed for continuous human occupancy?		
If a confined space, continue with the questions below to determine permit or non-permit space		

Identification of Risk and Hazards *(Does the space:)*	**YES**	**NO**
Have the potential to contain a hazardous atmosphere?		
Have an extreme temperature hazard?		
Have an entrapment hazard such as inwardly converging wall?		
Have an engulfment hazard? (any type of flowable material that can engulf an individual)		
Have an electrical, mechanical, hydraulic or pneumatic energy hazard?		
Have moving equipment?		
Have a fall hazard?		
Have a drowning hazard?		
Have any other serious physical or health hazards?		
Will the work we do in the space introduce the hazard into the space? E.g. welding, pvc glue or others…		
Any question answered "yes" classifies the space as a permit required space		

Pre Entry Identification/Communication

Permit Space Entry Communication and Coordination (1926.1203 General Requirements)

1. Host Employer must provide the following information to the controlling contractor (if no controlling contractor, this information must be provided to the entry employers (1926.1203):
    a. The location of each known permit space.

    b. Hazards or potential hazards in each space or the reason it is a permit space.

    c. Any precautions that the host employer or any previous controlling contractor or entry employer implemented for the protection of employees in the permit space.

2. The Controlling Contractor must:
    a. Obtain the host employer information about permit spaces (if applicable).

    b. Identify and classify confined spaces on the project.

    c. Provide to each entity entering permit spaces, information on permit spaces identified by the controlling contractor and host employer.

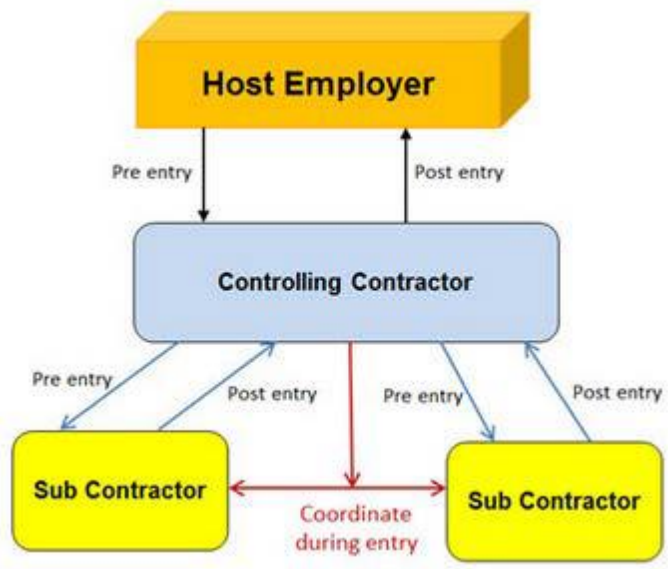
3. Prior to Entry the Entry Employer must:
    a. Coordinate entry operations with the controlling contractor when more than one entity performs permit space entry at the same time or and if multiple entities are performing work simultaneously in or around a permit space that could foreseeably result in a hazard in the permit space.

    b. Obtain all controlling contractor's information regarding permit spaces and entry operations.

    c. Inform the controlling contractor of the permit space program that the entry employer will be following, including any hazards likely to be encountered or created in each space.

    d. Must make available to each affected employee and his/her authorized representative all information required to be developed by 1926.1212.

Pre Entry Identification/Communication



Entry into Reclassified Non Permit Space

Based on the evaluation and the actions listed on the Alternate Entry/Reclassification Form, to eliminate, isolate, or control atmospheric, engulfment, physical or any other type of hazard, the entry into the identified space will be conducted as non-permit space entry.

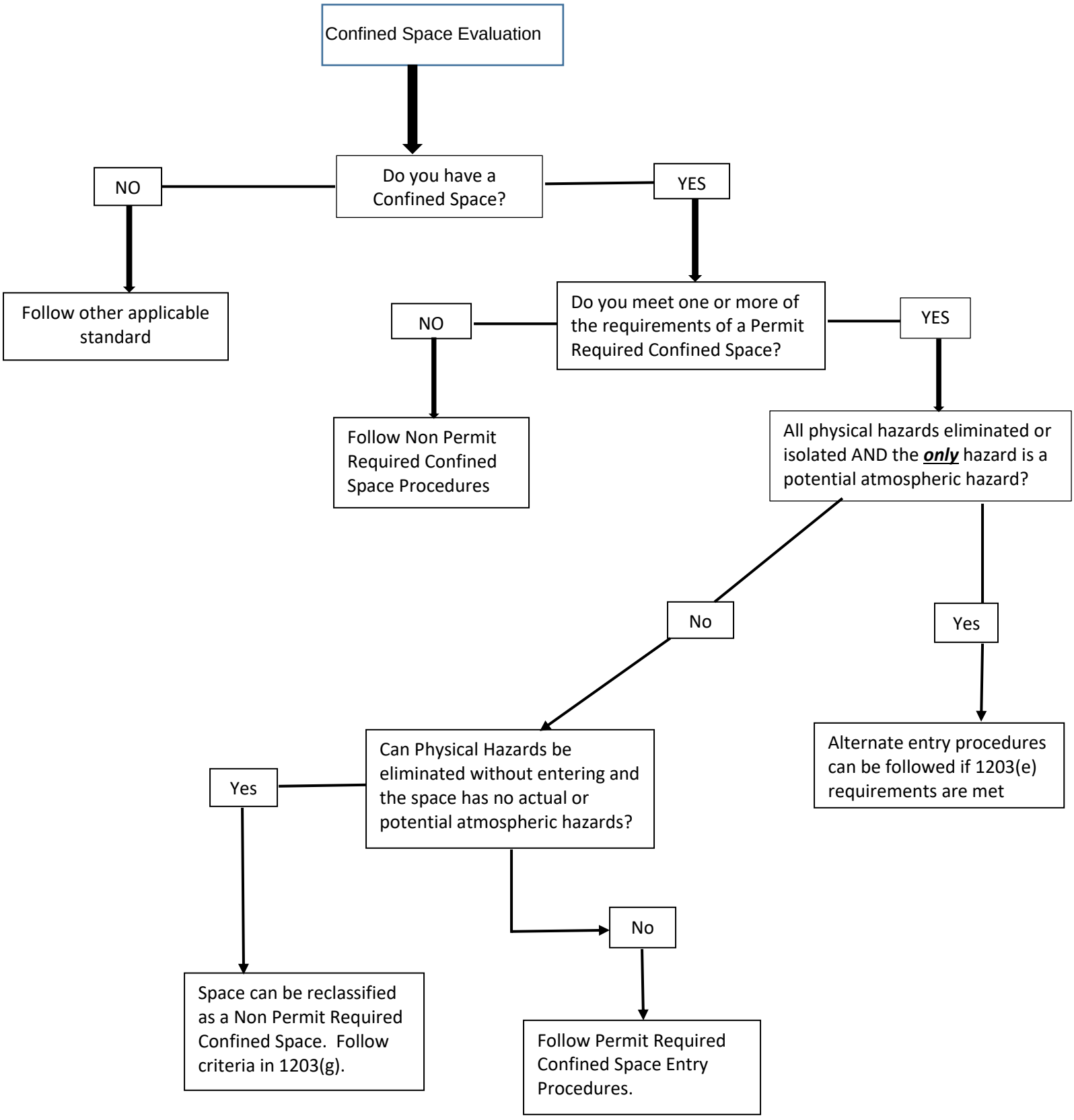
Non Permit confined spaces may be entered provided the following conditions are met:

a. If the permit space poses no actual or potential atmospheric hazard and if all hazards within the space are eliminated or isolated without entry into the space.

b. The entry employer must eliminate or isolate the hazards without entering the space, unless it can demonstrate it is infeasible.

c. Entry employer must document the basis for determining that all hazards in a permit space have been eliminated or isolated, through certification that contains date, location of space, and the signature of the person making the determination. (Alternate Entry/Reclassification Form).

d. If hazards arise within the space that has been classified as a non-permit each employee must exit the space.


Confined Space Evaluation
Do you have a Confined Space?
NO
YES
Follow other applicable standard
Do you meet one or more of the requirements of a Permit Required Confined Space?
NO
YES
Follow Non Permit Required Confined Space Procedures
All physical hazards eliminated or isolated AND the ***only*** hazard is a potential atmospheric hazard?
No
Yes
Alternate entry procedures can be followed if 1203(e) requirements are met
Can Physical Hazards be eliminated without entering and the space has no actual or potential atmospheric hazards?
Yes
No
Space can be reclassified as a Non Permit Required Confined Space. Follow criteria in 1203(g).
Follow Permit Required Confined Space Entry Procedures.

Permitting Process 1926.1205

1. Before entry is authorized, each entry employer must document the completion of measures by preparing an entry permit.

2. Before entry begins, the entry supervisor identified on the permit must sign the entry permit to authorize entry.

3. The completed permit must be made available at the time of entry to all authorized entrants or their authorized representatives by posting it at the entry portal or by any other equally effective means.

4. The duration of the permit may not exceed the time required to complete the assigned task.

5. The entry supervisor must terminate entry and take the following actions when any of the following apply:
    a. Isolate the permit space and physical hazards within the space.

    b. Suspend or cancel the entry permit and fully reassess the space before allowing reentry when a condition that is not allowed under the entry permit arises in or near the permit space and that condition is temporary in nature and does not change the configuration of the space or create any new hazards within the space.

    c. Cancel the entry permit when the entry operations covered by the entry permit have been completed.

6. The entry employer must retain each canceled entry permit for at least 1 year to facilitate the review of the permit-required confined space program.

Alternate Procedures (1926.1203 (e))

Employers may use the alternate procedures for entering a permit space only under the following conditions (1203 (e)). If alternate procedures are used the employer need not to comply with the following:

- ***1926.1204 - Permit Confined Space Program***
- ***1926.1205 - Permitting Process***
- ***1926.1206 - Entry Permit***
- ***1926.1208 - Duties of Authorized Entrants***
- ***1926.1210 - Duties of Entry Supervisors***
- ***1926.1211 - Rescue and Emergency Services***

1. All physical hazards in the spare are eliminated or isolated through engineering controls so only potential hazard is atmosphere conditions.

2. Can demonstrate that continuous forced air ventilation alone is sufficient to maintain the permit space safe for entry.

3. If ventilation system stops working entrants can exit the space.

4. Monitoring and inspection data that supports and demonstrates all physical hazards in the space are eliminated and isolated.

5. The supporting data and determinations are documented and are made available to each employee and employee authorized representative.

6. The following conditions must be in place to enter into permit spaces under the alternate procedures:
    a. Isolate the permit space and physical hazards within the space.

    b. The opening must be immediately guarded by railing, temporary cover, or other temporary barrier. Internal atmosphere must be tested, with a calibrated direct-reading instrument, oxygen content, for flammable gases and vapor and for potential toxic air contaminates.

    c. No hazardous atmosphere is permitted within the space whenever any employee is inside the space.

    d. Forced air ventilations must be used as follows:
        i. An employee must not enter the space until forced air ventilation has eliminated any hazards.
        ii. Forced air ventilation must be so directed as to ventilate the immediate areas where an employee is or will be present within the space.
        iii. Atmosphere within the space must be continuously monitored unless the entry employer can demonstrate:
            1. Equipment is not commercially available.
            2. Periodic monitoring is sufficient.
        iv. If continuous monitoring is used the employer must ensure:
            1. Monitoring equipment has an alarm or employees will check the monitor with sufficient frequency.
        v. If continuous monitoring is not used the employer must ensure:
            1. Periodic monitoring is required.
        vi. If a hazard is detected during entry:
            1. Each employee must leave the space immediately.
            2. Evaluate the space to determine how the hazard developed.
            3. Implement measures to protect employees from the hazard before any subsequent entry takes place.
        vii. Must ensure a safe method of entering and exiting the space:
            1. Must be designed and manufactured for personnel hoisting.

2. Job-made hoisting system must be approved for personnel hoisting by a registered professional engineer in writing.

viii. Verification that the space is safe for entry and that the pre-entry measures have been taken, through a written certification that contains:
   1. Date
   2. Location
   3. Signature of person providing certification

ix. Certification must be made prior to entry and made available to employees and employee representatives.

7. When changes in the use or configuration of a non-permit confined space occur, a competent person must reevaluate that space.

***See Confined Space Permit example in Appendix J**

Alternate Entry /Reclassification

Date:_____ Project:_____

Company: _____

Form Completed by:_____ Signature:_____

Location of Space:_____

Based on the following evaluation and the actions listed below to eliminate, isolate, or control atmospheric, engulfment, physical or any other type of hazard, this entry will be conducted as one of the following Options:

1. **Option 1** - In accordance with 1926.1203 (g) this space has been reclassified as a non-permit space. **OR**
2. **Option 2** - Entry using Alternate Procedures in accordance with 1926.1203 (e)

Option 1 Can the permit space be *reclassified* as a non-permit space?	YES	NO
Does the permit space contain or have potential to contain a hazardous atmosphere? Note: Control of atmospheric hazards through forced air ventilation does not constitute elimination or isolation of the hazard and therefore cannot be reclassified.		
Have all physical hazards been eliminated or isolated without entering the space?		
Has this form been completed and signed and made available to employees?		
Have employees been instructed to exit the space when hazards arise?		
Note: ALL GRAY BOXES MUST BE CHECKED TO RECLASSIFY THE SPACE AS NON-PERMIT		

Option 2 Can *alternate entry* procedure be used?	YES	NO
Do you have to enter the space to eliminate the hazards or collect data?		
Have all physical hazards been eliminated or isolated so that the only hazard posed is an actual or potential hazardous atmosphere?		
Will continuous forced air ventilation alone maintain safe entry?		
If ventilation stops working, will the employees have all necessary tools to exit the space safely?		
Do you have monitoring and inspection data that supports safe entry with use of ventilation alone?		
Has this form been completed and signed and data made available to all employees?		
Note: ALL GRAY BOXES MUST BE CHECKED TO USE ALTERNATE ENTRY PROCEDURES.		

LIST METHODS TO ELIMINATE, ISOLATE OR CONTROL THE IDENTIFIED HAZARDS:

Training

Entry Employer Training Responsibility

1. Competent Person - one who is capable of identifying existing and predictable hazards in the surrounding or working conditions which are unsanitary, hazardous or dangerous to employees and who has the authorization to take prompt corrective measures to eliminate them. (1926.1200(a))

Training each affected employee which covers the following :(1926.1207) (b)

1. In both language and vocabulary that the employee can understand.
2. Before the employee is first assigned duties.
3. Before there is a change in assigned duties.
4. Whenever there is a change in permit space entry operations that presents a hazard about which an employee has not previously been trained..
5. Whenever there is any evidence of a deviation from the permit space entry procedures.
6. Training must establish employee proficiency in the duties required by the confined space program.
7. The employer must maintain training records to show that the training has been completed. Training records must include employee names, the trainers and the dates of training.

Duties of Authorized Entrants Training (1926.1208)

1. Familiar with and understand the hazards that may be faced including information on the mode, signs or symptoms and consequences of the exposure.
2. Trained on proper use of testing and monitoring equipment, ventilation equipment, communication equipment, PPE, lighting equipment, barriers, ingress and egress equipment, rescue and emergency equipment (1209(f)).
3. Communicate with the attendant as necessary to enable the attendant to assess entrant status and to enable the attendant to alert entrants of the need to evacuate the space.

Duties of Attendants Training (1926.1209)

1. Familiar with and understand the hazards that may be faced including information on the mode, signs or symptoms and consequences of the exposure.
2. Aware of possible behavioral effect of exposures.
3. Continuously maintains an accurate count of entrants in the space.
4. Remain outside the permit space during entry operations.
5. Communicates with entrant as necessary to assess entrant
6. Assesses activities and conditions inside and outside the space to determine if it is safe for entrants to remain in the space.
7. Summons rescue and other emergency series.

8. Trained to take the following actions when unauthorized persons approach: warn to stay away from permit, advise unauthorized to exit immediately, and inform entrants and the entry supervisor if any unauthorized person entered the permit space.
9. Perform non-entry rescues according to rescue procedure.
10. Perform no duties that might interfere with attendant primary duty.

Duties of Entry Supervisor (1926.1210)

1. Familiar with and understand the hazards that may be faced including information on the mode, signs or symptoms and consequences of the exposure.
2. Checks that appropriate entries have been made on the permit, that all tests required by the permit have been conducted and all required equipment is in place.
3. Terminates the entry and cancel or suspends permit.
4. Verifies that rescue services are available and that the means of summoning them are operable.
5. Removes unauthorized individuals who enter or who attempt to enter the permit required confined space.
6. Determines, whenever responsibility for a permit space entry operation is transferred, at intervals dictated by the hazards and operations performed within the space, that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

Training Requirements of Employee Designated Permit Space Rescue Team (1926.1211)

1. Provide and train each affected employee with PPE needed to conduct permit space rescues safely.
2. Train each affected employee to perform assigned rescue duties, and successfully complete the training.
3. At least one member of the employee rescue team will be trained in first aid and CPR.
4. Ensure that employee rescue teams practice making permit space rescue prior to attempting an actual rescue and at least once every 12 months (simulated rescue operation in which they remove dummies, manikins or actual persons from permit space).

Entry Permit

Entry Permit (1926.1206)

The entry permit that documents compliance with this section and authorizes entry to a permit space must identify:

1. The permit space to be entered.

2. The purpose of the entry.
3. The date and the authorized duration of the entry permit.
4. The authorized entrants within the permit space by name or by such other means (roster, tracking system) to enable the attendant to determine quickly and accurately, for the duration of the permit.
5. Means of detecting an increase in atmospheric hazard levels in the event the ventilation system stops working.
6. Each person, by name, currently serving as an attendant.
7. The individual, by name, currently serving as entry supervisor, and the signature or initials of each entry supervisor who authorizes entry.
8. The hazards of the permit space to be entered.
9. The measures used to isolate the permit space and to eliminate or control permit space hazards before entry (ex: lockout or tagging of equipment, procedures for purging, inerting, ventilating and flushing permit spaces).
10. Acceptable entry conditions.
11. Results of tests and monitoring performed accompanied by the names or initials of the testers and by an indication of when the tests were performed.
12. Rescue and emergency services that can be summoned and the means (equipment to use and the numbers to call) for summoning those services.
13. Communication procedures used by authorized entrants and attendants to maintain contact during the entry.
14. Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment.
15. Any other information necessary.
16. Any additional permits (ex: hot work).

Rescue and Emergency Services

Rescue and Emergency Services 1926.1211

An employer who designates rescue and emergency services must:

1. Evaluate a prospective rescuer's ability to respond to a rescue summons in a timely manner.
2. Evaluate prospective rescue services ability, in terms of proficiency and to function appropriately with rescue -related tasks, equipment and while rescuing entrants.
3. Rescue team or service evaluation based on:
    a. Has the capacity to reach the victim(s) within a time frame that is appropriate for the permit space hazard.
    b. Isolate the permit space and physical hazards within the space.
    c. Agrees to notify the employer immediately in the event that the rescue service becomes unavailable.
4. Inform the rescue team or service of the hazards they may confront.
5. Provide rescue team or service selected with access to all permit spaces from which rescue may be necessary (assist with development of rescues plans).

Employee Permit Space Rescue

Provide all equipment and training at no cost to those employees:

1. Train each affected employee to perform assigned rescue duties. (each employee must successfully complete the training required and establish proficiency as authorized entrants).
2. Train each affected employee in basic first aid and cardiopulmonary (CPR).
3. Communication procedures used by authorized entrants and attendants to maintain contact during the entry.
4. Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment.
5. Any other information necessary.
6. Any additional permits. (ex: hot work).
7. Ensure that employee rescue teams practice making permit space rescue prior to attempting an actual rescue and at least once every 12 months. (simulated rescue operation in which they remove dummies, manikins or actual persons from permit space).
8. Non-entry rescue is required unless the retrieval equipment could increase the overall risk of entry or would not contribute to the rescue of the entrant.
9. If employer selects entry rescue an entry rescue service must be designated.
10. Whenever non-entry rescue is selected, the entry employer must ensure that retrieval systems or methods are used whenever an authorized entrant enter a permit space and confirm prior to entry that emergency assistance would be available in the event that non-entry rescue fails.
11. If employer selects entry rescue an entry rescue service must be designated.
12. Retrieval system must meet the following requirements:
    a. Each authorized entrant must use a chest or full body harness, with retrieval line attached at the center of entrants back near shoulder level, above the entrant's head, or another point which the employer can establish presents a profile small enough for successful removal.

Rescue and Emergency Services

1. Wristlets or anklet may be used in lieu of the chest or full boy harness if the employer can demonstrate that the use of the chest or body harness is infeasible.
2. The retrieval line must be attached to a mechanical device or fixed point outside of the confined space. A mechanical device must be available to retrieve personnel from a vertical type permit space more than 5 feet deep.
    a. Unsuitable retrieval equipment must not be used; including retrieval line that has a reasonable probability of becoming entangled or retrieval line that will no work due to internal configuration of the space.

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

Post Entry Documents

Permit Space Entry Communication and Coordination (1926.1203 General Requirements)

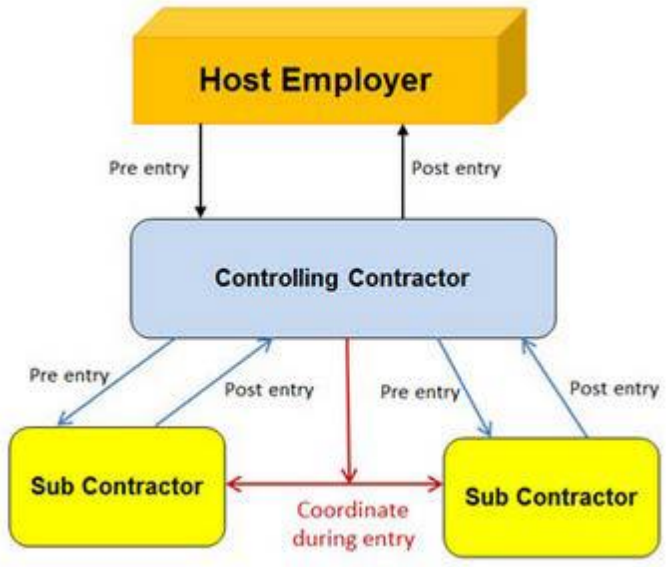
The Controlling Contractor must:

1. Must debrief each entity that entered a permit space regarding the permit space program followed and any hazards confronted or created in the permit space(s).
2. Must relay information to the host employer of the information exchanged with the entry entities.

The Entry Employer must:

- Must inform the controlling contractor in a timely manner of the permit space program followed and of any hazards confronted or created in the permit spaces during operations (If no new hazards arose during entry and the entry employers program did not change, the information exchange can be brief, just confirming the original program was followed.).

********If there is no controlling contractor present at the worksite, the requirements must be fulfilled by the host employer or employer who arranges to have employees of another employer preform work that involves permit space entry.***



CRANES and RIGGING

All equipment shall meet OSHA and ANSI standards as well as the manufacturer's specifications.

No one knows a crane's limitations better than the manufacturer who built it. You can work safely when you operate within the design parameters of the manufacturer.

Most accidents are due to a structural failure of the crane (overloading the crane) because of Operator error. Improper riggings are also a leading cause of accidents again due to Operator error.

Cranes must be setup on a properly graded and well drained, firm pad for operation.

- All underground hazards must be identified such as utilities, manholes, sewers, vaults etc.

Assembly and Disassembly requires a Director that is Competent and Qualified to do the work

- Understands the manufacturers and employers' procedures
- Ensures all crew members are familiar with their task assignments
- Rigging must be done by a Qualified Rigger
- Outriggers must be fully deployed and extended if needed

When working around power lines the work area must be identified by marking boundaries or establishing a 360-degree radius around the crane.

1. Must be at least 20 feet from the power lines –or-
2. De-energize and ground the lines –or-
3. Ask the utility for the voltage and then use table A distances

Note – If using option 1 or option 3, the employer must set up a planning meeting, tag lines must be nonconductive, use elevated warning lines PLUS use a proximity alarm –or- spotter –or- warning device –or- range limiter –or- insulating link.

Operators must be competent to operate a crane safely by Nov 9, 2014. Crane operators must be certified to operate a crane by November 10, 2017. Employers are required to pay for certification or qualification of their uncertified or unqualified operators.

Signal persons must use hand, voice or audible signals to signal the crane.

- A signal person is required if the point of operation is not in plain view, the view of the direction of travel is obstructed or there are site specific safety rules or concerns.

Inspections must be performed each shift by a Competent Person.

Operators cannot be distracted by other activities such as cell phones.

All safety devices such as the crane level, boom stops or check valves etc. must be in proper working order. Defects must be corrected.

Power line safety, before beginning operations

The employer must:

(1) Identify the work zone by either:

(i) Demarcating boundaries (such as with flags, or a device such as a range limit device or range control warning device) and prohibiting the operator from operating the equipment past those boundaries, or

(ii) Defining the work zone as the area 360 degrees around the equipment, up to the equipment's maximum working radius.

(2) Determine if any part of the equipment, load line or load (including rigging and lifting accessories), if operated up to the equipment's maximum working radius in the work zone, could get closer than 20 feet to a power line. If so, the employer must meet the requirements in Option (1), Option (2), or Option (3) of this section, as follows:

Option (1)—De-energize and ground. Confirm from the utility owner/operator that the power line has been de-energized and visibly grounded at the worksite.

Option (2)—20-foot clearance. Ensure that no part of the equipment, load line, or load (including rigging and lifting accessories), gets closer than 20 feet to the power line by implementing the measures specified in paragraph (b) of this section.

Option (3)—Table A clearance.

(A) Determine the line's voltage and the minimum approach distance permitted under Table A (*see* § 1926.1408).

(B) Determine if any part of the equipment, load line or load (including rigging and lifting accessories), while operating up to the equipment's maximum working radius in the work zone, could get closer than the minimum approach distance of the power line permitted under Table A. If so, then the employer must follow the requirements in paragraph (b) of this section to ensure that no part of the equipment, load line, or load (including rigging and lifting accessories), gets closer to the line than the minimum approach distance.

Barricades:

a. Barricades must be set up to protect employees from being struck or crushed by the rotating superstructure of the crane.
b. Special attention must be given to guarding of the swing radius when near buildings or other structures.

Stability:

A crane's load rating is generally developed for operations under ideal conditions, i.e., a level, firm surface. Un-level surfaces or soft ground must be avoided. In areas

where soft ground poses a support problem for stability, mats and/or blocking should be used to distribute a crane's load and maintain a level, stable condition.

If a crane is out of level more than one degree, it exerts a side load on the crane boom, and can affect structural integrity.

a. Check for crane leveling
b. Are the outriggers, where applicable, fully extended and being used in accordance with manufacturer's recommendation?
c. Where necessary for rigging or service requirements, a ladder or steps shall be provided to give access to a cab roof

Inspect all wire rope (including standing ropes):

Wire rope shall be taken out of service when any of the following conditions exist:

a. In running ropes, six randomly distributed broken wires in one lay or three broken wires in one string in one lay.
b. Wear of one-third of the original diameter of outside individual wires.
c. Kinking, crushing, bird caging and corrosion, or any other damage resulting in distortion of the rope structure.
d. Evidence of any heat damage from any cause.
e. Reductions from nominal diameter

Check exhaust pipes, wheels, proper inflation of tires, and other general requirements
(including fluids, water levels, fuel, air, hydraulic systems, hoses, etc.)

Rigging

Employers must use qualified riggers during hoisting activities for assembly and disassembly work (1926.1404(r)(1)). Additionally, qualified riggers are required whenever workers are within the fall zone and hooking, unhooking, or guiding a load, or doing the initial connection of a load to a component or structure (1926.1425(c)).

A qualified rigger is a rigger who meets the criteria for a qualified person. Employers must determine whether a person is qualified to perform specific rigging tasks. Each qualified rigger may have different credentials or experience. A qualified rigger is a person that:

- possesses a recognized degree, certificate, or professional standing, or
- has extensive knowledge, training, and experience, and
- can successfully demonstrate the ability to solve problems related to rigging loads.

The person designated as the qualified rigger must have the ability to properly rig the load for a particular job. It does not mean that a rigger must be qualified to do every type of rigging job. Each load that requires rigging has unique properties that can range from the simple to the complex. For example, a rigger may have extensive experience in rigging structural components and other equipment to support specific construction activities. Such experience may have been gained over many years. However, this

experience does not automatically qualify the rigger to rig unstable, unusually heavy, or eccentric loads that may require a tandem lift, multiple-lifts, or use of custom rigging equipment. In essence, employers must make sure the person can do the rigging work needed for the exact types of loads and lifts for a particular job with the equipment and rigging that will be used for that job.

***See Appendix K**

EXCAVATIONS – SHORING & TRENCHING
(General Requirements)

OSHA requires that all excavations, and the work performed in them, must adhere to their standards. This type of work is considered to be the most hazardous in the industry. Even though the actual numbers are not large, injuries are almost always fatal when they do occur. Most of the time, accidents are due to inadequate planning.
29 CFR 1926.650.

The following are general guidelines to use:

1. If exposed to potential cave-ins, you must be protected by:
    - Sloping or benching the sides of the excavation
    - Placing a shield between the sides and the work area
2. Requirements do not apply when excavations are less than five feet in depth and examination of the ground by a competent person provides no indication of a cave in.
3. Trench
    - Narrow excavation below surface
    - Depth is greater than width
    - Width doesn't exceed 15 feet
4. Excavation
    - Man-made cut, cavity, etc. formed by earth removal

Cave-In:

1. Soil or dirt is very heavy
    - Cubic foot = 114 lbs.
    - Cubic yard = the weight of a pick-up truck
2. Vertical stress
    - 2' deep – 200 PSI/square foot
    - 5' deep – 500 PSI/square foot
3. Excavation disturbs columns of soil
    - Is unnatural
    - Called shear stress
    - Cracks occur – excavation fails or kicks
    - Cave-ins come in multiples of 1 to 3
    - Vibration, water, weather, lead to many conditions of cave-ins

Vibration Sources:

1. Railroad operations
2. Traffic
3. Heavy equipment operations
4. Jack hammer operations
5. Tamping machine operation

General Regulations:

1. Contact underground utilities (OUPS) 48 hours before you dig
2. Must provide stairway/ladder/ramp in trench
    - If 4’ or more deep
    - Within 25’ of lateral travel in any direction
3. Exposure to traffic – vests, signs, cones, barricades, lights etc.
4. Workers are not permitted to be below exposed loads or digging
5. Adjacent equipment must be guarded – hand signals or barricades
6. Hazardous atmosphere
    - Proper PPE (Lifeline and harness attached)
    - Same as confined space (rescue, etc.)
7. Control Water – Competent person
    - Ditches, streams, dike, etc.
8. Bracing/shoring of adjacent structures (Professional engineer)
9. Loose rock or soil – spoil pile minimum 2 feet from edge of excavation
10. Daily inspections by competent person, or if it rains or hazards found
11. Soil analysis is required daily and must be 1 visual test and 1 manual test.
12. Fall protection is required for trenches over 6 ft. in depth.

Requirements for protecting employees from cave-ins:

1. Required for over 5’ deep (all excavations must be evaluated by a competent person to determine potential for cave in)
2. Design of sloping and benching systems, options to consider:
    - Depth of trench
    - Soil conditions
    - Type of protective equipment
    - Engineered systems
3. Shoring types
    - Heavy timber
    - Aluminum
    - Plywood with aluminum
    - Trench shields

    Note: All use hydraulics, pneumatic, or screw types

Classification of soil rock deposits:

- Stable Rock
- Type A (Most stable)
- Type B
- Type C (Least stable)

Tested by compression strength of tons per square foot (tsf):

- Type A is > 1.5 TSF
- Type B is between .5 to 1.5 TSF
- Type C is < .5 TSF

Type A Examples:

1. Clay
2. Sandy clay
3. Hardpan

Note: Above are not considered Type A if:

- Subject to vibration (Traffic – pile driving, etc.)
- Previously disturbed
- Sloped layered types

Type B Examples:

1. Crushed rock
2. Previously disturbed soil (Unless type C)
3. Subject to vibration
4. Unstable dry rocks

Type C Examples:

1. Gravel
2. Sand
3. Loamy sand
4. Wet soil
5. Unstable wet rocks

***See* Appendix L**
OSHA Standard for Maximum Allowable Slopes

SAFETY MANUAL

APPENDIX A

Injury and Accident
Reporting Forms

Employee's Report of Injury Form

(To complete by the employee)

Employee's name: _____

__Male __Female Date of birth: ____/____/____ Home telephone :_____

Home address: _____

City: _____ State: Zip Code: _____

Present classification: _____

Location of accident: _____

Date of accident: _____ Time of accident: _____

Describe fully how accident occurred: (including events that occurred immediately before the accident):_____

_____

_____

_____

_____

Describe bodily injury sustained (be specific about body part(s) affected): _____

_____

Recommendation on how to prevent this accident from recurring: _____

_____

Name of supervisor: _____Contact #_____

Name(s) of witness(es): _____ Contact #_____

When did you report the accident to your supervisor? _____

Who did you report the injury to? _____

Do you require medical attention? Yes: _____ No: _____ Maybe: _____

Name of treating physician: _____Contact #_____

Signature of employee: _____Date: _____

Accident Witness Statement

(To be completed by Accident Witness)

Injured employee's name: _____

Name of witness: _____ Phone # _____

Job title of witness: _____

Home address of witness: _____

City: _____ State: _____ Zip Code: _____

Location of accident: _____

Date of accident: _____ Time of accident: _____

Describe fully how accident occurred: (including events that occurred immediately before the accident): _____

_____

_____

_____

_____

Describe bodily injury sustained (be specific about body part(s) affected): _____

_____

_____

_____

Recommendation on how to prevent this accident from recurring: _____

_____

_____

Name of Witnesses Supervisor: _____ Phone: _____

Signature of Witness: _____ Date: _____

Supervisor's Accident Investigation

(To be completed by the employee's supervisor or other responsible administrative official)

Location where accident occurred	Employer's Premises: Yes ☐ No ☐ Job site: Yes ☐ No ☐	Date of accident or illness
Who was injured?	☐ Employee ☐ Non-Employee	Time of accident ☐ a.m. ☐ p.m.

