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Responsible Safety Person:
Devon Molitor
Corporate Safety Director



Cirks Construction Inc.
Health, Safety, and Environmental Manual

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Corporate Safety Director

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Responsible Safety Person:
Devon Molitor
Corporate Safety Director

Responsibility Designation

Designation	Employee
Responsible Safety Person	Devon Molitor Corporate Safety Director

Employee	Desk Phone	Mobile Phone
Devon Molitor	(714) 632-6717	(714) 904-0825

Competent Person

An OSHA "competent person" is defined as *"one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them"* [[29 CFR 1926.32\(f\)](#)]. By way of training and/or experience, a competent person is knowledgeable of applicable standards, is capable of identifying workplace hazards relating to the specific operation and has the authority to correct them. Some standards add additional specific requirements which must be met by the competent person.

Responsible Safety Person:
Devon Molitor
Corporate Safety Director

Policy Statement Mission Statement and Code of Safe Practices

POLICY STATEMENT

The Occupational Safety and Health Act of 1970 clearly states our common goal of safe and healthful working conditions to be the first consideration in operating this business.

Safety and health in our business must be part of every operation. Without question, it is every employee's responsibility at all levels.

It is the intent of CCI to comply with all laws and regulations as they relate to Safety. To do this, we must constantly be aware of conditions in all work areas that can produce injuries. No employee is required to work at a job he/she knows is not safe or healthful. Inform your supervisor immediately of any situation beyond your ability or authority to correct.

The personal safety and health of each employee of this company is of primary importance. Prevention is a key focus in eliminating the hazardous condition(s) or unsafe act(s) in the workplace.

CCI strives to maintain a safety and health program conforming to the best practices of organizations of its type. To be successful, such a program must embody proper attitudes toward injury and illness prevention on the part of supervisors and employees. It also requires cooperation in all safety and health matters, not only between supervisor and employee, but also between each employee and co-workers. Only through such a cooperative effort can a safety program in the best interest of all be established and preserved.

In all instances we will adhere to the health and safety standard/instruction that is greater, in order to offer the greatest protection to our employees, partners, and the public.

Our objective is a safety and health program that will reduce the number of injuries and illnesses to an absolute minimum, not merely in keeping with, but surpassing, the best experience of operations similar to ours.

Responsible Safety Person:
Devon Molitor
Corporate Safety Director

SAFETY MISSION STATEMENT

At KDC, our commitment is to the safety and health of our employees, partners, and the public. Our mission is to ensure that everyone works safely each day. Through proactive measures, training, and continuous reinforcement, we strive to create a culture of safety excellence where all employees are empowered and responsible for maintaining a safe work environment.

SAFETY AND HEALTH PROGRAM

The safety and health program will include:

- Providing mechanical and physical safeguards to the maximum extent possible.
- Conducting safety and health inspections to identify health hazards as well as unsafe working conditions and practices, and to comply fully with the safety and health standards for every job.
- Training all employees in good safety and health practices.
- Providing necessary personal protective equipment, and instructions for use and care.
- Developing and enforcing safety and health rules and requiring that employees cooperate with these rules as a condition of employment.
- Investigating, promptly and thoroughly, every accident or near miss to find out what caused it and correct the problem so it will not happen again.
- Setting up a system of recognition and awards for outstanding safety service or performance.
- We recognize that the responsibilities for safety and health are shared:
- CCI accepts the responsibilities for leadership of the safety and health program, for its effectiveness and improvement, and for providing the safeguards required to ensure safe conditions.

CODE OF SAFE PRACTICES

It is our policy that everything possible will be done to protect employees, customers, and visitors from accidents. Safety is a cooperative undertaking requiring participation by every employee. Failure by any employee to comply with safety rules will be grounds for corrective discipline. Supervisors shall insist that employees observe all applicable Company, State, and Federal safety rules and practices and take action as is necessary to obtain compliance.

Code of Safe Practices

- All persons shall follow the Code of Safe Practices and render every possible aid to safe operations.
- Supervisors are accountable for ensuring employees follow all safety rules and shall take action as necessary to maintain compliance.

Responsible Safety Person:
Devon Molitor
Corporate Safety Director

- All incidents, unsafe conditions or practices, or near misses must be reported immediately to the jobsite supervisor and the Safety Team utilizing the Incident Reporting Procedure.
- All employees and visitors must adhere to jobsite work attire and Personal Protective Equipment (PPE) requirements. PPE must be evaluated for all work tasks and the appropriate PPE and training shall be provided to protect the head, hands, eyes, face, body, and feet.
- Horseplay is strictly prohibited. Do not run on the jobsite, in the shop, or in the office area.
- Use or possession of firearms, weapons, illegal drugs, or alcoholic beverages is strictly prohibited.
- No one shall be knowingly permitted to work if the employee's ability or alertness is impaired by fatigue, illness, or prescription/over-the-counter drugs.
- Radios or earphones are only permitted on-site if they do not interfere with communication.
- Housekeeping: Keep work areas clean, and free of debris, electrical cords, and other hazards.
- Do not block exits, fire doors, aisles, fire extinguishers, first aid kits, emergency equipment, electrical panels, or traffic lanes.
- All visitors must check in with the jobsite supervisor immediately upon arrival. Only authorized personnel are permitted on the jobsite.
- Daily Risk Assessment (DRA) will be reviewed daily and safety topic(s) will be addressed on the first day of the workweek with everyone on the jobsite.
- All High Hazard Activities: Scaffolding, Trenching/Excavation, Hot Work, Crane Lifts, Confined Space, Roofing, Demolition, and Working from Heights, must have a Safety Plan completed, submitted, reviewed, approved, and communicated. All plans must comply with OSHA regulations.
- Trenching and Excavation shall be pre-planned with 811 Dig Alert Ticket/markings to identify safe work practices, hazard recognition procedures, and soil determination to provide the appropriate shoring/shielding system. Subcontractors are responsible for submitting USA 811 Tickets.
- Fall protection/prevention must be in place when working at heights above 6 feet.
- All employees exposed to equipment and vehicle traffic are required to wear Class II High Visibility clothing (shirts, vests, or jackets) at all times.
- All traffic controls will be established by the State of California Manual of Traffic Controls for Construction and Maintenance Work Zones.

Responsible Safety Person:
Devon Molitor
Corporate Safety Director

- Inspection of ladders (including manufacturer's safety labels) shall occur before use, and ladders may only be used according to the manufacturer's instructions. Ladders must be maintained in good working condition.
- All hand and power tools (including power cords) shall be used according to the manufacturer's instructions, maintained in good working condition, and used appropriately for the specific task. All OSHA regulations must be adhered to.
- All mobile equipment operating on the jobsite shall be inspected and used according to the manufacturer's instructions and shall meet all OSHA regulations.
- Before using any chemicals, SDS warning labels and Safety Data Sheets (SDS) shall be read and all safety information and PPE requirements must be strictly followed.
- Gasoline or other flammable liquids shall be stored and used properly.
- All electrical equipment and systems shall be treated as energized until tested or otherwise proven to be de-energized.
- All energized equipment and installations will be de-energized before the commencement of any work. Proper Lockout/Tagout (LOTO) practices and procedures shall be utilized. If the equipment or installation must be energized for test or other purposes, only qualified and authorized personnel may perform said tasks. The Safety Team must be contacted before the commencement of any energized work.

Responsible Safety Person:
Devon Molitor
Corporate Safety Director

Abrasive Blasting

PURPOSE

To outline the requirements and guidelines for safe abrasive blasting operations for **Cirks Construction Inc.**; hereafter will be referred to as "CCI,"

RESPONSIBILITIES

Supervisor

- Ensure that all personnel exposed to sandblasting are trained in the awareness and avoidance of unsafe work practices
- All employees subject to silica exposure will be provided information about adverse health effects, work practices, and use and care of personal protective equipment
- Ensure that the initial determination for potential Abrasive Blasting or particulate exposure has been accomplished before work begins

Personnel

- Uses the protective and safety equipment as assigned and directed
- Abides by the requirements of this and site-specific work practices

POLICY

Abrasive blasting uses compressed air or water to direct a high velocity stream of an abrasive material to clean an object or surface, remove burrs, apply a texture, or prepare a surface for the application of paint or other type of coating. It is the policy of CCI to protect workers from hazardous dust levels and toxic metals that may be generated from both the blasting material and the underlying substrate and coatings being blasted. In all cases where atmospheric testing is not available, CCI will assume hazards are above PEL standards and PPE will be used. This policy shall be used in conjunction with policy Silica Exposure Control and Silica.

HEALTH EFFECTS AND EXPOSURE

When workers inhale the crystalline silica used in abrasive, blasting the lung tissue reacts by developing fibrotic nodules and scarring around the trapped silica particles. This fibrotic condition of the lung is called silicosis. If the nodules grow too large, breathing becomes difficult and death may result. Silicosis victims are also at high risk of developing active tuberculosis. The silica sand used in abrasive blasting typically fractures into fine particles and becomes airborne. Inhalation of such silica appears to produce a more severe lung reaction than silica that is not freshly fractured. This factor may contribute to the development of acute and accelerated forms of silicosis among sandblasters. Sandblaster working in the dusty atmosphere created by airborne

Responsible Safety Person:
Devon Molitor
Corporate Safety Director

particles of silica and without proper personal protective equipment and who remain in an atmosphere containing these particles may inhale dangerous or lethal amounts unknowingly.

Permissible Exposure Limit

The following control methods will be used to ensure that the employees exposure to hazardous substances via inhalation, ingestion, skin absorption, or any contact with any substance or material at a level of concentration above those recommended by the "Threshold Limit Values of Airborne Contaminants for 1970" published by the American Conference of Governmental Industrial Hygienist (ACGIH) and subsequent publications of the same, shall be avoided.

Work operations in which particulate or abrasive blasting materials may be encountered involve welding, burning, cutting, brazing, grinding and abrasive blasting sanding and drilling work. The equipment and materials used to accomplish work operations are those normally associated with sandblasting and painting operations.