Job title or occupation	Name of dept. normally assigned	How long has employee worked at job where injury or illness occurred?
What property/equipment was damaged?		Property/equipment owned by:

What was employee doing when injury/illness occurred? What machine or tool was being used? What type of operation?

How did injury/illness occur? List all objects and substances involved.

Part of body affected/injured?

Any prior physical conditions? If so, what?
Yes ☐ No ☐

Nature and extent of injury/illness and property damaged (be specific)

PLEASE INDICATE ALL OF THE FOLLOWING WHICH CONTRIBUTED TO THE INJURY OR ILLNESS

____ Improper instruction	____ Failure to lockout	____ Unsafe arrangement or process
____ Lack of training or skill	____ Unsafe position	____ Poor ventilation
____ Operating without authority	____ Improper dress	____ Improper guarding
____ Horseplay	____ Improper protective equipment	____ Improper maintenance
____ Physical or mental impairment	____ Unsafe equipment	____ Inoperative safety device
____ Failure to secure	____ Poor housekeeping	____ Other _____

Supervisor's corrective action to ensure this type of accident does not recur: _____

_____

_____

Was employee trained in the appropriate use of Personal Protective Equipment/Proper safety procedures?

Yes _____No _____

Was employee cautioned for failure to use Personal Protective Equipment/Proper safety procedures?

Yes _____ No _____

Did employee promptly report the injury/illness? Yes _____No_____

Is there modified duty available? Yes _____ No _____

Supervisor's name | Supervisor's Signature | Phone

Ohio | Bureau of Workers' Compensation

First Report of an Injury, Occupational Disease or Death

This form can be completed and submitted online at **www.bwc.ohio.gov**

Report your injury by completing all three sections of this form

1. Complete as much of all three sections of this form as possible to reduce the time necessary in determining the claim. If this form is completed by the injured worker at the first visit to a medical provider, the injured worker may give the FROI to the provider to complete the treatment information section. The provider can then submit the FROI to the MCO.
2. Deliver, mail or fax the completed document to your employer or your employer's managed care organization (MCO).
3. If you do not know your employer's MCO, contact BWC at **1-800-644-6292** and follow the prompts, or use the MCO on BWC's Web site at **www. bwc.ohio.gov.**
4. If you are unable to determine your MCO, mail or fax this form to the BWC customer service office closest to your home. For information on your local customer service office, please visit **www.bwc.ohio.gov.**, or call **1-800-644-6292**.

Injured workers employed by a self-insuring employer

- Complete this form and give to your employer.
- Your employer should be able to tell you if he or she is a self-insuring employer.
- If your employer is self-insuring and you file this information with BWC, processing delays may occur.

For assistance in completing this form, call your BWC customer service offi Monday through Friday, 8 a.m. – 5 p.m.

Cambridge
61501 Southgate Road
Cambridge, OH 43725-9114
Phone: 740-435-4200
Fax: 866-281-9351

Canton
339 E. Maple St., Suite 200
North Canton, OH 44720-2593
Phone: 330-438-0638
Toll free: 800-713-0991
Fax: 866-281-9352

Cleveland
615 Superior Ave. W.
Cleveland, OH 44113-1889
Phone: 216-787-3050
Toll free: 800-821-7075
Fax: 866-336-8345

Columbus
30 W. Spring St.
Columbus, OH 43215-2256
Phone: 614-728-5416
Fax: 866-336-8352

Dayton
3401 Park Center Drive, Suite 100
Dayton, OH 45414-2577
Phone: 937-264-5000
Fax: 866-281-9356

Garfield Heights
4800 E. 131 St., Suite A
Garfield Heights, OH 44105-7132
Phone: 216-584-0100
Toll free: 800-224-6446
Fax: 866-457-0590

Cincinnati–Governor's Hill
8650 Governor's Hill Drive
Cincinnati, OH 45249-1369
Phone: 513-583-4400
Fax: 866-281-9357

Lima
2025 E. Fourth St.
Lima, OH 45804-4101
Phone: 419-227-3127
Toll free: 888-419-3127
Fax: 866-336-8346

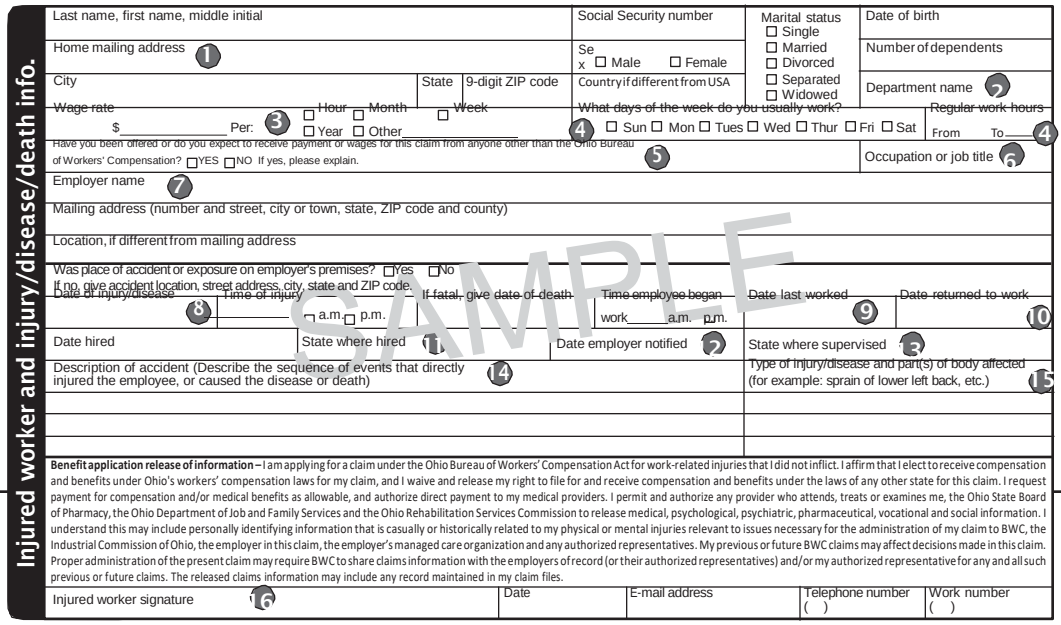
Mansfield
240 Tappan Drive, N., Suite A
Ontario, OH 44906-1366
Phone: 419-747-4090
Fax: 866-336-8350

Portsmouth
1005 Fourth St.
Portsmouth, OH 45662-4315
Phone: 740-353-2187
Fax: 866-336-8353

Toledo
P.O. Box 794
1 Government Center, Suite 1136
Toledo, OH 43697-0794
Phone: 419-245-2700
Fax: 866-457-0594

Youngstown
242 Federal Plaza, W., Suite 200
Youngstown, OH 44503-1206
Phone: 330-797-5500
Toll free: 800-551-6446
Fax: 866-457-0596

Completion instructions
(continued)



Injured worker and injury/disease/death info.

Last name, first name, middle initial | Social Security number | Marital status ☐ Single ☐ Married ☐ Divorced ☐ Separated ☐ Widowed | Date of birth

Home mailing address (1) | Sex ☐ Male ☐ Female | Number of dependents

City | State | 9-digit ZIP code | Country if different from USA | Department name (2)

Wage rate $_____ Per: (3) ☐ Hour ☐ Month ☐ Week ☐ Year ☐ Other_____ | What days of the week do you usually work? (4) ☐ Sun ☐ Mon ☐ Tues ☐ Wed ☐ Thur ☐ Fri ☐ Sat | Regular work hours From To (4)

Have you been offered or do you expect to receive payment or wages for this claim from anyone other than the Ohio Bureau of Workers' Compensation? ☐YES ☐NO If yes, please explain. (5) | Occupation or job title (6)

Employer name (7)

Mailing address (number and street, city or town, state, ZIP code and county)

Location, if different from mailing address

Was place of accident or exposure on employer's premises? ☐Yes ☐No
If no, give accident location, street address, city, state and ZIP code.

Date of injury/disease (8) | Time of injury _____ ☐ a.m. ☐ p.m. | If fatal, give date of death | Time employee began work_____ a.m. p.m. | Date last worked (9) | Date returned to work (10)

Date hired | State where hired (11) | Date employer notified (12) | State where supervised (13)

Description of accident (Describe the sequence of events that directly injured the employee, or caused the disease or death) (14) | Type of injury/disease and part(s) of body affected (for example: sprain of lower left back, etc.) (15)

Benefit application release of information – I am applying for a claim under the Ohio Bureau of Workers' Compensation Act for work-related injuries that I did not inflict. I affirm that I elect to receive compensation and benefits under Ohio's workers' compensation laws for my claim, and I waive and release my right to file for and receive compensation and benefits under the laws of any other state for this claim. I request payment for compensation and/or medical benefits as allowable, and authorize direct payment to my medical providers. I permit and authorize any provider who attends, treats or examines me, the Ohio State Board of Pharmacy, the Ohio Department of Job and Family Services and the Ohio Rehabilitation Services Commission to release medical, psychological, psychiatric, pharmaceutical, vocational and social information. I understand this may include personally identifying information that is casually or historically related to my physical or mental injuries relevant to issues necessary for the administration of my claim to BWC, the Industrial Commission of Ohio, the employer in this claim, the employer's managed care organization and any authorized representatives. My previous or future BWC claims may affect decisions made in this claim. Proper administration of the present claim may require BWC to share claims information with the employers of record (or their authorized representatives) and/or my authorized representative for any and all such previous or future claims. The released claims information may include any record maintained in my claim files.

Injured worker signature (16) | Date | E-mail address | Telephone number ( ) | Work number ( )

SAMPLE

Injured worker and injury/disease/death info.

1. Home address: Enter the home address where the injured worker lives. Include the apartment number, if applicable.
   - If the post offi does not deliver mail to the home address, list the mailing address instead of the home address.
2. Department name: Enter the injured worker's department or area name where he/she normally reports for work.
3. Wage rate: Enter the injured worker's rate of pay, and then select how often it is received. (If the pay rate being reported is not hourly, report the gross amount.)
   - If eight or more days of work will be missed, BWC needs wage information for the 52 weeks prior to the date of injury. Submit wage information using employer payroll reports, wage statement (BWC form C-94-A), W-2s, etc.
4. What days of the week do you usually work? What are your regular work hours: Enter the days and hours the injured worker normally works.
   - If the days worked vary from week to week, list the number of hours worked in an average week.
5. Wages: If you received wages during disability, please explain.
6. Occupation or job title: Enter the injured worker's type of occupation or actual job title at the time of injury, occupational disease or death.
7. Employer name: Enter the name of the injured worker's employer at the time of the injury, occupational disease or death.
8. Date of injury/disease: Enter the date injured worker was injured. OR
   If the injured worker contracted an occupational disease, determine which of the following happened most recently:
   - The occupational disease was diagnosed by a medical provider;
   - The fi st medical treatment;
   - The injured worker fi st quit work, due to the occupational disease.

   Enter this as the date of occupational disease.
9. Date last worked: Enter the last day worked as a result of this injury, occupational disease or death.
10. Date returned to work: Enter the date the injured worker returned to work after the injury or occupational disease.
11. State where hired: Enter the state where the injured worker was hired by the employer listed on this application.
12. Date employer notified: Enter the date the employer was notified of the injury, occupational disease or death.
13. State where supervised: Enter the state where the injured worker was supervised by the employer listed on this application.
14. Description of accident: Describe in detail the events that caused the injury, occupational disease or death. Attach additional sheets, if necessary.
15. Type of injury/disease and part of body affected: Describe the nature of the injury, occupational disease or death.
    Indicate the part(s) of body injured, affected or that caused the death.
    Examples:
    - Laceration of first toe, left foot;
    - Sprain of lower right back; etc.
16. Injured worker signature (injured workers only): Please read the Benefit application/medical release information before signing and dating this form.

Instructions continued on last page

Ohio | Bureau of Workers' Compensation

First Report of an Injury, Occupational Disease or Death

By signing this form, I:

- **Elect to only receive compensation and/or benefits that are provided for in this claim under Ohio workers' compensation laws;**
- **Waive and release my right to receive compensation and benefits under the workers' compensation laws of another state for the injury or occupational disease, or death resulting from an injury or occupational disease, for which I am filing this claim;**
- **Agree that I have not and will not fi a claim in another state for the injury or occupational disease or death resulting from an injury or occupational disease for which I am filing this claim;**
- **Confirm that I have not received compensation and/or benefits under the workers' compensation laws of another state for this claim, and that I will notify BWC immediately upon receiving any compensation or benefits from any source for this claim.**

WARNING:
Any person who obtains compensation from BWC or self-insuring employers by knowingly misrepresenting or concealing facts, making false statements or accepting compensation to which he or she is not entitled, is subject to felony criminal prosecution for fraud.
(R.C. 2913.48)

Injured worker and injury/disease/death info.

Last name, first name, middle initial			Social Security number	Marital status ☐ Single ☐ Married ☐ Divorced ☐ Separated ☐ Widowed	Date of birth
Home mailing address			Sex ☐ Male ☐ Female		Number of dependents
City	State	9-digit ZIP code	Country if different from USA		Department name
Wage rate $_____ Per: ☐ Hour ☐ Month ☐ Week ☐ Year ☐ Other _____			What days of the week do you usually work? ☐ Sun ☐ Mon ☐ Tues ☐ Wed ☐ Thur ☐ Fri ☐ Sat		Regular work hours From _____ To _____
Have you been offered or do you expect to receive payment or wages for this claim from anyone other than the Ohio Bureau of Workers' Compensation? ☐ Yes ☐ No If yes, please explain.					Occupation or job title

Employer name

Mailing address (number and street, city or town, state, ZIP code and county)

Location, if different from mailing address

Was the place of accident or exposure on employer's premises? ☐ Yes ☐ No
(If no, give accident location, street address, city, state and ZIP code)

Date of injury/disease	Time of injury _____ ☐ a.m. ☐ p.m.	If fatal, give date of death	Time employee began work _____ ☐ a.m. ☐ p.m.	Date last worked	Date returned to work
Date hired	State where hired		Date employer notified	State where supervised	

Description of accident (Describe the sequence of events that directly injured the employee, or caused the disease or death.)	Type of injury/disease and part(s) of body affected (For example: sprain of lower left back)

Benefit application release of information – I am applying for a claim under the Ohio Bureau of Workers' Compensation Act for work-related injuries that I did not inflict. I affirm that I elect to receive compensation and benefits under Ohio's workers' compensation laws for my claim, and I waive and release my right to file for and receive compensation and benefits under the laws of any other state for this claim. I request payment for compensation and/or medical benefits as allowable, and authorize direct payment to my medical providers. I permit and authorize any provider who attends, treats or examines me, the Ohio State Board of Pharmacy, the Ohio Department of Job and Family Services and the Ohio Rehabilitation Services Commission to release medical, psychological, psychiatric, pharmaceutical, vocational and social information. I understand this may include personally identifying information that is casually or historically related to my physical or mental injuries relevant to issues necessary for the administration of my claim to BWC, the Industrial Commission of Ohio, the employer in this claim, the employer's managed care organization and any authorized representatives. My previous or future BWC claims may affect decisions made in this claim. Proper administration of the present claim may require BWC to share claims information with the employers of record (or their authorized representatives) and/or my authorized representative for any and all such previous or future claims. The released claims information may include any record maintained in my claim files.

Injured worker signature	Date	E-mail address	Telephone number	Work number ( )

Treatment info.

Health-care provider name	Telephone number ( )	Fax number ( )	Initial treatment date
Street address	City	State	9-digit ZIP code

Diagnosis(es): Include ICD code(s)

Will the incident cause the injured worker to miss eight or more days of work? ☐ Yes ☐ No	Is the injury causally related to the industrial incident? ☐ Yes ☐ No

E code	11-digit BWC provider number	Date

Health-care provider signature

Employer info.

Employer policy number — Check if ☐ Employer is self-insuring ☐ Injured worker is owner/partner/member of firm

Telephone number ( )	Fax number ( )	E-mail address	Federal ID number	Manual number

Was employee treated in an emergency room? ☐ Yes ☐ No	Was employee hospitalized overnight as an inpatient? ☐ Yes ☐ No

If treatment was given away from work site, provide the facility name, street address, city, state and ZIP code

☐ **Certification** - The employer certifies that the facts in this application are correct and valid.

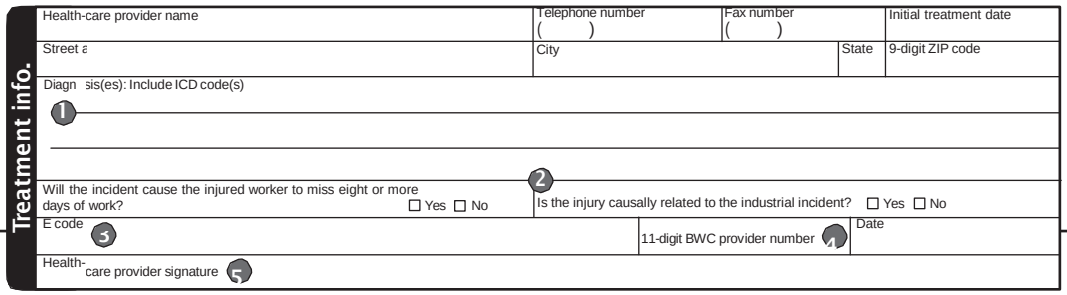
☐ **Rejection** - The employer rejects the validity of this claim for the reason(s) listed below:

For self-insuring employers only

☐ **Clarification** - The employer clarifies and allows the claim for the condition(s) below:
☐ **Medical only** ☐ **Lost time**

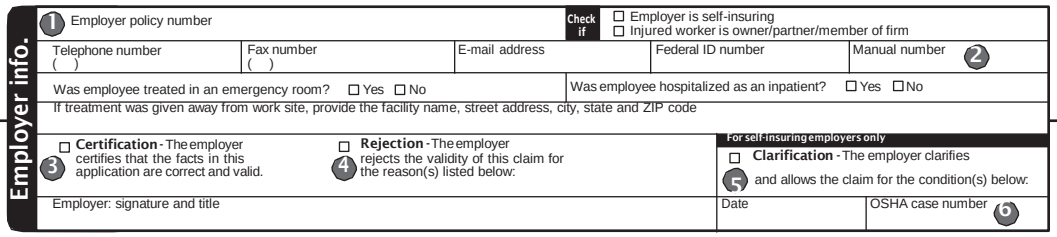
Employer signature and title	Date	OSHA case number

Completion instructions
(continued)



Treatment info.

1. Indicate the diagnosis and ICD codes for conditions being treated as a result of the injury.
2. Indicate the treating provider's medical opinion that the injury sustained is causally related to the industrial incident, that the injury could result from the method (manner) of the accident, as described by the injured worker. It must be clear that the diagnosis in all probability occurred as a result of the injury.
3. Providing a valid E code will enable us to determine the claim more quickly and efficiently.
4. Enter the physician's or health-care provider's 11-digit BWC-assigned provider number.
5. Signature of the health-care provider completing this form.



Employer info.

1. Enter the employer's BWC-assigned policy number, which is located on the BWC certificate of coverage.
2. Enter the four-digit code that indicates the injured worker's job classification, located on the semiannual payroll report.
   - If you do not know the injured worker's manual number, call **1-800-644-6292** and follow the prompts.
3. If certification is selected and the claim is allowed, it will promptly be paid. Employers certifying a claim waive both the notice of receipt and notice of first order of compensation.
4. If rejection is selected, use the space provided to list the reasons for rejection. Attach additional sheets, if necessary.
5. Self-insuring employers that choose to clarify certification may use the space provided. Attach additional sheet, if necessary.
6. If this is an OSHA-reportable injury, include the case number assigned by the employer. This form meets OSHA 301 requirements and may be used in lieu of the OSHA 301 when reporting recordable injuries and illnesses to the federal government.

Note:
If your employee misses eight or more days of work, BWC will need wage information for the 52 weeks prior to the date of injury. Submit wage information using employer payroll reports, wage statement (BWC form C-94-A), W-2s, etc.

SAFETY MANUAL

APPENDIX B

Accident Report Form

GUIDELINES FOR A JOB SITE ACCIDENT KIT / MOTOR VEHICLE ACCIDENT KIT

Following is a suggested guideline to provide kits, which should be made available to employees for use on job sites to report accidents or injuries. These kits will be structured so that they will uniformly provide all items or information necessary to report accidents or injuries on any job site. These kits should be available in several locations on every job site (job trailer, glove compartment of every company vehicle, job boxes, etc.) These kits should be used only for accident or injury reports, and are not to be opened for any other reason. If any item in the kit is used, it should be replaced immediately by notifying your foreman or Safety Director or designee.

Kit should contain:

1. One large Ziploc™ (or equivalent) bag as a container.
2. One disposable camera with flash (only 12 exposures necessary).
3. One copy of the company business card, with telephone number and Safety Director (or designee)'s number.
4. One large letter-style envelope to hold the following forms and one pencil:

    a. Occupational injury and illness procedures
    b. General liability accident procedures
    c. Motor vehicle accident procedures
    d. Accident report forms
    e. Blank paper (if more space is needed than form provides)

ACCIDENT REPORT FORM
(MOTOR VEHICLES, GENERAL LIABILITIES, ILLNESSES OR INJURIES)

This form should be copied for use in accident kit.

Company Name: _____
NOTE: Report must be sent to Safety Director (or designee)

Location of Accident: _____

Date of Accident: _____ Time: _____

Injury or Accident Type (Check as applies :)

_____ Employee illness on site (occupational)
_____ Employee injury on site (occupational)
_____ Motor Vehicle
_____ Injury/illness to another person (other than employee)
_____ Damages to property or equipment (not owned by the company)

Number of People Ill or Injured: _____

Were authorities contacted?	_____ Yes	_____ No
Was supervisor contacted?	_____ Yes	_____ No
Did you use the accident kit?	_____ Yes	_____ No
Did you take any pictures?	_____ Yes	_____ No

If the illness or injury is job related, did you fill out OSHA Form 300 (If applicable): ____ Yes ____ No

Names of Injured	**Employer**	**Telephone Number**

Describe illnesses, injuries, or property damage:

Apparent cause of accident (do not assign blame)

Could something have been done to prevent this incident? _____ Yes _____ No

If yes, please explain:

Name of Witness	**Employer**	**Telephone Number**

Attach any other items to this form that will help describe the illness, injury, or accident better.

SAFETY MANUAL

APPENDIX C

Hazard Assessment (JSA/JHA)

Checklist Audit
Work Environment—Construction

Company Name:
Notes:

Medical Services and First Aid—Construction

Yes	No	N/A	
O	O	O	1. **Prior to starting a project, are provisions made for prompt medical attention in case of a serious injury?** 29 CFR 1926.50(b)
O	O	O	2**. Is a person who has a valid certificate in first-aid training available at the worksite?** 29 CFR 1926.50(c)
O	O	O	3**. Are first-aid supplies easily accessible when required?** 29 CFR 1926.50(d)(1)
O	O	O	4. **Is the first-aid kit in a weatherproof container with individual sealed packages for each type of item?** 29 CFR 1926.50(d)(2)
O	O	O	5. **Do you check the contents of the first-aid kit before it is sent out on each job or at least weekly on each job to ensure that the expended items are replaced?** 29 CFR 1926.50(d)(2)
O	O	O	6. **Is proper equipment provided for prompt transportation of injured persons to a physician or hospital, or is a communication system for contacting necessary ambulance service provided?** 29 CFR 1926.50(e)
O	O	O	7. **When 911 service is not available, are the telephone numbers of physicians, hospitals, or ambulances conspicuously posted?** 29 CFR 1926.50(f)
O	O	O	8. **Are appropriate procedures for dealing with blood borne pathogen exposure in place?**

Sanitation—Construction

Yes	No	N/A	
O	O	O	9. **Is an adequate supply of potable water provided in all places of employment?** 29 CFR 1926.51(a)(1)

Yes	No	N/A	
O	O	O	10. **Are portable containers used to dispense drinking water capable of being tightly closed?** 29 CFR 1926.51(a)(2)
O	O	O	11**. Do you make certain water is not dipped from portable containers for drinking?** 29 CFR 1926.51(a)(2)
O	O	O	12**. Are containers used to distribute drinking water clearly marked and not used for another purpose?** 29 CFR 1926.51(a)(3)
O	O	O	13. **Where single service cups (to be used only once) are supplied, are both a sanitary container for the unused cups and a receptacle for disposing of the used cups provided?** 29 CFR 1926.51(a)(5)
O	O	O	14. **Are outlets for non-potable water, such as water for industrial or firefighting purposes only, identified by signs clearly indicating that the water is unsafe and is not to be used for drinking, washing, or cooking purposes?** 29 CFR 1926.51(b)(1)
O	O	O	15. **Do you make certain there are no cross-connections, open or potential, between system furnishing potable water and a system furnishing non-potable water?** 29 CFR 1926.51(b)(2)
O	O	O	16**. Are toilets provided for employees according to table D-1 of 29 CFR 1926.51?** 29 CFR 1926.51(c)(1)
O	O	O	17. **Under temporary field conditions, are provisions made to assure that at least one toilet facility is available?** 29 CFR 1926.51(c)(2)
O	O	O	18. **Are job sites that are not provided with sanitary sewers provided with toilet facilities that meet local codes?** 29 CFR 1926.51(c)(3)
O	O	O	19. **Do employee food service facilities and operations meet the applicable laws, ordinances, and regulations of the jurisdictions in which they are located?** 29 CFR 1926.51(d)(1) 29 CFR 1926.51(d)(2)
O	O	O	20. **Are temporary sleeping quarters heated, ventilated, and lighted?** 29 CFR 1926.51(e)
O	O	O	21. **Are adequate washing facilities provided for employees engaged in the application of paints, coating, herbicides, or insecticides or in other**

operations where contaminants might be harmful to the employees?
29 CFR 1926.51(f)(1)

O O O 22. **Are washing facilities near the worksite and are they equipped to enable employees to remove such substances as paints, coatings, herbicides, or insecticides?**
29 CFR 1926.51(f)(1)

Noise Exposure—Construction

Yes No N/A

O O O 23. **Is protection against the effects of noise provided for employees exposed to sound levels which exceed those listed in table D-2 of 29 CFR 1926.52?**
29 CFR 1926.52(a)

Yes No N/A

O O O 24. **Where required, are feasible administrative or engineering controls utilized to reduce sound levels?**
29 CFR 1926.52(b)

O O O 25**. Do you make certain employees are not exposed to impulsive or impact noise that exceeds 140 decibels peak sound pressure level?**
29 CFR 1926.52(e)

Illumination—Construction

Yes No N/A

O O O 26. **While work is in progress, are construction areas, ramps, runways, corridors, offices, shops or storage areas lighted to the minimum illumination intensities listed in table D-3 of 1926.56?**
29 CFR 1926.56(a)

O O O 27. **Are areas or operations lighted to, or greater than, the recommended values of illumination referred to in the American National Standard (A11.1-1965, R1970) practice for industrial lighting?**
29 CFR 1926.56(b)

Ventilation—Construction

Yes No N/A

O O O 28. **Are local exhaust ventilation systems designed to prevent dusts, fumes, mists, vapors and gases from being dispersed into the air in concentrations causing harmful exposure?**
29 CFR 1926.57(b)

O O O 29. **Are local exhaust ventilation systems designed to prevent air contaminants from being drawn through the work area of employees?**
29 CFR 1926.57(b)

O O O 30. **Do exhaust ventilation system components maintain airflow sufficient to gather air contaminants from equipment or processes and convey them to suitable points for safe disposal?**
29 CFR 1926.57(c)

O O O 31. **Are exhaust systems operated continually during all operations of processes, or after cessation of processes for a period while employees remain in contaminated zones?**
29 CFR 1926.57(d)(1)

O O O 32. **Do employees wearing respiratory equipment continue wearing**

it until the atmosphere is clear of contaminants?
29 CFR 1926.57(d)(2)

O O O 33. **Does the air outlet from every dust separator and the dusts, fumes, mists, vapors or gases collected by the exhaust system discharge to the outside atmosphere?**
29 CFR 1926.57(e)

O O O 34. **Is dust and refuse discharging from the exhaust system disposed in such a way that it does not result in harmful exposure to employees?**
29 CFR 1926.57(e)

Gases, Vapors, Fumes, Dusts, and Mists—Construction

Yes No N/A

O O O 35. **Do you make certain employees are not exposed to materials at concentrations above those specified in the "Threshold Limit Values of Airborne Contaminants for 1970" of the American Conference of Governmental Industrial Hygienists?**

O O O 36. **Are feasible administrative or engineering controls implemented to reduce employee exposures?**
29 CFR 1926.55(b)

Ionizing Radiation—Construction

Yes No N/A

O O O 37. **Are activities involving the use of radioactive materials or X-rays performed by competent persons?**
29 CFR 1926.53(b)

O O O 38. **Is the use of radioactive materials or X-rays, under license of the Nuclear Regulatory Agency, performed by appropriate persons?**
29 CFR 1926.53(b)

Non-ionizing Radiation—Construction

Yes No N/A

O O O 39. **Are persons assigned to install, adjust, and operate laser equipment qualified and trained?**
29 CFR 1926.54(a)

O O O 40. **Does the operator have in his possession at all times proof of his/her qualification for the laser equipment?**
29 CFR 1926.54(b)

O O O 41. **Do you provide employees who work in areas with a potential exposure to direct or reflected laser light greater than 5 milli watts with anti-laser eye protection devices as specified in Subpart E (Personal Protective and Life Saving Equipment) of 1926?**
29 CFR 1926.54(c)

O O O 42. **Are standard laser warning placards posted in areas where lasers are used?**
29 CFR 1926.54(d)

O O O 43. **When laser transmission is not actually required, is the laser turned off, and are beam shutters or caps utilized?**
29 CFR 1926.54(e)

O O O 44. **Do you only use mechanical or electronic means as a detector for guiding the internal alignment of the laser?**

29 CFR 1926.54(f)

O O O 45. **Are procedures in place to ensure the laser beam is not directed at employees?**
29 CFR 1926.54(g)

O O O 46. **Are employees kept out of range of the area of source and**
Yes No N/A **target of laser operations when it rains or snows or if dust or fog is in the air?**
29 CFR 1926.54(h)

O O O 47. **Does laser equipment bear a label indicating maximum output?**
29 CFR 1926.54(i)

O O O 48. **Do you make certain employees are not exposed to light intensities exceeding 1 microwatt per square centimeter while staring directly at the source?**
29 CFR 1926.54(j)(1)

O O O 51. **Are laser units set up above the head of employees when in operation whenever possible?**
29 CFR 1926.54(k)

O O O 52. **Are employees not permitted to be exposed to microwave power densities in excess of 10 milli watts per square centimeter?**
29 CFR 1926.54(l)

General Safety and Health Provisions—Construction

Yes No N/A

O O O 53. **Are tools, machinery, material, or equipment which are not in compliance with 29 CFR 1926 either identified as unsafe by tagging, or locking the controls to render them inoperable, or physically removed from their place of operation?**
29 CFR 1926.20(b)(3)

Safety Training and Education—Construction

Yes No N/A

O O O 54. **Do you instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to their work environment to control or eliminate any hazards or other exposure to illness or injury?**
29 CFR 1926.21(b)(2)

O O O 55. **Are employees who are required to enter into confined or enclosed spaces instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required?**
29 CFR 1926.21(b)(6)(i)

Housekeeping—Construction

Yes No N/A

O O O 56. **During construction, is form or scrap lumber with protruding nails kept clear from work areas, passageways and stairs, and in and around buildings or other structures?**
29 CFR 1926.25(a)

O O O 57. **Is combustible scrap and debris removed at regular intervals during the course of construction?**
29 CFR 1926.25(b)

O O O 58. **Are safe means provided to help remove combustible scrap and debris at regular intervals during construction?**
29 CFR 1926.25(b)

O O O 59. **Are containers used for garbage or other oily, flammable or hazardous waste equipped with covers?**
29 CFR 1926.25(c)

Personal Protective Equipment—Construction

Yes No N/A

O O O 60. **Is appropriate personal protective equipment worn by employees in all operations where there is exposure to hazardous conditions?**
29 CFR 1926.28(a)

Signs, Signals, and Barricades—Construction

Yes No N/A

O O O 61**. Are required signs and symbols visible when work is being performed?**
29 CFR 1926.200(a)

O O O 62. **Are required signs and symbols removed or covered promptly when the hazard no longer exists?**
29 CFR 1926.200(a)