Abrasives and the surface coatings on the materials blasted are shattered and pulverized during blasting operations, the dust formed will contain particles of respirable size. The composition and toxicity of the dust from these sources must be considered in making an evaluation of the potential health hazards.

The hazards involved in abrasive blasting include the material that is being removed and the surface from which the material is being removed. Lead is an example of a hazardous material being removed, while exposure to silica comes from using sand and other silica-producing materials in the blasting process. Both of these materials involve inhalation hazards. Other exposure risk is flying debris to the eyes, face and any other exposed skin.

Health Hazards

Abrasive blasting operations can create high levels of dust and noise. Abrasive material and the surface being blasted may contain toxic materials (e.g., lead paint, silica) that are hazardous to workers.

Silica sand (crystalline) can cause silicosis, lung cancer, and breathing problems in exposed workers.

Coal slag and garnet sand may cause lung damage like silica sand.

Copper slag, nickel slag, and glass (crushed or beads) also have the potential to cause lung damage.

Steel grit and shot have less potential to cause lung damage.

Slags can contain trace amounts of toxic metals such as arsenic, beryllium, and cadmium.

Responsible Safety Person:
Devon Molitor
Corporate Safety Director

TOXIC DUST

The composition and toxicity of the dust created during blasting operations will be considered hazardous. All blasting operations shall be conducted with the highest level of caution.

Potential Air Contaminants Associated with Abrasive Blasting	
Source	Potential Air Contaminants
Base Material - steel, aluminum, stainless steel, galvanized steel, copper-nickel and other copper alloys	Aluminum, cadmium, chromium, copper, iron, lead, manganese, nickel and zinc
Surface Coatings - pre-construction primers, anticorrosive and antifouling paints	Copper, barium, cadmium, chromium, lead, tributyl tin compounds, zinc
Abrasive Blasting Media - coal slag, copper slag, nickel slag, glass, steel grit, garnet, silica sand, soda	Arsenic, beryllium, amorphous silica, cadmium, chromium, cobalt, crystalline silica, lead, manganese, nickel, silver, titanium and vanadium

In some cases, the dust that is formed from abrasive blasting can be flammable or explosive. This can involve obvious hazards of fire and explosion. Organic abrasives which are combustible will be used only in automatic systems. Where flammable or explosive dust mixtures may be present, the construction of the equipment, including the exhaust system and all electric wiring, will conform to the OSHA and ANSI requirements.

Where there is potential for flammable or explosive dust mixtures, the blast nozzle will be bonded and grounded to prevent the buildup of static charges. Organic abrasives will be used only in automatic systems.

Where flammable or explosive dust mixtures may be present, the abrasive blasting enclosure, the ducts and the dust collector will be constructed with loose panels or explosion venting areas, located on sides away from any occupied area, to provide for pressure relief in case of explosion, following NFPA standards.

Dust will not be permitted to accumulate on the floor or on ledges outside the blast enclosure. Dust and other abrasives will be cleaned up promptly to prevent slipping hazards.

ENGINEERING CONTROLS

CCI shall implement engineering controls where possible to eliminate or reduce the amount of silica in the work area and to reduce build-up of dust on equipment and machinery surfaces.

Responsible Safety Person:
Devon Molitor
Corporate Safety Director

Preventative maintenance will be conducted as a high priority to ensure effectiveness of the engineering controls.

Where possible controls will include, but are not limited to:

- General exhaust ventilation systems
- Local ventilation systems
- Dust collection systems
- Enclosed cabs for workers
- Water sprays for dust reduction
- Wet drilling when drilling operations are in effect
- Drill platform skirts when drilling operations are in effect

Ventilation

CCI shall ensure the area where blasting is performed is contained and ventilation supplied to remove contaminated air and usher in fresh air. All containment structures should be ventilated to maintain a continuous airflow and prevent any leakage of dust to the outside. Exhaust air should be discharged to the outside through an appropriate opening. Blowers should be set up so that accumulated dust can be removed without contaminating work areas and dust collectors will be utilized as required.

The concentration of respirable dust, fumes, mists, vapors or gases exist or are produced in the course of construction work and their concentrations will not exceed the limits specified in 1926.55(a). When ventilation is used as an engineering control method, the system will be installed and operated according to the requirements of this section.

ADMINISTRATIVE CONTROLS

Where engineering controls are not feasible, administrative controls will be attempted where possible to eliminate or reduce the amount of silica or environmental dusts each worker is exposed to. Where possible controls will include, but are not limited to:

- Job-specific training programs
- Job rotation
- Job enlargement
- Job pacing variations
- Policies and procedure development
- Regular job inspections and review

Use a Less Toxic Abrasive Blasting Material

Substituting less toxic abrasive materials for the traditional high-silica-containing abrasive is becoming more common. Even with a low silica content abrasive (less than one percent free silica,) work in containment structures or in confined spaces may result in hazardous exposures.

Responsible Safety Person:
Devon Molitor
Corporate Safety Director

Additional Controls

- Use abrasives that can be delivered with water (slurry) to reduce dust
- Use barriers and curtain walls to isolate the work area
- Use blast areas or blast cabinets for smaller operations
- Use restricted areas for non-enclosed blasting operations
- Keep coworkers away from blasting areas
- Use exhaust ventilation systems in containment structures to capture dust
- Use HEPA filters on vacuums or wet methods to minimize accumulation of toxic dust

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Where administrative controls are not feasible (PPE) will be selected and used through the Daily Risk Assessment (DRA) program. Supervisors will ensure that equipment selected will meet the following requirements:

- It will be appropriate for the particular hazard.
- It will be maintained in good condition.
- It will be properly stored when not in use, to prevent damage or loss.
- It will be kept clean, fully function and sanitary.

PPE shall be provided to all employees involved in (or in the vicinity of) abrasive blasting operations.

Documentation

PPE requirements will be documented on the DRA and properly filed. Types of PPE, where required, PPE will include but are not limited to:

- Abrasive blasting gloves
- Appropriate respirators
- Body shields
- Aprons
- Non-slip and steel-toed shoes
- Full eye protection
- Full-body jump suites for dust protection
- Hard hats
- Caps
- Hair nets
- Footguards

Hearing Protection

Abrasive blasting creates high levels of noise that can cause substantial hearing loss. CCI shall ensure all employees performing abrasive blasting procedures are given hearing protection in accordance with a hearing conservation program as required by the OSHA Occupational Noise standard.

Responsible Safety Person:
Devon Molitor
Corporate Safety Director

RESPIRATORY PROTECTION

A respiratory protection program will be established wherever it is necessary to use respiratory protective equipment including worksite specific procedures and elements for required respirator use. Abrasive blasting respirators will be worn by all abrasive blasting operators under certain conditions. All use of respirators or other respiratory protective equipment will be in accordance with OSHA CFR 1926.103.

Employees required to don or attempt to use a respirator must undergo proper medical evaluation, fit test and training in the proper selection, use, maintenance, and storage of the specific respirator and is individually authorized by CCI.

Respirator

An abrasive-blasting respirator must cover the wearer's head, neck, and shoulders to protect the wearer from rebounding abrasive. Workers must use only respirators approved by NIOSH to provide protection from dusts produced during abrasive-blasting operations.

Air for abrasive-blasting respirators must be free of harmful quantities of dusts, mists, or noxious gases.

Type CE NIOSH-certified blasting airline respirator with positive pressure blasting helmet.

Support personnel involved in cleanup and other related activities may also need respiratory protection.

GENERAL SAFETY PRECAUTIONS

Machines and hoses should be inspected frequently and all parts showing excessive wear should be repaired or replaced.

Nozzles should be externally attached to the hose by a fitting, which will prevent accidental disengagement.

Blast cleaning nozzles will be equipped with an operating valve which must be held open manually. A support (or deadman) will be provided on which the nozzle may be mounted when it is not in use. An electric deadman will be low voltage (12-volt DC) and have continuous wire or plug connections.

Lengths of hose should be joined by external metallic connectors. The connectors will have pin-clips to prevent disengagement. Anti-whip arresters may be used between each connector.

Responsible Safety Person:
Devon Molitor
Corporate Safety Director

All bull hoses, from the compressor to the abrasive blast pot, will have pin-clips and anti-whip arresters on each end.

In abrasive blasting situations where flammable or explosive dust mixtures may be present, construction of equipment and any exhaust system, including all electric wiring, will conform to American National Standard Installation of Blower and Exhaust Systems for Dust, Stock and Vapor Removal or Conveying, Z33.1-1961 (NFPA 91-1961), as well as 1926 Subpart S.

Prior to operation where flammable or explosive dust mixtures may exist, confirm that the blast nozzle is bonded and grounded to prevent the buildup of static charges.

Where flammable or explosive dust mixtures may be present, confirm that the abrasive blasting enclosure, ducts and the dust collector are constructed with loose panels or explosion venting areas, located on sides away from any occupied area. These areas will provide pressure relief in the event of an explosion.

Compressed air can only be used for cleaning objects and materials when the pressure is reduced to less than 30 psi and effective chip guarding and PPE are utilized.

The pressure vessel built in accordance with ASME codes allows a maximum operating pressure of 150 psi for Marco blast pots.

At no time will compressed air be used for cleaning clothes while being worn or directly applied to any part of the body.

WORK OPERATIONS

Work operations in which particulate or Abrasive Blasting materials may be encountered involve welding, burning, cutting, brazing, grinding, and abrasive blasting sanding, and drilling work. The equipment and materials used to accomplish work operations are those normally associated with sandblasting and painting operations.

All work areas/stations will be kept in a clean and safe manner. Debris (material, dust, etc.) and materials will be removed when work is completed. If excessive debris is generated during working operations, it will be cleaned at that time. Compressed air will not be used for the cleaning of work surfaces or tools, unless:

- The air pressure is kept below 30psi
- Adequate protection is provided against chipping and flying hazards
- Proper PPE is utilized

Responsible Safety Person:
Devon Molitor
Corporate Safety Director

EMERGENCY FIRST AID

In the event of an emergency, institute first aid procedures and send for first aid or medical assistance in accordance with local procedures.

Eye Exposure

Wash immediately with large amount of water. Lifting the lower and upper lids occasionally, get medical attention as soon as possible.

Skin Exposure (imbedded particulates)

Immediately flush with copious amounts of water. Remove any clothing blocking exposed skin areas and flush exposed skin areas, get medical attention as soon as possible.

Respiratory Exposure

Get the victim to open, fresh air immediately. If breathing has stopped, perform CPR. Keep the victim warm and at rest. Get medical attention as soon as possible.

Rescue Considerations

Do not become a second victim. Move the affected person from the hazardous area. If the exposed person has been overcome, initiate local emergency notification procedures. Understand CCI's emergency rescue procedures and know the locations of rescue equipment.

ABRASIVE HAZARDS WORK AREA

Work areas meeting the criteria for delineation as an "Abrasive Hazards Work Area" will be restricted only to trained and authorized employees. Physical barriers, ropes, fencing or any other equally effective means of entry control may use to control entry.

Abrasive Hazards Work Areas will be identified by signage and color-coding as needed. A sign reading "**DANGER ABRASIVE HAZARDS WORK AREA**" or similar language will be used to satisfy the requirement for a sign.

CCI shall inform employees working near Abrasive Hazards Work Areas, by posting danger signs, conducting awareness training, or by any other equally effective means, of the existence and location of and the danger posed by abrasive blasting.

As much of blasting as possible should be done in a specified location, a blasting zone (where dust is visible) should be established and marked off with signs around the perimeter of the area such as:

CAUTION
ABRASIVE BLASTING AREA
EYE, EAR, AND RESPIRATORY PROTECTION MUST BE WORN

Responsible Safety Person:
Devon Molitor
Corporate Safety Director

Blasting should not be done when wind direction and velocity carry visible dust to people unprotected by proper respirators.

Blasting of small objects should be done in an enclosure which is designed to specifically reduce the dust hazards.

HOUSEKEEPING

CCI shall ensure employees use proper hygiene practices while in hazardous areas and remain fully always protected in the work area. Before leaving work areas, ensure protective clothing is removed, properly stored in a controlled area and wash facilities used to remove any contaminants from exposed skin. Specific procedures and facilities established for personal hygiene will be covered in the activity plan and covered with all team members.

Good housekeeping practices should be followed in abrasive blasting operation to prevent slips, trips and falls.

A facility should be available for blasters to wash hands routinely and before eating, drinking or smoking and after blasting operations.

Eating, drinking or the use of tobacco products is prohibited in the blasting area.

Park their cars where they will not be contaminated with silica and other substances such as lead.

Wash their hands and faces before eating, drinking or smoking. Vacuum or remove contaminated work clothes before eating, drinking or smoking.

Provide accommodations with separate storage facilities for street clothes, protective clothing and equipment. Keep contaminated clothing and equipment out of clean changing area. Shower before leaving the worksite.

Do not allow dust to accumulate on the floor or ledges outside of an abrasive blasting enclosure. Clean up dust spills in a prompt and consistent manner.

Keep walkways and aisles clear of abrasive blasting product such as steel shot or any other material that could cause a slipping hazard.

During post abrasive blasting cleanup operation compressed air will not be used unless verification has been made that the compressed air pressure has been reduced to less than 30 psi.

Responsible Safety Person:
Devon Molitor
Corporate Safety Director

TRAINING

CCI shall provide training to ensure that the hazards associated with Abrasive Blasting are understood by employees and that the knowledge, skills, and personal protective equipment required are acquired by employees.

The training shall as a minimum include the following:

- Each authorized employee shall receive training in the recognition of applicable hazards involved with the particular job and job site, as well as the methods and means necessary for safe work.
- The specific nature of the operation, which could result in exposure to Abrasive Blasting materials.
- The purpose, proper selection, fitting, use and limitation of personal protective equipment (PPE)
- The adverse health effects associated with excessive exposure to Abrasive Blasting materials.
- The engineering controls, administrative controls and work practices associated with the employee's job assignment, including training of employees to follow relevant good work practices.
- The contents of any compliance plan in effect.
- The employee's right of access to records under 29 CFR 1910.20

Manufacturers are required to include appropriate health hazard information on the blasting materials on safety data sheets (SDS) as required under OSHA's Hazard Communication standard (29 CFR 1910.1200). Obtain and read the manufacturer's SDS for health hazard information on the abrasive blasting material you are using.

Access to Employee Medical Records

PURPOSE

The purpose of this safety policy and procedure is to establish the guidelines and procedures through which employees will be able to obtain and gain access to **Cirks Construction Inc.**, hereafter referred to as "CCI," maintained exposure and medical records. These exposure and medical records are those resulting from employment related exposures, injuries, and/or illnesses.

Employees may be exposed to toxic substances and harmful physical agents to an extent that may severely impair their health. Workers must be informed about the toxic exposures they face and their potential health effects. This safety policy and procedure provides guidelines for employees to obtain their exposure and medical records. It includes provisions on training, retention requirements for employee exposure and medical records, and response time to employee requests for exposure and medical records. Additionally, guidelines are presented on physician review of employee medical records, OSHA access to medical records, and information that must be shared with new employees.

RESPONSIBILITIES

It is the general responsibility of CCI to ensure that each employee has access to all exposure and medical records pertaining to their present or past employment with CCI. This chapter provides definitions, establishes general provisions, and identifies responsibilities regarding access to employee exposure and medical records.

Employer Responsibilities

CCI is responsible for:

- Maintaining employees' exposure and medical records.
- Ensuring compliance with this safety policy and procedure.
- Providing employees with copies of their exposure and medical records when properly requested.
- Ensure the confidentiality of employees' medical records.

Supervisors

Supervisors will be responsible for educating and training employees about their rights under this safety policy and procedure.

Employees

Exposure and medical records may be kept in an employee's personnel files, in a physician's office, or contained within claim files such as "Workers' Compensation,"

Safety Department

Safety and Loss Control will provide:

- Prompt assistance to managers/unit heads or others on any matter concerning this safety policy and procedure.
- Assist in developing or securing required training for the effective implementation of this safety policy and procedure.
- Provide consultative and audit assistance to ensure effective implementation of this safety policy and procedure.

POLICY

CCI will provide all exposure and medical records when properly requested as outlined in this safety policy and procedure.

CCI will ensure that those employees who request their exposure and medical records are provided with confidential, fair, and equal treatment.

ACCESS TO MEDICAL RECORDS

An Employee Medical Record is a record concerning the health status of an employee which is made or maintained by a physician, nurse, or other health care personnel or technician.

Whenever an employee or a designated representative of an employee requests access to exposure and/or medical records, CCI will provide these documents within 15 working days. If records cannot be provided within this time period, the employee or representative must be informed and given a date on which the records will be provided along with a reason for the delay. These records will be provided to the employee or representative at no cost for reproduction or for the document search itself.

Whenever access is requested to an analysis which reports the contents of employee medical records by either direct identifier (name, address, social security number, payroll number, etc.) or by information which could reasonably be use under the circumstances indirectly to identify specific employees (exact age, height, weight, race, sex, date of initial employment, job title, etc.), personal identifiers must be removed before access is provided.

HIPPA

Access to employee medical records does not violate HIPPA (Health Information Privacy and Portability Act) privacy as it allows access to occupational medical records under specific guidelines outline in this policy. The policy is not intended to affect existing:

- Legal and ethical obligations concerning the maintenance and confidentiality of employee medical information,

- The duty to disclose information to a patient/employee, any other aspect of the medical-care relationship,
- Affect existing legal obligations concerning the protection of trade secret information.

Regulations-standardized by HIPPA include the patient's right to make certain amendments to their personal medical records. Patients make request to amend information pertaining to their medical records with which they disagree. Patients are permitted to submit a written statement of disagreement in order to request a formal amendment.

EMPLOYEE EXPOSURE AND MEDICAL RECORDS

Upon request, CCI must provide the employee or employee's designated representative access to employee exposure records. If no records exist, the employer must provide records of other employees with job duties similar to those of the employee. Access to exposure records does not require the written consent of the other employees.

In addition, these exposure records must reasonably indicate the identity, amount, and nature of the toxic substances or harmful physical agents to which the employee has been exposed. CCI also must provide employees and their designated representatives' access to employee medical records. Access to the medical records of another employee may be provided only with the written consent of that employee. A request for medical records can be made by using the form (or one substantially similar) shown in this chapter.

CCI is responsible for maintaining employee medical records for the duration of employment plus 30 years. This recordkeeping does not include health insurance claims, first aid records (not including medical histories) of one-time treatment, and medical records of employees who have worked less than a year for CCI. Employee exposure records and data analysis shall be maintained for the duration of employment plus 30 years. It is the responsibility of the employee to initiate any request for access to his or her medical records as outlined in this safety policy and procedure.

If, for any reason, CCI shall cease to do business, CCI shall transfer all records subject to this section to the successor employer. If, CCI ceases to do business and there is no successor employer to receive and maintain the records, and CCI intends to dispose of any records required to be preserved for at least thirty (30) years, the employer shall notify affected current employees of their rights of access to records at least three (3) months prior to the cessation of CCI business.

ENVIRONMENTAL AND BIOLOGICAL MONITORING

To maintain accurate records of exposure, CCI shall set in place environmental (workplace) monitoring and measuring of all toxic substances or harmful physical agent, including personal, area, grab, wipe, or other form of sampling. As well as related collection and analytical methodologies, calculations, and other background data relevant to interpretation of the results obtained.

Biological monitoring results which directly assess the absorption of a toxic substance or harmful physical agent by body systems (e.g., the level of a chemical in the blood, urine, breath, hair, fingernails, etc.) but not including results which assess the biological effect of a substance or agent or which assess an employee's use of alcohol or drugs.

REPRESENTATION BY A PHYSICIAN

CCI may request that a physician be appointed to review medical records with the employee or employee's designated representative to ensure records are reviewed and properly interpreted. The physician may deny the employee access to records if the physician detects a situation which may be detrimental to the health of the employee such as the identification of terminal illness or a psychiatric condition. In such cases, the employee's designated representative may request the records even if it is known that the representative may disclose the information to the employee.