O O O 63. **Do barricades for protection of employees conform to Part VI of the *Manual on Uniform Traffic Control Devices*?**
29 CFR 1926.202

Signaling—Construction

Yes No N/A

O O O 64. **Are construction areas posted with legible traffic signs at points of hazards in accordance with Part VI of the *Manual on Uniform Traffic Control Devices*?**
29 CFR 1926.200(g)(1)-(2)

O O O 65. **Does signaling by flaggers and the use of flaggers, including warning garments worn, conform to Part VI of the *Manual on Uniform Traffic Control Devices*?**
29 CFR 1926.201

O O O 66. **For daytime work, do flaggers wear a vest, shirt, or jacket this is orange, yellow, yellow-green, or a fluorescent version of these colors?**
29 CFR 1926.201

O O O 67. **For nighttime work, do flaggers wear vests, shirts, or jackets similar to items 66 and 69, but retro-reflective?**
29 CFR 1926.201

O O O 68. **Is hand signaling during daylight by flaggers done with the use of a STOP/SLOW paddle (18 inches wide) or a red flag (24 inches square)?**
29 CFR 1926.201

O O O 69. **For nighttime work, is hand signaling done with a retro-reflectorized STOP/SLOW paddle or a red retro-reflective flag?**
29 CFR 1926.201

JOB SAFETY ANALYSIS (Example)

<table>
<tr><td>Date:</td><td rowspan="4">Describe Job Being Analyzed:
Site excavation and prep work; Installing forms for footings; Installing and removing retaining wall forms. Pouring concrete.</td></tr>
<tr><td>Location:</td></tr>
<tr><td>Job Safety Analysis By:</td></tr>
<tr><td>Supervisor:</td></tr>
<tr><td>Company:</td><td rowspan="2">List Special Hazards: Working around heavy equipment,; excavation hazards (soil); material handling; fall hazards working on scaffolding and ladders; pouring and working with concrete.</td></tr>
<tr><td>List all Personnel Involved With Job: All company personnel</td></tr>
<tr><td>First Aid Measures:</td><td>Required and/or Recommended Personal Protective Equipment: Hard Hat; Z87.1 Safety Glasses; Face Shield; Leather, Rubber or Neoprene Gloves; Steel Toe Boots or Safety Shoes.</td></tr>
<tr><td></td><td>Describe Job Being Analyzed:
Site excavation and prep work; Installing forms for footings; Installing and removing retaining wall forms. Pouring concrete</td></tr>
<tr><td></td><td>List Special Hazards: Working around heavy equipment,; excavation hazards (soil); material handling; fall hazards working on scaffolding and ladders; pouring and working with concrete.</td></tr>
<tr><td></td><td>Required and/or Recommended Personal Protective Equipment: Hard Hat; Z87.1 Safety Glasses; Face Shield; Leather, Rubber or Neoprene Gloves; Steel Toe Boots or Safety Shoes.</td></tr>
</table>

SEQUENCE OF JOB STEPS	POTENTIAL ACCIDENTS OR HAZARDS	RECOMMENDED SAFE JOB PROCEDURES
1. Site excavation and prep work	1(a) Being struck by heavy equipment	***1(a) Reduce potential exposure to injury by- limiting site access to authorized personnel only. Limit number of employees who will work in vicinity of excavator and haul truck. Review procedures with operators and ground personnel on working safely around heavy equipment.***
	1(b)Being crushed by excavated walls or struck by boulders or Excavated spoilage / materials.	***1(b)All excavated walls will be sloped or benched appropriately based on soil type. In areas where sloping or benching is not feasible alternative methods shall be used to include use of shoring or shields.*** ***Controlled access zones (CAZ) shall be established to limit access above and at the base of excavated walls; spoil piles and trench used for footings of retaining wall.*** ***All spoils and excavated materials shall be set at least 2 feet from excavation edges, where this is not practical, excavated materials shall be stored centrally at the south end of the project.***
	1(c) slips, trips, and falls due to rough terrain.	***1(c)Be aware are of surroundings, check footing, and slip, trip and fall hazards. Enter and exit heavy equipment properly, always maintaining 3 points of contact.***

SEQUENCE OF JOB STEPS	POTENTIAL ACCIDENTS OR HAZARDS	RECOMMENDED SAFE JOB PROCEDURES
2. Installing forms for retaining wall footings	2(a) Being struck by excavator or forklift, suspended loads, rocks and soil from excavated walls.	2(a)(i) Inspect all equipment prior to performing task. Use only approved rigging equipment, check for damage and remove from service if needed. 2(a)(ii) Employees authorized to perform task shall stand clear and maintain safe distances from excavator, excavator bucket and forklift. Under no circumstances shall they place any part of their body in-between or under suspended loads, elevated parts of equipment, or equipment pinch points. 2(a)(iii) Excavated walls shall be inspected for hazardous conditions prior to performing task. Lose rocks and boulders shall be removed or scaled down by excavator. Employees shall stand back from work - maintaining safe distances from excavated walls, trench edges and spoil piles. Tag lines shall be used to control forms lowered by the forklift. This will eliminate the need for employees to enter trench. If employees must enter trench 4' or more in depth, a safe means of access and egress (ladder or ramp) shall be provided every 25'. The competent person on-site will also determine whether or not protection is required prior to entry.
	2(b) Sprains / Strains and cuts and lacerations from handling and setting forms.	2(b) Minimize employee exposure by using forklift and taglines to move and set forms. Review proper lifting techniques with employees and ensure that they are followed. Install rebar caps on all exposed vertical rebar. Wear gloves when handling or tying re-bar assemblies. Position body to avoid overexertion/sprains and strains when using shovels or handling materials.
	2(c) Trips and falls.	2(c) Be aware are of surroundings, check footing, and slip, trip and fall hazards. Enter and exit trench properly, always secure ladders to prevent displacement set at 4 to 1 (height to base ratio) and ensure that it extends 3' above edge of trench. Always face the ladder and maintain 3 points of contact. Use caution when approaching or standing near the edge of trench.

SEQUENCE OF JOB STEPS	POTENTIAL ACCIDENTS OR HAZARDS	RECOMMENDED SAFE JOB PROCEDURES
3. Installing and removing forms for retaining wall. Pouring concrete.	3(a) Being struck by forklift, suspended loads, forms and related equipment, rocks and soil from excavated walls	3(a)(i) Inspect all equipment prior to performing task. Use only approved rigging equipment, check for damage and remove from service if needed. 3(a)(ii) Employees authorized to perform task shall stand clear and maintain safe distances from forklift. Under no circumstances shall they place any part of their body in-between or under suspended loads, elevated parts of equipment, or equipment pinch points. 3(a)(iii) During assembly and removal of forms, no employees will be permitted between retaining wall / forms and excavation face until it has been inspected and rendered safe. Lose rocks and boulders shall be removed or scaled down by excavator. Exposure will be limited to one employee to perform task and then leave area. (No loitering between backside of wall and face of excavation). Employees shall stand back from work - maintaining safe distances from other excavated walls, trench edges and spoil piles. Tag lines shall be used to control forms lowered or removed by the forklift. During assembly and removal of forms if employees must enter trench 4' or more in depth, a safe means of access and egress (ladder or ramp) shall be provided every 25'. The competent person on-site will also determine whether protection is required or not prior to entry.
	3(b) Sprains / strains and cuts / lacerations from handling and setting forms.	3(b)(i) Minimize employee exposure by using forklift and taglines whenever possible to move and set forms. Review proper lifting techniques with employees and ensure that they are followed. Position body to avoid overexertion/sprains and strains when using shovels or handling materials. Be aware of pinch points while constructing forms. Wear gloves appropriate for the task.

SAMPLE JHA FOR GENERAL CONSTRUCTION ACTIVITIES

ACTIVITY	POTENTIAL HAZARD	REQUIRED ACTIONS, CONTROLS, OR METHODS OF COMPLIANCE
General Construction	• Head injury • Eye injury • Hearing damage • Foot injury • Hand injury • Back injury • Inadequate lighting • Slip/trip hazards • Non-construction individuals being injured on jobsite • Improper response to medical emergencies on the job.	• Hard hats shall be worn at all times. • Protective eyewear with side shields which meets the ANSI Z-87.1 standard shall be worn as needed. • Individuals with prescription glasses shall either provide ANSI approved prescription safety glasses with side shields or wear protective cover glasses. • Hearing protection shall be worn as needed in noisy areas. • Sturdy leather footwear which covers the ankles shall be required. • All nails shall be pulled from all scrap lumber. • Steel toes or other protection may be required when operating tamps. • Gloves shall be worn when handling rough or sharp materials. • Employees shall be instructed on proper lifting techniques • Temporary lighting shall be used in dark work areas. Minimum required illumination for general site areas is 5 foot-candles. ▪ Basic housekeeping requirements shall apply to all construction sites. ▪ Cords shall be covered or elevated when crossing pathways. • Each construction site shall be identified with warning signs and flagging. • Building management shall be notified of possible hazards prior to work starting. • Employees shall know emergency evacuation procedures, correct assembly points, emergency phone numbers. • An individual trained in first aid/CPR shall be present at the jobsite to respond to medical emergencies until help arrives.

SAFETY MANUAL

APPENDIX D

GLCA Substance Abuse Policy

Great Lakes Construction Alliance

An Owner, Labor, Contractor Partnership

THE

NORTHWEST OHIO

GREAT LAKES CONSTRUCTION ALLIANCE

SUBSTANCE ABUSE POLICY

as of November 1, 2015

Table of Contents

Section 1. INTRODUCTION

Members of the Northwest Ohio Great Lakes Construction Alliance are committed to providing a safe work place for those working within the organized construction industry. "Striving to make a zero injury career a reality" remains a primary goal of the Alliance. A workplace unencumbered by the influences of illegal drugs and alcohol is necessary to assure this goal.

The Policy that follows was created in a collaborative effort by Labor, Owner and Contractor members of the Alliance. The first Policy was adopted March 1, 2002.

This document contains procedures to be utilized to conduct screening for illegal drugs, substances and alcohol on unionized construction projects. When implemented, this Policy applies to all employees and potential employees of contractors and subcontractors at all tiers, including bargaining unit and non-bargaining unit employees.

Individuals are prohibited from using, possessing, distributing, dispensing, manufacturing, being under the influence, or otherwise being involved with illegal substances and from abusive use of chemicals or controlled substances or alcohol while on employer or client property or while performing the employer's business.

Individuals are encouraged to seek assistance for substance abuse. Contact your union or your health and welfare plan for information on confidential Employee Assistance Programs which are designed to help individuals tackle a variety of issues including substance and alcohol abuse, relationship problems, child care and eldercare concerns, financial/legal problems, depression and anxiety, work pressures, stress and more.

Section 2. COMMITMENT TO CONFIDENTIALITY

(a) Protecting the confidentiality of individuals is a primary interest of labor, owners, and contractors. Therefore, there will be a single entity contracted to provide medical review officer (MRO) services for the entire area covered by the Northwest Ohio GLCA Substance Abuse Policy. Only the MRO has access to an individual's medical records. Only the MRO and third party administrator (TPA) have access to an individual's drug screening results.

(b) Only the MRO or TPA will be allowed to advise a designated contractor representative and local union representative when applicable that an individual is either *current* or *not current* under the NW Ohio GLCA Substance Abuse Policy. No information about test results, substances, levels of screening, or any other specific information will be shared.

(c) Contractors will designate a specific representative as the contact person. The contact person will be the only individual to receive information from the MRO.

(d) The following procedures and guidelines regarding confidentiality will be strictly observed:

(1) All test results will be considered medical records and held confidential to the extent permitted by law.

(2) All actions taken in connection with the Policy will remain confidential.

(3) Only the MRO will have detailed information concerning an individual's drug screening.

(4) Only the MRO or the TPA may disclose whether an individual is current or not current with the Policy.

(5) Medical personnel, the contractor, its supervisors, or any other personnel will not disclose any information regarding the screening of an individual.

(6) Information may be divulged for grievances, arbitration, and/or litigation with respect to these matters to the extent permitted by law.

Section 3. CARD IDENTIFICATION SYSTEM

(a) Only individuals who are current under the NW Ohio GLCA Substance Abuse Policy may be employed for work on a project requiring this Policy. After completion of consent form and testing, individuals will be issued an identification card with their current status.

(b) An individual must fill out the Drug/Alcohol screen consent form and mail or fax to the third party administrator address listed on appendix F.

(c) When an individual has submitted to an initial drug screening he/she shall proceed to the appropriate contractor's field office to be signed up for employment for a probationary period, pending results of the initial drug screening.

Section 4. TYPES OF SCREENING

A urine drug screen and/or breathalyzer alcohol test shall be administered under the following circumstances:

(a) *Initial Drug Screening*: All potential employees of all contractors at all tiers who work at the Project and who are not current with the NW Ohio GLCA Substance Abuse Policy shall submit to an Initial Drug Screening. The Initial Drug Screening will test for the presence of illegal drugs and substances. Information on drugs for which the test will be screening, and what levels will constitute a non-current test may be found in Appendix A. This screen will not include an alcohol test. Any potential employee refusing to submit to this test will not be permitted to work on any Project covered by this Policy.

(1) *Existing Employees Transferred From Another Location to Work on a Project Covered by this Policy:* Individuals in this classification must become current under the Policy. Any individual who is not current under the Policy will not be permitted to work on the Project.

(2) *Recognition of other Drug Tests:* An individual who presents proof that he/she has passed a drug screen test administered under a program recognized as reciprocal to our program by the NWOGLCA Board who has taken the test within a twelve months prior to his/her first day of work on a Project covered by this Policy shall be classified as current under the Policy without being required to submit to an Initial Drug Screening. The date posted for the renewal will be twelve months from the date of the test not the date entered into the system. Unless the drug testing program has been previously classified as a Reciprocal Drug Testing Program, an individual shall not be eligible to work on a Project covered by this Policy until such time the other drug testing program is reviewed and classified as a Reciprocal Drug-Testing Program or one which meets the requirements of this Section 4(a)(2). Because delays will occur in the classification process, individuals are encouraged to provide information about the other drug testing program well in advance of their start date.

(3) Any individual who tests non-current under a Reciprocal Drug-Testing Program shall not be considered current under this Policy unless (a) the individual becomes current under the Reciprocal Drug-Testing Program before reporting to work on a Project covered by this Policy or (b) the individual fulfills the eligibility requirements of Section 15 of this Policy.

(b) *Random Screening*: Twenty-five percent (25%) of the workforce employed on Projects covered by this Policy shall be tested at random annually or as mandated by law. Project owners requiring site specific random collection may request the Policy administrator to segregate the individuals working on their project into a separate pool otherwise the pool will include all individuals working on projects requiring the Policy. In either case, the selection of individuals for random screening shall be determined exclusively by the TPA through its computer-generated, random-number generating Policy to ensure complete impartiality and objectivity. Selection of individuals for random screening shall not be conducted by any contractors or employers. Random screening shall screen for illegal drugs and substances. This screen shall not include an alcohol test.

(c) *Periodic Screening*: All individuals will be tested a minimum of once every twelve (12) months to maintain their status as current with the Policy. A random test will be counted in determining whether an individual has been tested within the previous twelve (12) months. Individuals who have not been tested within the previous twelve (12) months will submit to a screening test

when directed to do so. Periodic screening shall include screening for illegal drugs and substances. This screen will not include an alcohol test.

(d) *Screening for Cause*: All individuals may be tested for cause for illegal drugs and substances as well as alcohol when a reasonable suspicion exists that the individual appears to be under the influence of illegal drugs or substances and/or alcohol.

(e) *Post Accident*: An individual with a chargeable accident shall be required to submit to post-accident screening for the use of illegal drugs or substances and/or alcohol as soon as possible after the accident, but in no case later than thirty-two (32) hours after the accident. Screening will only test for alcohol if a breathalyzer test is conducted within eight (8) hours after the accident.

(f) *MRO-Directed Screening*: After a non-current test individuals are subject to unannounced screening for illegal drugs and substances as well as alcohol as directed by the discretion of the MRO. Costs associated with MRO directed screenings will be paid by the individual.

Section 5. ILLEGAL DRUGS AND SUBSTANCES

(a) Screening under the Policy includes screens for:

Amphetamines & MDMA (Ecstasy/Ecstacy)
6-Acetylmorphine (6AM)
Barbiturates
Benzodiazepines
Cocaine
Creatinine
Methadone
Opiates (2 tests: 1 for synthetic opiates, 1 for opiate derivatives)
Phencyclidine
Propoxyphene (Darvon)
THC (Marijuana and Cannabinoids)
Tramadol (Ultram)

(b) A screening test will be considered non-current when it shows the presence of illegal drugs/substances in the body at or above cutoff levels stated on the Drug Information Chart contained in Appendix A.

Section 6. PROCEDURE FOR INITIAL, RANDOM AND PERIODIC DRUG SCREENING

(a) Specimen collection may occur on-site or at an off-site clinic provided no loss of wages results. (Wages will be the responsibility of the individual's employer.) Once notified that one is chosen for random test and if that random test is to be done *outside* of work hours, individual has 48 hours to report to an approved testing location with the COC form. If random is to be done immediately, the individual shall proceed to the collection facility.

(b) Each individual will read and sign the attached Drug Screen Consent Form prior to the first test being administered. Failure to do so constitutes refusal to submit to a test.

(c) A formal chain of custody will be established for every drug test.

(d) A split sample consisting of two urine specimen bottles, sealed in a plastic container will be furnished to the individual. The bottles must contain an amount of urine sufficient for one Enzyme Multiplied Immunoassay Technique (EMIT) test and two Gas Chromatography Mass Spectrometry (GC/MS) tests, but in no event less than two bottles totaling 45 milliliters (one bottle containing 30ml and one bottle containing 15ml). Each individual's urine specimen will be collected in the plastic container and temperature verified so as to be within "acceptable range." *In order for a specimen to be within acceptable range and thus constitute a valid sample, the temperature reading must register between 90 (ninety) to 100 (one-hundred) degrees Fahrenheit.* The second bottle will be used in the event that the first bottle has become contaminated. Both Bottle A and Bottle B are to be sent to the screening laboratory after the remainder of the collection protocol has been properly completed, especially with

regard to the tamper-proof seals. If the donor's specimen temperature does not meet the Policy guidelines (90 – 100 degrees), the donor will be given the opportunity to submit a second specimen. After dumping the original specimen in front of the donor, the donor will be allowed up to three (3) hours and can consume up to 40oz of fluid to provide this second specimen, but MUST NOT be allowed to leave the collection facility. The same second specimen protocol applies in the event that the donor is unable to provide a sufficient quantity of urine (at least 45 ml), and under no circumstances may the collector combine specimen amounts from separate voids to accumulate a specimen of adequate volume. If the donor agrees to the second specimen protocol, but is unable to provide an acceptable second specimen AND there is still time remaining under the three (3) hour time limit, the donor may attempt to produce a third specimen. If the donor agrees to attempt a third collection, it MUST be a witnessed collection. All other protocols still apply.

(e) Before the specimen ever leaves the individual's sight, the urine container will be sealed with security tape, which has been initialed by the individual.

(f) A portion of the sample will be tested using the EMIT test and if non-current, another portion will be tested for verification using the GC/MS test.

(g) If a test is non-current the remainder of the urine specimen will be maintained at the laboratory for one year following the date of the test.

(h) Any individual who refuses to take a drug test will be considered having tested non-current.

(i) The results of a not current status will be communicated to the contractor's designated representative and local union representative when applicable by the MRO. If an individual has tested non-current or has otherwise become not current with the Policy, he/she will be removed from the Project immediately and paid for all hours worked, or if not yet employed, prohibited from reporting to work on a Project covered by this Policy. The individual will not become eligible for employment until such time the individual has met the requirements set forth in Section 15 unless the individual is regulated by the Department of Transportation or the Nuclear Regulatory Commission.

(j) The individual will be given a copy of non-current test results by the MRO, if requested in writing.

(l) *Rescreening*: If any individual who has tested non-current wishes to challenge the results of the GC/MS test, he/she may do so at his/her option by having a GC/MS test performed on the remainder of the previously collected urine specimen at a laboratory certified by SAMHSA (Substance Abuse and Mental Health Services Administration) of his/her choice. The MRO will have available a current list of SAMHSA certified screening facilities. The specimen will be shipped directly from the Policy administrator's laboratory to the laboratory of the individual's choice. The cost of this test will be borne by the individual (Appendix C). If the results of this test are current, the employer will reinstate the individual with full loss wages and benefits and will reimburse the individual for the cost of the test**.** The employer will in turn negotiate reimbursement for the associated cost for reinstatement with the owner requiring the use of this program. The individual must exercise the option of a second GC/MS test within 72 business hours, excluding Saturday and Sunday, of being notified of the non-current test results. See Appendix C: Rescreening Procedure After a Non-Current Test.

Section 7. PREREQUISITES FOR A DRUG/ALCOHOL TEST FOR CAUSE

(a) Individuals working at the Project may be tested for illegal drugs, substances and alcohol if there exists a reasonable suspicion that the individual is under the influence of alcohol or any of the substances identified in Section 5. For the purpose of this Policy, the terms "reasonable suspicion" shall be defined as aberrant or unusual on-duty behavior of an individual who:

(1) is observed on-duty by either the individual's immediate supervisor, higher ranking employee, or other managerial personnel of the contractor who has been trained to recognize the symptoms of drug abuse, impairment or intoxication, which observations shall be documented by the observer(s);

(2) exhibits the type of behavior which shows accepted symptom(s) of intoxication or impairment caused by controlled substances or alcohol or addiction to or dependence upon said controlled substances or alcohol; and

(3) Such conduct cannot reasonably be explained as resulting from other causes, such as fatigue, lack of sleep, side effect of prescription or over-the-counter medications, illness, reaction to noxious fumes or smoke.

(b) Drug screening of this type will not be conducted without the written approval of the contractor's job superintendent or designated manager. The job superintendent or designated manager must document in writing who is to be tested and why the test was ordered, including the specific objective facts constituting reasonable suspicion leading to the test being ordered, and name of any source(s) of this information. One copy of this document shall be given to the individual before he/she is required to be tested, and one copy shall immediately be provided to the Union steward, if requested by the individual. After being given a copy of the document, the affected individual shall be allowed enough time to be able to read the entire document. Failure to follow any of these procedures shall result in the elimination of the test results as if no test had been administered. The test results shall be destroyed, and no disciplinary action shall be taken against the individual.

(c) When a supervisor, higher ranking employee or other managerial personnel has reasonable suspicion to believe that an individual is using, consuming, or under the influence of an alcoholic beverage, non-prescribed controlled substance (other than over-the-counter medication), and/or non-prescribed narcotic drug while on duty, that person will notify the job superintendent or designated manager for the purpose of observation and confirmation of the individual's condition.

(d) The individual will be offered an opportunity to give an explanation of his condition, such as reaction to a prescribed drug, fatigue, lack of sleep, exposure to noxious fumes, reaction to over-the-counter medication or illness. A Union steward or designee shall be present if appropriate and requested during such explanation and shall be entitled to confer with the individual before the explanation is presented.

(e) If after this explanation the job superintendent or designated manager, after observing the individual, has reasonable suspicion to believe that the individual is using, consuming and/or under the influence of an alcoholic beverage, non-prescribed controlled substances, or non-prescribed narcotic while on duty, then, by a written order signed by the job superintendent or designated manager, the individual may be ordered to submit to a drug and alcohol screen. Refusal to submit to this screening after being ordered to do so will result in a non-current status.

Section 8. PREREQUISITES FOR POST-ACCIDENT SCREENING

All employees who may have caused or contributed to an on-the-job accident, as defined below, will submit to a drug and or alcohol test unless the accident investigation documents all of the exceptions identified below.

This test will be administered as soon as possible after the employee receives necessary medical attention, or within eight hours for alcohol and within 32 hours for other drugs.

Accident means an unplanned or unintended event that occurs on the employer's property, during the course of the employer's business, or during working hours, or that involves employer-supplied motor vehicles or motor vehicles used in conducting the employer's business, or within the scope of employment, and results in any of the following:

- A fatality of anyone involved in the accident;
- Bodily injury requiring off-site medical attention;
- Vehicular damage in apparent excess of $5,000.00
- Non-Vehicular damage in apparent excess of $5,000.00
- Damage in apparent excess of $5,000.00 for the combination of both Vehicular and Non-Vehicular damage.

As used in this policy accident does not have the same meaning as provided in Division (c) of section 4123.01 of the Ohio Revised Code. The definition of this rule is not intended to modify the definition of a compensable injury under the workers' compensation law in Ohio. Also, this definition of an accident does not match the definition used by the DOT. BWC in Ohio provides what they consider to be an "intelligent-testing design." As such, even after conducting an accident investigation and determining who may have caused or contributed to a work-related injury, it will not be required for the employer to order a post-accident test if all of the following apply:

- The injury was not serious even though off-site medical attention was required;
- The nature of the injury is common to the employee's job function;
- There was no violation of the work rules;
- There was no reasonable suspicion indicated by the accident investigation.

If the project owner has an existing post-accident testing policy that is more stringent, the policy may be implemented by the project owner.

Section 9. PROCEDURE FOR CAUSE DRUG AND POST-ACCIDENT SCREENING

(a) Individual drug screens for cause/ post-accident will include screening for the same drugs as identified in Section 5 and alcohol.

(b) Each individual will read and sign the attached Drug Screen Consent Form prior to any test being administered. Failure to do so constitutes refusal to submit to a screening.

(c) For cause/ post-accident screening shall be performed at the appropriate jobsite trailer or at a designated off-site clinic. The individual will be accompanied to an off-site clinic by a contractor representative. A split sample consisting of two urine collection containers sealed in a plastic container will be furnished to the individual. A minimum sample of two (2) ounces per container must be collected. All other security procedures are as listed in Section 6 shall be followed.

(d) In EMIT test and, if non-current, a confirming GC/MS test will be performed on the sample. The remainder of the sample will be stored at the laboratory for one year.

(e) If the individual's test is non-current, he/she will be presented with the results of the drug screen. He/She will have the option to have a portion of the remainder of the sample tested at his/her own expense at a SAMHSA certified laboratory of his/her own choice. The screen will consist of a GC/MS test. The sample will be shipped directly from the Policy administrator's laboratory to the laboratory of the individual's choice.

(f) If the test conducted pursuant to Paragraph (e) of this Section is current, the employer will reinstate the individual with full lost wages and benefits and will reimburse the individual for the cost of the test**.** The employer will in turn negotiate reimbursement for the associated cost for reinstatement with the owner requiring the use of this program. The individual must exercise the option of a second GC/MS test within 48 hours of being notified of the non-current test results.

(g) Any individual who is non-current will not be eligible for employment on Projects covered by this Policy in accordance with Section 15.

(h) Any individual who is non-current is subject to unannounced screening for illegal drugs and substances as well as alcohol as directed by the discretion of the MRO.

Section 10. SCREENING FOR ALCOHOL

(a) If an individual's test results indicate that he/she exceeded the Policy's .02% blood alcohol limitation, he/she will not be considered current under the Policy. Alcohol detection will be based on a breathalyzer. All breath testing shall be conducted by personnel trained in breath alcohol testing.

(b) An individual who tests non-current will be removed from the Project immediately and paid for all hours worked. If the individual has exceeded the Policy limit, they will not be eligible for employment for any employer on Projects covered by this Policy in accordance with Section 15.

(c) Any individual who refuses to take an alcohol test will be considered non-current.

(d) Any individual whose screening is non-current is subject to unannounced screening for illegal drugs and substances as well as alcohol as directed in the discretion of the MRO.

Section 11. EMPLOYER RESPONSIBILITIES

(a) Each employer working on a site requiring compliance with this Policy must be registered in the Program (see appendix E).

(b) Each employer will enroll and process the initial drug screening if an individual has not already been enrolled into the Program.

(c) That any chain of custody issued to an employer is the employer's responsibility and if used the employer is responsible for payment within 30 days of invoice.

(d) Failure of the employer to comply with the Policy will be grounds to relinquish their access to the system and thus access to Projects requiring compliance with this Policy.

(e) Each employer will monitor its individuals for behavior that may indicate drug or alcohol misuse or abuse.

(f) Each employer will provide training to its supervisor's that meets BWC requirements to enable them to identify and document behaviors that show reasonable suspicion. The training will also educate supervisors on how to handle the confrontation of situations and how to make referrals to testing and/or assistance.

(g) Each employer will educate their individuals by providing information about the policy and how it will operate as well as to present educational awareness sessions on substance issues that meets the BWC requirements.

(h) Each employer will notify the TPA if any of their individuals refuse to test. The employer shall use one of their chain of custody forms and fill in the individual's name, the date, and his/her social security number with a note that they refused to test. The chain of custody form should then be forwarded immediately to the third party administrator's office.

Section 12. EMPLOYEE RESPONSIBILITIES

(a) Each individual shall report for screening as instructed. Failure to report will be considered a refusal to submit to the test.

(b) It is recommended an individual have his/her Program Identification Card in his/her possession.

Section 13. GENERAL PRINCIPLES

(a) All results of tests included in this Policy shall be considered medical records and held confidential to the extent permitted by law. However, this information may be divulged for grievances, arbitration, and/or litigation with respect to these matters.

(b) The screening laboratory for this Policy must be a laboratory certified by SAMHSA.

(c) It is understood that neither NW Ohio Great Lakes Construction Alliance, nor their constituent member organizations and affiliated Unions, shall be responsible for ascertaining or monitoring the drug-free or alcohol-free status of any individual or applicant for employment.

(d) No individual or employer may modify any document involved with the administration of this Policy.

Section 14. MEDICAL REVIEW OFFICER RESPONSIBILITIES

(a) The MRO shall:

(1) Maintain confidentiality on all levels.
(2) Review and verify a non-current test.
(3) Notify a tested individual of a non-current test.

(4) Provide the individual an opportunity to explain a non-current test.
(5) If an individual has appropriate documentation for use of prohibited drug and the MRO determines legitimate use, the individual will continue to be classified as current with the Policy.
(6) Review individual's medical records made available to him.
(7) Notify the designated contractor representative and if applicable the local union representative when an individual is not current with the Policy.
(8) Advise the individual of his right to request a second test of the split sample.
(9) Process request for retest of original sample.
(10) Participate in return to work decisions as required, noting individual's ability to return to work with or without restrictions.
(11) Refer individuals who test non-current to appropriate medical evaluation and make recommendations.

Section 15. CONSEQUENCES OF A NON-CURRENT DRUG OR ALCOHOL TEST

(a) If an individual tests non-current, the individual will be removed from the Project immediately and paid for all hours worked, or if not yet employed, prohibited from reporting to work. In a situation of reciprocal programs, ineligibility to work starts upon the date the first MRO determines someone is noncompliant with their policy. The individual will not become eligible for employment until such time the individual has met the requirements set forth in Paragraphs (d), (e), (f) and (g) of this Section, unless the individual is regulated by Department of Transportation or Nuclear Regulatory Commission regulations. Non-current violations in the program will not be counted toward the multiple infraction rules listed below under paragraph e, f or g after five years with no additional non-current violations by the individual in this policy.

(b) Individuals who test non-current and local union representatives when allowed for by the applicable collective bargaining agreement, local union rules or apprenticeship policy and procedures shall have the right to secure a copy of all data relating to the test procedures and results provided. These costs are to be paid by the individual in advance.

(c) All individuals must be current under the Policy in order to be employed on a covered Project.

(d) ***First Violation of Policy***: An individual who tests non-current for the first time will be ineligible for employment on all Projects covered by this Policy for thirty (30) days from the date that he/she was notified by the MRO. Return to work is contingent on a review of a substance abuse professional, approval by the MRO and a current drug/alcohol screening.

(e) ***Second Violation of Policy***: An individual who tests non-current for the second time will be ineligible for employment on all Projects covered by this Policy for ninety (90) days from the date that he/she was notified by the MRO, contingent on a review of a substance abuse professional, approval by the MRO and a current drug/alcohol screening.

(f) ***Third Violation of Policy***: An individual who tests non-current for the third time will be ineligible for employment on all Projects covered by this Policy for one year from the date that he/she was notified by the MRO, contingent on a review of a substance abuse professional, approval by the MRO and a current drug/alcohol screening.

(g) ***Violations of the Policy Greater than Three:*** Each non-current result greater than three will result in an additional one year of ineligibility for each violation from the date that he/she was notified by the MRO, contingent on a review of a substance abuse professional, approval by the MRO and a current drug/alcohol screening.

(h) The MRO may, in his discretion, modify the ineligibility periods in 15 (d)-(g).

(i) This Policy has no intention to mitigate a project owner's right to manage their facility. If a project owner has more severe consequences for a non-current drug and/or alcohol testing result they will be recognized for the project owner's facility only.

Section 16. TAMPERING WITH A TEST

(a) Any individual who attempts to or introduces a substituted or altered specimen shall be classified as not current under the Policy, as if he/she had tested non-current.

Section 17. RESOLUTION OF DISPUTES

(a) The following procedure shall be used to resolve all disputes relating to the Policy with the exception of those disputes involving individuals covered by a collective bargaining agreement that references the NW Ohio GLCA Substance Abuse Policy. The parties to such a collective bargaining agreement should use the dispute resolution procedure contained in that collective bargaining agreement. However, the parties to such a collective bargaining agreement, at their discretion, may use the following procedure, or any portion thereof, in any particular dispute if so agreed by the local union and the Contractor.

(b) When a dispute arises pertaining to the administration of the NW Ohio Substance Abuse Policy, it shall be the responsibility of the Local Union and the Employer to attempt to resolve the matter. If the individual is not covered by a collective bargaining agreement, the individual and the employer will attempt to resolve the matter. In both cases, the parties may consult with the Policy Administrator to assist in resolving the matter.

(c) Joint Committee. If the matter is not resolved by the Local Union or unrepresented individual, and the Employer as indicated in Section 17b above, the parties will have 5 days to refer the problem to the NW Ohio GLCA Joint Drug Screening Board. This Board will consist of equal numbers of Union and contractor representatives, with each side having 3 members. The Board will attempt to reach consensus and shall be chaired by an individual elected by the full Board who will serve as the tiebreaker in case a vote is necessary to reach closure. The Board will convene a meeting within 10 days of receipt of a request from a Local Union, unrepresented individual or Employer. The Board will accept verbal and written statements, review testimony and exhibits, and will render a recommendation as to the merit of the grievance within 5 days of the meeting. The Board's decision will be binding. Upon request by the Board, the TPA will make a representative available to provide information and if necessary testimony in connection with disputes under Article 17. Such information and/or testimony will only be given when there is a properly executed "Drug/Alcohol Consent Form and Member Information Form" (See Appendix B). Further, MOST reserves the exclusive right to provide such information and/or testimony in writing, over the telephone or in person.

(d) Should any provision of this Policy be declared illegal by any court of competent jurisdiction, such provisions shall immediately become null and void, leaving the remainder of the Policy in full force and effect. The parties shall, thereupon seek to negotiate substitute provisions which are in conformity with the applicable laws.

DEFINITIONS

CHAIN OF CUSTODY: Handling samples in a way that supports legal testimony to prove that the sample integrity and identification of the sample have not been violated, as well as documentation describing the procedures.

CONFIDENTIALITY: Knowledge that a specific individual is to be or has been screened for alcohol/substance abuse shall be limited to the MRO, personnel of the screening facility, the contractor's designed Policy administrator, the individual and, if the individual chooses, a representative of the union. To the extent that statistical data regarding the workforce and/or a portion of the workforce are collected, details of the screening may be included as long as the identity of the individual is protected.

CONFIRMATION: A second test by an alternate chemical method to positively identify a drug or metabolite. Confirmation is carried out on presumptive positive from an initial screen.

CURRENT: Individuals with *current* status have submitted to testing, are in compliance with the program terms, and are therefore eligible to work on projects requiring compliance with this Policy.

DRUG & ALCOHOL SCREENING: The method for determining the presence of controlled substances in a urine sample using a scientifically reliable method performed in accordance with procedures specified herein.

IMPAIRED FROM ALCOHOL: A level in excess of .02% blood alcohol.

INDIVIDUAL: a potential employee, employee or individual who has tested under this policy or a Reciprocal Drug-Testing Program.

LOSS TIME INJURY: As defined by OSHA regulations.

MEDICAL REVIEW OFFICER (MRO): A licensed physician whose medical training includes certification in toxicology and substance abuse treatment. The MRO is responsible for receiving the laboratory results generated by the substance abuse testing program, then interpreting and evaluating an individual's test result together with medical history and relevant biomedical information.

NOT CURRENT: Individuals who are not in compliance with this Policy. Individuals with a not current status shall either submit to a substance test, or complete rehabilitation and provide a current return to duty test if they wish to be eligible to work on projects requiring compliance with this Policy.

POST-ACCIDENT: Having a drug and/or alcohol screening done as a result of an accident.

REASONABLE SUSPICION: A belief that an individual shows signs of possible intoxication, use or being under the influence of drugs or alcohol. "Reasonable suspicion" may also be defined as a belief drawn from specific and particular facts and reasonable inferences that an individual is using illegal drugs or alcohol.

RECIPROCAL DRUG-TESTING PROGRAM: Any program administered under procedures substantially similar to or more stringent than this Policy and approved as a reciprocal drug-testing program by the NWOGLCA Board of Directors.

SCREENING FOR CAUSE: Having a drug and alcohol screening done when an individual's fitness for duty is in question.

THIRD PARTY ADMINISTRATOR: The individual or entity chosen to administer the substance abuse testing related elements of the substance abuse program. NW Ohio GLCA Substance Abuse Program TPA is:

MOST
753 State Avenue, Ste 800
Kansas City, KS 66101
www.mostprograms.com
phone: 1-877-522-6869.

WRITTEN CONSENT FORM: A form to be signed by the individual prior to submitting to a drug or alcohol screen. See Appendix B.

Great Lakes Construction Alliance
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Appendix A

NW OHIO GLCA
SUBSTANCE ABUSE POLICY

Information Chart and Screening Levels

Drug Class (Common Names)	Drugs included	Screening cutoff	Confirmation Cutoff
Amphetamines Extended (Speed, Eve, Crystal, (Ecstacy, Ecstasy, X)	Amphetamine Methamphetamine MDMA MDA MDEA	500 ng/mL	250 ng/mL
Benzolecgonine (Cocaine metabolite)	Cocaine	150 ng/mL	100 ng/mL
Opiates Extended (Vicodin, Oxycontin, Dilaudin, Darvon, Demerol, Heroin, Horse)	Morphine Codeine Synthetic Opiates	300 ng/mL	300 ng/mL
Phencyclidine	Phencyclidine (PCP)	25 ng/mL	25 ng/mL
Tetrahydrocannabinol Cannabinoids (THC – marijuana metabolite)	Marijuana (THC)	50 ng/mL	15 ng/mL
6-Acetylmorphine (6AM)	6AM	10 ng/mL	10 ng/mL
Barbiturates	Barbiturates	300 ng/mL	200 ng/mL
Benzodiazepines (Valium, Librium)	Benzodiazepines	300 ng/mL	300 ng/mL
Methadone	Methadone	300 ng/mL	300 ng/mL
Propoxyphene	Propoxyphene	300 ng/mL	300 ng/mL
Creatinine	Creatinine	20 mg/dL	20 mg/dL
Tramadol (Ultram)	Tramadol	300 ng/mL	300 ng/mL

* The permissible level for alcohol is less than .02% blood alcohol as screened by breath alcohol analysis. Screening for alcohol is only done for cause and post accident screenings.

**The urine sample at time of collection will be temperature tested and must be between the temperature range of ninety to one hundred degrees Fahrenheit to constitute a valid sample.

***Opiates tests are actually 3 separate tests.
****Effective 10/1/10 cut off levels were modified in accordance with DOT guidelines, Federal Register 49 CFR part 40, and the US Dept. of Health and Human Services (HHS) Substance Abuse and Mental Health Services Administration (SAMSHA).

Great Lakes Construction Alliance

GLCA Northwest Ohio

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Appendix B

NW OHIO GLCA
SUBSTANCE ABUSE POLICY

Drug / Alcohol Screen Consent Form
and Member Information Form
Please Print Clearly!

Release form for obtaining urine and/or breathalyzer samples for drug and/or alcohol screening and permission to furnish the results to employers participating in the NW Ohio Great Lakes Construction Alliance Program.

I authorize all contractors participating in the NW Ohio Great Lakes Construction Alliance Drug and Alcohol Screening Program, MOST and any authorized collection site or agent to take urine and/or breathalyzer samples from me for use in a drug or alcohol screening. I understand why these samples are being requested and I give permission for the results to be sent to the MRO. The MRO may communicate my status (current or not current) in accordance with the NW Ohio GLCA and MOST Programs. I further understand this information will be used to determine whether I am eligible for employment or continued employment under the Program's Policy. I further agree I am subject to the Program's Policy and that a non-current test will render me ineligible for employment until such time I become "current" under the policy. I also recognize that the owner may have more severe consequences for a non-current drug and/or alcohol testing result.

I further release and hold harmless MOST, the NW Ohio GLCA, and the Labor/Owner/Contractor Construction Summit, including their constituent member organizations and affiliated Unions, as well as their officers and directors from any consequences arising out of the drug and/or alcohol test or results there from.

I understand that this document will be valid for any and **ALL** drug and alcohol testing performed by all contractors participating in the NW Ohio GLCA Drug and Alcohol Screening Program, including randoms, and that I may not be required to fill out consent forms every time I am required to test.

Signature _____ Date _____

Social Security # _____ Date of Birth _____ Home Local _____

First Name _____ MI _____ Last Name _____

Street Address _____ Apartment # _____

City _____ State _____ Zip _____

Home Phone _____ Craft / Occupation _____

Employer / Jobsite _____

Please fax this form to: (913) 281-3922

Great Lakes Construction Alliance
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Appendix C

NW OHIO GLCA
SUBSTANCE ABUSE POLICY

Rescreening Procedure
After A Non-current Test

*SUBJECT: Clarification of **Section 6 (l)**. - **RESCREENING PROCEDURES** After a Non-current Test Result*

Section 6 (1) Rescreening allows an individual the opportunity to confirm a non-current test result having a GC/MS test performed on the split sample previously collected at a laboratory certified by SAMHSA (Substance Abuse and Mental Health Services Administration) of their choice.

1. The individual must exercise the option of a second GC/MS test within 72 business hours, excluding Saturday and Sunday, of being notified of the non-current test results.

2. A letter must be sent by the individual screening non-current to: **MOST/NW Ohio GLCA, Attn: Smitty Minton, 753 State Ave., Ste 800, Kansas City, KS 66101,** explaining the wish to confirm the results at a laboratory of their choice. Include the name, address and phone number of the laboratory. Also include a money order in the amount of the lab's cost (usually $150.00. Check with M.O.S.T.) If the results are current, the lab fee will be reimbursed by the employer. The employer will also reinstate the individual with full loss wages and benefits. The money order and letter need to be in the possession of M.O.S.T. within 72 business hours, excluding Saturday and Sunday, of notification of non-current test results. If M.O.S.T. does not receive such items in that time frame, the original test will be deemed non-current and no retesting will be allowed.

3. If the results remain non-current an additional $45.00 (Forty-Five Dollars) money order must be sent to allow the individual to retest after the applicable period of exclusion from projects covered by the Policy. A Chain of Custody will be sent by the Policy Administrator to the individual to be used at an approved collection site.

   A list of SAMHSA approved laboratories can be obtained from the Medical Review Officer or from M.O.S.T. and is attached as Appendix G. This list may change from the time this policy version was printed. Labs determine their specific fees; these fees are not negotiated by M.O.S.T.

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Appendix D

NW OHIO GLCA
SUBSTANCE ABUSE POLICY

Re-entry Screening Procedures

If an individual has been reported by the Medical Review Officer (MRO) to the employer as "Not Current," the individual must:

1. Be removed from all project requiring current status for the applicable period of time: Thirty (30) days, first offense, ninety (90) days, second offense and one (1) year, third and subsequent offenses.

2. Forward a cashier's check or money order to MOST for the amount necessary for re-entry screening. The current amount is forty-five dollars ($45). It is recommended to do this at least two weeks prior to the end of the suspension period.

3. Follow recommendations of MRO.

4. Receive review of Substance Abuse Professional and follow appropriate treatment if necessary.

5. Receive release from MRO following period of suspension. It is recommended to contact the MRO at least a week prior to the end of the suspension period to verify completion of all MRO recommendations.

6. Receive Custody and Control (COC) form from MOST for re-entry screening. A contractor's COC will not be acceptable.

7. Submit urine sample at approved collection site.

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Appendix E

NW OHIO GLCA
SUBSTANCE ABUSE POLICY
Employer Registration Form
Please Type or PRINT CLEARLY

Company Name:_____

Street Address:_____

City: _____State:_____Zip:_____

Phone:_____Fax:_____

Contact Person:_____

Title of Contact Person:_____

E-Mail Address: _____

Billing Address:_____

Billing City:_____State:_____Zip:_____

Billing Phone: _____ Billing Fax: _____

Signature:_____

Date: _____

Upon receipt of the Employer Registration form, MOST will issue a Company Identification number to the contact person. This identification number will allow access by your company representatives to the MOST database to check the status of building tradesmen and/or other jobsite employees with regard to the NW Ohio Great Lakes Construction Alliance Program.

Return completed Employer Registration form to:

By Mail: MOST / NW Ohio GLCA
Attn: Smitty Minton
753 State Ave., Ste 800
Kansas City, KS 66101

By Fax: (913) 281-3922

By Email: sminton@mostprograms.com

Appendix F

CONTACTS

ENTITY	NOTES	PHONE, FAX, EMAIL, WEB
MOST OFFICES	Smitty Minton MOST is our program's third party administrator	Tel: 877-522-6869 Fax: 913-281-3922 sminton@mostprograms.com
MOST Website		www.mostprograms.com
MUST	Michigan's Substance Abuse and Safety Program	Tel: 248-352-9810 Fax: 248-352-9814
MUST Website		www.mustonline.org
NW Ohio GLCA Website		www.nwoglca.org
NW Ohio GLCA Administrator	Todd Michaelsen	Tel: 419-666-6040
NW Ohio GLCA Local Program Coordinator Substance Abuse Program	Todd Michaelsen	Tel: 419-666-6040
NW Ohio GLCA MRO	Linda Marylyn	Tel: 419-251-4639 Tel: 419-251-2872
NWO Safety Website		www.nwosafety.com

Craftspeople: When you have a question about the substance abuse policy, please contact your labor organization.

NORTHWESTERN OHIO BUILDING AND CONSTRUCTION TRADES COUNCIL
Shaun Enright, Executive Secretary/Business Manager
909 Front Street ● Toledo, OH 43605
Phone: 419-693-7717 ●Fax: 419-693-2813

LIST OF CRAFT UNIONS
Updated: 12/2013

****

BOILERMAKERS LOCAL #85	P. O. Box 35 319 Glenwood Rd. Rossford, OH 43460 419-666-9724 419-666-8605 (FAX)
BRICKLAYERS &ALLIED CRAFTWORKERS LOCAL #3	4652 Lewis Ave. Toledo, OH 43612 419-478-1818 419-478-1201 (FAX)
BRICKLAYERS & ALLIED CRAFTWORKERS LOCAL #46	1310 Siler Street Fremont, OH 43420 1-419-334-2454 1-419-334-2437 (FAX)
CEMENT MASONS & PLASTERERS LOCAL #886	4652 Lewis Ave. Toledo, OH 43612 419-478-2652 419-478-0208 (FAX)
ELECTRICIANS LOCAL #8	807 Lime City Road Rossford, OH 43460 419-666-8920 419-666-3984 (FAX)
ELEVATOR CONSTRUCTORS LOCAL #44	2300 Ashland Ave. Room 206 Toledo, OH 43620 419-242-7902 419-242-6627 (FAX)
GLAZIERS LOCAL #948	1308 W. Sylvania Ave. Toledo, OH 43612 419-476-8362 419-476-8917 (FAX)

INSULATORS LOCAL #45	4904 North Summit St. Toledo, OH 43611 419-726-4683 419-726-4739 (FAX)
IRON WORKERS LOCAL #55	1080 Atlantic Ave. Toledo, OH 43609 419-385-6613 - 419-385-2125 419-385-6041 (FAX)
LABORERS LOCAL #480	P O Box 2214 (44871-2214) 1205 W. Perkins Ave. Sandusky, OH 44870-4603 1-419-626-0793 1-419-626-0219 (FAX)
LABORERS LOCAL #500	2270 Ashland Ave. Toledo, OH 43620 419-243-3279 - 419-243-3270 419-243-2061 (FAX)
LABORERS LOCAL #574 (Serving Delaware, Hancock, Hardin Marion, Seneca & Wyandot Counties)	1585 Harding Highway East Marion, OH 43302 740-382-4136 740-387-6354 (FAX)
PAINTERS LOCAL #7	1308 W. Sylvania Ave. Toledo, OH 43612 419-476-7505 419-476-7506 (FAX)
PLUMBERS/FITTERS LOCAL #50	7570 Caple Blvd. Suite A Northwood, OH 43619-1084 419-662-5456 419-662-4534 (FAX)
PLUMBERS/FITTERS LOCAL 776	1300 Bowman Road Lima, OH 45801 419-229-5176 419-224-7552 (FAX)
ROAD SPRINKLER FITTERS LOCAL #669	P. O. Box 306 Lindsey, OH 43442 1-419-665-2516 Office 1-419-665-2674 (FAX)
ROOFERS LOCAL #134	4652 Lewis Ave. Toledo, OH 43612 419-478-3785 419-478-1201 (FAX)

SHEET METAL WORKERS LOCAL #33	27430 Crossroads Parkway Rossford, OH 43460 419-873-9971 419-873-9978 (FAX)
SIGN DISPLAY AND ALLIED TRADES LOCAL 639	8257 Dow Circle Strongsville, OH 44136 1-866-239-4575 1-440-234-6527 (FAX)

SAFETY MANUAL

APPENDIX E

Health Hazards in Construction

POTENTIALLY HAZARDOUS CHEMICALS COMMONLY FOUND ON CONSTRUCTION PROJECTS

2-BUTOXYETHANOL (BUTYL CELLULOSIVE)	CALCIUM OXIDE (LIME
ABRASIVE, ALUMINUM OXIDE	CARBON BLACK
ACETONE (PROPANE)	CARBON DIOXIDE (DRY ICE)
ACETYLENE GAS	CARBON MONOXIDE (COAL GAS)
ACID, ACETIC (ETHANOIC ACID	CARBON MONOXIDE (IN CYLINDERS)
ADHESIVE, INSTANT	CARBON STEEL (SCRAP, GENERIC)
ADHESIVES	CARBURETOR & CHOKE CLEANER
AGGREGATE	CAULKING, SEALANT AGENTS
AIR FRESHENER (PARA CRYSTALS)	CAUSTIC SODA (SODIUM HYDROXIDE)
ALUMINUM ETCHING AGENT	CEMENT
ALUMINUM METAL	CEMENT, PORTLANT (CONCRETE, GROUT, MORTAR)
AMMONIA	CHLORINE
AMMONIA, ANHYDROUS (AMMONIA GAS)	CHROMATE SALTS
ANTIFREEZE (ETHYLENE GLYCOL)	CHROMIUM
ARGON	CHRYSOLITE ASBESTOS (ASBESTOS)
ARSENIC COMPOUNDS	CLAY (KAOLIN)
ASBESTOS	CLEANER, BOWL
ASPHALT	CLEANER, DETERGENT
ASPHALT FUMES (PETROLEUM)	CLEANER, HAND
ASPHALT, LIQUID (MINERAL PITCH)	CLEANER, RESIN
BATTERY	CLEANING AGENTS
BATTERY, GEL CELL	COAL TAR
BATTERY, TERMINAL CLEANER	COAL TAR PITCH
BELT DRESSING	COATINGS (BRUSH OR SPRAY)
BENTOTITE CLAY	COMPOUND, ANTISEIZE
BENZENE (BENZOL)	CONCRETE
BENZENE (AND DERIVATIVES)	CONCRETE, CURING COMPOUNDS
BLEACHING AGENTS	CONDUIT, METAL
BUTADIENE	CONDUIT, PLASTIC
CADMIUM METAL	COPIER, DEVELOPER
CADMIUM OXIDE	COPPER
CALCIUM CHLORIDE, ANHYDROUS	CREOSOL (CREOSITE)

DICHLOROTETRAFLUOROETHANE (FREON)	GASKET, ADHESIVE
DIESEL FUEL OIL NO. 2-D	GASKET, PERMATEX
DIESEL GAS	GASKET ELIMINATOR
DRYWALL	GYPSUM (CALCIUM SULFATE)
DUST (BRICK, CEMENT BLOCK)	GASOLINE (PETROL, ETHYL)
ENAMEL	GASOLINE (PETROL, ETHYL)
EPOXY, LOCTITE	GASOLINE, AUTOMOTIVE, LEAD-FREE
EPOXY RESIN, CURING AGENTS (HARDENER)	GLASS CLEANER
ETCHING AGENTS	GLUES
ETHYL ALCOHOL (GRAIN ALCOHOL)	GRAPHITE
ETHYLENE GLYCOL (ANTI-FREEZE)	GERASES
EXPLOSIVES, AMMONIUM NITRATE	GROUTS
EXPLOSIVES, DETONATING CORD	GYPSUM
FIBERGLASS, MINERAL WOOD	HELIUM
FIBERGLASS, REPAIR	HELIUM (IN CYLINDERS)
FIBROUS GLASS (SILICATE BASE, FIBERGLASS)	HYDRAULIC BRAKE FLUID
FIRE EXTINGUISHER (HALON)	HYDRAULIC OIL
FLUID, BRAKE	HYDROCHLORIC (MURIATIC) ACID
FLUID, CUTTING (HOGWASH)	HYDROGEN (IN CYLINDERS)
FLUID, ENGINE STARTING	HYDROGEN, GAS
FLUID, POWER STEERING	IPS TR 250 (COMPONENT B) URETHANE RESIN
FOAM INSULATION & FIREPROOFING	INKS
FORM OILS	INSULATION (FORM, ROLL OR BATT, ETC.)
FORMALIN (FORMALDEHYDE)	IRON
FREON 20, R20 (AND OTHERS)	KEROSENE
FUEL, ANTI-GEL	LEAD
FUEL, GASOLINE	LIME (CALCIUM OXIDE)
GALVANIZED JUNCTION BOXES, OUTLETS SWITCHES	LIMESTONE (DOLOMITE)
GAS, ACETYLENE	LIQUEFIED PROPANE (LP GAS)
GAS, CARBON DIOXIDE	LUBRICANT, CABELOK
GAS, HELI-ARC WELDING	LUBRICANT, GEAR
GAS, NITROGEN	LUBRICANT, RUBBER
GAS, OXYGEN	LUBRICANT. SPRAY
LYE (SODIUM HYDROXIDE, POTASSIUM HYDROXIDE)	PIPE (FIBERGLASS, COPPER, PVC)
MAGNESIUM	PIPE THREADING OIL

MANGANESE METAL/POWDER	PLASTICS
MASONRY MATERIALS (BRICKS, STONE, CEMENT BLOCK, PANELS)	POLISHES (WOOD, METAL)
METAL CONDUIT	POTASSIUM HYDROXIDE (POTASH LYE)
METALS (ALUMINUM, NICKEL, COPPER, ZINC, CADMIUM, IRON, ETC.	PRESSURE TREATED WOOD (TREATED LUMBER)
METHANE (MARSH GAS)	PROPANOL
METHANOL (METHYL ALCOHOL)	PULLING SOAP
METHYL ETHYL KETONE (BUTANONE)	PUTTY
METHYL ETHYL KETONE (2-BUTANONE)	PVC PIPE CEMENT
METHYLENE CHLORIDE (METHANE DICHLORIDE)	QUARTZ (FLINT, AGATE, SAND)
MINERAL SPIRITS (TYPES I & II)	RADIATOR FAST FLUSH
MORTAR	RESINS, EPOXY/SYNTHETICS
MOTOR OIL ADDITIVES	ROCK DUST
MURIATIC ACID (HYDROCHLORIC ACID)	ROOFING FELTS (ASBESTOS, GLASS FIBER, TARRED, ETC.)
NAPTHA (COAL TAR)	ROPE, WIRE
NITROGLYCERIN	SANDPAPER
NITROGEN DIOXIDE (IN CYLINDERS)	SEALERS
OIL	SHELLAC
OIL, MINERAL	SHRINK TUBE
OIL, PENETRATING	SODIUM HYDROXIDE (SODA LYE)
OIL, TRANSFORMER PCB	SOLDER, FLUX (ZINC CHLORIDE, FLUORIDES, ETC.)
OXALIC ACID	SOLDER, SOFT (LEAD, TIN)
OXYGEN	SOLVENT, XYLOL
OZONE (TRATOMIC OWYGEN)	SOLVENTS
PAINT	SPIRIT, MINERAL
PAINT, KILRUST	SULPHURIC ACID, CONCENTRATED (OIL OF VITRIOL)
PAINT, LACQUERS	TALC (TALCUM)
PAINT, REMOVER	TAPE, DUCT
PAINT, SPRAY CAN	TEFLON EEP
PAINT STRIPPER	TETRAHYDROFURAN (OXOLANE, FURANIDINE)
PAINT, ZINC	THINNER, PAINT/LACQUER
PARTICLEBOARD (FLAKEBOARD)	TIN, METAL/POWDER (STANNUM)

PENTACHLOROPHENOL	TOLUENE (METHYL BENZENE
PESTICIDE	TRANSITE
PESTICIDE, WASP SPRAY	TRICHLOROETHYLENE (ETYLENE TRICHLORIDE)
PHOTOGRAPHIC DEVELOPERS AND FIXERS	TUNGSTON CARBIDE (CEMENTED WITH COBALT BINDER)
PHOTOGRAVURE INK (COPY MACHINE)	TURPENTINE, GUM SPIRIT, OIL OF TURPENTINE
VARNISHES	WOOD ALCOHOL (METHANOL)
WATERPROOFING AGENTS	WOOD DUST (HARD WOOD/SOFT WOOD SAWDUST)
WAXES	WOOD PRESERVATIVE
WELDING CONSUMABLES AND PRODUCTS	XYLENE (MIXED ISOMERS, XYLOL)
WELDING ROD	ZINC CHLORIDE SOLDERING (FLUX)
WELDING SPRAY	ZINC METAL/POWDER (SPELTER)

HEALTH HAZARDS TO WELDERS AND WORKERS

I. CHEMICAL AGENTS:

Zinc: Zinc is used in large quantities in the manufacture of brass, galvanized metals, and various other alloys. Inhalation of zinc oxide fumes can occur when welding or cutting on zinc-coated metals. Exposure to these fumes is known to cause metal fume fever. Symptoms of metal fume fever are very similar to those of common influenza. They include fever (rarely exceeding 102 degrees F), chills, nausea, dryness of the throat, cough, fatigue, and general weakness and aching of the head and body. The victim may sweat profusely for a few hours, after which the body temperature begins to return to normal. The symptoms of metal fume fever have rarely, if ever, lasted beyond 24 hours. The subject can then appear to be more susceptible to the onset of this condition on Mondays or on weekdays following a holiday than they are on other days.

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

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

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

Mercury: Mercury compounds are used to coat metals to prevent rust or inhibit foliage growth (marine paints). Under the intense heat of the arc or gas flame, mercury vapors will be produced. Exposure to these vapors may produce stomach pain, diarrhea, kidney damage, or respiratory failure. Long-term exposure may produce tremors, emotional instability, and hearing damage.

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

Fluorides: Fluoride compounds are found in the coatings of several types of flux used in welding. Exposure may irritate the eyes, nose, and throat. Long-term exposure to high concentrations of fluorides in the air may cause pulmonary edema (fluid in the lungs) and bone damage. Exposure to fluoride dusts and fumes has also produced skin rashes.

Chlorinated Hydrocarbon Solvents: Various chlorinated hydrocarbons are used in degreasing or other cleaning operations. The vapors of these solvents are a concern in welding and cutting because the heat and ultraviolet radiation from the arc will decompose the vapors and form highly toxic and irritating phosgene gas (see Phosgene).

Phosgene: Phosgene is formed by decomposition of chlorinated hydrocarbon solvents by ultraviolet radiation. It reacts with moisture in the lungs to produce hydrogen chloride, which in turn destroys lung tissue. For this reason, any use of chlorinated solvents should be well away from welding operations or any operation in which ultraviolet radiation or intense heat is generated.

Carbon Monoxide: Carbon monoxide is a gas usually formed by the incomplete combustion of various fuels. Welding and cutting may produce significant amounts of carbon monoxide. In addition, welding operations that use carbon dioxide as the inert gas shield may produce hazardous concentrations of carbon monoxide in poorly ventilated areas. This is caused by a “breakdown” of shielding gas. Carbon monoxide is odorless and colorless. Common symptoms of overexposure include pounding of the heart, a dull headache, flashes before the eyes, dizziness, ringing in the ears, and nausea.

Nitrogen Oxides: The ultraviolet light of the arc can produce nitrogen oxides (NO_1, NO_2) from the nitrogen (N) and oxygen (O_2) in the air. Nitrogen oxides are produced by gas metal arc welding (GMAW or short-arc), gas tungsten arc welding (GTAW or HELI-ARC), and plasma arc cutting. Even greater quantities are formed if the shielding gas contains nitrogen. Nitrogen dioxide (NO_2), one of the oxides formed, has the greatest health effect. This gas is irritating to the eyes, nose and throat but dangerous concentrations can be inhaled without any immediate discomfort. High concentrations can cause shortness of breath, chest pain, and fluid in the lungs (pulmonary edema).

Ozone: Ozone (O_3) is produced by ultraviolet light from the welding arc. Ozone is produced in greater quantities by gas metal arc welding (GMAW or short-arc), gas tungsten arc welding (GTAW or Heli-arc), and plasma arc cutting. Ozone is a highly active form of oxygen and can cause great irritation to all mucous membranes. Symptoms of ozone exposure include headache, chest pain, and dryness of the eyes, nose and throat. Excessive exposure can cause fluid in the lungs (pulmonary edema). Both nitrogen dioxide and ozone are thought to have long-term effects on the lungs.

Hexavalent Chromium: Hexavalent chromium (Cr(VI)) compounds are a group of chemical substances that contain the metallic element chromium in its positive-6 valence (hexavalent) state. Occupational exposures to Cr(VI) occur during the production of stainless steel, chromate chemicals, and chromate pigments. Cr(VI) exposures also occur

during other work activities such as stainless steel welding, thermal cutting, chrome plating. Workplace exposure to hexavalent chromium may cause the following health effects:

• lung cancer in workers who breathe airborne hexavalent chromium

• irritation or damage to the nose, throat, and lung (respiratory tract) if hexavalent chromium is breathed at high levels

• irritation or damage to the eyes and skin if hexavalent chromium contacts these organs in high concentrations.

II. PHYSICAL AGENTS

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

Ultraviolet rays also increase the skin effects of some industrial chemicals (coal tar and cresol compounds).

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

Intense Visible Light: Exposure of the human eye to intense visible light can produce adaptation, papillary reflex, and shading of the eyes. Such actions are protective mechanisms to prevent excessive light from being focused on the retina. In the arc welding process, eye exposure to intense visible light is prevented by the welder’s helmet; however, some individuals have sustained retinal damage due to careless “viewing” of the arc. At no time should the arc be observed without eye protection.

LEAD AWARENESS

Blood Lead Level:

The measurement of blood lead level indicates how much lead was absorbed by the body. However, this measurement only shows the amount of lead circulating in the bloodstream. It does not show the amount of lead stored in the body. Most individuals have some amount of Lead in their body at all times.

The blood lead level of employees who are exposed to lead should not be above 40 micrograms of lead per deciliter of blood.

Permissible Exposure Limit:

The Permissible Exposure Limit (PEL) is 50 micrograms of airborne lead per cubic meter of air in the work environment over an eight-hour period. If the concentration of lead particles in the air is above the PEL, then regulated activities must be established. This includes the use of respiratory protection, personal protective equipment, and engineering and work practice controls.

Engineering controls such as enclosures and vacuums equipped with high efficiency particulate filters lessen the chances of lead particles becoming airborne. This is important because airborne lead particles can attach to dust and be carried long distances from where they were released.

Before leaving the work area, remove all surface dust from your protective clothing and equipment. Use a vacuum equipped with a high efficiency particulate filter or other cleaning method that does not cause an uncontrolled release of lead into the air.

Respiratory Protection and PPE:

Since exposure to lead mainly occurs when you inhale airborne lead particles, the respirator is the most important piece of protective equipment you will use. The purpose of the respirator is to provide you with a continuous supply of clean air. This is done in one of two ways:

- Air supplying respirators provide breathable air from an outside source.
- Air purifying respirators filter contaminated air through high efficiency particulate filters.

The type of respiratory protection you use will depend on the level of airborne lead particles in the work environment. The higher the concentration, the greater the protection you will need.

Paper dust-mask respirators do not provide enough protection from airborne lead particles and must never be used when working with lead.

A full respirator program is required along with a doctor's permission of the employee. Fit testing, training, issuing of the appropriate respirator, repair and inspection are all needed trainings for the employees.

Some ways to prevent Lead exposure in construction work include:

1. Respirator protection: An air-purifying respirator with HEPA and Organic Vapor canisters could be used to prevent employees from inhaling Lead. Check with your employer for assistance.
2. Eye and skin protection: Eyes can be guarded against Lead particles by using safety glasses with side protection. Long sleeved shirts, coveralls, and gloves are recommended for Lead that can cause skin irritations.
3. Dusty operations, such as sawing, grinding, burning and sanding, may be carried out in isolated areas to reduce exposure. Local exhaust ventilation is also recommended. Containments are typical to minimize exposures to others.
4. Housekeeping – Cleaning at regular intervals is important in minimizing Lead exposures.

ASBESTOS

The first step in recognition of asbestos hazards is to develop knowledge of the types of construction materials that historically have contained asbestos. Common materials that may contain asbestos include:

Sprayed on insulation on ceilings or walls
Sprayed on insulation on beams
Insulation around or in ductwork
Boiler insulation
Pipe coverings
Ceiling, floor, and wall tiles or panels
Fire walls and doors
Sprayed on decorative surfaces

The second step is positive identification of asbestos in the material. This is done by submitting a sample of the material to a laboratory for analysis. Only a small amount of the material is needed for analysis. Contact an approved Industrial Hygienist for collection of samples or assistance.