Upon receiving a written request from OSHA, CCI will supply OSHA with:

- Any exposure or medical records for analysis;
- A copy of this request must be posted in a conspicuous place for at least 15 working days; and
- Access to records shall be provided within a reasonable time, place, and manner.

If access to records cannot reasonably be provided within fifteen (15) working days, CCI shall within the fifteen (15) working days apprise the employee or designated representative requesting the record of the reason for the delay and the earliest date when the record can be made available.

NEW EMPLOYEE NOTIFICATION

Upon a person first entering into employment, at least annually thereafter, information of the existence, location, and availability of the person responsible for maintaining and providing access to records. Individual employee's rights of access to these records must be given to all current employees.

New Company employees will be informed of the following information:

- The existence, location, and availability of any records covered by this safety policy and procedure.
- The person responsible for maintaining and providing access to these records.
- Employee's rights under this safety policy and procedure.

DEFINITIONS

Access – The right and opportunity to examine, copy, or use any or all exposure and medical records.

Designated Representative – Any individual or organization to whom an employee gives written authorization to exercise a right of access to exposure or medical records.

Employee – An individual who is employed by CCI and who is being assigned or transferred to work where there will be exposure to toxic substances or harmful physical agents. In a case where the employee is deceased, the employee's legal representative may directly exercise all of the employee's rights under this policy.

Employee Exposure Record – A record containing information regarding an employee's health and that those medical records must be maintained by a physician, nurse, other health care professional, or technician.

Employee Medical Record – A record concerning the health status of an employee which is made or maintained by a physician, nurse, or other health care personnel or technician.

Exposure – A condition that occurs when an employee is subjected to toxic or hazardous environments as a result of his or her job duties.

Health Professional – A physician, occupational health nurse, industrial hygienist, toxicologist, or epidemiologist providing medical care or other occupational health services to exposed employees.

Record – Any item, collection, or grouping of information regardless of the form or process by which it is maintained.

Toxic Substance – Any chemical substance, biological agent (bacteria, virus, etc.), or physical stress (noise, heat, cold, vibration, etc.) to which employees could have been exposed as a result of performing their job function

Aerial (Boom) and Mobile Elevated Work Platforms (Scissor) Lifts

PURPOSE

The purpose of this document is to outline safety policy and procedures for the use of aerial and scissor lift devices for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

Aerial lift devices shall conform to ANSI standards applicable to the type of equipment being used – bucket truck, under-bridge inspection vehicle, portable and or self-propelled personnel lift. Aerial lift devices shall only be used for the purpose intended by the manufacturer. All manufacturer maintenance recommendations, warning regarding operation, capacity and safety precautions shall be strictly followed at all times. Permanent labeling must be conspicuously posted to indicate lifting capacity and travel height.

The hazards of potential falls will be addressed in this document. This instruction describes a systematic approach that must be used to protect and prevent people from falling. This instruction also lists some of the most common fall hazards and provides recommendations and guidelines for selecting fall arrest systems.

RESPONSIBILITIES

CCI/Management

- Perform annual reviews of this safety policy and any corresponding training programs/records
- Ensure all worksites are protected from aerial/scissor lift injury by providing the necessary PPE
- Enforce the contents of this policy and procedure
- Ensure all aerial lift devices are properly operated by trained personnel
- Ensure all aerial lift devices used are designed and constructed in conformance with the requirements set forth by the American National Standards for Vehicle Mounted Elevating and Rotating Work Platforms [ANSI A92.2 - 1969](#)

POLICY

Inspections

All aerial lift equipment shall be inspected at the beginning of each work shift to verify that all components of the equipment are in safe operating condition. Workers shall not operate any aerial lift equipment if any component of the pre-shift/job checklist are defective. Any equipment found defective or in need of repair shall be marked as defective and in need of repair, until repaired by qualified personnel prior to operating the defective piece of equipment.

Worksite inspections shall be performed at the start of each shift or job to verify the area is safe for the operation of aerial lifts and other devices.

The worksite inspection shall cover the following:

- Drop-offs, holes, or unstable surfaces such as but not limited to loose dirt, slopes, ditches, bumps, or oil and chemicals that may cause a slip.
- Inadequate ceiling heights or other low hanging obstructions such as but not limited to trees or power lines.
- High winds and or severe weather conditions such as but not limited to ice.
- The presence of other workers and personnel in the operation.

FALL PROTECTION/CONTROLLED ACCESS ZONES – BOOM LIFT OPERATIONS

If Fall Protection Plans are utilized, the following requirements need to be met:

- If tools and materials are being used while operating the lift, the area below shall be barricaded to warn and protect other workers from overhead hazards from dropped tools and materials.
- When used to control access to areas where leading edge and other operations are taking place the controlled access zone shall be defined by a control line or by any other means that restricts access.
 - When control lines are used, they shall be erected not less than 6 feet (1.8 m) nor more than 25 feet (7.7 m) from the unprotected or leading edge, except when erecting precast concrete members.
 - When erecting precast concrete members, the control line shall be erected not less than 6 feet (1.8 m) nor more than 60 feet (18 m) or half the length of the member being erected, whichever is less, from the leading edge.
- To prevent falls from boom lift devices, an approved fall restraint system shall be worn. The fall restraint system must be attached to the boom basket.
- Never tie-off to any adjacent structure or pole.
- Never use ladders, planks, or other material/device as a brace or standing platform as a working position.
- Never climb or lean over guardrails or handrails
- Always stand firmly on the floor lift.
- Ensure that access gates or openings are closed at all times.
- The load capacity may never, under any circumstance, be exceeded. The combined weight of the workers, tools and materials must be considered when calculating the load.
- Load limits specified by the manufacturer shall not be exceeded.
- Be aware of overhead clearance and overhead objects at all times. The minimum clearance between electrical lines and any part of the equipment shall be 10 (ten) feet for all power lines rated 50 kV or below.

- Never use an aerial lift device as a crane or use the aerial lift device to transport objects larger than the platform.
- All aerial lift devices operated shall have a working back-up alarm audible above the surrounding noise level. If the specified device is not equipped with a back-up alarm, the device may only be backed or in the reverse position when accompanied by a spotter or observer to ensure safe backing.
- Aerial lift devices may only be field modified for uses intended by the manufacturer. All manufacturer recommendations for device modification must be in writing from the manufacturer or an equivalent entity. Said written consent must also be kept on file at least one of CCI's locations.
- Never operate the device in winds higher than recommended by the manufacturer.
- Never override hydraulic, mechanical, or electrical safety devices.

TRAINING

Any persons operating an aerial lift device must be trained by a competent and authorized person prior to operation and all training must meet or exceed OSHA requirements. Proof of training must be provided.

Training may be obtained from the rental company or other authorized training facility.

Retraining shall occur before an employee's first interaction with equipment, and refresher training should be provided every 3 years for all operators, or when an employee shows a lack of understanding of aerial lift safe operating procedures, or if there is an accident.

Mobile Elevated Work Platform - Scissor Lift

POLICY

Only trained workers are allowed to use scissor lifts.

Introduction

Scissor lifts are work platforms used to safely move workers vertically and to different locations in a variety of industries including construction, retail, entertainment, and manufacturing.

Scissor lifts are different from aerial lifts because the lifting mechanism moves the work platform straight up and down using crossed beams functioning in a scissor-like fashion.

Although scissor lifts present hazards like scaffolding when extended and stationary, using scissor lifts safely depends on considering equipment capabilities, limitations, and safe practices.

HOW TO SAFELY USE SCISSOR LIFTS

Safe scissor lift use includes:

- Properly maintaining the equipment
- Following the manufacturer's instructions
- Providing workers training and needed PPE
- Implementing safe work practices

The worksite safety coordinator shall assess each worksite to identify all possible hazards to select the appropriate equipment for the task.

The supervisor shall evaluate and implement effective controls that address fall protection, stabilization and positioning, prior to initial assignment.

FALL PROTECTION FOR SCISSOR LIFTS

Scissor lifts must have guardrails installed to prevent workers from falling [29 CFR 1926.451\(g\)](#). When working from an elevated scissor lift (ANSI A92.6 series), a worker need only be protected from falling by a properly designed and maintained guardrail system. However, if the guardrail system is less than adequate, or the worker leaves the safety of the work platform, an additional fall protection device would be required.

Cal/OSHA reminds employers that there are two exceptions under which personal fall protection is required.

- If the guardrails are temporarily lowered or removed to allow the scissor lift to fit into a tight space, then Section 3642 (a) applies and requires workers on the scissor lift to use personal fall protection equipment until the guardrails are restored. The scissor lift in this instance must also be designed and manufactured to accommodate fall protection loads and provide a fall protection anchor(s).
- If a scissor lift is used to transfer an employee onto a raised deck or structure - when permitted in the manufacturer's operating instructions - then Section 3646 (e) Operating Instructions (Elevating Work Platforms). applies and prohibits employees from transferring to a deck or structure by climbing over the guardrails. In this case, the employee must wear double lanyards, and be tied off to an approved anchorage on the structure before releasing the lanyard connected to the anchor on the scissor lift. And, such transfer must be by way of a gate in the railing enclosing the scissor lift platform.

CCI will train workers to:

- Check to see that a guardrail system is in place before working on the scissor lift.
- Only stand on the work platform; never stand on the guardrails.
- Keep work within easy reach to avoid leaning away from the scissor lift.

STABILIZATION FOR SCISSOR LIFTS

CCI will ensure that scissor lifts are stable and will not tip over or collapse.

Stable conditions for scissor lift use include:

- Follow the manufacturer's instructions for safe movement – this usually rules out moving the lift in an elevated position.
- Isolate the scissor lift or implement traffic control measures to ensure that other equipment cannot contact the scissor lift.
- Select work locations with firm, level surfaces away from hazards that can cause instability (e.g., drop-offs, holes, slopes, bumps, ground obstructions, or debris).
- Use the scissor lift outside only when weather conditions are good. Scissor lifts rated for outdoor use are generally limited to wind speeds below 28 miles per hour.
- Ensure that safety systems designated to stop collapsing are maintained and not bypassed.
- Never allow the weight on the work platform to exceed the manufacturer's load rating.
- Never allow equipment other than the scissor mechanism to be used to raise the work platform (e.g., using a forklift to lift the work platform).
- Keep the lift from being struck by other moving equipment on the worksite.