To obtain samples from some materials it may be necessary to use a scraping or cutting tool such as pen knife, putty knife, or sheet rock knife. In some cases, it may be necessary to patch-up places where a sample has been taken. For example, duct tape may be applied over a hole in pipe lagging.

In all cases, be careful not to expose yourself when taking a sample. Use of an appropriate respirator and other protective equipment may be required. The best scenario is to hire a local environmental firm for testing or an Industrial Hygienist.

A full respirator program is required along with a doctor's permission of the employee. Fit testing, training, issuing of the appropriate respirator, repair and inspection are all needed trainings for the employees.

Some ways to prevent Asbestos exposure in construction work include:

1. Respirator protection: An air-purifying respirator with a typical HEPA canister can be used to prevent employees from inhaling Asbestos. Check with your employer for assistance.

2. Eye and skin protection: Eyes can be guarded against Asbestos fibers by using safety glasses with side protection. Long sleeved shirts, coveralls, and gloves are required for Asbestos exposures that cause skin irritations.

3. Dusty operations, such as breaking, disturbing, sawing and sanding, can be carried out in isolated areas to reduce exposure. Local exhaust ventilation is also

recommended. This is typically performed under containment to protect workers from airborne contaminants.

4. Housekeeping – Cleaning at regular intervals is important in minimizing Asbestos from causing problems. Wet mopping or using a vacuum with a HEPA filter should be used over dry sweeping.

CARCINOGEN HEALTH HAZARDS IN CONSTRUCTION

CARCINOGENS IN CONSTRUCTION

1. Arsenic – found in fly ash in power plants, and in pressure treated lumber, OSHA regulated carcinogen.

2. Asbestos – OSHA carcinogen, found in all manners of insulation.

3. Benzene – OSHA carcinogen, found in process stream in refineries, old solvent in painting compounds.

4. Coal tar pitch – OSHA carcinogen, found in roof insulation.

5. Dichloromethane (methylene chloride) – NTP Carcinogen, used as a solvent in paint removers, contact cement, wood floor cleaners, wood stains, silicone lubricants, aerosol spray cans.

6. Diesel fuel exhaust – IARC Human suspect Class 2A, found in exhaust of construction equipment. Gasoline engine exhaust is IARC Class 2B.

7. Fiberglass – IARC Human Suspect (glass wool) Class 2B, used in insulation. Included are rock wool, slag wool, and ceramic fibers.

8. Formaldehyde – OSHA carcinogen, found in resins, adhesives, and particleboard.

9. Hexavalent Chromium (Chromium 6) NTP Human suspect carcinogen, found in some stainless steel fumes, Portland cement, welding or cutting.

Respirable Crystalline Silica Program

PURPOSE

This Respirable Crystalline Silica Program was developed to prevent employee exposure to hazardous levels of Respirable Crystalline Silica that could result through construction activities or nearby construction activities occurring on worksites. Respirable Crystalline Silica exposure at hazardous levels can lead to lung cancer, silicosis, chronic obstructive pulmonary disease, and kidney disease. It is intended to meet the requirements of the Respirable Crystalline Silica Construction Standard (29 CFR 1926.1153) established by the Occupational Safety and Health Administration (OSHA).

All work involving chipping, cutting, drilling, grinding, or similar activities on materials containing Crystalline Silica can lead to the release of respirable-sized particles of Crystalline Silica (i.e. Respirable Crystalline Silica). Crystalline Silica is a basic component of soil, sand, granite and many other minerals. Quartz is the most common form of Crystalline Silica. Many materials found on constructions sites include Crystalline Silica; including but not limited to – cement, concrete, asphalt, pre-formed structures (inlets, pipe, etc.) and others. Consequently, this program has been developed to address and control these potential exposures to prevent our employees from experiencing the effects of occupational illnesses related to Respirable Crystalline Silica exposure.

SCOPE

This Respirable Crystalline Silica Program applies to all employees who have the potential to be exposed to Respirable Crystalline Silica when covered by the OSHA Standard. The OSHA Respirable Crystalline Silica Construction Standard applies to all occupational exposures to Respirable Crystalline Silica in construction work, except where employee exposure will remain below 25 micrograms of Respirable Crystalline Silica per cubic meter of air (25 $\mu g/m^3$) as an 8-hour time-weighted average (TWA) under any foreseeable conditions.

RESPONSIBILITIES

Transtar Electric firmly believes protecting the health and safety of our employees is everyone's responsibility. This responsibility begins with upper management providing the necessary support to properly implement this program. However, all levels of the organization assume some level of responsibility for this program including the following positions.

Safety Department (Replace with Upper Management for Smaller Contractors):

- Conduct job site assessments for Silica containing materials and perform employee Respirable Crystalline Silica hazard assessments to determine if an employee's exposure will be above 25 µg/m^3 as an 8-hour TWA under any foreseeable conditions

- Select and implement into the project's ECP (Exposure Control Plan), the appropriate control measures in accordance with the Construction Tasks identified in OSHA's Construction Standard Table 1; and potentially including (but not limited to) - a written Exposure Control Plan (ECP), exposure monitoring, Hazard Communication training, medical surveillance, housekeeping and others.

  NOTE: OSHA's Construction Standard Table 1 is a list of 18 common construction tasks along with acceptable exposure control methods and work practices that limit exposure for those tasks.

- Ensure that the materials, tools, equipment, personal protective equipment (PPE), and other resources (such as worker training) required to fully implement and maintain this Respirable Crystalline Silica Program are in place and readily available if needed.

- Ensure that Project Managers, Site Managers, Competent Persons, and employees are educated in the hazards of Silica exposure and trained to work safely with Silica in accordance with OSHA's Respirable Crystalline Silica Construction Standard and OSHA's Hazard Communication Standard. Managers and Competent Persons may receive more advanced training than other employees.

- Maintain written records of training (for example, proper use of respirators), ECPs, inspections (for equipment, PPE, and work methods/practices), medical surveillance (under lock and key), respirator medical clearances (under lock and key) and fit-test results.

- Conduct an annual review (or more often if conditions change) of the effectiveness of this program and any active project ECP's that extend beyond a year. This includes a review of available dust control technologies to ensure these are selected and used when practical.

- Coordinate work with other employers and contractors to ensure a safe work environment relative to Silica exposure.

Project Manager/Site Manager:

- Ensure all applicable elements of this Respirable Crystalline Silica Program are implemented on the project including the selection of a Competent Person.

- Assist the Safety Department in conduct job site assessments for Silica containing materials and perform employee Respirable Crystalline Silica hazard assessments to determine if an ECP, exposure monitoring, and medical surveillance is necessary.

- Assist in the selection and implementation of the appropriate control measures in accordance with the Construction Tasks identified in OSHA's Construction Standard Table 1; and potentially including (but not limited to) - a written Exposure Control Plan (ECP), exposure monitoring, Hazard Communication training, medical surveillance, housekeeping and others.

- Ensure that employees using respirators have been properly trained, medically cleared, and fit-tested in accordance with the company's Respiratory Protection Program as well as the medical surveillance program as directed within 29 CFR 1926.1153. This process will be documented.

- Ensure that work is conducted in a manner that minimizes and adequately controls the risk to workers and others. This includes ensuring that workers use appropriate engineering controls, work practices, and wear the necessary PPE.

- Where there is risk of exposure to Silica dust, verify employees are properly trained on the applicable contents of this program, the project-specific ECP, and the applicable OSHA Standards (such as Hazard Communication). Ensure employees are provided appropriate PPE when conducting such work.

Competent Person

- Make frequent and regular inspections of job sites, materials, and equipment to implement the written ECP.

- Identify existing and foreseeable Respirable Crystalline Silica hazards in the workplace and take prompt corrective measures to eliminate or minimize them.

- Notify the Project Manager and/or Safety Department of any deficiencies identified during inspections to coordinate and facilitate prompt corrective action.

- Assist the Project Manager and Safety Department in conducting job site assessments for Silica containing materials and perform employee Respirable Crystalline Silica hazard assessments to determine if an ECP, exposure monitoring, and medical surveillance is necessary.

Employees:

- Follow recognized work procedures (such as the Construction Tasks identified in OSHA's Construction Standard Table 1) as established in the project's ECP and this program.
- Use the assigned PPE in an effective and safe manner.
- Participate in Respirable Crystalline Silica exposure monitoring and the medical surveillance program.
- Report any unsafe conditions or acts to the Site Manager and/or Competent Person.
- Report any exposure incidents or any signs or symptoms of Silica illness.

DEFINITIONS

If a definition is not listed in this section, please contact your supervisor. If your supervisor is unaware of what the term means, please contact the Competent Person or your Safety Department.

- Action Level means a concentration of airborne Respirable Crystalline Silica of 25 µg/m^3, calculated as an 8-hour TWA.
- Competent Person means an individual who is capable of identifying existing and foreseeable Respirable Crystalline Silica hazards in the workplace and who has authorization to take prompt corrective measures to eliminate or minimize them.
- Employee Exposure means the exposure to airborne Respirable Crystalline Silica that would occur if the employee were not using a respirator.
- High-Efficiency Particulate Air (HEPA) Filter means a filter that is at least 99.97 percent efficient in removing monodispersed particles of 0.3 micrometers in diameter.
- Objective Data means information, such as air monitoring data from industry-wide surveys or calculations based on the composition of a substance, demonstrating employee exposure to Respirable Crystalline Silica associated with a particular product

or material or a specific process, task, or activity. The data must reflect workplace conditions closely resembling or with a higher exposure potential than the processes, types of material, control methods, work practices, and environmental conditions in the employer's current operations.

- Permissible Exposure Limit (PEL) means the employer shall ensure that no employee is exposed to an airborne concentration of Respirable Crystalline Silica in excess of 50 µg/m^3, calculated as an 8-hour TWA.

- Physician or Other Licensed Health Care Professional (PLHCP) means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all of the particular health care services required by the Medical Surveillance Section of the OSHA Respirable Crystalline Silica Standard.

- Respirable Crystalline Silica means Quartz, Cristobalite, and/or Tridymite contained in airborne particles that are determined to be respirable by a sampling device designed to meet the characteristics for respirable-particle size- selective samplers specified in the International Organization for Standardization (ISO) 7708:1995: Air Quality-Particle Size Fraction Definitions for Health-Related Sampling.

- Specialist means an American Board Certified Specialist in Pulmonary Disease or an American Board Certified Specialist in Occupational Medicine.

REQUIREMENTS

Specified Exposure Control Methods

When possible and applicable, Transtar Electric will conduct activities with potential Silica exposure to be consistent with OSHA's Construction Standard Table 1. Supervisors will ensure each employee under their supervision and engaged in a task identified on OSHA's Construction Standard Table 1 have fully and properly implemented the engineering controls, work practices, and respiratory protection specified for the task on Table 1 (unless Transtar Electric has assessed and limited the exposure of the employee to Respirable Crystalline Silica in accordance with the Alternative Exposure Control Methods Section of this program).

The task(s) being performed by Transtar Electric identified on OSHA's Construction Standard Table 1 is/are: Select any/all of the following that apply:

Table 1: Specified Exposure Control Methods When Working With Materials Containing Crystalline Silica

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
1	Stationary masonry saws	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
2a	Handheld power saws (any blade diameter) when used outdoors	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
2b	Handheld power saws (any blade diameter) when used indoors or in an enclosed area	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
3	Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less) for tasks performed outdoors only	• Use saw equipped with commercially available dust collection system. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency.	None	None
4a	Walk-behind saws when used outdoors	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
4b	Walk-behind saws when used indoors or in an enclosed area	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
5	Drivable saws for tasks performed outdoors only	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None

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

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

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
	indoors or in an enclosed area	• Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.		Filtering Facepiece or Half Mask
13a	Walk-behind milling machines and floor grinders	• Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
13b	Walk-behind milling machines and floor grinders	• Use machine equipped with dust collection system recommended by the manufacturer. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide the air flow recommended by the manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. • When used indoors or in an enclosed area, use a HEPA-filtered vacuum to remove loose dust in between passes.	None	None
14	Small drivable milling machines (less than half-lane)	• Use a machine equipped with supplemental water sprays designed to suppress dust. • Water must be combined with a surfactant. • Operate and maintain machine to minimize dust emissions.	None	None
15a	Large drivable milling machines (half-lane and larger) for cuts of any depth on asphalt only	• Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust. • Operate and maintain machine to minimize dust emissions.	None	None
15b	Large drivable milling machines (half-lane and larger) for cuts of four inches in depth or less on any substrate	• Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust. • Operate and maintain machine to minimize dust emissions.	None	None
15c	Large drivable milling machines (half-lane and larger) for cuts of four inches in depth or less on any substrate	• Use a machine equipped with supplemental water spray designed to suppress dust. • Water must be combined with a surfactant. • Operate and maintain machine to minimize dust emissions.	None	None

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

When implementing the control measures specified in Table 1, Transtar Electric shall:

- For tasks performed indoors or in enclosed areas, provide a means of exhaust as needed to minimize the accumulation of visible airborne dust;
- For tasks performed using wet methods, apply water at flow rates sufficient to minimize release of visible dust;
- For measures implemented that include an enclosed cab or booth, ensure that the enclosed cab or booth:
    - Is maintained as free as practicable from settled dust;
    - Has door seals and closing mechanisms that work properly;
    - Has gaskets and seals that are in good condition and working properly;
    - Is under positive pressure maintained through continuous delivery of fresh air;
    - Has intake air that is filtered through a filter that is 95% efficient in the 0.3-10.0 µm range (e.g., MERV-16 or better); and
    - Has heating and cooling capabilities.
- Where an employee performs more than one task included on OSHA's Construction Standard Table 1 during a shift, and the total duration of all tasks combined is more than four hours, the required respiratory protection for each task is the respiratory protection specified for more than four hours per shift. If the total duration of all tasks on Table 1 combined is less than four hours, the required respiratory protection for each task is the respiratory protection specified for less than four hours per shift.

Alternative Exposure Control Methods

Alternative Exposure Control Methods apply for tasks not listed in OSHA's Construction Standard Table 1, or where Transtar Electric cannot not fully and properly implement the engineering controls, work practices, and respiratory protection described in Table 1.

First, Transtar Electric will assess the exposure of each employee who is or may reasonably be expected to be exposed to Respirable Crystalline Silica at or above the Action Level in accordance with either the Performance Option or the Scheduled Monitoring Option.

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

- **Scheduled Monitoring Option:**

    - Transtar Electric will perform initial monitoring to assess the 8-hour TWA exposure for each employee on the basis of one or more personal breathing zone air samples that reflect the exposures of employees on each shift, for each job classification, and in each work area. Where several employees perform the same tasks on the same shift and in the same work area, Transtar Electric will plan to monitor a representative fraction of these employees. When using representative monitoring, Transtar Electric will sample the employee(s) who are expected to have the highest exposure to Respirable Crystalline Silica.

    - If initial monitoring indicates that employee exposures are below the Action Level, Transtar Electric may discontinue monitoring for those employees whose exposures are represented by such monitoring.

    - Where the most recent exposure monitoring indicates that employee exposures are at or above the Action Level but at or below the PEL, Transtar Electric will repeat such monitoring within six months of the most recent monitoring.

    - Where the most recent exposure monitoring indicates that employee exposures are above the PEL, Transtar Electric will repeat such monitoring within three months of the most recent monitoring.

    - Where the most recent (non-initial) exposure monitoring indicates that employee exposures are below the Action Level, Transtar Electric will repeat such monitoring within six months of the most recent monitoring until two consecutive measurements, taken seven or more days apart, are below the Action Level, at which time Transtar Electric may discontinue monitoring for those employees whose exposures are represented by such monitoring, except when a reassessment is required. Transtar Electric will reassess exposures whenever a change in the production, process, control equipment, personnel, or work practices may reasonably be expected to result in new or additional exposures at or above the Action Level, or when Transtar Electric has any reason to believe that new or additional exposures at or above the Action Level have occurred.

Transtar Electric will ensure that all Respirable Crystalline Silica samples taken to satisfy the monitoring requirements of this program and OSHA are collected by an individual knowledgeable in the process of silica air sampling. The samples are evaluated by a qualified

laboratory (i.e. accredited to ANS/ISO/IEC Standard 17025:2005 with respect to Crystalline Silica analyses by a body that is compliant with ISO/IEC Standard 17011:2004 for implementation of quality assessment programs).

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

Whenever an exposure assessment indicates that employee exposure is above the PEL, Transtar Electric will describe in the written notification the corrective action being taken to reduce employee exposure to or below the PEL.

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

Once air monitoring has been performed, Transtar Electric will determine its method of compliance based on the monitoring data and the hierarchy of controls. Transtar Electric will use engineering and work practice controls to reduce and maintain employee exposure to Respirable Crystalline Silica to or below the PEL, unless Transtar Electric can demonstrate that such controls are not feasible. Wherever such feasible engineering and work practice controls are not sufficient to reduce employee exposure to or below the PEL, Transtar Electric will nonetheless use them to reduce employee exposure to the lowest feasible level and shall supplement them with the use of respiratory protection.

In addition to the requirements of this program, Transtar Electric will comply with other programs and OSHA standards (such as 29 CFR 1926.57 [Ventilation]), when applicable where abrasive blasting is conducted using Crystalline Silica-containing blasting agents, or where abrasive blasting is conducted on substrates that contain Crystalline Silica.

Control Methods

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

List and discuss control methods

Respiratory Protection

Where respiratory protection is required by this program, Transtar Electric will provide each employee an appropriate respirator that complies with the requirements of the company's Respiratory Protection Program and the OSHA Respiratory Protection Standard (29 CFR 1910.134).

Respiratory protection is required where specified by the OSHA Construction Standard Table 1, for tasks not listed in Table 1, or where the company has not fully and properly implemented the engineering controls, work practices, and respiratory protection described in Table 1. Situations requiring respiratory protection include:

- Where exposures exceed the PEL during periods necessary to install or implement feasible engineering and work practice controls;

- Where exposures exceed the PEL during tasks, such as certain maintenance and repair tasks, for which engineering and work practice controls are not feasible; and

- During tasks for which an employer has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce exposures to or below the PEL.

Housekeeping

Transtar Electric does not allow dry sweeping or dry brushing where such activity could contribute to employee exposure to Respirable Crystalline Silica unless wet sweeping, HEPA-filtered vacuuming, or other methods that minimize the likelihood of exposure are not feasible. Sweeping compound may be used.

Transtar Electric does not allow compressed air to be used to clean clothing or surfaces where such activity could contribute to employee exposure to Respirable Crystalline Silica unless:

- The compressed air is used in conjunction with a ventilation system that effectively captures the dust cloud created by the compressed air; or

- No alternative method is feasible.

Written Exposure Control Plan

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

- A description of the tasks in the workplace that involve exposure to Respirable Crystalline Silica;
- A description of the engineering controls, work practices, and respiratory protection used to limit employee exposure to Respirable Crystalline Silica for each task;
- A description of the housekeeping measures used to limit employee exposure to Respirable Crystalline Silica; and
- A description of the procedures used to restrict access to work areas, when necessary, to minimize the number of employees exposed to Respirable Crystalline Silica and their level of exposure, including exposures generated by other employers or sole proprietors.
- The written ECP will designate a Competent Person to make frequent and regular inspections of job sites, materials, and equipment to ensure the ECP is implemented.

The written ECP will be reviewed at least annually to evaluate the effectiveness of it and update it as necessary. Having said this, ECP's are project specific and most project durations do not exceed a year. The written ECP will be readily available for examination and copying, upon request, to each employee covered by this program and/or ECP, their designated representatives, and OSHA.

Medical Surveillance

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

Transtar Electric will make available an initial (baseline) medical examination within 30 days after initial assignment, unless the employee has received a medical examination that meets the requirements of the OSHA Respirable Crystalline Silica Construction Standard within the last three years. The examination shall consist of:

- A medical and work history, with emphasis on past, present, and anticipated exposure to Respirable Crystalline Silica, dust, and other agents affecting the respiratory system in addition to any history of respiratory system dysfunction, including signs and symptoms of respiratory disease (e.g., shortness of breath, cough, wheezing), history of tuberculosis, and smoking status and history;

- A physical examination with special emphasis on the respiratory system;

- A chest X-ray (a single postero-anterior radiographic projection or radiograph of the chest at full inspiration recorded on either film [no less than 14 x 17 inches and no more than 16 x 17 inches] or digital radiography systems) interpreted and classified according to the International Labor Office (ILO) International Classification of Radiographs of Pneumoconiosis by a NIOSH-certified B Reader;

- A pulmonary function test to include forced vital capacity (FVC) and forced expiratory volume in one second (FEV1) and FEV1/FVC ratio, administered by a spirometry technician with a current certificate from a NIOSH-approved spirometry course;

- Testing for latent tuberculosis infection; and

- Any other tests deemed appropriate by the PLHCP.

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

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

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

- The employee's former, current, and anticipated levels of occupational exposure to Respirable Crystalline Silica;

- A description of any personal protective equipment (PPE) used or to be used by the employee, including when and for how long the employee has used or will use that equipment; and

- Information from records of employment-related medical examinations previously provided to the employee and currently within the control of Transtar Electric.

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

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

- Any recommended limitations on the employee's use of respirators;

- Any recommended limitations on the employee's exposure to Respirable Crystalline Silica; and;

- A statement that the employee should be examined by a Specialist if the chest X-ray is classified as 1/0 or higher by the B Reader, or if referral to a Specialist is otherwise deemed appropriate by the PLHCP.

Transtar Electric will also obtain a written medical opinion from the PLHCP within 30 days of the medical examination. The written opinion shall contain only the following in order to protect the employee's privacy:

- The date of the examination;

- A statement that the examination has met the requirements of the OSHA Respirable Crystalline Silica Construction Standard; and

- Any recommended limitations on the employee's use of respirators.

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

- Any recommended limitations on the employee's exposure to Respirable Crystalline Silica; and/or

- A statement that the employee should be examined by a Specialist if the chest X-ray is classified as 1/0 or higher by the B Reader, or if referral to a Specialist is otherwise deemed appropriate by the PLHCP.

If the PLHCP's written medical opinion indicates that an employee should be examined by a Specialist, Transtar Electric will make available a medical examination by a Specialist within 30

days after receiving the PLHCP's written opinion. Transtar Electric will ensure that the examining Specialist is provided with all of the information that the employer is obligated to provide to the PLHCP.

Transtar Electric will ensure that the Specialist explains to the employee the results of the medical examination and provides each employee with a written medical report within 30 days of the examination. The written report will contain:

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

- Any recommended limitations on the employee's use of respirators; and

- Any recommended limitations on the employee's exposure to respirable crystalline Silica.

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

- The date of the examination;

- Any recommended limitations on the employee's use of respirators; and

- If the employee provides written authorization, the written opinion shall also contain any recommended limitations on the employee's exposure to Respirable Crystalline Silica.

Hazard Communication

Transtar Electric will include Respirable Crystalline Silica in the company's Hazard Communication Program established to comply with the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Transtar Electric will ensure that each employee has access to labels on containers of Crystalline Silica and those containers respective Safety Data Sheets (SDS's).

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

Transtar Electric will ensure that each employee with the potential to be exposed at or above the Action Level for Respirable Crystalline Silica can demonstrate knowledge and understanding of at least the following:

- The health hazards associated with exposure to Respirable Crystalline Silica;
- Specific tasks in the workplace that could result in exposure to Respirable Crystalline Silica;
- Specific measures Transtar Electric has implemented to protect employees from exposure to Respirable Crystalline Silica, including engineering controls, work practices, and respirators to be used;
- The contents of the OSHA Respirable Crystalline Silica Construction Standard;
- The identity of the Competent Person designated by Transtar Electric; and
- The purpose and a description of the company's Medical Surveillance Program.

Transtar Electric will make a copy of the OSHA Respirable Crystalline Silica Construction Standard readily available without cost to any employee who requests it.

Recordkeeping

Transtar Electric will make and maintain an accurate record of all exposure measurements taken to assess employee exposure to Respirable Crystalline Silica. This record will include at least the following information:

- The date of measurement for each sample taken;
- The task monitored;
- Sampling and analytical methods used;
- Number, duration, and results of samples taken;
- Identity of the laboratory that performed the analysis;
- Type of personal protective equipment (PPE), such as respirators, worn by the employees monitored; and

- Name, social security number, and job classification of all employees represented by the monitoring, indicating which employees were actually monitored.

Transtar Electric will ensure that exposure records are maintained and made available in accordance with 29 CFR 1910.1020. Exposure records will be kept for at least 30 years.

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

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

Transtar Electric will ensure that objective data are maintained and made available in accordance with 29 CFR 1910.1020. Objective data records will be kept for at least 30 years.

Transtar Electric will make and maintain an accurate record for each employee enrolled in the Medical Surveillance portion of this program. The record shall include the following information about the employee:

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

Transtar Electric will ensure that medical records are maintained and made available in accordance with 29 CFR 1910.1020. Medical records will be kept under lock and key for at least the duration of employment plus 30 years. It is necessary to keep these records for extended periods because Silica-related diseases such as cancer often cannot be detected until several decades after exposure. However, if an employee works for an employer for less than one year, the employer does not have to keep the medical records after employment ends, as long as the employer gives those records to the employee.

PROGRAM EVALUATION

This program will be reviewed and evaluated on an annual basis by the Safety Department unless changes to operations, the OSHA Respirable Crystalline Silica Construction Standard (29 CFR 1926.1153), or another applicable OSHA Standard require an immediate re-validation of this program.

APPLICABLE FORMS

The following lists applicable forms relating to this program.

APPENDICES

EXAMPLE OF WRITTEN EXPOSURE CONTROL PLAN

Company: _____ Date: _____
Person Completing the Plan, Title: _____
Competent Person: _____
Job site/location: _____

Description of Task: _____
_____
(Routine task, new task, Indoors/outdoors, task found on Table 1?)

Engineering Controls: _____
_____
Any deviation from Table 1 = air monitoring is required. Engineering controls must be used at all times!
(Wet methods, continuous water feed, local exhaust ventilation w/ HEPA filters, commercially available shrouds, commercial dust collection system, cyclone pre-separator/filter cleaning system, and ventilation, enclosed cab w/ fresh climate controlled air to operator, employees outside of cabs applying water/dust suppressants, equipment maintained to minimize dust emissions.)

Work Practices: _____
_____
(Maintain equipment functionality – cleaned/spare filters, hoses to start; good connections; hoses with no holes, kinks, permanent bends, crushed; power source available; water source available, ensure ventilation is ≥ 25 cfm/inch of wheel diameter; water/exhaust ventilation lines safe from damage; shrouds/cowls fit correctly and not damaged; follow Manufacturer's instruction for filter cleaning/change out.)

Respiratory protection: _____
(Use respirator with APF = 10 the entire time the task is being performed – See Table 1)
Respiratory Protection rule for information on selection, training and fit testing requirements, and proper use instruction for respirators (i.e., no facial hair interfering with the respirator sealing surface).

Housekeeping: _____

_____

(Dust containing silica on work surfaces/equipment must be cleaned up using wet methods of HEPA equipped vacuum**, no use of compressed air or dry sweeping** for removing dust and debris containing silica, dispose of used vacuum bags in a closed sealed container).

Procedures Used to Restrict Access to Work Area (Construction = optional, GI = required if exposures exceed the permissible exposure limit, PEL): _____

_____

_____

_____

(Signage, barricades, enclosures, spotters, work when area is cleared of other contractors to reduce risk of exposure.)

Objective data use (Optional) – **Yes** or **NO**

Data Source: _____

_____

Data conditions from the source exactly matches the work conditions? **Yes** or **No**
(Same conditions, equipment, process, controls, material silica %, environmental.)

Review and update this plan annually.
Keep a copy of this plan at the jobsite.
Provide this plan of action to the General Contractor.
Review this plan with all involved employees.

SAFETY MANUAL

APPENDIX F

NFPA 70E

Revised 04-2019

NFPA 70-E Arc Flash Program

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NFPA 70-E Arc Flash Program
2018 Edition

1. Basis and why of the program

1.1. The National Institute for Occupational Safety and Health (NIOSH) estimates that between 13-15 arc flash incidents occur every day in the United States. Many of these go unreported or are misclassified. Worker deaths by electrocution are the 4th leading cause of workplace fatalities.

1.2. General

1.2.1. The company will ensure that an arc flash risk assessment be performed in order to protect personnel from the possibility of being injured by an arc flash. The National Fire Protection Association (NFPA) requires an arc flash risk assessment or incident energy analysis that determines the appropriate safety related work practices, the arc flash boundary and the PPE to be used inside the arc flash boundary.

1.3. Responsibility

1.3.1. The company Safety Officer is the Environmental Health and Safety Coordinator. They are solely responsible for all facets of this program and have full authority to make necessary decisions to ensure the success of the program. The Environmental Health and Safety Coordinator will develop written detailed instructions covering each of the basic elements in this program, and is the sole person authorized to amend these instructions. The company has expressly authorized the Environmental Health and Safety Coordinator to halt any operation where there is danger of serious personal injury.

1.4. Written Program

1.4.1. This program will be reviewed and evaluated on an annual basis. It will also be reviewed whenever changes occur to 29 CFR 1910 Subpart S or when changes to facility operations occur that would require a revision of this document. Effective implementation of this program requires support from all levels of management within the company. This written program will be communicated to all personnel that are affected by it. It encompasses the total workplace, regardless of number of workers employed or the number of work shifts. It is designed to establish clear goals and objectives.

1.5. Facility/Department Evaluation

1.5.1. Each department will be evaluated individually to determine where arc flash hazards exist. Jobs and areas that present such risks will meet the criteria for designation as an arc flash hazard area.

1.5.2. Employee notification.

1.5.2.1. Employees will be informed by posting danger signs, conducting awareness training, and by any other equally effective means, of the existence and location of the danger posed by arc flash hazard areas. A sign reading "WARNING, ARC FLASH HAZARD- QUALIFIED PERSONNEL ONLY, APPROPRIATE PPE REQUIRED" (or similar language in accordance with NFPA 70-E) will be used to satisfy the requirement for untrained employee/visitor notification.

1.5.3. High risk electrical hazard jobs/areas.

Alerting techniques. The following alerting techniques shall be used to warn and protect employees from arc flash hazards, which could cause injury due to electric shock, non-contact electric arc burns or failure of electric equipment parts:

1.5.3.1. Safety signs and tags.

1.5.3.1.1. Safety signs, safety symbols, or accident prevention tags shall be used where necessary to warn employees about arc flash hazards which may endanger them as required by NFPA 70-E.

1.5.3.2. Barricades.

1.5.3.2.1. Barricades shall be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas exposing employees to the flash protection boundary for arc flash hazards. Conductive barricades may not be used where they might increase the likelihood of exposure to an electrical hazard.

1.5.3.3. Attendants.

1.5.3.3.1. If signs and barricades do not provide sufficient warning and protection from electrical hazards, an attendant shall be stationed to warn and protect employees. An attendant shall remain in presence as long as there is a potential for employees to be exposed to the electrical hazard.

2. General

2.1. This standard practice instruction will cover work by both qualified and unqualified persons. The provisions of 29 CFR 1910.331 through 1910.335 will be detailed to cover electrical safety-related work practices for both qualified persons (those who have training in avoiding the electrical hazards of working on or near exposed energized parts) and unqualified persons (those with little or no such training) do not work on, near or within the limited approach boundary with the following installations.

2.1.1. Premises wiring.

2.1.1.1. Installations of electric conductors and equipment within or on buildings or other structures, and on other premises such as yards, carnival, parking, and other lots, and industrial substations.

2.1.2. Wiring for connection to supply.

2.1.2.1. Installations of conductors that connect to the supply of electricity.

2.1.3. Other wiring.

2.1.3.1. Installations of other outside conductors on the premises.

2.1.4. Optical fiber cable.

2.1.4.1. Installations of optical fiber cable where such installations are made along with electric conductors.

2.1.5. General electrical safety work practices by the company's employees.

3. Training

3.1. Employees to be trained

3.1.1. Once an arc flash risk assessment has been conducted, training will be conducted for employees who face a potential for arc flash hazards/injuries that is not reduced to a safe level by the installation requirements.

3.2. High risk occupations

3.2.1. Employees in occupations listed in Table S-4 (29 CFR 1910.332) face such a risk and are required to be trained. Other employees who also may reasonably be expected to face a comparable risk of injury due to electric shock or other electrical hazards must also be trained. These employees will be identified based upon their job title and or area(s) of the facility they are exposed to. The company will use the facility evaluation data, referenced in section 2 of this, to develop a personnel training listing by job and hazard area(s) exposure.

Table S-4 (29 CFR 1910.332)
Typical Occupational Categories of Employees
Facing a Higher Than Normal Risk of Electrical Accident

OCCUPATION

First line supervisors
Electrical and electronic engineers
Electrical and electronic equipment assemblers
Electrical and electronic technicians
Electricians
Industrial machine operators
Material handling equipment operators
Mechanics and repairers
Painters
Riggers and roustabouts
Stationary engineers
Welders

3.3. Content of training

3.3.1. General electrical safety policy:

3.3.1.1. The Environmental Health and Safety Coordinator will develop a facility wide electrical policy that details this company's' general electrical safety policy.