POSITIONING FOR SCISSOR LIFTS

Positioning the scissor lift to avoid crushing or electrocution hazards is important for safe use.

Crushing hazards are present in workplaces using scissor lifts and may expose workers nearby, even those not working on the scissor lift.

Scissor lift presents crushing hazards similar to vehicles and other mobile equipment at worksites.

CCI will train workers to be watchful when:

- A moving scissor lift is near a fixed object.
- A moving vehicle and the scissor lift are operating closely.
- The scissor lift passes under a fixed object, such as a door frame or support beam.

SCISSOR LIFT USE NEAR ENERGIZED POWER LINES

CCI will ensure scissor lifts are not positioned within close proximity of energized power lines, because electrocution can occur even if neither the scissor lift nor the worker touches the power line.

Position the scissor lift to avoid electrocution, arc flash, and thermal burns.

CCI will use the following safe work practices to ensure that scissor lifts are safely positioned:

- Implement traffic control measures around the scissor lift to prevent other workers or vehicles from getting too close.
- Use ground guides when operating or moving the scissor lift around the workplace.
- Operators must maintain a minimum clearance distance of at least ten feet between overhead powerlines that are 50kV or less and any part of the equipment or load unless the lift is insulated for the voltage involved, and the work is performed by a qualified person, then the clearance distance between the uninsulated portion of the aerial lift

SCISSOR LIFT EQUIPMENT MAINTENANCE

CCI will regularly inspect scissor lifts to ensure that they are safe to use (e.g., Prevent the lifting mechanism from collapsing).

CCI will regularly:

- Test and inspect controls and components before each use.
- Ensure that guardrail systems are in good working condition.
- Verify that brakes once set will hold the scissor lift in position.
- Brakes shall be set and outriggers, when used, positioned on pads or a solid surface.
- Ensure wheel chocks shall be installed before using an aerial lift on an incline.

TRAINING FOR SCISSOR LIFTS

CCI will provide workers training on hazards including how to work safely with or near scissor lifts. Training will, at a minimum, include:

- Manufacturer's instructions for operating the scissor lift vertically and while in transit.
- How to handle materials on the scissor lift, including weight limits.
- Other worksite hazards workers may encounter when working on a scissor lift (e.g., contact with electrical wires).

Asbestos Awareness

PURPOSE

The purpose of this document is to outline safety policy and procedures surrounding operation and maintenance of asbestos containing materials for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

RESPONSIBILITIES

Management

- Ensure all Asbestos Containing Material is identified and abated prior to workers coming onto worksite
- Ensure training is effective for authorized employees
- Conduct medical surveillance of affected employees if there is an exposure

POLICY

It is the policy of CCI that only qualified persons shall be involved in any asbestos repairs, maintenance, or removal.

HAZARDS

Asbestos is a common, naturally occurring group of fibrous minerals. Asbestos fibers have been used in a variety of building materials; however, CCI takes an aggressive effort to use non-asbestos containing materials in new construction and renovation projects. Generally, most asbestos is found in pipe insulation, doors, textured paints and plasters, structural fireproofing, and floor tiles. Friable asbestos (material that contains more than 0.1% asbestos by weight and can be crumbled by hand) is a potential hazard because it can release fibers into the air if damaged.

Long term exposure to airborne asbestos is necessary for chronic lung disease. Significant and long-term exposure to asbestos from activities that directly disturb asbestos-containing materials (such as asbestos mining) can lead to a variety of respiratory diseases, including asbestosis and mesothelioma (cancer of the lung lining). Asbestosis is a non-malignant, irreversible disease resulting in fibrosis of the lung. Asbestos-related cancers tend also to result from substantial long-term exposure; however, mesothelioma may result from much smaller exposures to asbestos.

Asbestos materials are used in the manufacture of:

- Heat-resistant clothing

- Automotive brake and clutch linings
- Insulation
- Soundproofing
- Floor tiles
- Roofing felts
- Ceiling tiles
- Asbestos-cement pipe and sheet
- Fire-resistant drywall
- Pipe and boiler insulation materials
- Pipeline wrap
- Sprayed-on materials located on beams, in crawlspaces, and between walls

Exposure to asbestos has been shown to cause lung cancer, asbestosis, mesothelioma, and cancer of the stomach and colon.

MAJOR SOURCES OF POTENTIAL EXPOSURE

- Opening boxes containing asbestos materials
- Cutting insulation, transit, or asbestos/cement pipe with hand or power tools
- Mixing asbestos with cement or fireproofing materials
- Removing or installing asbestos roofing and siding (i.e., transit)
- Removing asbestos leak sealant material
- CAD welding
- Asbestos friction pad or brake work
- Using asbestos fire blankets or hot gloves
- Removing old insulation from lines and vessels
- Grinding or sanding on gaskets, floor tiles/mastic, ceiling tile, or paints/coatings containing asbestos

HOUSEKEEPING

All surfaces must be maintained as free as practicable of accumulations of asbestos containing dust and waste.

Floors and other surfaces contaminated with asbestos should only be cleaned by vacuuming and/or wet cleaning methods. Where vacuuming and/or wet cleaning is not feasible, shoveling, dry sweeping and dry clean-up of asbestos may be used.

The use of compressed air for cleaning purpose is prohibited. Asbestos waste, scrap, debris, bags, containers, and equipment must be disposed of in sealed impermeable bags or containers.

Benzene Awareness

PURPOSE

To outline safety procedures surrounding exposure to Benzene for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

POLICY

This program is to protect employees from hazards associated with benzene and to maintain safe benzene exposure levels in the workplace. CCI's program and plans shall be furnished upon request for examination and copying. All affected employees will always have access to the written safety plans.

RESPONSIBILITIES

Responsible Safety Person Responsible Safety Person

- Provide adequate training in safe handling of chemicals/ Training records
- Incident investigation and reporting

Supervisors

- To ensure compliance with this program
- Maintain SDS records and posting as needed

Employees

- Always be aware of benzene hazards

DEFINITIONS

Action Level – is 0.5-part benzene per million parts or air (0.5 ppm), calculated as an eight-hour time weighted average. If employees are exposed at or above this concentration for more than 30 days per year, OSHA mandates that employees initiate certain required activities such as annual exposure monitoring and medical surveillance.

Authorized person - any person specifically authorized by the employer whose duties require the person to enter a regulated area, or any person entering such an area as a designated representative of employees for the purpose of exercising the right to observe monitoring and measuring procedures under paragraph (I) of this section, or any other person authorized by the Act or regulations issued under the Act.

Benzene (C6 H6) (CAS Registry No. 71-43-2)- liquefied or gaseous benzene. It includes benzene contained in liquid mixtures and the benzene vapors released by these liquids. It does not include trace amounts of unreacted benzene contained in solid materials.

Container - any barrel, bottle, can, cylinder, drum, reaction vessel, storage tank, or the like, but does not include piping systems.

Emergency - any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which may or does result in an unexpected significant release of benzene.

Employee exposure - exposure to airborne benzene which would occur if the employee were not using respiratory protective equipment.

Permissible Exposure Limit (PELs) – 1 ppm, calculated as an eight-hour time – weighted average. If employees are required to provide protective equipment such as respirators, must study and install engineering controls, if feasible, establish regulated areas, and perform all other OSHA- required procedures and duties.

Regulated area - any area where airborne concentrations of benzene exceed or can reasonably be expected to exceed, the permissible exposure limits, either the 8-hour time weighted average exposure of 1 ppm or the short-term exposure limit of 5 ppm for 15 minutes.

Short Term Exposure Limit (STEL) – 5ppm averaged over any fifteen-minute period. Any exceedance of this limit also triggers all the OSHA requirements prescribed for exceedances of the PEL.

Vapor control system - any equipment used for containing the total vapors displaced during the loading of gasoline, motor fuel or other fuel tank trucks and the displacing of these vapors through a vapor processing system or balancing the vapor with the storage tank. This equipment also includes systems containing the vapors displaced from the storage tank during the unloading of the tank truck which balance the vapors back to the tank truck.

CHARACTERISTICS OF BENZENE

Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities. Benzene is 2.7 times as dense as air. Benzene is liquid at room temperature. Benzene is a colorless liquid compound with a sweet, harsh smell. It is highly flammable and considered toxic. Benzene dissolves only slightly in water and will float on top of water.

Benzene is widely used in the United States; it ranks in the top 20 chemicals for production volume. Benzene can be found in occupational settings such as factories, burning coal,

refineries, in hydraulic fracturing, printing facilities, in gasoline and other fuels, crude oil, in the production of plastics, detergents, pesticides, various chemicals, vehicle exhaust, lubricants, resins, rubbers, dyes, and in other industrial applications. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon or synthetic fibers.

Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke.

Benzene is not soluble in water, and it is flammable, therefore CCI requires that all ignition sources must be controlled when benzene is used, handled, or stored. Benzene vapors are heavier than air; thus, the vapors may travel along the ground and be ignited by open flames or sparks at locations remote from where the benzene is used, handled, or stored.

Benzene is an extremely flammable substance with a flash point of 12 degrees Fahrenheit (-11 degrees Celsius), an autoignition temperature of 1,076 degrees Fahrenheit (580 degrees Celsius), and a lower explosion limit (LEL) of 1.3% and an upper flammable limit (UFL) of 7.5%. Benzene is also classified as a 1 B flammable liquid for the purpose of conforming to the requirements of 29 CFR 1910.106. A concentration exceeding 3,250 ppm is considered a potential fire explosion hazard.

Location where Benzene may be present in quantities sufficient to produce explosive or ignitable mixtures are considered Class I Group D for the purpose of conforming to the requirements of CFR 1910.309.

Note: Benzene liquid is highly flammable, and vapors may form explosive mixtures in air. Fire extinguishers must be readily available in areas where benzene is used or stored.

POSSIBLE EXPOSURE LOCATIONS

Some examples of where employees may be exposed to Benzene during their job functions include, but are not limited to:

- Petroleum refining sites
- Tank gauging (tanks at producing, pipeline, and refining operations)
- Field maintenance

Examples of such products that may contain benzene include:

- Commercial hexanes
- Rubber solvent
- Petroleum benzene
- Stoddard solvent
- 140 Flash aliphatic solvent
- Alkyd paint
- Toluene
- Xylene

- Spot remover
- Naphtha solvents
- Ethyl benzene
- Mineral spirits

BENZENE EXPOSURE HEALTH EFFECTS

People who breathe in high levels of benzene may develop the following signs and symptoms within minutes to several hours.

Short Term Effects

- Drowsiness
- Dizziness
- Rapid or irregular heartbeat
- Headaches
- Tremors
- Confusion
- Unconsciousness
- Death (at very high levels)
- Irritation of the eyes, nose, and skin
- Breathlessness
- Irritability
- Euphoria
- Headache
- Dizziness
- Nausea

Other short-term effects of overexposure may include:

- Irritation of eyes, nose, and skin
- Breathlessness
- Irritability
- Euphoria
- Headache
- Dizziness
- Nausea

Long term effects may include:

- Blood disorders such as leukemia
- Anemia

Eating foods or drinking beverages containing high levels of Benzene can cause the following symptoms within minutes to several hours:

- Vomiting
- Irritation of the stomach
- Dizziness
- Sleepiness
- Convulsions
- Rapid or irregular heartbeat
- Death (at very high levels)

If a person vomits because of swallowing foods or beverages containing benzene, the vomit could be sucked into the lungs and cause breathing problems and coughing.

Direct exposure of the eyes, skin, or lungs to benzene can cause tissue injury and irritation.

Showing these signs and symptoms does not necessarily mean that a person has been exposed to benzene.

WHAT TO DO IF EXPOSED

First, if the benzene was released into the air, get fresh air by leaving the area where the benzene was released. Moving to an area with fresh air is a good way to reduce the possibility of death from exposure to benzene in the air.

- If the benzene release was outside, move away from the area where the benzene was released.
- If the benzene release was indoors, get out of the building.

If you are near a release of benzene, emergency coordinators may tell you to either evacuate the area or to "shelter in place" inside a building to avoid being exposed to the chemical. For more information on evacuation during a chemical emergency, see "Facts About Evacuation," On the CDC.gov website.

If you think you may have been exposed to benzene, you should remove your clothing, rapidly wash your entire body with soap and water, and get medical care as quickly as possible.

REMOVING CLOTHING

- Quickly take off clothing that may have benzene on it. Any clothing that has to be pulled over the head should be cut off the body instead of pulled over the head.
- If you are helping other people remove their clothing, try to avoid touching any contaminated areas, and remove the clothing as quickly as possible.

WASHING INSTRUCTIONS

- As quickly as possible, wash any benzene from your skin with large amounts of soap and water. Washing with soap and water will help protect people from any chemicals on their bodies.
- If your eyes are burning or your vision is blurred, rinse your eyes with plain water for 10 to 15 minutes. If you wear contacts, remove them after washing your hands and put them with the contaminated clothing. Do not put the contacts back in your

eyes (even if they are not disposable contacts). If you wear eyeglasses, wash them with soap and water. You can put your eyeglasses back on after you wash them.

DISPOSING OF CLOTHING

- After you have washed yourself, place your clothing inside a plastic bag. Avoid touching contaminated areas of the clothing. If you can't avoid touching contaminated areas, or you aren't sure where the contaminated areas are, wear rubber gloves or put the clothing in the bag using tongs, tool handles, sticks, or similar objects. Anything that touches the contaminated clothing should also be placed in the bag.
- Seal the bag, and then seal that bag inside another plastic bag. Disposing of your clothing in this way will help protect you and other people from any chemicals that might be on your clothes.
- When the local or state health department or emergency personnel arrive, tell them what you did with your clothes. The health department or emergency personnel will arrange for further disposal. Do not handle the plastic bags yourself.

If you think your water supply may have benzene in it, drink bottled water until you are sure your water supply is safe.

If someone has swallowed benzene, do not try to make them vomit or give them fluids to drink. Also, if you are sure the person has swallowed benzene, do not attempt CPR. Performing CPR on someone who has swallowed benzene may cause them to vomit. The vomit could be sucked into their lungs and damage their lungs.

Seek medical attention right away. Dial 911 and explain what has happened.

LABELING

Regulated Areas – access to these areas will be limited to persons trained to recognize the hazards of benzene. All entrances and access ways will be posted with signs bearing the following:

**DANGER
BENZENE
MAY CAUSE CANCER
HIGHLY FLAMMABLE LIQUID AND VAPOR DO NOT SMOKE
WEAR RESPIRATORY PROTECTION IN THIS AREA
AUTHORIZED PERSONNEL ONLY**

Container Labels – if a chemical product containing benzene is transferred into a container other than the original, the labels shall comply with the requirements [of 29 CFR 11926.1128](#) and with the following:

**DANGER - Contains Benzene
Cancer Hazard**

TRAINING

All employees exposed to Benzene must receive training on the hazards associated with Benzene.

Training shall include the physical characteristics of benzene to include that benzene is a colorless liquid with a sweet odor. It shall be emphasized that smell is not an adequate warning of the hazards of benzene.

EMERGENCY FIRST AID PROCEDURES

In the event of an emergency, institute first aid procedures and send for first aid or medical assistance in accordance with local procedures. Dial 9-1-1 for emergency response personnel.

Eye Exposure: Wash immediately with large amounts of water for at least 15 minutes. Lifting the lower and upper lids occasionally, get medical attention as soon as possible.

Skin Exposure: Immediately flush with copious amounts of water. Remove any clothing contaminated, and flush exposed skin areas, get medical attention as soon as possible.

Swallowing Exposure: If benzene has been swallowed and the patient is conscious, do not induce vomiting. Call for medical assistance or a doctor immediately.

Respiratory Exposure: Get the victim to open, fresh air immediately. If breathing has stopped perform CPR. Keep the victim warm and at rest. Get medical attention as soon as possible.

Rescue Considerations

Move the affected person from the hazardous area. If the exposed person has been overcome, initiate local emergency notification procedures.

Never enter any vessel or confined space where the benzene concentration might be high enough to displace air or create an explosive atmosphere without proper training, equipment, and procedures. Understand the facility's emergency rescue procedures and know the locations of rescue.

Bloodborne Pathogens

PURPOSE

EXCEPTION: This regulation does not apply to the construction industry. The purpose of this document is to outline The Bloodborne Pathogens Exposure Control Plan for **Cirks Construction Inc.**; hereafter referred to as "CCI," OSHA requires that all employers that can "reasonably anticipate exposure" of employees to infectious material prepare and implement a written exposure control plan. This policy has been adopted by CCI to ensure a safe and healthful work environment for its personnel.

POLICY

Bloodborne pathogens are diseases caused by microorganisms that live in the bloodstream and are spread through blood and other body fluids. Bloodborne pathogens include the human immunodeficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV). These can enter the bloodstream through cuts, abrasions, or small tears in mucous membranes.

Bloodborne pathogens can be transmitted through any bodily fluid, and employees must take care when they are near, or meet possible contaminants, to prevent the spread of bloodborne infections.

RESPONSIBILITIES

CCI is committed to providing a safe and healthful work environment for all personnel. In pursuit of this objective, the following exposure control plan (ECP) is provided to eliminate or minimize occupational exposure to bloodborne pathogens in accordance with [OSHA 29 CFR 1910.1030](#), CFR 1926.21(b)(2) "Occupational Exposure to Bloodborne Pathogens," This plan is vital to assist our organization in implementing and ensuring compliance with the CAL/OSHA & FED/OSHA standard, thereby protecting our employees.

Responsible Safety Person

- Responsible for the implementation, maintenance, review and update of this ECP. The plan should be review at least once annually, but whenever necessary, to ensure the plan aligns with applicable regulatory standards. All personnel who have occupational exposure to blood and or other potentially infectious materials (OPIM) must comply with the procedures set forth in this policy.
- Ensure that adequate supplies of the equipment are always available in the appropriate sizes to ensure that all personnel have access if needed.

Employees

Every employee is expected to:

- Follow all elements of the bloodborne pathogens policy and training
- Notify a supervisor if they encounter any problems or concerns related to this policy

ENGINEERING CONTROLS AND WORK PRACTICES

Engineering controls and work practice controls will be used to prevent or minimize exposure to bloodborne pathogens. This plan encourages work task changes to reduce exposure, as well as for isolating or removing materials that might pose a hazard. The ECP shall be examined regularly to maintain, and replace, engineering controls to ensure their effectiveness, such as:

Handwashing

- CCI will provide readily accessible handwashing facilities to every employee. If providing handwashing facilities is not feasible, CCI will provide antiseptic towelettes or an appropriate antiseptic hand cleanser in conjunction with clean cloth/paper towels.
- For construction projects, CCI must provide onsite general washing facilities (one per 20 employees), keep them in sanitary condition, and provide suitable cleaning agents/towels for the removal of hazardous and other substances.
- In addition to basic workplace hygiene requirements, employees will wash their hands as soon as possible after removing gloves or other PPE.
- Should an employee's skin or mucous membrane be exposed to potentially infectious materials, the employee will immediately wash their skin with soap and water or flush their mucous membranes with water.

TRAINING

All employees who have occupational exposure to bloodborne pathogens will receive training on the epidemiology, symptoms, and transmission of bloodborne pathogen diseases. All employees shall be provided training at the time of initial assignment to task where occupational exposure may take place, and at least annually thereafter. Training will be documented and retained for a minimum of three years. The employer shall make available the hepatitis B vaccine and vaccination series to all employees who have occupational exposure, and post-exposure evaluation.