3.3.2. Employee job specific training (unqualified):

3.3.2.1. Employees who are classified as "unqualified" (i.e., those not permitted to work on or near exposed energized parts or limited approach boundary) persons shall also be trained in and familiar with any electrically related safety practices inherent to their jobs which are necessary for their safety. First line supervisors in coordination with the Maintenance Manager (where required) will develop a

training outline detailing the arc flash boundary associated with a work area or job when an initial evaluation reveals a risk of potential arc flash.

3.3.3. Employee job specific training (qualified):

3.3.3.1. Qualified Person. A qualified person shall be trained and knowledgeable in the construction and operation of equipment or a specific work method and be trained to identify and avoid the electrical hazards that might be present with respect to that equipment or work method.

3.3.3.1.1. Such persons shall also be familiar with the proper use of the special precautionary techniques, applicable electrical policies and procedures, PPE, insulating and shielding materials, and insulated tools and test equipment.

3.3.3.1.2. A person can be considered qualified with respect to certain equipment and tasks but still be unqualified for others.

3.3.3.1.3. Such persons permitted to work within the limited approach boundary shall, at a minimum, be additionally trained in all of the following:

a. Skills and techniques necessary to distinguish exposed energized electrical conductors and circuit parts from other parts of electrical equipment.
b. Skills and techniques necessary to determine the nominal voltage of exposed energized electrical conductors and circuit parts.
c. Approach distances specified in Table 130.4(D)(a) and Table 130.4(D)(b) and the corresponding voltages to which the qualified person will be exposed.
d. Decision -making process necessary to be able to do the following:
    - ♦ Perform the job safety planning
    - ♦ Identify electrical hazards
    - ♦ Assess the associated risk
    - ♦ Select the appropriate risk control methods from the hierarchy of controls identified in 110.0(G), including personal protective equipment.

3.3.3.1.4. An employee who is undergoing on-the-job training for the purpose of obtaining the skills and knowledge necessary to be considered a qualified person, and who in the course of such training demonstrates and ability to perform specific duties safely at his or her level of training, and who is under the direct supervision of a qualified person shall be considered to be a qualified person for the performance of those specific duties.

3.3.3.1.5. Employees shall be trained to select an appropriate test instrument and shall demonstrate how to use a device to verify the absence of voltage, including interpreting indications provided by the device. The training shall include information that enables the employee to understand all limitations of each test instrument that might be used.

3.3.3.1.6. The employer shall determine through regular supervision or through inspections conducted on at least an annual basis that each employee is complying with the safety-related work practices required by this standard.

NOTE 1: For the purposes of this, the company employees must have the training required by the definition of a "qualified person" detailed above in order to be considered a qualified person.

NOTE 2: Qualified persons whose work on energized equipment involves either direct contact or contact by means of tools or materials must also have the training needed for safe exposure to energized part (see below).

3.4. Type of training

3.4.1. The training required by the company shall be of the classroom or on-the-job type. The degree of training provided shall be determined by the evaluated risk to the employee.

3.4.1.1. Decision-making process: Necessary to be able to do the following:

3.4.1.1.1. Perform the jobs safety planning.

3.4.1.1.2. Identify electrical hazards.

3.4.1.1.3. Assess the associated risk.

3.4.1.1.4. Implement risk control methods according to the hierarchy of controls which are 1) Elimination, 2) Substitution, 3) Engineering Controls, 4) Awareness, 5) Administration Controls and 6) PPE per NFPA 70E, Section 110.1 (G).

3.4.2. Initial Training

3.4.2.1. This employer shall provide training to ensure that the arc flash hazards associated with their job are understood by employees and that the knowledge and skills required for the safe application and usage of work place equipment, and removal of the energy controls, are acquired by employees. The training shall include the following:

3.4.2.1.1. Each authorized employee shall be instructed in the recognition of arc flash warning labels placed on equipment. Each employee will be trained on the information present on the arc flash label, including the arc flash boundary, the available incident energy and corresponding working distanced, the PPE level required and the arc rated shirt/pants/coverall required for the job.

3.4.2.1.2. Each affected employee shall be instructed in the purpose and use of the arc flash labels, and the flash hazard boundary and PPE requirements that must be observed.

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

Tags are essentially warning devices affixed to energy isolating devices and do not provide the physical restraint on those devices that is provided by a lock. Non-legible or missing tags will be reported to the Environmental Health and Safety Coordinator immediately.

3.4.2.1.4. Employees shall be trained to select an appropriate test instrument for measuring voltage on equipment operating voltage equal to or greater than 50 volts and demonstrate the use of device to verify absence of voltage including interpreting indications provided by the device. Training to include information on specific limitations of test instrument being used. The operation of the test instrument shall be verified on a known voltage before and after an absence of voltage test is performed.

3.5. Refresher Training

3.5.1. Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes which present a new hazard, when their work takes them into hazardous areas or when there is a change in the energy control procedures.

3.5.2. Additional retraining shall also be conducted whenever a periodic inspection reveals or whenever this employer has reason to believe that there are deviations from or inadequacies in the employee's knowledge of known hazards or use of the energy control procedures.

3.5.3. The retraining shall reestablish employee proficiency and introduce new technology, new types of equipment or changes in procedures necessitate the use of safety-related work practices which are different from those that the employee would normally use during job duties.

3.5.4. Retraining in safety related work practices and applicable changes in the NFPA 70E standard shall be performed at intervals not to exceed three years.

3.5.5. The employee needs to review tasks that are performed less often than once a year.

3.5.6. Employees responsible to respond to medical emergencies shall be trained in First Aid, CPR and AED use. Training shall occur at a frequency that satisfies the requirements of the certifying body and documented by employer annually.

3.6. Documentation

3.6.1. This employer shall document that employee training has been accomplished and is being kept up to date. The documentation shall contain each employee's name and dates of training per section 110.2C 4 of NFPA 70E.

3.6.2. Employers to document each employee training when employee demonstrates proficiency in work practice and maintained for duration of employees' employment

3.6.3. Emergency Response Training

3.6.3.1. Employees exposed to shock hazards shall be trained in methods of safe release of victims from contact with exposed energized conductors or parts. Refresher training shall occur annually.

4. Selection and use of work practices

4.1. Supervisors shall develop and ensure use of standardized safety-related work practices to prevent electric shock or other injuries resulting from arc flash hazards. This will be accomplished whenever work is performed near or on equipment or circuits which have a flash protection boundary. The specific safety-related work practices shall be consistent with the nature and extent of the associated arc flash hazard.

4.2. De-energized parts.

4.2.1. Live parts to which an employee may be exposed shall be de-energized before the employee works on or near them unless it can be demonstrated that de-energizing introduces additional or increased hazards or is unfeasible due to equipment design or operational limitations. Live parts that operate at less than 50 volts to ground need not be de-energized if there will be no increased exposure to electrical burns or to explosion due to electric arcs.

NOTE 1: Examples of but not limited to increased or additional hazards include interruption of life support equipment, deactivation of emergency alarm systems, and shutdown of hazardous location ventilation equipment.

NOTE 2: Examples of work that may be performed within the limited approach boundary of exposed energized conductors of circuit parts because of infeasibility due to equipment design or operational limitations include testing and diagnostics (ex: start-up or troubleshooting) of electric circuits that can only be performed with the circuit energized and work on circuits that form an integral part of a continuous process that would otherwise need to be completely shut down in order to permit work on one circuit or piece of equipment.

4.3. Lockout and tagging.

4.3.1. While any employee is exposed to contact with parts of fixed electric equipment or circuits which have been de-energized, the circuits energizing the parts shall be locked out or tagged or both in accordance with the requirements of this company's lock-out/tag-out procedures program. All complex Lock Out /Tag Out procedures shall require a written plan of execution that identifies the person in charge. The complex Lock Out/Tag Out procedure should vest primary responsibility in an authorized employee for a set number of employees working under the protection of group Lock Out/Tag Out device. Each employee should affix personal lock or tag out before employee begins work and remove when employee stops working on equipment

4.3.2. Lock Out/Tag Out Procedure training.

4.3.2.1. Initial Training. Employees involved in or affected by the lockout/tagout procedures required by 120.2 shall be trained in the following:

4.3.2.1.1. The lockout/tagout procedures

4.3.2.1.2. Their responsibility in the execution of the procedures

4.3.2.2. Retraining. Retraining in the lockout/tagout procedures shall be performed as follows:

4.3.2.2.1. When the procedures are revised

4.3.2.2.2. At intervals not to exceed 3 years

4.3.2.2.3. When supervision or annual inspections indicate that the employee is not complying with the lockout/tagout procedures

4.3.2.3. Lockout/Tagout Training Documentation.

4.3.2.3.1. The employer shall document that each employee has received the training required ty 110.2 (B)

4.3.2.3.2. The documentation shall be made when the employee demonstrates proficiency in the work practices involved.

4.3.2.3.3. The documentation shall contain the content of the training, each employee's name, and the dates of the training.

4.3.3. Lock Out/Tag Out Program

4.3.3.1. General. Each employer shall establish, document, and implement a lockout/tagout program. The lockout/tagout program shall specify lockout/tagout procedures to safeguard workers from exposure to electrical hazards. The lockout/tagout program and procedures shall also incorporate the following:

4.3.3.1.1. Be applicable to the experience and training of the workers and conditions in the workplace.

4.3.3.1.2. Meet the requirements of Article 120

4.3.3.1.3. Apply to fixed, permanently installed equipment, temporarily installed equipment, and portable equipment.

4.3.3.2. Employer Responsibilities. The employer shall be responsible for the following:

4.3.3.2.1. Providing the equipment necessary to execute lockout/tagout procedures

4.3.3.2.2. Providing lockout/tagout training to workers in accordance with 110.2

4.3.3.2.3. Auditing the lockout/tagout program in accordance with 110.1

4.3.3.2.4. Auditing execution of the lockout/tagout program in accordance with 110.1

4.3.3.3. Lockout/Tagout Principles

4.3.3.3.1. General. Electrical conductors and circuit parts shall not be considered to be in an electrically safe work condition until all of the requirements of Article 120 have been met.

4.3.3.3.2. Safe work practices applicable to the circuit voltage and energy level shall be used in accordance with Article 130 until such time that electrical conductors and circuit parts are in an electrically safe work condition.

4.4. Energized parts.

4.4.1. If the exposed live parts are not de-energized (i.e., for reasons of increased or additional hazards or unfeasibility), supervisors will ensure that other safety-related work practices are used to protect employees who may be exposed to the electrical hazards involved. Such work practices shall protect employees against contact with energized circuit parts directly with any part of their body or indirectly through some other conductive object. The work practices that are used shall be suitable for the conditions under which the work is to be performed and for the voltage level of the exposed electric conductors, circuit parts, or materials. Only qualified company employees may work on electric circuit parts or equipment that have not been de-energized.

4.4.2. When working under overhead uninsulated lines, clearance distance must be maintained if energized. Where the work to be performed is such that contact with uninsulated energized overhead lines is possible, the lines shall be de-energized and visibly grounded at this point of the work or suitably guarded or other protective measure shall be provided before work is started. Mechanical and vehicular equipment shall maintain 10 ft. clearance distance from overhead lines up to 72.5 KV. If clearance cannot be maintained, appropriate rubber insulated covering shall be applied.

If voltage over 72.5 KV is encountered, limited approach boundary for exposed movable conductors must be maintained per Table 130.4 (D)a and (D)b NFPA 70E standard.

4.4.3. Authorized maintenance personnel.

4.4.3.1. Only employees in the following job classification(s) (once trained) are authorized to work on or near exposed energized parts.

Department	Job Classification
Contractors	Electricians
Operations	Facility Technician
Operations	Equipment/Electrical Engineer

4.4.4. Contractor personnel.

4.4.4.1. Contractor personnel will be notified that they will be required to provide proof of certification for NFPA 70E electrical safety training and shall be familiar with the proper use of special precautionary techniques, personal protective equipment and insulated tools.

4.5. Illumination.

4.5.1. Supervisors will ensure that employees do not enter spaces where equipment with an arc flash hazard exists unless illumination is provided that enables the employees to perform the work safely.

4.5.2. Where lack of illumination or an obstruction precludes observation of the work to be performed, employees may not perform tasks within the Limited Approach Boundary

of energized electrical conductors or circuit parts operating at 50 Volts or more and in work situations where electrical hazards exist. Employees may not reach blindly into areas which may contain energized electrical conductors or circuit parts. Additionally, unless known otherwise the space shall be evaluated to determine if it meets the criteria for designation as a confined space. The company confined space program will be implemented to manage the entry.

4.6. Confined or enclosed work spaces.

4.6.1. When an employee works in a confined or enclosed space (such as a manhole or vault) that contains exposed energized or circuit parts operating at 50V or more or where electric hazards exist must observe proper PPE and arc rated worn. Employers shall provide and employee shall use protection shield barriers and insulating materials to avoid inadvertent contact with these parts unless known otherwise. The space shall be evaluated to determine if it meets the criteria for designation as a confined space. The company confined space program will be implemented to manage the entry.

4.7. Conductive materials and equipment.

4.7.1. Conductive materials and equipment that are in contact with any part of an employee's body shall be handled in a manner that will prevent them from unintentional contacting exposed energized conductors or circuit parts. Supervisors will ensure pre-written safety procedures are in place and that all employees are trained when long dimensional conductive objects (such as ducts and pipes) in areas with exposed live parts, are used. Other protective measures (such as the use of insulation, guarding, and material handling techniques) will be considered and used to minimize the hazard.

4.8. Portable ladder.

4.8.1. Portable ladders shall have nonconductive side rails if they are used where the employee or the ladder could contact exposed energized parts.

4.9. Conductive apparel.

4.9.1. Conductive articles of jewelry and clothing (such as watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear) shall not be worn within the restricted approach boundary or where they present an electrical contact hazard with exposed energized conduits or parts. However, such articles may be worn if they are rendered nonconductive by covering, wrapping, or other insulating means.

4.10. Housekeeping duties.

4.10.1. Where equipment presents an arc flash hazard, employees may not perform housekeeping duties within the limited approach boundary. No electrically conductive cleaning materials are to be used inside the limited approach boundary.

4.11. Safety Interlocks.

4.11.1. Only qualified person with the requirements for working inside the restricted approach boundary per NPFA 70E ART. 130.4 D shall be permitted to defeat or bypass an electrical safety interlock over which the person has sole control and temporarily whole working on the equipment. The safety interlock system shall be returned to its operable condition when this work is completed. Up to date diagram drawings should be consulted

to ensure that no electrical safety interlock operation can result in reenergizing circuit being worked on.

4.12. Employees shall be instructed to keep alert at all times and they shall not be allowed to work within Limited Approach Boundary of energized conductors or circuit parts while their alertness is recognizably impaired due to illness, fatigue or other reasons.

4.13. Clean Spaces:

4.13.1. Working space required by other code standards shall not be used for storage. The space should be kept clean to permit safe operation and maintenance of electrical equipment.

5. Use of equipment

5.1. Portable electric equipment:

5.1.1. This paragraph applies to the use of cord- and plug-connected equipment, including flexible cord sets (extension cords).

5.1.2. Handling and Storage:

5.1.2.1. Portable equipment shall be handled and stored in a manner which will not cause damage. Flexible electric cords connected to equipment may not be used for raising or lowering the equipment. Flexible cords may not be fastened with staples or otherwise hung in such a fashion as could damage the outer jacket or insulation.

5.1.3. Visual inspection and repair

5.1.3.1. Portable cord- and plug-connected equipment and flexible cord sets (extension cords) shall be visually inspected before use on any shift for external defects (such as loose parts, deformed and missing pins or damage to outer jacket or insulation) and for evidence of possible internal damage (such as pinched or crushed outer jacket). Cord and plug-connected equipment and flexible cord sets (extension cords), which remain connected once they are put in place and are not exposed to damage, need not be visually inspected until they are relocated.

5.1.3.2. If there is a defect or evidence of damage that might expose an employee to injury, the defective or damaged item shall be tagged and removed from service, and no employee may use it until a person qualified to do repairs and test necessary to render the equipment safe has done so.

5.1.3.3. When an attachment plug is to be connected to a receptacle (including any on a cord set), the relationship of the plug and receptacle contacts shall first be checked to ensure that they are of proper mating configurations.

5.1.4. Grounding-type equipment.

5.1.4.1. A flexible cord used with grounding-type utilization equipment shall contain an equipment grounding conductor.

5.1.4.2. Attachment plugs and receptacles may not be connected or altered in a manner which would prevent proper continuity of the equipment grounding

conductor at the point where plugs are attached to receptacles. Additionally, these devices may not be altered to allow the grounding pole of a plug to be inserted into slots intended for connection to the current-carrying conductors.

5.1.4.3. Adapters which interrupt the continuity of the equipment grounding connection may not be used.

5.1.5. Conductive work locations

5.1.5.1. Portable electric equipment and flexible cords used in highly conductive work locations (such as those inundated with water or other conductive liquids), in job locations where employees are likely to contact water or in conductive liquids shall be approved for those locations.

5.1.6. Connecting attachment plugs.

5.1.6.1. Employees' hands may not be wet when plugging and unplugging flexible cords and cord- and plug-connected equipment if energized equipment is involved.

5.1.6.2. Energized plug and receptacle connections may be handled only with insulating protective equipment if the condition of the connection could provide a conducting path to the employee's hand (if, for example, a cord connector is wet from being immersed in water).

5.1.6.3. Locking-type connectors shall be properly secured after connection.

5.1.6.4. Manufacturer’s instructions. Portable equipment shall be used in accordance with manufacturer’s instructions and safety warnings.

5.1.7. Ground fault circuit Interrupter (GFCI) protection.

5.1.7.1. Employees shall be provided GFCI protection where required per OSHA 1926. Listed cord sets or devices shall be used for personal protection.

5.1.7.2. Maintenance and Construction. GFCI protection shall be provided to employees when using plug cord and plug connected tools related to maintenance and construction activity supplied by 125 volt, 15, 20 or 30 amp circuit, GFCI or assured equipment grounding conductor program shall be implemented.

5.1.7.3. GFCI protection shall be used when employee is outdoors.

5.1.7.4. Test GFCI equipment monthly in accordance to manufacturer instructions.

5.1.7.5. Per 205.14 of NFPA 70 E, flexible cords and cables repair and replacement. Cords and cord caps for portable electrical equipment shall be repaired and replaced by qualified personnel and checked for proper polarity, grounding and continuity prior to returning to service. The intent is to include extension cords. OSHA does permit a qualified person to replace a cord on an extension cord, portable tool or equipment provided a qualified person makes the repair. See 1926.404 (b) (i) (iii) (c) and associated letter of interpretation of 4/4/2010.

6. Electric power and lighting circuits.

6.1. Routine opening and closing of circuit.

6.1.1. Load rated switches, circuit breakers or other devices specifically designed as disconnecting means shall be used for the opening, reversing, or closing of circuits under load conditions. Cable connectors not of the load-break type, fuses, terminal lugs and cable splice connections may not be used for such purposes, except in an emergency. In proper load shedding, disconnect all circuits before operation of main.

6.2. Reclosing circuits after protective device operation.

6.2.1. After a circuit is de-energized by a circuit protective device, the circuit may not be manually reenergized until it has been determined that the equipment and circuit can be safely energized. The repetitive manual reclosing of circuit breakers or reenergizing circuits through replaced fuses is prohibited.

When it can be determined from the design of the circuit and the overcurrent devices involved that the automatic operation of a device was caused by an overload rather than a fault condition, no examination of the circuit or connected equipment is needed before the circuit is reenergized.

6.3. Overcurrent protection modification.

6.3.1. Overcurrent protection of circuits and conductors may not be modified, even on a temporary basis, beyond that allowed by 29 CFR 1910.304(e), the installation safety requirements for overcurrent protection.

7. Test instruments and equipment.

7.1. Use

7.1.1. Only company qualified persons may perform testing work within the limited approach boundary of energized conductors or circuit parts operating at 50 Volts or more.

7.2. Visual inspection

7.2.1. Test instruments and equipment and all associated test leads, cables, power cords, probes and connectors shall be visually inspected for external defects and damage before each use. If there is a defect or evidence of damage that might expose an employee to injury, the defective or damaged item shall be tagged and removed from service and no employee may use it until a person qualified to perform repairs and tests that are necessary to render the equipment safe has done so.

7.3. Rating of equipment.

7.3.1. Test instruments and equipment and their accessories shall be rated for the circuits and equipment to which they will be connected and shall be designed for the environment in which they will be used.

7.4. When test instruments are used for the testing for the absence of voltage on conductors or circuit parts operating at 50 Volts or more, the operation of the test instrument shall be verified on a known voltage source before and after an absence of voltage test is performed.

NOTE: Electrical installation requirements for locations where flammable materials are present on a regular basis will meet NFPA requirements and local fire codes.

8. Safeguards for personnel protection

8.1. Use of protective equipment.

8.1.1. Employees working in areas where electrical hazards are present shall be provided with, and shall use, personal protective equipment and Arc Rated clothing that is appropriate for the specific parts of the body to be protected and for the work to be performed.

8.1.2. Occasional use of flammable or ignitable materials. Where flammable materials are present only occasionally, electric equipment capable of igniting them shall not be used unless measures are taken to prevent hazardous conditions from developing. Such materials include but are not limited to: flammable gases, vapors or liquids; combustible dust; and ignitable fibers or flyings.

NOTE: Personal protective equipment requirements will be located on the arc flash hazard warning label on the equipment.

8.1.3. Protective equipment shall be maintained in a safe, reliable condition and shall be periodically inspected or tested, as required by 29 CFR 1910.137.

8.1.4. If the insulating capability of protective equipment may be subject to damage during use, the insulating material shall be protected. (For example, an outer covering of leather is sometimes used for the protection of rubber insulating material.)

8.1.5. Employees shall wear nonconductive head protection wherever there is a danger of head injury from electric shock or burns due to arc flash hazards.

8.1.6. Employees shall wear protective equipment for the eyes or face wherever there is danger of injury to the eyes or face from electric arcs or flashes or from flying objects resulting from electrical explosion.

8.2 General protective equipment and tools.

8.2.1 When working inside the restricted approach boundary of exposed electrical conductors or circuit parts, each employee shall use insulated tools or handling equipment if the tools or handling equipment might be used within the restricted approach boundary. If the insulating capability of insulated tools or handling equipment is subject to damage, the insulating material shall be protected.

8.2.2 Fuse handling equipment, insulated for the circuit voltage, shall be used to remove or install fuses when the fuse terminals are energized.

8.2.3 Ropes and hand lines used near or within the restricted approach boundary shall be nonconductive.

8.3 Protective shields, protective barriers, or insulating materials shall be used to protect each employee from shock, burns or other electrically related injuries while that employee is working near limited approach boundary of energized conductors or circuits parts which might be accidentally contacted or where dangerous electric heating or arcing might occur. When normally enclosed energized conductors or circuit parts are exposed for

maintenance or repair, they shall be guarded to protect unqualified persons from contact with the energized conductors or circuit parts.

8.4 Equipment Labeling.

8.4.1 Labels will be placed on all electrical equipment with an arc flash hazard. The label will be placed in a conspicuous location which can be seen by any individual, and will contain the following information: 1) normal system voltage; 2) arc-flash boundary and 3) at least one of the following: a) available incident energy and corresponding working distance or the arc flash PPE category in Tables 130.7(c)(15.a) or 130.7(c) (15.b) for the equipment, but not both, b) minimum arc rating of clothing and c) site specific level of PPE. **Exception**! Labels applied prior to the effective date of this edition of standards are acceptable if they contain available information in the standard in effect at the time the labels were applied.

8.4.2 The owner of the electrical equipment shall be responsible for the documentation, installation and maintenance of the field-marked label.

8.4.3 The data shall be reviewed for accuracy at intervals not to exceed five (5) years.

8.5 Energized Work Permit

8.5.1 Energized electrical work permit is required when energized work is permitted in accordance with NFPA 130.2 (A). An energized work permit shall be required under the following conditions:

8.5.1.1 When work is performed within the restricted approach boundary.

8.5.1.2 Whether employee interacts with the equipment when conductors or current parts are not exposed but on increased likelihood of injury from an exposure to an arc flash hazard exist.

8.5.2 Exemptions to Work Permit.

8.5.2.1 An energized electrical work permit shall not be required if a qualified person is proved with and the uses appropriate safe work practices and PPE in accordance with Chapter 1 under any of the following conditions:

8.5.2.2 Testing, troubleshooting or voltage measuring.

8.5.2.3 Thermography, ultrasound or visual inspections if the restricted approach boundary is not crossed.

8.5.2.4 Access to and egress from an area with energized electrical equipment if no electrical work is performed and the restricted approach boundary is not crossed.

8.5.2.5 General housekeeping and miscellaneous non-electrical tasks if the restricted approach boundary is not crossed.

8.5.3 Elements of work permit. The energized electrical work permit shall include but not be limited to the following items:

8.5.3.1 Description of circuit and equipment to be worked on and the location.

8.5.3.2 Description of the work to be performed.

8.5.3.3 Justification for why the work must be performed in an energized condition.

8.5.3.4 Results of a shock risk assessment per 130.4.

8.5.3.5 Results of an arc flash risk assessment per 130.5.

8.5.3.6 Description of the safe work practices to the employee.

8.5.3.7 Means employed to restrict the access of unqualified person from the work.

8.5.3.8 Evidence of completion of a job briefing including a discussion of any job–specific hazards.

8.5.3.9 Energized work approval (authorizing or responsible management, safety office or other) signature.

8.5.4 Normal operation of electric equipment shall be permitted where all of the following conditions are satisfied.

8.5.4.1 The equipment is properly installed in accordance with applicable industry codes and standards and manufacturer's' recommendations.

8.5.4.2 The equipment is properly maintained in accordance with the manufacturer's recommendations and applicable codes and standards.

8.5.4.3 The equipment is used in accordance with instructions included in the listing and labeling and in accordance with manufacturer's instructions.

8.5.4.4 The equipment doors are closed and secured.

8.5.4.5 All equipment covers are in place and secured.

8.5.4.6 There is no evidence of impending failure, such as arcing, overheating, loose or bound equipment parts, visible damage or deterioration.

9. Responsibilities

9.1. Relationships with Contractors (Outside Service Personnel, etc.)

9.1.1. Host Employer Responsibilities.

9.1.1.1. The host employer shall inform contract employers of:

9.1.1.2. Known Hazards which are covered by this standard, that are related to the contract employer's work and which might not be recognized by the contract employer or its employees.

9.1.1.3. Information about the employer's installation that the contract employer needs to make the assessments required by Chapter 1 of NFPA 70E.

9.1.1.4. The host employer shall report observed contract-employer- related violations of this standard to the contract employer.

9.2. Contract Employer Responsibilities

9.2.1. The contract employer shall ensure that each of his or her employees is instructed in the hazards communicated to the contract employer by the host employer. This is in addition to the basic training required by this standard.

9.2.2. The contract employer shall ensure that each of his or her employees follows the work practices required by this standard and safety-related work rules required by the host employer.

9.2.3. The contract employer shall advise the host employer of:

9.2.3.1. Any unique hazards presented by the contract employer's work.

9.2.3.2. Hazards identified during the course of the contract employer's work that the host employer did not communicate to contract employee, and

9.2.3.3. The measures the contractor took to correct any violations reported by the host employer under paragraph 9.1.1.4 of this section and to prevent such violation from recurring in the future.

10. Definitions applicable to this standard practice instruction

Accessible
(As applied to wiring methods.) Capable of being removed or exposed without damaging the building structure or finish, or not permanently closed in by the structure or finish of the building.

Accessible
(As applied to equipment.) Admitting close approach; not guarded by locked doors, elevation, or other effective means, such as to use tools

Approved
Acceptable to the authority having jurisdiction.

Arc flash hazard
A type of electrical explosion that results from a low impedance connection to ground or another voltage phase in an electrical system. Arc flash hazards dangerous condition associated with the possible release of energy caused by an electric arc.

Arc Flash Hazard Analysis
A study investigating a worker's potential exposure to arc-flash energy, conducted for the purpose of injury prevention and the determination of safe work practices, arc flash protection boundary, and the appropriate levels of PPE.

Arc Flash Suit
A complete arc rated clothing and equipment system that covers the entire body, except for the hands and feet. This includes pants, jacket, and beekeeper- type hood fitted with a face shield.

Arc Rating

The value attributed to materials that describe their performance to exposure to an electrical arc discharge. The arc rating is expressed in cal/cm2 and is derived from the determined value of the arc thermal performance value (ATPV) or energy of break open threshold (Ebt) (should a material system exhibit a break-open response below the ATPV value) derived from the determined value of ATPV or Ebt.

Boundary, Arc Flash

When an arc flash hazard exists, an approach limit from an arc source at which incident energy equals 1.2 cal/ cm^2 (5 J/cm^2)

Building

A structure which stands alone or which is cut off from adjoining structures by fire walls with all openings therein protected by approved fire doors.

Circuit breaker

- (600 volts nominal or less). A device designed to open and close a circuit by non-automatic means and to open the circuit automatically on a predetermined overcurrent without injury to itself when properly applied within its rating.

- (Over 600 volts, nominal). A switching device capable of making, carrying, and breaking currents under normal circuit conditions, and also making, carrying for a specified time, and breaking currents under specified abnormal circuit conditions, such as those of short circuit.

Conductor

- Bare. A conductor having no covering or electrical insulation whatsoever.
- Covered. A conductor encased within material of composition or thickness that is not recognized as electrical insulation.
- Insulated. A conductor encased within material of composition and thickness that is recognized as electrical insulation.

Device

A unit of an electrical system other than a conductor which carries or controls electric energy as its principle function.

Electrical Hazard.

A dangerous condition such that contact or equipment failure can result in electric shock, arc flash burn, thermal burn or arc blast injury.

Electrical Safety

Identifying hazards associated with the use of electrical energy and taking precautions to reduce the risk associated with those hazards.

Electrical Safety Program

A documented system consisting of electrical safety principles, policies, procedures, and processes that directs activities appropriate for the risk associated with electrical hazards.

Enclosed

Surrounded by a case, housing, fence or walls that prevents persons from unintentionally contacting energized parts.

Enclosure

The case or housing of apparatus, or the fence or walls surrounding an installation to prevent personnel from unintentionally contacting energized electrical conductors or circuit parts, or to protect the equipment from physical damage.

Equipment

A general term including fittings, devices, appliances, luminaires, apparatus, and the like, used as a part of, or in connection with, an electrical installation.

Exposed

(As applied to live parts.) Capable of being inadvertently touched or approached nearer than a safe distance by a person. It is applied to parts not suitably guarded, isolated, or insulated.

Exposed

(As applied to wiring methods.) On or attached to the surface or behind panels designed to allow access.

Exposed

(For the purposes of 29 CFR 1910.308(e), Communications systems.) Where the circuit is in such a position that in case of failure of supports or insulation, contact with another circuit may result.

Fault Circuit

The amount of current delivered at a point on the system during a short-circuit condition.

Fault Current, Available

The largest amount of current capable of being delivered at a point on the system during a short-circuit condition.

Fuse

(Over 600 volts, nominal.) An overcurrent protective device with a circuit opening fusible part that is heated and severed by the passage of overcurrent through it. A fuse comprises all the parts that form a unit capable of performing the prescribed functions. It may or may not be the complete device necessary to connect it into an electrical circuit.

Ground

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

Grounded

Connected to earth or some conducting body that serves in place of the earth.

Grounding Conductor, Equipment (EGC)

The conductive path(s) that provides a ground-fault current path and connects normally non-current-carrying metal parts of equipment together and to the system grounded conductor or to the grounding electrode conductor, or both.

Guarded

Covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers, casings, barriers, rails, screens, mats, or platforms to remove the likelihood of approach to a point of danger or contact by persons or objects.

Hazard

A source of possible injury or damage to health.

Hazardous

Involving exposure to at least one hazard.

Labeled

Equipment is labeled if there is attached to it a label, symbol, or other identifying mark of a nationally recognized testing laboratory which, (a) makes periodic inspections of the production of such equipment, and (b) whose labeling indicates compliance with nationally recognized standards or tests to determine safe use in a specified manner.

Maintenance, Condition of

The state of the electrical equipment considering the manufacturers' instructions, manufacturers' recommendations and applicable industry codes, standards and recommended practices.

Outlet

A point on the wiring system at which current is taken to supply utilization equipment.

Premises wiring system

That interior and exterior wiring, including power, lighting, control, and signal circuit wiring together with all of its associated hardware, fittings, and wiring devices, both permanently and temporarily installed, which extends from the load end of the service drop, or load end of the service lateral conductors to the outlet(s). Such wiring does not include wiring internal to appliances, fixtures, motors, controllers, motor control centers, and similar equipment.

- This includes a) wiring from the service point or power source to the outlets or b) wiring from and including the power source to the outlets where there is not service point. Such wiring does not include wiring internal to appliances, motor controlling the equipment, motors, luminaires and similar equipment.

Qualified person

One who has demonstrated skills and knowledge related to the construction and operation of electrical equipment and installations and has received safety training to identify the hazards and reduce the associated risk.

Readily accessible

Capable of being reached quickly for operation, renewal, or inspections, without requiring those to whom ready access is requisite to climb over or remove obstacles or to resort to portable ladders, chairs, etc. (See "Accessible.)

Risk

A combination of the likelihood of occurrence of injury or damage to health and the severity of injury or damage to health which results from a hazard.