CCI will provide additional training when tasks or procedures are added or changed that affect the employee's occupational exposure. It is acceptable for additional training to be limited to addressing only the changes or additions to the employees' exposure.

In addition, the training program covers, at a minimum, the following elements:

- A copy and explanation of the OSHA bloodborne pathogen standard

- Explanation of CCI ECP and how to obtain a copy
- Explanation of methods to recognize tasks and other activities that may involve exposure to blood and OPIM, including what constitutes an exposure incident.
- An explanation of the modes of transmission of bloodborne pathogens
- An explanation of the use of PPE
- An explanation of the types, uses, location, removal, handling, decontamination, and disposal of PPE.
- The basis of PPE selection.
- Hepatitis B vaccine information.
- Appropriate actions to take and persons to contact in an emergency involving blood or OPIM.
- The procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available.
- Post-Exposure evaluation and follow-up.
- Signs and labeling.
- The person conducting the training will be knowledgeable in the subject matter of the training program as it relates to the workplace.

PERSONAL PROTECTIVE EQUIPMENT

PPE shall be provided by CCI to personnel at no cost to the worker. Moreover, workers will be trained by CCI or by a qualified trainer in the use of appropriate PPE for specific tasks or procedures. Personal protective equipment will also be provided at no expense to affected employees when possible occupational exposure of bodily fluids exists.

The following list of PPE shall be made available to all personnel as needed:

- Latex Gloves
- Safety Glasses

The following work procedures and precautions shall be followed by all personnel:

- Wash hands immediately or as soon as feasible after removing gloves or other PPE.
- Remove PPE after it becomes contaminated and before leaving the work area.
- Used PPE may be disposed of in the garbage
- Wear appropriate gloves if available. If not readily available, render treatment and follow hand washing procedures.
- Never wash or decontaminate disposable gloves for reuse.
- Wear appropriate face and eye protection when splashes, sprays, spatters, or droplets of blood or OPIM pose a hazard to the eye, nose, or mouth.
- Remove immediately or as soon as feasible any garment contaminated by blood or OPIM, in such a way as to avoid contact with the outer surface. Place in plastic bag and secure.

HOUSEKEEPING

Personnel are responsible for keeping work areas clean and sanitary. All equipment and working surfaces must be cleaned and decontaminated using sanitizing cleanser after contact with blood or OPIM.

Contaminated work surfaces must be decontaminated with disinfectant upon completion of each of the following:

- Directly following the contamination or after any spill of blood or OPIM
- At the end of the workday if the surface may have become contaminated since the last cleaning.

RECORDKEEPING

Training Records

Training records are completed for each employee upon successful completion of training. These documents will be kept for at least three years at the office.

Training records shall include the following information:

- Date of training
- Contents or a summary of the training
- Names and qualifications of trainer(s)
- Names and titles of all training session attendees

All training records shall be made available to all personnel upon request.

Medical Records

Medical records shall be maintained for each employee with occupational exposure in accordance with [29 CFR 1010.1020](#), "Access to Employee Exposure and Medical Records," Written employee consent is required prior to the release of employee medical records.

Human Resources is responsible for the maintenance of required medical records. These records shall be kept confidential in accordance with HIPPA regulations for the period of employment plus thirty years. Medical records shall be provided to personnel upon request.

Cadmium Awareness

PURPOSE

The purpose of this document is to outline safety requirements and procedures surrounding the exposure to Cadmium, and to eliminate all illness and injuries resulting from exposure to Cadmium at **Cirks Construction Inc.**; hereafter referred to as "CCI," This policy applies to all sites, personnel, and contractors; this policy must be always followed.

RESPONSIBILITIES

Responsible Safety Person

- Ensure that all personnel are trained in the awareness of cadmium exposure safety
- Understand the health risks associated with cadmium exposure
- Ensure industrial hygiene monitoring measures are in place on all worksites

Management

- Ensure that all direct reports follow this procedure

Employees

- Always follow this procedure

POLICY

Cadmium is a naturally occurring element found in the earth's crust. It was discovered in 1817 but was not used commercially until the end of the 19th century. This soft, silver-white metal was first used in paint pigments and as a substitute for tin in World War I. Today, about three-fourths of cadmium is used as an electrode component in alkaline batteries, with the remainder used in pigments, coatings, and plating and as a stabilizer for plastics. Workers in many industries face potential exposure to cadmium. The potential for exposure is highest among workers in electroplating, metal machining, plastics, ceramics, paint, and welding operations.

The main exposure routes are through inhalation of dust, fumes, and the incidental ingestion of dust from contaminated hands, food, or cigarettes.

Workers face a greater danger of cadmium exposure from inhalation than from ingestion. Exposure to cadmium that may be dangerous to life or health may occur in jobs in which workers are exposed to cadmium dust or fumes, where they heat compounds or surfaces that contain cadmium, or where workers weld/cut with materials or solders that contain cadmium.

The primary and most serious adverse health effects of long-term exposure to cadmium include:

- Kidney dysfunction
- Lung cancer
- Prostate cancer
- Local skin or eye irritation

This written program must be reviewed and updated annually or more often to reflect significant changes in employer's compliance status. The policy must be provided for examination and copying upon request of affected employees, and or their representatives.

COMMUNICATION

Warning signs shall be displayed in regulated areas and in all approaches to regulated areas. (A regulated area is defined as the area in which an employee may face exposure to cadmium at levels above the PEL.) The signs shall be illuminated, cleaned, and maintained so that the legend is readily visible, and they will include the following words:

- Danger
- Cadmium
- Cancer hazard
- Can cause lung and kidney disease
- Authorized personnel only
- Respirators required in this area

TRAINING

A training program will be provided for all employees who may be potentially exposed to cadmium. The program will assure employee participation and maintain a record of contents. Training must be provided prior to initial assignment.

Required training elements include:

- Explanation of the health hazards associated with cadmium exposure (See Appendix A of the cadmium standard at 29 CFR 1926.1127(a-n)).
- Information about where and how cadmium is used, stored, and released at the worksite. This includes processes or operations that involve potential cadmium exposure, especially above the PEL.
- Description of measures that employees can take to protect themselves from cadmium exposure, such as modification of smoking, personal hygiene precautions, and appropriate work practices.
- Explanation of emergency procedures.
- Informing employees of their rights of access to records.

TRAINING RECORDS

Training shall be recorded, and the records will be kept for one year; training must include the following:

- Identify of employee trained
- The signature of the person who conducted the training
- Date of training

Compressed Gas Cylinders

PURPOSE

To outline safety requirements and procedures surrounding the use of Compressed Gas Cylinders at **Cirks Construction Inc.**; hereafter referred to as "CCI,"

Regulations and Guidelines

Regulations established by government agencies, trade associations and the local authority having jurisdiction are put into place to minimize the risks associated with gas cylinders.

Written in accordance with

- OSHA (Occupational Safety and Health Administration)
- CGA (Compressed Gas Association)
- NFPA (National Fire Protection Association)

RESPONSIBILITIES

Supervisors

- Understand and comply with the requirements of this Program
- Ensure proper handling, use, storage, and transportation of compressed gas cylinders
- Train employees on the safe use, handling, storage, and transportation of compressed gas cylinders

Employees

- Completing training as necessary
- Complying with the procedures outlined in this Program
- Informing their supervisor of any problems, defective equipment, or lack of proper storage space for compressed gas cylinders used by them

POLICY

Compressed gas cylinders can present a variety of hazards due to their pressure and/or contents.

This program covers recommendations which should be followed for the use of compressed gas cylinders. It is the policy of CCI to cover general procedures and safe practices for the safe handling, storage, and transport of all compressed gas cylinders.

CYLINDER TYPES

Standard Measurements and Capacity

The most commonly used gas cylinders come in these measurements:

- Height: 4-5 feet tall
- Weight: 75-80 pounds (empty), up to 270 pounds (filled)
- Pressure: 2,200 pounds per square inch (psi)

Types of Cylinders

Gas cylinders can be made from a variety of materials, but there are four general classes:

- **Type 1** - Metal only, either seamless forged metal or seamless steel
- **Type 2** - Metal vessel, hoop wrapped with a fiber composite
- **Type 3** - Thin metal liner, wrapped with fiber
- **Type 4** - Metal-free liner from plastic, wrapped with fiber

Types of Gases

Compressed gas cylinders can store flammable gases, like acetylene, and inert gases, like helium.

Gas categories:

- **Liquefied gases** - Gases that are a liquid-vapor balance or equilibrium inside the cylinder, but which can become liquids at normal temperatures inside cylinders under pressure. Examples are anhydrous ammonia, chlorine, propane, and carbon dioxide
- **Non-liquefied gases** - Pressurized or permanent gases do not become liquid when compressed at normal temperature, no matter the pressure. Examples are: oxygen, nitrogen, helium, and argon
- **Dissolved gases** - Very unstable gases, like acetylene, which can explode at atmospheric pressure. These gases are packed with an inert, porous filler to prevent explosions

Types of Gas Cylinder Hazards

There are two primary types of hazards associated with the use, storage and handling of compressed gas cylinders:

- 1) The chemical hazard associated with the cylinder contents (corrosive, toxic, flammable)
- 2) The physical hazard represented by the presence of a heavy, high pressure vessel (explosion, fire, falling cylinder)

Safety Data Sheets (SDS) must be obtained and maintained for all compressed gases. Before using any compressed gas, be familiar with the respective Safety Data Sheet (SDS) for the gas being used

INSPECTION

CCI shall determine that compressed gas cylinders are in a safe condition to the extent that this can be determined by visual inspection. Visual and other inspections shall be conducted as prescribed in the Hazardous Materials Regulations of the Department of Transportation 49 CFR 1926.350(a)(9)

When a gas cylinder is received, it shall be inspected by the user for the following:

- A stamped hydrostatic test date within the last five years
- A stenciled or labeled identification of its contents
- Presence of a valve protection cap
- Signs of damage or leakage

Compressed gas cylinders should be visually inspected daily for leaks, cracks, etc. This visual inspection will include the cylinder, safety relief devices, valves, protection caps and stems. If a cylinder is thought to be defective, it should be returned to the supplier for replacement. Under no circumstances should employees attempt to repair defective cylinders. Gauges should be checked to ensure that the gas under pressure is not left in hoses when operations are completed.