Risk Assessment

An overall process which identifies hazards, estimates the likelihood of occurrence of injury or damage to health, estimates the potential severity of injury or damage to health and determines if protective measures are required.

Shock Hazard

A source of possible injury or damage to health associated with current through the body caused by contact or approach to energized electrical conductors or circuit parts.

Voltage (of a circuit)

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

Voltage, nominal

A nominal value assigned to a circuit or system for the purpose of conveniently designating its voltage class (as 120/240, 480Y/277, 600, etc.). The actual voltage at which a circuit operates can vary from the nominal within a range that permits satisfactory operation of equipment.

Working Distance

The distance between a person's face and chest area and a prospective arc source.

*****Contact your lawyer and local OSHA office for assistance in the development of an action plan which meets all the requirements determined by OSHA.***

Table 130.4(D)(a) Shock Protection Approach Boundaries to Exposed Energized Electrical Conductors or Circuit Parts for Alternating-Current Systems

(1)	(2)	(3)	(4)
	Limited Approach Boundary[b]		
Nominal System Voltage Range, Phase to Phase[a]	Exposed Movable Conductor[c]	Exposed Fixed Circuit Part	Restricted Approach Boundary[b]; Includes Inadvertent Movement Adder
Less than 50 V	Not specified	Not specified	Not specified
50 V–150 V[d]	3.0 m (10 ft 0 in.)	1.0 m (3 ft 6 in.)	Avoid contact
151 V–750 V	3.0 m (10 ft 0 in.)	1.0 m (3 ft 6 in.)	0.3 m (1 ft 0 in.)
751 V–15 kV	3.0 m (10 ft 0 in.)	1.5 m (5 ft 0 in.)	0.7 m (2 ft 2 in.)
15.1 kV–36 kV	3.0 m (10 ft 0 in.)	1.8 m (6 ft 0 in.)	0.8 m (2 ft 9 in.)
36.1 kV–46 kV	3.0 m (10 ft 0 in.)	2.5 m (8 ft 0 in.)	0.8 m (2 ft 9 in.)
46.1 kV–72.5 kV	3.0 m (10 ft 0 in.)	2.5 m (8 ft 0 in.)	1.0 m (3 ft 6 in.)
72.6 kV–121 kV	3.3 m (10 ft 8 in.)	2.5 m (8 ft 0 in.)	1.0 m (3 ft 6 in.)
138 kV–145 kV	3.4 m (11 ft 0 in.)	3.0 m (10 ft 0 in.)	1.2 m (3 ft 10 in.)
161 kV–169 kV	3.6 m (11 ft 8 in.)	3.6 m (11 ft 8 in.)	1.3 m (4 ft 3 in.)
230 kV–242 kV	4.0 m (13 ft 0 in.)	4.0 m (13 ft 0 in.)	1.7 m (5 ft 8 in.)
345 kV–362 kV	4.7 m (15 ft 4 in.)	4.7 m (15 ft 4 in.)	2.8 m (9 ft 2 in.)
500 kV–550 kV	5.8 m (19 ft 0 in.)	5.8 m (19 ft 0 in.)	3.6 m (11 ft 8 in.)
765 kV–800 kV	7.2 m (23 ft 9 in.)	7.2 m (23 ft 9 in.)	4.9 m (15 ft 11 in.)

Notes:
(1) For arc flash boundary, see 130.5(A).
(2) All dimensions are distance from exposed energized electrical conductors or circuit part to employee.
[a]For single-phase systems above 250 volts, select the range that is equal to the system's maximum phase-to-ground voltage multiplied by 1.732.
[b]See definition in Article 100 and text in 130.4(D)(2) and Informative Annex C for elaboration.
[c]*Exposed movable conductors* describes a condition in which the distance between the conductor and a person is not under the control of the person. The term is normally applied to overhead line conductors supported by poles.
[d]This includes circuits where the exposure does not exceed 120 volts nominal.

Table 130.4(D)(b) Shock Protection Approach Boundaries to Exposed Energized Electrical Conductors or Circuit Parts for Direct-Current Voltage Systems

(1)	(2)	(3)	(4)
	Limited Approach Boundary		
Nominal Potential Difference	Exposed Movable Conductor*	Exposed Fixed Circuit Part	Restricted Approach Boundary; Includes Inadvertent Movement Adder
Less than 50 V	Not specified	Not specified	Not specified
50 V–300 V	3.0 m (10 ft 0 in.)	1.0 m (3 ft 6 in.)	Avoid contact
301 V–1 kV	3.0 m (10 ft 0 in.)	1.0 m (3 ft 6 in.)	0.3 m (1 ft 0 in.)
1.1 kV–5 kV	3.0 m (10 ft 0 in.)	1.5 m (5 ft 0 in.)	0.5 m (1 ft 5 in.)
5 kV–15 kV	3.0 m (10 ft 0 in.)	1.5 m (5 ft 0 in.)	0.7 m (2 ft 2 in.)
15.1 kV–45 kV	3.0 m (10 ft 0 in.)	2.5 m (8 ft 0 in.)	0.8 m (2 ft 9 in.)
45.1 kV– 75 kV	3.0 m (10 ft 0 in.)	2.5 m (8 ft 0 in.)	1.0 m (3 ft 6 in.)
75.1 kV–150 kV	3.3 m (10 ft 8 in.)	3.0 m (10 ft 0 in.)	1.2 m (3 ft 10 in.)
150.1 kV–250 kV	3.6 m (11 ft 8 in.)	3.6 m (11 ft 8 in.)	1.6 m (5 ft 3 in.)
250.1 kV–500 kV	6.0 m (20 ft 0 in.)	6.0 m (20 ft 0 in.)	3.5 m (11 ft 6 in.)
500.1 kV–800 kV	8.0 m (26 ft 0 in.)	8.0 m (26 ft 0 in.)	5.0 m (16 ft 5 in.)

Note: All dimensions are distance from exposed energized electrical conductors or circuit parts to worker.
**Exposed movable conductor* describes a condition in which the distance between the conductor and a person is not under the control of the person. The term is normally applied to overhead line conductors supported by poles.

Table 130.5(C) Estimate of the Likelihood of Occurrence of an Arc Flash Incident for ac and dc Systems

Task	Equipment Condition	Likelihood of Occurrence*
Reading a panel meter while operating a meter switch. Performing infrared thermography and other non-contact inspections outside the restricted approach boundary. This activity does not include opening of doors or covers. Working on control circuits with exposed energized electrical conductors and circuit parts, nominal 125 volts ac or dc, or below without any other exposed energized equipment over nominal 125 volts ac or dc, including opening of hinged covers to gain access. Examination of insulated cable with no manipulation of cable. For dc systems, insertion or removal of individual cells or multi-cell units of a battery system in an open rack. For dc systems, maintenance on a single cell of a battery system or multi-cell units in an open rack.	Any	No
For ac systems, work on energized electrical conductors and circuit parts, including voltage testing. For dc systems, working on energized electrical conductors and circuit parts of series-connected battery cells, including voltage testing. Removal or installation of CBs or switches. Opening hinged door(s) or cover(s) or 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. Application of temporary protective grounding equipment, after voltage test. Working on control circuits with exposed energized electrical conductors and circuit parts, greater than 120 volts. Insertion or removal of individual starter buckets from motor control center (MCC). Insertion or removal (racking) of circuit breakers (CBs) or starters from cubicles, doors open or closed. Insertion or removal of plug-in devices into or from busways. Examination of insulated cable with manipulation of cable. Working on exposed energized electrical conductors and circuit parts of equipment directly supplied by a panelboard or motor control center. Insertion or removal of revenue meters (kW-hour, at primary voltage and current). Removal of battery conductive intercell connector covers. For dc systems, working on exposed energized electrical conductors and circuit parts of utilization equipment directly supplied by a dc source. Opening voltage transformer or control power transformer compartments. Operation of outdoor disconnect switch (hookstick operated) at 1 kV through 15 kV. Operation of outdoor disconnect switch (gang-operated, from grade) at 1 kV through 15 kV.	Any	Yes
Operation of a CB, switch, contactor, or starter. Voltage testing on individual battery cells or individual multi-cell units. 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. Opening a panelboard hinged door or cover to access dead front overcurrent devices. Removal of battery nonconductive intercell connector covers.	Normal	No
Maintenance and testing on individual battery cells or individual multi-cell units in an open rack Insertion or removal of individual cells or multi-cell units of a battery system in an open rack. Arc-resistant switchgear Type 1 or 2 (for clearing times of less than 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, 1 kV through 15 kV. Insertion or removal (racking) of CBs from cubicles; Insertion or removal (racking) of ground and test device; or Insertion or removal (racking) of voltage transformers on or off the bus.	Abnormal	Yes

(continues)

Table 130.5(C) ***Continued***

Task	Equipment Condition	Likelihood of Occurrence*
Equipment condition considered to be "normal" if all of the following circumstances apply: (1) The equipment is properly installed in accordance with the manufacturer's recommendations and applicable industry codes and standards. (2) The equipment is properly maintained in accordance with the manufacturer's recommendations and applicable industry codes and standards. (3) The equipment is used in accordance with instructions included in the listing and labeling and in accordance with manufacturer's instructions. (4) Equipment doors are closed and secured. (5) Equipment covers are in place and secured. (6) There is no evidence of impending failure such as arcing, overheating, loose or bound equipment parts, visible damage, or deterioration.		

*As defined in this standard, the two components of risk are the likelihood of occurrence of injury or damage to health and the severity of injury or damage to health that results from a hazard. Risk assessment is an overall process that involves estimating both the likelihood of occurrence and severity to determine if additional protective measures are required. The estimate of the likelihood of occurrence contained in this table does not cover every possible condition or situation, nor does it address severity of injury or damage to health. Where this table identifies "No" as an estimate of likelihood of occurrence, it means that an arc flash incident is not likely to occur. Where this table identifies "Yes" as an estimate of likelihood of occurrence, it means that additional protective measures are required to be selected and implemented according to the hierarchy of risk control identified in 110.1(H).

Informational Note No. 1: An example of a standard that provides information for arc-resistant switchgear referred to in Table 130.5(C) is IEEE C37.20.7, *Guide for Testing Metal-Enclosed Switchgear Rated Up to 38 kV for Internal Arcing Faults.*

Informational Note No. 2: Improper or inadequate maintenance can result in increased fault clearing time of the overcurrent protective device, thus increasing the incident energy. Where equipment is not properly installed or maintained, PPE selection based on incident energy analysis or the PPE category method might not provide adequate protection from arc flash hazards.

Informational Note No. 3: Both larger and smaller available fault currents could result in higher incident energy. If the available fault current increases without a decrease in the fault clearing time of the overcurrent protective device, the incident energy will increase. If the available fault current decreases, resulting in a longer fault clearing time for the overcurrent protective device, incident energy could also increase.

Informational Note No. 4: The occurrence of an arcing fault inside an enclosure produces a variety of physical phenomena very different from a bolted fault. For example, the arc energy resulting from an arc developed in the air will cause a sudden pressure increase and localized overheating. Equipment and design practices are available to minimize the energy levels and the number of procedures that could expose an employee to high levels of incident energy. Proven designs such as arc-resistant switchgear, remote racking (insertion or removal), remote opening and closing of switching devices, high-resistance grounding of low-voltage and 5000-volt (nominal) systems, current limitation, and specification of covered bus or covered conductors within equipment are available to reduce the risk associated with an arc flash incident. See Informative O for safety-related design requirements.

Informational Note No. 5: For additional direction for performing maintenance on overcurrent protective devices, see Chapter 2, Safety-Related Maintenance Requirements.

Informational Note No. 6: See IEEE 1584, *Guide for Performing Arc Flash Calculations*, for more information regarding incident energy and the arc flash boundary for three-phase systems.

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

Equipment	Arc-Flash PPE Category	Arc-Flash Boundary
Panelboards or other equipment rated 240 volts and below Parameters: Maximum of 25 kA available fault current; maximum of 0.03 sec (2 cycles) fault clearing time; minimum working distance 455 mm (18 in.)	1	485 mm (19 in.)
Panelboards or other equipment rated greater than 240 volts and up to 600 volts Parameters: Maximum of 25 kA available fault current; maximum of 0.03 sec (2 cycles) fault clearing time; minimum working distance 455 mm (18 in.)	2	900 mm (3 ft)
600-volt class motor control centers (MCCs) Parameters: Maximum of 65 kA available fault current; maximum of 0.03 sec (2 cycles) fault clearing time; minimum working distance 455 mm (18 in.)	2	1.5 m (5 ft)
600-volt class motor control centers (MCCs) Parameters: Maximum of 42 kA available fault current; maximum of 0.33 sec (20 cycles) fault clearing time; minimum working distance 455 mm (18 in.)	4	4.3 m (14 ft)
600-volt class switchgear (with power circuit breakers or fused switches) and 600-volt class switchboards Parameters: Maximum of 35 kA available fault current; maximum of up to 0.5 sec (30 cycles) fault clearing time; minimum working distance 455 mm (18 in.)	4	6 m (20 ft)
Other 600-volt class (277 volts through 600 volts, nominal) equipment Parameters: Maximum of 65 kA available fault current; maximum of 0.03 sec (2 cycles) fault clearing time; minimum 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 available fault current; maximum of up to 0.24 sec (15 cycles) fault clearing time; minimum working distance 910 mm (36 in.)	4	12 m (40 ft)
Metal-clad switchgear, 1 kV through 15 kV Parameters: Maximum of 35 kA available fault current; maximum of up to 0.24 sec (15 cycles) fault clearing time; minimum working distance 910 mm (36 in.)	4	12 m (40 ft)
Arc-resistant switchgear 1 kV through 15 kV [for clearing times of less than 0.5 sec (30 cycles) with an available 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, 1 kV through 15 kV	N/A (doors closed)	N/A (doors closed)
Parameters: Maximum of 35 kA available fault current; maximum of up to 0.24 sec (15 cycles) fault clearing time; minimum working distance 910 mm (36 in.)	4 (doors open)	12 m (40 ft)
Other equipment 1 kV through 15 kV Parameters: Maximum of 35 kA available fault current; maximum of up to 0.24 sec (15 cycles) fault clearing time; minimum 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.

Informational Note to Table 130.7(C)(15)(a): The following are typical fault clearing times of overcurrent protective devices:

(1) 0.5 cycle fault clearing time is typical for current limiting fuses when the fault current is within the current limiting range.

(2) 1.5 cycle fault clearing time is typical for molded case circuit breakers rated less than 1000 volts with an instantaneous integral trip.

(3) 3.0 cycle fault clearing time is typical for insulated case circuit breakers rated less than 1000 volts with an instantaneous integral trip or relay operated trip.

(4) 5.0 cycle fault clearing time is typical for relay operated circuit breakers rated 1 kV to 35 kV when the relay operates in the instantaneous range (i.e., "no intentional delay").

(5) 20 cycle fault clearing time is typical for low-voltage power and insulated case circuit breakers with a short time fault clearing delay for motor inrush.

(6) 30 cycle fault clearing time is typical for low-voltage power and insulated case circuit breakers with a short time fault clearing delay without instantaneous trip.

Informational Note No. 1: See Table 1 of IEEE 1584TM, *Guide for Performing Arc Flash Hazard Calculations*, for further information regarding Notes b through d.

Informational Note No. 2: An example of a standard that provides information for arc-resistant switchgear referred to in Table 130.7(C)(15)(a) is IEEE C37.20.7, *Guide for Testing Metal-Enclosed Switchgear Rated Up to 38 kV for Internal Arcing Faults.*

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

Equipment	Arc-Flash PPE Category	Arc-Flash Boundary
Storage batteries, dc switchboards, and other dc supply sources Parameters: Greater than or equal to 100 V and less than or equal to 250 V Maximum arc duration and minimum working distance: 2 sec @ 455 mm (18 in.)		
Available fault current less than 4 kA	2	900 mm (3 ft)
Available fault current greater than or equal to 4 kA and less than 7 kA	2	1.2 m (4 ft)
Available fault current greater than or equal to 7 kA and less than 15 kA	3	1.8 m (6 ft)
Storage batteries, dc switchboards, and other dc supply sources Parameters: Greater than 250 V and less than or equal to 600 V Maximum arc duration and minimum working distance: 2 sec @ 455 mm (18 in.)		
Available fault current less than 1.5 kA	2	900 mm (3 ft)
Available fault current greater than or equal to 1.5 kA and less than 3 kA	2	1.2 m (4 ft)
Available fault current greater than or equal to 3 kA and less than 7 kA	3	1.8 m (6 ft.)
Available fault current greater than or equal to 7 kA and less than 10 kA	4	2.5 m (8 ft)

Notes

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

(a) Be evaluated for electrolyte protection

Informational Note: ASTM F1296, *Standard Guide for Evaluating Chemical Protective Clothing*, contains information on evaluating apparel for protection from electrolyte.

(b) Be arc-rated

Informational Note: ASTM F1891, *Standard Specifications for Arc Rated and Flame Resistant Rainwear*, contains information on evaluating arc-rated apparel.

(2) A two-second arc duration is assumed if there is no overcurrent protective device (OCPD) or if the fault clearing time is not known. If the fault clearing time is known and is less than 2 seconds, an incident energy analysis could provide a more representative result.

Informational Note No. 1: When determining available fault current, the effects of cables and any other impedances in the circuit should be included. Power system modeling is the best method to determine the available short-circuit current at the point of the arc. Battery cell short-circuit current can be obtained from the battery manufacturer. See Informative Annex D.5 for the basis for table values and alternative methods to determine dc incident energy. Methods should be used with good engineering judgment.

Informational Note No. 2: The methods for estimating the dc arc-flash incident energy that were used to determine the categories for this table are based on open-air incident energy calculations. Open-air calculations were used because many battery systems and other dc process systems are in open areas or rooms. If the specific task is within an enclosure, it would be prudent to consider additional PPE protection beyond the value shown in this table. Research with ac arc flash has shown a multiplier of as much as 3× for arc-in-a-box [508 mm (20 in.) cube] versus open air. Engineering judgment is necessary when reviewing the specific conditions of the equipment and task to be performed, including the dimensions of the enclosure and the working distance involved.

Table 130.7(C)(15)(c) Personal Protective Equipment (PPE)

Arc-Flash PPE Category	PPE
1	**Arc-Rated Clothing, Minimum Arc Rating of 4 cal/cm² (16.75 J/cm²)[a]** Arc-rated long-sleeve shirt and pants or arc-rated coverall Arc-rated face shield[b] or arc flash suit hood Arc-rated jacket, parka, rainwear, or hard hat liner (AN) **Protective Equipment** Hard hat Safety glasses or safety goggles (SR) Hearing protection (ear canal inserts)[c] Heavy-duty leather gloves[d] Leather footwear (AN)
2	**Arc-Rated Clothing, Minimum Arc Rating of 8 cal/cm² (33.5 J/cm²)[a]** Arc-rated long-sleeve shirt and pants or arc-rated coverall Arc-rated flash suit hood or arc-rated face shield[b] and arc-rated balaclava Arc-rated jacket, parka, rainwear, or hard hat liner (AN) **Protective Equipment** Hard hat Safety glasses or safety goggles (SR) Hearing protection (ear canal inserts)[c] Heavy-duty leather gloves[d] Leather footwear
3	**Arc-Rated Clothing Selected so That the System Arc Rating Meets the Required Minimum Arc Rating of 25 cal/cm² (104.7 J/cm²)[a]** Arc-rated long-sleeve shirt (AR) Arc-rated pants (AR) Arc-rated coverall (AR) Arc-rated arc flash suit jacket (AR) Arc-rated arc flash suit pants (AR) Arc-rated arc flash suit hood Arc-rated gloves[d] Arc-rated jacket, parka, rainwear, or hard hat liner (AN) **Protective Equipment** Hard hat Safety glasses or safety goggles (SR) Hearing protection (ear canal inserts)[c] Leather footwear
4	**Arc-Rated Clothing Selected so That the System Arc Rating Meets the Required Minimum Arc Rating of 40 cal/cm² (167.5 J/cm²)[a]** Arc-rated long-sleeve shirt (AR) Arc-rated pants (AR) Arc-rated coverall (AR) Arc-rated arc flash suit jacket (AR) Arc-rated arc flash suit pants (AR) Arc-rated arc flash suit hood Arc-rated gloves[c] Arc-rated jacket, parka, rainwear, or hard hat liner (AN) **Protective Equipment** Hard hat Safety glasses or safety goggles (SR) Hearing protection (ear canal inserts)[c] Leather footwear

AN: As needed (optional). AR: As required. SR: Selection required.

[a]*Arc rating* is defined in Article 100.

[b]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.

[c]Other types of hearing protection are permitted to be used in lieu of or in addition to ear canal inserts provided they are worn under an arc-rated arc flash suit hood.

[d]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.

Table 130.5(G) Selection of Arc-Rated Clothing and Other PPE When the Incident Energy Analysis Method Is Used

Incident energy exposures equal to 1.2 cal/cm² up to 12 cal/cm²
Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy[a]
Long-sleeve shirt and pants or coverall or arc flash suit (SR)
Arc-rated face shield and arc-rated balaclava or arc flash suit hood (SR)[b]
Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner) (AN)
Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors (SR)[c]
Hard hat
Safety glasses or safety goggles (SR)
Hearing protection
Leather footwear
Incident energy exposures greater than 12 cal/cm²
Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy[a]
Long-sleeve shirt and pants or coverall or arc flash suit (SR)
Arc-rated arc flash suit hood
Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner) (AN)
Arc-rated gloves or rubber insulating gloves with leather protectors (SR)[c]
Hard hat
Safety glasses or safety goggles (SR)
Hearing protection
Leather footwear

SR: Selection of one in group is required.
AN: As needed.
[a]Arc ratings can be for a single layer, such as an arc-rated shirt and pants or a coverall, or for an arc flash suit or a multi-layer system if tested as a combination consisting of an arc-rated shirt and pants, coverall, and arc flash suit.
[b]Face shields with a wrap-around guarding to protect the face, chin, forehead, ears, and neck area are required by 130.7(C)(10)(c). Where the back of the head is inside the arc flash boundary, a balaclava or an arc flash hood shall be required for full head and neck protection.
[c]Rubber insulating gloves with leather protectors provide arc flash protection in addition to shock protection. Higher class rubber insulating gloves with leather protectors, due to their increased material thickness, provide increased arc flash protection.

Table Q.5 Error Precursor Identification and Human Performance Tool Selection *(see Q.5 and Q.6.1)*

Error Precursors	Optimal Tool(s)	Human Performance Tools
Task Demands		**1 Pre-job briefing**
Time pressure (in a hurry)		Identify hazards, assess risk and select and implement risk controls from a hierarchy of methods
High workload (memory requirements)		**2 Job site review**
Simultaneous or multiple tasks		Increased situational awareness
Repetitive actions or monotony		**3 Post-job review**
Critical steps or irreversible acts		Identify ways to improve and best practices
Interpretation requirements		Peer check
Unclear goals, roles, or responsibilities		**4 Procedure use and adherence**
Lack of or unclear standards		Step-by-step procedure read, outcome understood
Work Environment		Circle the task to be performed, check off each task as it is completed
Distractions/interruptions		**5 Self-check with verbalization**
Changes/departures from routine		Stop, Think, Act, Review (STAR)
Confusing displays or controls		Verbalize intent before, during, and after each task
Workarounds/out of service instrumentation		**6 Three-way communication**
Obscure electrical supplies or configurations		Directives are repeated by receiver back to sender; receiver is acknowledged by sender
Unexpected equipment conditions		Use of the phonetic alphabet for clarity
Lack of alternative indication		**7 Stop when unsure**
Personality conflicts		Stop and obtain further direction when unable to follow a procedure or process step or if something unexpected occurs
Individual Capabilities		Maintain a questioning attitude
Unfamiliar with, or first time performing task		**8 Flagging and blocking**
Lack of knowledge (faulty mental model)		Identify (flag) equipment and controls that will be operated
New technique not used before		Prevent access (block) equipment and controls that should not be operated
Imprecise communication habits		
Lack of proficiency or experience		
Indistinct problem-solving skills		
Unsafe attitudes for critical task		
Inappropriate values		
Human Nature		
Stress (limits attention)		
Habit patterns		
Assumptions		
Complacency/overconfidence		
Mind-set		
Inaccurate risk perception		
Mental shortcuts (biases) or limited short-term memory		

Notes:
This table may be utilized when identifying workplace hazards. Identify the error precursors in the left-hand column. Select the optimal human performance tool or combination of tools from the right-hand column. List the selected tool(s) in the centre column beside the associated error. This table does not include all possible human performance tools; however, all tools listed can be applied to each error precursor.

SAFETY MANUAL

APPENDIX G

Hot Work Permit

Revised 10/2016

Warning!

Hot Work in Progress
Watch for Fire!

Rev. 0 – 08/16	**Company Name:**	**Permit Number**

Instructions

Supervisor:
1. Complete precaution checklist at right
2. Complete this form and retain
3. This permit must be saved for 1 year

Permit Information

Hot work done by:

❑ Employee

❑ Contractor

Location/ building and floor:	
Reason for job:	

PPE Required:

❑ Welder's hood with appropriate lenses

❑ Welder's gloves

❑ Leather jacket/clothing

❑ Head Protection

❑ Hearing Protection

❑ Respirator Type/cartridge:_____

❑ Other:_____

Hot Work Performer

Name:

Signature:

I verify the above information has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for this work.

Hot Work Supervisor Approval

Name:

Signature:

Date:

Permit Dates

Permit Activated	Date:	Time:
Permit Expires	Date:	Time:
Date and time work completed	Date:	Time:
Final Fire Watch Check-up	Date:	Time:

Fire Watch Inspector Signature (below)

Signature:

Required Precautions Checklist

❑ Sprinkler protection in service (if present) and appropriate fire extinguishers available

❑ Hot work equipment is in good working order

Requirements within 35 ft. of hot work

❑ Flammable liquid, dust, lint and oily deposits removed and floor swept clean

❑ Explosive atmosphere in area eliminated (hot work is not to be conducted in a classified area unless made safe)

❑ Nearby activities evaluated for conditions that could be effected by hot work

❑ Path of likely sparks evaluated

❑ Combustible floors wet down, covered with damp sand or fire-resistive sheets

❑ Remove other combustible material where possible. Otherwise, protect with approved welding pads, blankets and curtains or metal shields

❑ All wall and floor openings covered

❑ Fire resistive covers and metal shields provided as needed

❑ Protect or shut down ducts and conveyors that might carry sparks to distant combustible material

❑ An appropriate fire extinguisher is located in the hot work area

Hot work on walls, ceilings or roofs

❑ Construction is noncombustible and without combustible covering or insulation

❑ Combustible material on other side of walls, ceilings or roofs is moved away

Hot work on enclosed equipment

❑ Enclosed equipment cleaned of all combustible material

❑ Containers purged of flammable liquid/vapor

❑ Pressurized vessels, piping and equipment removed from service, isolated and vented

Hot work inside of enclosed spaces (i.e., inside of tanks)

❑ Adequate ventilation provided

❑ Atmosphere checked with gas detector per confined space permit

❑ Area purged of any flammable or toxic vapors

❑ Other permits completed as required: Lock-out/tag-out, working at heights, live electrical work

Hot work/Fire Safety Notifications

❑ Location of nearest fire alarm known

❑ If no alarm present, what method will be used to raise the alarm? (List in other precautions area below)

❑ Escape routes maintained and known by personnel

Fire Watch/Hot work area monitoring

❑ Fire watch will be provided for a minimum of 30 minutes after work has ceased.

❑ Fire watch is provided with suitable extinguishers

❑ Fire watch trained in use of equipment and in sounding alarm

Other Precautions/Special Instructions:

❑ _____

_____

WARNING!

HOT WORK IN PROGRESS
WATCH FOR FIRE!

IN CASE OF EMERGENCY:

Call:
At:

FIRE WATCH

Maintain fire watch throughout work. Watch must be maintained uninterrupted throughout lunch, breaks and ensuing shifts.

Complete inspection of work area and adjacent areas must be conducted every 30 minutes for 1 hour after work is complete. Work area shall be checked at the end of the work day.

SAFETY MANUAL

APPENDIX H

Forklift Evaluations

FORKLIFT CERTIFICATION/EVALUATION FORM

Driver: _____ Employee No: _____

Examiner: _____ Date: _____

Forklift Type: Powered Industrial Truck _____ Rough Terrain _____

Forklift Equipment Number: _____

This Examiner Training Form will serve as your guide and permanent record of training for each student. Read it carefully and complete each of the four parts. Part Four will be used as a guide by the driving skills examiner. The pre-operational checks may be performed individually or as a group.

		Instructor's Signature	**Date**
Part 1	Classroom Instruction Videos		
Part 2	Written Exam (Scores)		
Part 3	Pre-operational Check		
Part 4	Operation and Road Test		

Instructor: Observe and score the Operator on the following items. If the Operator fails to operate the forklift in a safe manner, the operator shall not pass, and shall repeat the Operational and Road Test. A passing score shall be determined by properly operating the forklift in each of the areas outlined below. A check mark shall indicate unsatisfactory completion of the task.

	1	Did not raise fork before moving vehicle
	2	Incorrect position for insertion
	3	Incorrect positioning for pickup of load
	4	"Skidded" load on insertion of forks or placement of load
	5	Did not raise load before moving vehicle
	6	Did not tilt load against backrest before moving vehicle
	7	Did not look in direction of travel
	8	Did not look over both shoulders before backing
	9	Did not drive smoothly to destination
	10	Nudged one or more barriers or structures with vehicle or load
	11	Requires excess maneuvering when entering aisle, placing load or stacking
	12	Fork lowered (dragging) while vehicle in motion or fork raised while vehicle in motion
	13	Did not use horn to warn pedestrians – before backing (if unit not equipped with reverse alarm) or at blind corners
	14	Load not deposited smoothly or properly
	15	Did not use proper safety equipment shoes, hats, etc.
	16	Operator used radio headset or dark glasses
	17	Vehicle not properly secured before leaving seat
	18	Operator failed to stay within reasonable boundaries of course

Comments: _____

SAFETY MANUAL

APPENDIX I

Daily Aerial Lift
Inspection Checklist

DAILY AERIAL LIFT INSPECTION FORM

LIFT #: _____ **Inspector:** _____

Job #: **Week Beginning:**

Instruction:
Each aerial lift will be operationally tested and visually inspected each day. The designated inspector will place a (√) in the appropriate box when an item passes inspection. Leave the box empty and note a brief description of any problem. Immediately notify the Foreman of any aerial lift deficiencies. *The Foremen will forward this inspection form to the Safety Dept. at the end of each week.*

Operating Controls (Operational)	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Maintenance Needed
Emergency Stop & Brakes								
Base Operation Controls								
Basket Operation Controls								
Foot Controls (if applicable)								
Safety Signs (Readable)								
Boom								
Hydraulic Leaks								
Extension Chain & Pivot Pins								
Electrical Lines								
Basket Cage and Gate								
Anchorage Points								
Base (Visual)								
Broken, Cracked or Loose Parts								
Leaks								
Electrical								
Tires & Outriggers								
Back Up Alarm & Manual								
Engine Compartment (Visual)								
Oil Level								
Fuel Level								
Belt, Hose & Motor Condition								
Battery & Electrical								

Addition Notes: _____

Dept. Foreman Signature: _____ Date: _____

SAFETY MANUAL

APPENDIX J

Confined Space Permits

CONFINED SPACE ENTRY PERMIT

SPECIAL EQUIPMENT REQUIRED FOR ENTRY, TASKS AND RESCUE

PERSONAL EQUIPMENT

- ☐ GOGGLES
- ☐ FULL-FACE SHIELD
- ☐ HARD HAT
- ☐ SAFETY SHOES
- ☐ BOOTS
- ☐ HEARING PROTECTION
- ☐ LIFE JACKET
- ☐ FULL COVERAGE CLOTHING
- ☐ GLOVES
- ☐ RESPIRATOR
- ☐ LIFELINE
- ☐ SAFETY NET
- ☐ _____ OTHER: _____

TASK EQUIPMENT:

- ☐ LIGHTING TO BE EXPLOSION-PROOF
- ☐ LIGHTING AND TOOLS TO BE LOW VOLTAGE
- ☐ POWER TOOLS TO BE AIR DRIVEN
- ☐ GROUND-FAULT CIRCUIT INTERRUPTERS ON ALL EQUIPMENT AND LIGHTING
- ☐ OTHER: _____

TEAM EQUIPMENT:

☐ VENTILATION: _____

☐ COMMUNICATIONS METHOD/EQUIPMENT: _____

☐ RESCUE EQUIPMENT: _____

☐ OTHER: _____

EMERGENCY PHONE NUMBERS:

FUNCTION	NO.	NAME
Rescue Supervisor		
Emergency Supervisor		
Fire Department		
Medical		

CONFINED SPACE ENTRY PERMIT

PREPARATION CHECK LIST (INITIAL EACH WHEN COMPLETED OR MARK "NA" IF NOT APPLICABLE)

_____ AFFECTED DEPARTMENTS NOTIFIED OF SERVICE INTERRUPTION

_____ HAZARDOUS ENERGY DE-ENERGIZED AND LOCKED OUT

_____ INCOMING LINES BLINDED, DISCONNECTED OR CAPPED

_____ BARRIERS ARE INSTALLED TO PROTECT AGAINST EXTERNAL HAZARDS

_____ VENTILATION IS MAINTAINING A NON-HAZARDOUS ATMOSPHERE

_____ TESTS INDICATE ATMOSPHERE IS WITHIN ALLOWANCE LIMITS

_____ RESCUE TEAM NOTIFIED AND "READY"

_____ INVOLVED PERSONNEL BRIEFED ON HAZARDS & PROCEDURES

_____ "HOT WORK" PERMIT POSTED WITH ENTRY PERMIT

_____ OTHER PERMITS POSTED (SPECIFY):

_____ OTHER (SPECIFY):

TESTING & MONITORING RECORD

CHEMICAL OR ATTRIBUTE	ALLOWABLE UNITS	DATE TIME	/ / : AM / PM	/ / : AM / PM	/ / : AM / PM	/ / : AM / PM	/ / : AM / PM	/ / : AM / PM	/ / : AM / PM	/ / : AM / PM
OXYGEN	19.5 – 23-5%									
FLAMMABILITY	<10% LEL									
CARBON MONOXIDE	<35 PPM									
HYDROGEN SULFIDE	<10 PPM									
TEMPERATURE										
TESTER'S INITIAL										

CONFINED SPACE ENTRY PERMIT

ALTERNATIVE PROTECTION PROCEDURES

SPACE DOES NOT REQUIRE CONFINED SPACE PERMIT (NO POTENTIAL HAZARDS)

YES	NO	N/A	
			WORKPLACE DECISION FLOW CHART PROCESS WAS APPLIED AND "PERMIT REQUIRED CONFINED SPACE" DOES NOT APPLY.
			DETERMINED THAT VENTILATION ALONE IS SUFFICIENT TO MAINTAIN THE PERMIT SPACE SAFE FOR ENTRY AND WORK TO BE PERFORMED WITHIN THE SPACE INTRODUCES NO ADDITIONAL HAZARD.
			DATA GATHERED PREVIOUSLY UNDER FULL PERMIT PROGRAM, AND IS AVAILABLE.
			OPENINGS ARE GUARDED TO PROTECT FROM FALLING OBJECTS.
			INTERNAL ATMOSPHERIC TESTING WILL BE PROVIDED PERIODICALLY (EVERY HOUR)
			FLOW CHART IS PROVIDED TO SHOW COMPLIANCE

_____

SUPERVISOR DATE

AUTHORIZED PERSONNEL:

ENTRY SUPERVISORS: _____

ATTENDANTS: _____

RESCUE SUPERVISORS: _____

EMERGENCY SUPERVISORS: _____

TEST TECHNICIANS: _____

CONTRACTOR REPS: _____

ENTRANTS: _____

_____

OTHERS: _____

_____

ENTRY AUTHORIZATION BY ENTRY SUPERVISOR: I HAVE VERIFIED THAT APPROPRIATE ENTRIES HAVE BEEN MADE ON THIS PERMIT, THAT ALL TESTS SPECIFIED BY THE PERMIT HAVE BEEN CONDUCTED AND THAT ALL PROCEDURES AND EQUIPMENT SPECIFIED BY THE PERMIT ARE IN PLACE. I HAVE CONCLUDED THAT THIS PROVIDES SAFE CONDITIONS FOR ENTRY AND WORK IN THIS CONFINED SPACE.

PRINTED NAME: _____

SIGNATURE: _____

DATE: _____ TIME: _____

SAFETY MANUAL

APPENDIX K

Cranes

New Crane Standard Facts

1. **When will the rule be effective?**
   November 8, 2010.

2. **Is every requirement of the rule effective at the same time?**
   No. While most of the requirements in the new rule are effective 90 days after publication in the *Federal Register*, which occurred on August 9, 2010, there are certain provisions that have delayed effective dates ranging from 1 year to 4 years from the effective date of the rule.

3. **Where can I find a copy of the rule?**
   The rule is available at http://www.osha.gov/FedReg_osha_pdf/FED20100809.pdf or at http://edocket.access.gpo.gov/2010/pdf/2010-17818.pdf.

4. **How will this rule improve worker safety on construction sites with cranes and derricks?**
   This new standard will comprehensively address key hazards related to cranes and derricks on construction worksite, including the four main causes of worker death and injury: electrocution, crushed by parts of the equipment, struck-by the equipment/load, and falls. Some of the significant requirements in this new rule include: a pre-erection inspection of tower crane parts; use of synthetic slings in accordance with the manufacturer's instructions during assembly/disassembly work; assessment of ground conditions; qualification or certification of crane operators; procedures for working in the vicinity of power lines. It is anticipated that this final standard will prevent 22 fatalities and 175 non-fatal injuries each year.

5. **How is the final rule different from the rule proposed October 9, 2008?**
   Several provisions have been changed or modified from the proposed rule. These changes include:
   - Employers must comply with local and state operator licensing requirements when they meet the minimum criteria specified § 1926.1427.
   - The clarification that employers must pay for certification or qualification of their currently uncertified or unqualified operators.
   - A clarification that written certification tests may be administered in any language understood by the operator candidate.
   - When employers with employees qualified for power transmission and distribution are working in accordance with § 1910.269, that employer will be considered in compliance with this final rule's requirements for working around power lines.
   - Employers must use a qualified rigger for rigging operations during assembly/disassembly.
   - Employers must perform a pre-erection inspection of tower cranes.

6. **When will compliance assistance materials be available to the public?**
   OSHA has posted a preliminary fact sheet and this FAQ and anticipates having fact sheets and other material available soon. These materials will be posted on this website as they becomes available.
7. **Does the final rule require crane operators to be qualified or certified?**
   Yes. This final rule requires operators of most types of cranes to be qualified or certified under

one of the methods set forth in § 1926.1427. Employers have up to four years to ensure that their operators are qualified or certified, unless they are operating in a state or city that has operator requirements.

8. **Does the final rule allow cities or states to have their own licensing or certification program for crane operators?**
   Yes; however, that city or state's requirements must meet the minimum criteria that is set forth in this rule at § 1926.1427.

9. **Does the final rule require riggers to be certified?**
   No, riggers are not required to be certified. However, riggers must be a qualified person for the performance of specified hoisting activities such as during assembly/disassembly work and those that require employees to be in the fall zone to handle a load. The rigger would be considered qualified through possession of a recognized degree, certificate, or professional standing; or by extensive knowledge, training, and experience, successfully demonstrating the ability to solve/resolve problems related to rigging work and related activities.

10. **Does the final rule require signal persons to be certified?**
    No, signal persons do not have to be certified. However, the employer of a signal person must ensure that the signal person is qualified. This qualification must be done by a qualified evaluator, which may be a third party or an employee of the signal person's employer. The evaluator must demonstrate that he or she can accurately assess whether an individual meets the qualification requirements specified by this final rule for signal persons.

11. **How does this new rule affect those states that administer their own OSHA-approved safety and health plan?**
    State Plans must have job safety and health standards that are “at least as effective as” comparable federal standards. State Plans have the option to promulgate more stringent standards or standards covering hazards not addressed by federal standards.

12. **How was this rule developed?**
    OSHA's Advisory Committee on Construction Safety and Health (ACCSH) established a workgroup to develop recommended changes to the requirements in Subpart N for cranes and derricks. ACCSH then recommended that the Agency use negotiated rulemaking to develop a new rule. The Cranes and Derricks Negotiated Rulemaking Committee (C-DAC) was established and provided a consensus draft document to the Agency. OSHA used this document to develop the proposed rule. After reviewing public comments on that proposed rule and information received during four days of public hearings, OSHA developed this final rule.

13. **What interests were represented on the C-DAC committee?**
    The 23 C-DAC members represented a wide variety of interests. These included crane and derrick manufacturers, suppliers, owners, leasing companies, construction companies that use cranes and derricks, general contractors, labor organizations representing construction employees who operate and work with cranes, electric utilities, the insurance industry and government.

Subpart CC – Cranes and Derricks in Construction: Operator Qualification and Certification

This fact sheet explains the operator qualification and certification requirements of subpart CC – Cranes and Derricks in Construction, as specified in 29 CFR 1926.1427. State or local government licensing is effective November 8, 2010. Other certification and qualification is effective November 10, 2014.

Who needs to be certified or qualified?

Any person engaged in a construction activity who is operating a crane covered by the new cranes and derricks rule, except:

- sideboom cranes*
- derricks*
- equipment with a rated hoisting/lifting capacity of 2,000 pounds or less*

*Operators of the listed equipment must meet the criteria for minimum expertise described in the applicable section in subpart CC.

Are operators of digger derricks required to be qualified or certified?

Yes, unless the digger derrick is being used to auger holes for poles carrying electric or telecommunication lines, place or remove the poles, or handle associated materials to be installed on or removed from the poles.

What is required in the testing for certification?

Certification has two parts:

1. A written examination that includes the safe operating procedures for the particular type of equipment the applicant will be operating and technical understanding of the subject matter criteria required in 1926.1427(j).

2. A practical exam showing the applicant has the skills needed to safely operate the equipment, including, among other skills, the ability to properly use load chart information and recognize items required in the shift inspection.

Does an operator need more than one certification?

With respect to certification from an accredited testing organization, an operator must be certified for the *type* and *capacity* of crane he or she is going to operate. Each accredited testing organization develops its own categories for crane type and capacity.

How is an operator certified or qualified?

There are 4 ways that an equipment operator can be qualified or certified and meet OSHA requirements.

1. A certificate from an accredited crane operator testing organization

2. Qualification from the employer through an audited employer program

3. Qualification by the US Military (only applies to employees of Department of Defense or Armed Forces and does not include private contractors)

4. *Licensing by a state or local government (if that licensing meets the minimum requirements set forth by OSHA)

*When a state or local government requires a crane operator license, the crane operator must be licensed accordingly to meet OSHA requirements.

Operator Qualification & Certification (cont.)

Accredited crane operator testing organization.

The testing organization must be accredited by a nationally recognized accrediting agency and test according to the criteria listed at §§ 1926.1427(j)(1) and (j)(2). This certification is portable from employer to employer. The testing organization must have its accreditation reviewed every 3 years. The certificate must note the type and capacity of equipment for which the operator is tested and certified. The certificate is valid for 5 years.

Audited employer program.

An employer may provide a crane operator testing program under the oversight of an independent auditor. An accredited crane operator testing organization must certify the auditor to evaluate the administration of written and practical tests. The auditor must conduct audits of the employer's program according to nationally recognized auditing standards. Crane operator qualification under an employer program is only valid while the operator is an employee of the employer and operating a crane for the employer. The qualification is valid up to 5 years.

U.S. Military.

This qualification applies only to civilian employees of the Department of Defense or Armed Services and is not portable. This qualification does not include employees of private contractors.

Licensing by a government entity.

This license is obtained from a government entity, such as a city or state that has a required certification program. When this license meets the minimum requirements of 1926.1427(e)(2) and (j), OSHA requires a crane operator to have this license when operating in the applicable city, county, or state. This license is not portable outside the boundaries of the government entity that issues the license, and is valid for a maximum of 5 years.

OSHA Facts

Subpart CC – Cranes and Derricks in Construction: Signal Person Qualification

This fact sheet describes the signal person qualification requirements of subpart CC – Cranes and Derricks in Construction, as specified in 29 CFR 1926.1419 and 1926.1428. Other requirements related to signal persons can be found at 29 CFR 1926.1404, 1926.1430, 1926.1431, and 1926.1441. These provisions are effective November 8, 2010.

When is a signal person required?

A signal person is required when:

- The point of operation is not in full view of the operator (1926.1419(a)).
- The operator's view is obstructed in the direction the equipment is traveling.
- Either the operator or the person handling the load determines that a signal person is needed because of site-specific safety concerns.

What does a signal person need to know?

The signal person is considered qualified if he or she:

- Knows and understands the type of signals used at the worksite.
- Is competent in using these signals.
- Understands the operations and limitations of the equipment, including the crane dynamics involved in swinging, raising, lowering and stopping loads and in boom deflection from hoisting loads.
- Knows and understands the relevant signal person qualification requirements specified in subpart CC (1926.1419-1926.1422; 1926.1428).
- Passes an oral or written test and a practical test.

How does a signal person become qualified?

Employers must use one of the following options to ensure that a signal person is qualified (see 1926.1428)

1. ***Third party qualified evaluator***. The signal person has documentation from a third party qualified evaluator showing that he or she meets the qualification requirements.
2. ***Employer's qualified evaluator*** (not a third party). The *employer's qualified evaluator* assesses the individual, determines the individual meets the qualification requirements, and provides documentation of that determination.

This assessment may not be relied on by other employers. Refer to 1926.1401 for definitions of qualified evaluators.

How will an employer show that a signal person is appropriately qualified?

Employers must make the documentation of the signal person's qualifications available at the worksite, either in paper form or electronically. The documentation must specify each type of signaling (e.g., hand signals, radio signals, etc.)for which the signal person is qualified under the requirements of the standard.

When are signal persons required to be qualified?

The qualification requirements for signal persons go into effect on November 8, 2010.

FactSheet

Subpart CC – Cranes and Derricks in Construction: Qualified Rigger

This fact sheet describes the qualified rigger requirements of subpart CC – Cranes and Derricks in Construction, as specified in 29 CFR 1926.1401, 1926.1404, and 1926.1425. These provisions are effective November 8, 2010. This is one in a series of informational fact sheets highlighting OSHA programs, policies or standards. It does not impose any compliance requirements.

When is a *qualified rigger* required?

Employers must use *qualified riggers* during hoisting activities for assembly and disassembly work (1926.1404(r)(1)). Additionally, *qualified riggers* are required whenever workers are within the fall zone and hooking, unhooking, or guiding
a load, or doing the initial connection of a load to a component or structure (1926.1425(c)).

Who can be a *qualified rigger*?

A *qualified rigger* is a rigger who meets the criteria for a qualified person. Employers must determine whether a person is qualified to perform specific rigging tasks. Each *qualified rigger* may have different credentials or experience. A *qualified rigger* is a person that:

- possesses a recognized degree, certificate, or professional standing, or
- has extensive knowledge, training, and experience, and
- can successfully demonstrate the ability to solve problems related to rigging loads.

The person designated as the *qualified rigger* must have the ability to properly rig the load for a particular job. It does not mean that a rigger must be qualified to do every type of rigging job. Each load that requires rigging has unique properties that can range from the simple to the complex. For example, a rigger may have extensive experience in rigging structural components and other equipment to support specific construction activities. Such experience may have been gained over many years.

However, this experience does not automatically qualify the rigger to rig unstable, unusually heavy, or eccentric loads that may require a tandem lift, multiple-lifts, or use of custom rigging equipment. In essence, employers must make sure the person can do the rigging work needed for the exact types of loads and lifts for a particular job with the equipment and rigging that will be used for that job.

Do *qualified riggers* have to be trained or certified by an accredited organization or assessed by a third party?

No. Riggers do not have to be certified by an accredited organization or assessed by a third party. Employers may choose to use a third party entity to assess the qualifications of the rigger candidate, but they are not required to do so.

Does a certified operator also meet the requirements of a *qualified rigger*?

A certified operator does not necessarily meet the requirements of a *qualified rigger*. Determining whether a person is a *qualified rigger* is based on the nature of the load, lift, and equipment used to hoist that load plus that person's knowledge and experience. A certified/qualified operator may meet the requirements of a *qualified rigger*, depending on the operator's knowledge and experience with rigging.

Subpart CC – Cranes and Derricks in Construction: Assembly/Disassembly

This fact sheet explains the assembly and disassembly requirements of subpart CC – Cranes and Derricks in Construction, as specified in 29 CFR 1926.1403-1926.1406 and 192.1412. These provisions are effective November 8, 2010.

Procedures

Under this standard, employers must comply with all manufacturer prohibitions regarding assembly and disassembly. However, the standard generally allows employers to choose between the manufacturer's procedures or their own (see exception below for synthetic slings procedures). Employer procedures must be developed by a "qualified person" and must satisfy a number of specified requirements, such as providing adequate support and stability for all parts of the equipment, and positioning employees involved to minimize exposure to any unintended movement or collapse.

Assembly/Disassembly responsibilities

- The rule requires the work to be directed by an A/D (Assembly/Disassembly) director. The A/D director must meet the criteria for both a "competent person" and a "qualified person," which are defined terms in this rule, or must be a "competent person" assisted by a "qualified person."
- The A/D director must understand the applicable procedures.
- The A/D director must review the procedures immediately prior to beginning work unless he or she understands the procedures and has used them before for that equipment type and configuration.
- The A/D director must ensure that each member of the crew understands his or her tasks, the hazards of the tasks, and any hazardous positions or locations to avoid.
- The A/D director must verify all capacities of any equipment used, including rigging, lifting lugs, etc.
- The A/D director must also address hazards associated with the operation, including 12 specified areas of concern: site and ground conditions, blocking material, proper location of blocking, verifying assist crane loads, boom & jib pick points, center of gravity, stability upon pin removal, snagging, struck by counterweights, boom hoist brake failure, loss of backward stability, and wind speed and weather.

Inspection

- Upon completion of assembly, but before use, the equipment must be inspected by a "qualified person" to ensure that it is configured in accordance with the manufacturer equipment criteria. If these criteria are unavailable, the employer's "qualified person," with the assistance of a registered professional engineer if necessary, must develop the appropriate configuration criteria and ensure that these criteria are met.

General requirements

- A crew member who moves out of the operator's view to a location where the crew member could be injured by movement of the equipment (or load) MUST inform the operator before going to that location. The operator must not move the equipment until that crew member informs the operator that he or she has relocated to a safe position.
- Employees must never be under the boom or jib when pins (or similar devices) are being removed, unless it is required by site constraints and the A/D director has implemented procedures that minimize the risk of unintended movement and the duration and extent of exposure under the boom.
- Component weights must be readily available for all components to be assembled.
- All rigging must be done by a "qualified rigger."
- Pins may not be removed during disassembly when the pendants are in tension.

- Booms supported only by cantilevering must not exceed manufacturer limitations or RPE limitations, as applicable.
- Component selection and equipment configuration that affects the capacity or safe operation of the equipment must be in accordance with manufacturer requirements and limits or RPE requirements and limits, as applicable.

Synthetic slings

- The employer must follow manufacturer procedures when using synthetic slings during assembly or disassembly rigging (even when the employer has developed its own A/D procedure as an alternative to the manufacturer's other procedures.)
- Synthetic slings must be protected from abrasive, sharp or acute edges, and configurations that might reduce the sling's rated capacity.

Outriggers and stabilizers

When outriggers or stabilizers are used or are necessary in light of the load to be handled and the operating radius:

- Outriggers and stabilizers must be fully extended or, if permitted by manufacturer procedures, deployed as specified in the load chart.
- Outriggers must be set to remove equipment weight from the wheels, except for locomotive cranes.
- Outrigger floats, if used, must be attached to the outriggers; stabilizer floats, if used, must be attached to the stabilizers.
- Each outrigger or stabilizer must be visible to the operator or to a signal person during extension and setting.
- Outrigger and stabilizer blocking must be placed under the float/pad of the jack or, if there is no jack, under the outer bearing surface of the outrigger or stabilizer beam. Blocking must also be sufficient to sustain the loads and maintain stability and must be properly placed.

Tower cranes

- Tower cranes are subject to additional requirements for erecting, climbing and dismantling, including a pre-erection inspection (29 CFR 1926.1435).

SAFETY MANUAL

APPENDIX L

Trenching and Excavation

Revised 10/2016

Daily Trenching Log

Project:	Location:
Competent Person:	
Description of excavation:_____ _____ ____	
Were visual soil tests made: **(See tests on back)** Yes _____ No_____ If yes, what type? _____	
Were manual soil tests made: **(See tests on back)** Yes _____ No _____ If yes, what type? _____	
Surface encumbrances: Yes _____ No _____ If yes, what type? _____	
Water conditions: Wet _____ Dry _____ Submerged _____	
Protective system used: Sloping _____Slope of Sides: _____ **(See Required Slopes)** Trench Box _____ Wood shoring _____ Other _____	
Type of soil determined: Stable Rock _____ Type A _____ Type B _____ Type C _____ **(See Soil Classifications)**	
Measurements of trench: Depth _____ Length _____ Width Top _____ Width Bottom_____	
Is a ladder within 25 feet of all workers: Yes _____ No _____	
Is excavated material stored two feet or more from edge of excavation: Yes _____ No _____	
Are employees exposed to public vehicular traffic: Yes _____ No _____ If yes, what protection is provided? _____	
Are other utilities protected: Yes _____ No _____ Water___ Gas____ Electric_____ Phone_____ TV _____ Other_____	
Periodic inspections done: Yes _____ No _____	
Signature:_____ Date:_____ Time:_____	

Soil Classifications:

STABLE ROCK is natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed. It is usually identified by a rock name such as granite or sandstone. Determining whether a deposit is of this type may be difficult unless it is known whether cracks exist and whether or not the cracks run into or away from the excavation.

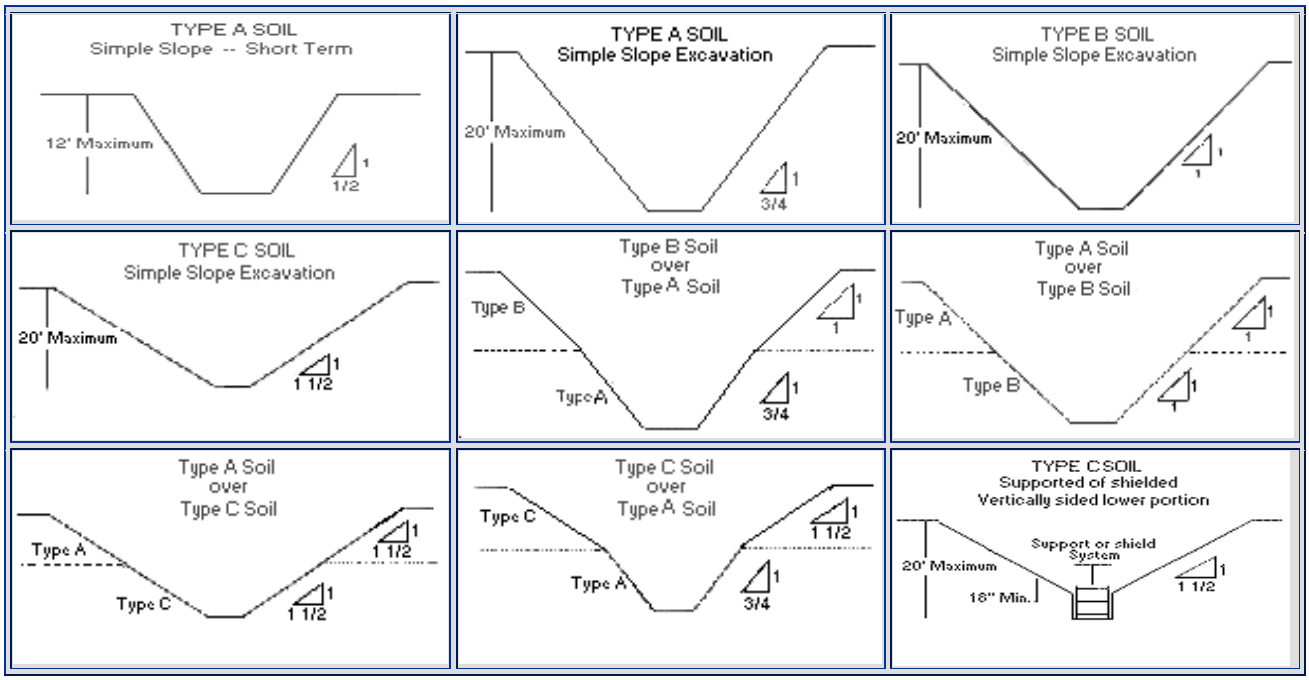
TYPE A SOILS are cohesive soils with an unconfined compressive strength of 1.5 tons per square foot (tsf) or greater. Examples of Type A cohesive soils are often: clay, silty clay, sandy clay, clay loam and, in some cases, silty clay loam and sandy clay loam. (No soil is Type A if it is fissured, is subject to vibration of any type, has previously

been disturbed, is part of a sloped, layered system where the layers dip into the excavation on a slope of 4 horizontal to 1 vertical (4H:1V) or greater, or has seeping water.

TYPE B SOILS are cohesive soils with an unconfined compressive strength greater than 0.5 tsf but less than 1.5 tsf. Examples of other Type B soils are: angular gravel; silt; silt loam; previously disturbed soils unless otherwise classified as Type C; soils that meet the unconfined compressive strength or cementation requirements of Type A soils but are fissured or subject to vibration; dry unstable rock; and layered systems sloping into the trench at a slope less than 4H:1V (only if the material would be classified as a Type B soil).

TYPE C SOILS are cohesive soils with an unconfined compressive strength of 0.5 tsf or less. Other Type C soils include granular soils such as gravel, sand and loamy sand, submerged soil, soil from which water is freely seeping, and submerged rock that is not stable. Also included in this classification is material in a sloped, layered system where the layers' dip into the excavation or have a slope of four horizontal to one vertical (4H:1V) or greater.

SLOPE CONFIGURATIONS



ANGLE OF REPOSE: Stable Rock–90; Type A Long–53; Type B–45; Type C- 34

VISUAL TESTS:

The entire excavation site is observed, including the soil adjacent to the site and the soil being excavated.

Estimate soil. Observe spoil for estimating soil consistency and particle sizes. Soil with fine grained particles is cohesive and soil primarily of coarse grained sand or gravel is granular.

Soil sizes. Soil that remains in tight clumps is cohesive. Soil that breaks up easily is granular.

Cracks. Observe sides of excavation. Cracks indicate fissured material. Spalling or chunks of the side falling off could indicate fissured material. This also could indicate moving soil and instable ground conditions.

Existing utilities. Observe the area for existing utilities indicating previously disturbed areas.

Layered systems. Examine layered systems to identify if the layers slope toward the excavation. Estimate the degree of slope. Weaker soil as layers could pose a failure potential.

Water. Observe for seeping or running water. High water tables, seeping water, running water leads to weak soils.

Vibration. Observe the area around the excavation for vibration that may affect stability.

MECHANICAL TESTS:

Penetrometer: Penetrometers are direct-reading. spring-operated instruments used to determine the unconfined compressive strength of saturated cohesive soils.

Shearvane (Torvane). The blades of the vane are pressed into a level section of undisturbed soil, and the torsional knob is slowly turned until soil failure occurs. The direct instrument reading must be multiplied by 2 to provide results in tons per square foot (tsf) .

Thumb Penetration Test. Press the thumb firmly into the soil. If the thumb makes an indentation in the soil only with great difficulty, the soil is probably Type A. If the thumb penetrates no further than the length of the thumb nail, it is probably Type B soil, and if the thumb penetrates the full length of the thumb, it is Type C soil.

Dry Strength Test. Dry soil that breaks into clumps that do not break into smaller clumps (and the soil can be broken only with difficulty), the soil is considered unfissured unless there is visual indication of fissuring and tends to Type A. Dry soil that falls into clumps that subsequently break into smaller clumps (and the smaller clumps can be broken only with difficulty) is probably clay in combination with gravel, sand, or silt and tends to Type B. Dry soil that crumbles freely or with moderate pressure into individual grains is granular tends to Type C.

Plasticity or wet thread test. This test is conducted by molding a moist sample of the soil into a ball and attempting to roll it into a thin thread approximately 1/8 inch (3 mm) in diameter (thick) by 2 inches (50 mm) in length. The soil sample is held by one end. If the sample does not break or tear, the soil is considered cohesive and tends toward Type A or B.

SAFETY MANUAL

APPENDIX M

OSHA Inspection

OSHA Inspection Site Documentation

Date:_____ Time Arrived on Site: _____

Company: _____

Jobsite Name: _____

Jobsite Address: _____

_____

Superintendent / Foreman: _____

Compliance Officer's Name: _____

Local OSHA Office: _____

First Person Contacted: _____

Reason for Inspection (circle one):

Scheduled Complaint Referral Drive By Accident Other

If Complaint, what was item(s)? _____

_____

If Drive By, what was the reason for the stop? _____

_____

If Accident, what was the situation? _____

_____

General Contractor / Construction Manager: _____

List all of your sub-contractors on site: _____

_____

_____

How to survive an OSHA inspection:

While many business owners cringe at the thought of an OSHA inspector coming onto their jobsite, in reality they have little to fear. Be supportive of their jobs but keep in mind they are still Compliance Officers and can issue citations. Their job is to enforce the regulations.

1. BE NICE. Treat the person with respect. Know your rights.
2. Don't run and hide or leave the site or stop working. This can only have a negative effect.
3. Remember, this Compliance Officer is there to help prevent injuries to your employees and assist with compliance of the federal code. They are not there on behalf of the employer.
4. Follow your company's procedures during an inspection. Some companies may want a safety officer or company representative there to assist in the inspection. Know what to do and when before this happens.
5. In the event that you need a company rep. there for the inspection, BE NICE and ask if the Compliance Officer would be willing to wait for him or her to show up. In Northwest Ohio the wait is usually 20 – 30 minutes.
6. Treat the Compliance Officer as a guest AND DO NOT let them wander the project blindly.
7. If the Compliance Officer takes a picture or video, you should do the same.

What to expect if a CSHO shows up:

Presenting Credentials

At the beginning of the inspection the Compliance Officer shall locate the owner representative, operator or agent in charge at the workplace and present credentials. On construction sites this will most often be the representative of the general contractor or construction manager.

Refusal to Permit Inspection

The OSHA Act "provides that Compliance Officers may enter without delay and at reasonable times any establishment covered under the Act for the purpose of conducting an inspection". Unless the circumstances constitute a recognized exception to the warrant requirement (i.e., consent, third party consent, plain view, open field, or exigent circumstances) an employer has a right to require that the Compliance Officer seek an inspection warrant prior to entering an establishment and may refuse entry without such a warrant. Not recommended.

Opening Conference

The Compliance Officer shall attempt to inform all effected employers of the purpose of the inspection, provide a copy of the complaint if applicable, and shall include employees unless the employer objects. The opening conference shall be kept as brief as possible and may be expedited through use of an opening conference handout.

Conditions of the worksite shall be noted upon arrival as well as any changes which may occur during the opening conference. The Compliance Officer shall outline in general terms the scope of the inspection, including employee interviews, physical inspection of the workplace and records, possible referrals, discrimination complaints, and the closing conference(s).

Walk around Inspection

The main purpose of the walk around inspection is to identify potential safety and/or health hazards in the workplace. The Compliance Officer shall conduct the inspection as to eliminate unnecessary personal exposure to hazards and to minimize disruption of the workers. Interviews of employees are possible. Employees have a right to representation and/or to refuse to talk with the Compliance Officer.

Closing Conference

At the conclusion of an inspection, the Compliance Officer conduct a closing conference with the employers and the employee representatives, jointly or separately, as circumstances dictate. The closing conference may be conducted on site or by telephone as deemed appropriate by the CSHO. The closing conference is to discuss possible citations, hazards observed, recommendations and items proposed for needing correction.

VISITOR'S JOB SITE APPROVAL FORM

COMPANY NAME

Name of Visitor Name of Foreman Date

Note: For safety reasons, this form must be completed before approval can be received for any visitor job site visit.

Name of agency to be represented:	
Name of immediate supervisor for agency representative:	
Telephone number for agency:	
Location of area to be visited:	

Job Site Visit: _____ Approved
_____ Denied

Signature of Visitor Signature of Foreman Date

KEEP IN JOB FILE, UNLESS REQUIRED TO SEND IN TO THE OFFICE

SAFETY INFORMATION
FOR NEW EMPLOYEES ON JOB SITES

Company Name _____ Name of Foreman _____

Name of Employee _____ Job Location _____

The foreman shall discuss the following topics with new employees on their first day at the job site:

	SAFETY ATTITUDE: No job is so important or urgent that the necessary time cannot be taken to do it safely. Each employee is responsible for prevention of accidents to themselves, property, equipment and fellow workers.
	STANDARD JOB PROCEDURES: Discuss the employee's job site duties and how they can be done safely. Job site hazard analysis should be reviewed before any new job is started.
	PERSONAL PROTECTIVE EQUIPMENT: Discuss how and when to use eye protection, hearing protection, hard hats, dust masks or respirators, safety shoes, lockout/tagout, and any other means of protection.
	EMERGENCY PROCEDURES: Discuss what to do in case of accident or fire and where to find the written directions to the job site for the emergency crew. Point out location of fire extinguisher and how to operate it. Point out emergency shut-offs (electric, gas, water, etc.)
	MOTORIZED VEHICLES AND EQUIPMENT: Discuss safe operating procedures, seat belt usage, and defensive driving requirements. Equipment should not be operated without training.
	FALL PROTECTION: Discuss the use of safety harnesses, guardrails, ladder tie-offs, etc.
	SAFETY AWARENESS: Safety awareness should be developed by every employee and applied to every job. Employees should consider it a duty to call unsafe acts or conditions to the attention of other employees and the foreman.
	SAFETY MEETINGS: Employees shall actively participate in all safety meetings.
	MATERIAL SAFETY DATA SHEETS (MSDS): Show the location of the MSDS book and review how items are cataloged within the book.
	WRITTEN SAFETY MANUAL: Show the location of written safety manual and review where items are located in manual.

_____ _____

Signature of Employee Date

KEEP IN JOB FILE UNLESS REQUIRED TO SEND IN TO THE OFFICE