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

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

Hoses and connections should be inspected regularly for damage.

When a cylinder cap cannot be removed by hand, cylinder shall be tagged "Do Not Use" and returned to the designated storage area for return to vendor.

Visual and other inspections shall be conducted to determine that compressed gas cylinders are in a safe condition.

USE AND HANDLING

Compressed gas cylinders should be handled only by those familiar with the hazards and who can demonstrate safety precautions working with cylinders. Cylinders are heavy and awkward to move, and improper handling can result in sprain, strain, falls, bruised, or broken bones.

Other hazards such as fire, explosion, chemical burns, poison, and cold burns could occur due to mishandling. Eye protection and appropriate footwear should always be used when transporting compressed gas cylinders. It is advised to always push cylinder carts and not pull.

Safe Handling Guidelines

The following guidelines may also be explained further as proceeded through the document:

- Accept only cylinders approved for use in interstate commerce for transportation of compressed gases
- Do not remove or change the marks and numbers stamped on the cylinders
- Cylinders must never be dragged, pushed, or pulled across the floor
- Transport cylinders weighing more than a total of 40 pounds (18.2 kg) on a hand or motorized truck, securing them from falling
- Keep the cylinders clean and protect them from cuts or abrasions
- Do not lift compressed gas cylinders with an electromagnet. Where cylinders must be handled by a crane or derrick, as on construction jobs, carry them in a cradle or suitable platform and take extreme care that they are not dropped or bumped. Do not use slings
- Do not drop cylinders or allow them to strike each other violently
- Do not use cylinders for rollers, supports, or any purpose other than to contain gas
- Do not tamper with safety devices in valves or on cylinders
- Consult the supplier of the gas when in doubt about the proper handling of a compressed gas cylinder or its contents
- Clearly write EMPTY in chalk on empty cylinders that are to be returned to the vendor
- Close cylinder valves and replace valve protection caps, if the cylinder is designed to accept a cap
- Load cylinders to be transported to allow as little movement as possible. Secure them to prevent violent contact or upsetting
- Always consider cylinders to be full and handle them with corresponding care.
- Securely always support compressed gas cylinders. Cylinders must not be left "free-standing" at any time, e.g., cylinders unloaded from truck to loading dock must be secured until placed on a hand truck for delivery within the building
- Compressed gas cylinders should never be subjected to a temperature above 125 degrees F or below 20 degrees F
- Never place cylinders where they might become part of an electrical circuit.
- Do not re-paint cylinders
- Never use a flame to detect flammable gas leaks. Always use soapy water

CYLINDER STORAGE

Because of the high internal pressure in compressed gas cylinders, they can become projectiles if stored in a manner that could damage the valve. Leaking cylinders can also cause an

atmospheric hazard or create an oxygen deficient atmosphere. All compressed gas cylinders must be properly stored in compliance with OSHA and NFPA code requirements.

Cylinders internal pressure can reach over 2,000 psi. In the event of a container breach, the cylinder becomes a potential projectile.

Inside of buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location, at least 20 (6.1m) feet from highly combustible materials such as oil or excelsior. Cylinders should be stored in assigned places away from elevators, stairs, or gangways.

Assigned storage spaces shall be located where cylinders will not be knocked over or damaged by passing or falling objects or subject to tampering by unauthorized persons. Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards. Storage areas shall be designated for full and empty cylinders and labeled.

Do not store reserve stocks of cylinders containing flammable gases with cylinders containing oxygen. They should be segregated. Inside of buildings, stored oxygen and fuel gas cylinders should be separated by a minimum of 20 feet, or there should be a fire-resistive partition between the oxygen and fuel gas cylinders. This is in accordance with NFPA Standard No. 51.

It is recommended the following precautions be taken for the storage of compressed gas cylinders:

- Cylinders must be stored in a dry, cool, well-ventilated, secure area
- All cylinders whether empty or full must be stored upright and secured by chains, straps or in racks to prevent them from falling
- Segregated cylinders by contents. For example, flammable gases must be stored separately from oxidizing gases by 20 feet or a 5-foot high, one-hour fire-rated wall
- Prevent smoking or open flames in oxidizer or flammable gas storage areas
- Cylinders shall be kept away from radiators and other sources of heat
- Do not expose cylinders to corrosive materials such as corrosive gas or other combustible materials
- Segregate full and empty cylinders, use "first in first out" inventory control method
- Store cylinders away from heavily traveled areas and emergency exits
- Provide adequate access for cylinder handling and material handling carts
- Visually inspect stored cylinders on a routine basis, look for indication of leakage
- All cylinder storage areas, outside or inside, shall be protected from extreme heat and cold and from access by unauthorized personnel
- Protect cylinders from any object that will produce a cut or other abrasion in the surface of the metal

Specific Gas Cylinder Storage Guidelines

Specific gas cylinder storage guidelines include additional precautions and guidelines for oxygen, hydrogen, and acetylene and liquefied fuel gas cylinders.

Oxygen cylinders should not be stored within 20 feet (6 meters) of highly combustible materials, oil, grease, wood shavings, or cylinders containing flammable gases. (However, for company operations, oxygen and acetylene are typically paired on a common transfer cart for use.)

If closer than 20 feet, cylinders should be separated by a wall with a fire-resistance rating of at least 60 minutes.

Hydrogen cylinders storage locations shall be permanently placarded as follows: "HYDROGEN-FLAMMABLE GAS-NO SMOKING-NO OPEN FLAMES," or equivalent.

Acetylene and liquefied fuel gas cylinders should be stored with the valve end up. If storage is within 100 feet (30.5 meters) of each other and not protected by automatic sprinklers, the total capacity of acetylene cylinders stored and used inside the building should be limited to 2,500 cubic feet. Acetylene storage areas must be well ventilated and open flames must be prohibited. Acetylene storage rooms should have no other compressed gases.

Only tools provided by the supplier should be used to open and close cylinder valves.

Cylinder storage room guidelines include:

- Storage rooms for cylinders containing flammable gases being well ventilated to prevent the accumulation of explosive concentrations of gas
- No ignition sources being permitted
- Smoking being prohibited
- All permanent wiring being in conduit
- Electric lights (portable and fixed) being equipped with guards to prevent breakage
- Electric switches being located outside the room

Ambient Temperature

CCI shall ensure that stored gas cylinders are stored in the same temperature range as that of the surrounding area. Outdoor storage tanks that are heated or cooled to counter variation in temperature should be classified as ambient.

However, a tank maintained at a high (or low) temperature not close to the normal range of temperatures of the region should be noted as greater (or less) than ambient temperature.

SECURING CYLINDERS

Securing Compressed Gas Containers, Cylinders, and Tanks. Compressed gas cylinders, containers, and tanks in use or in storage shall be secured to prevent them from falling or being knocked over by corraling them and securing them to a cart, framework, or fixed object by use of a restraint, unless otherwise permitted by NFPA 55.

Cylinders should be secured in one or more of the following ways:

- Compressed gas cylinders shall be always secured in an upright position except, if necessary, for short periods of time while cylinders are being hoisted or carried
- By a noncombustible, two-point restraint system (chains) that secures the cylinder
- By a noncombustible rack, framework, cabinet, approved strapping device, secured cylinder cart, or other substantial assembly that prevents the cylinder from falling
- Straps should surround the cylinder approximately 1/3 to 2/3 the height of the cylinder measured from the floor
- Gas cylinders must be secured to prevent falling due to accidental contact or vibration
- Compressed gas cylinders must be protected from sources of heat while stored in a well-protected, well ventilated, and dry location away from highly combustible materials

PLACING CYLINDERS

Cylinders shall be kept far enough away from the actual welding or cutting operation so that sparks, hot slag, or flame will not reach them. When this is impractical, fire-resistant shields shall be provided.

Cylinders shall be placed where they cannot become part of an electrical circuit. Electrodes shall not be struck against a cylinder to strike an arc.

Fuel gas cylinders shall be placed with valve end up whenever they are in use. They shall not be placed in a location where they would be subject to open flame, hot metal, or other sources of artificial heat.

Cylinders containing oxygen or acetylene, or other fuel gas shall not be taken into confined spaces.

TRANSPORTING REQUIREMENTS

When handling and transporting compressed gas cylinders, the following shall be always followed:

- Do not drag or roll cylinders horizontally. They shall not be intentionally dropped, struck, or permitted to strike each other violently

- When moving gas cylinders use a hand truck or cart with a chain to secure cylinders in an upright position
- Valve protection caps shall be in place and secured. Do not lift cylinders by their valve cap.
- Capped cylinders must have regulators removed prior to moving
- Do not handle more than one cylinder at a time unless a cart that is designed for such purpose is utilized
- Keep cylinder vertical, except for short periods of time while cylinders are being hoisted or carried
- OSHA regulations need to be followed on the job site, which can vary depending on site location
- When cylinders are hoisted, they shall be secured and kept upright on a cradle, signboard, or pallet. They shall not be hoisted or transported by means of magnets or choker slings
- When cylinders are transported by powered vehicles, they shall be secured in a vertical position

ICC specification cylinders containing pressurized liquid oxygen, nitrogen or argon must be transported, stored, and used in an upright position. These materials are maintained at extremely low temperatures, and cylinders must be kept upright to permit venting of vapor periodically to maintain safe internal pressures.

Valve protection caps shall not be used for lifting cylinders from one vertical position to another. Bars shall not be used under valves or valve protection caps to pry cylinders loose when frozen. Warm, not boiling, water shall be used to thaw cylinders loose.

Unless cylinders are firmly secured on a special carrier intended for this purpose, regulators shall be removed and valve protection caps put in place before cylinders are moved.

A suitable cylinder truck, chain, or other steadying device shall be used to keep cylinders from being knocked over while in use.

When work is finished, when cylinders are empty, or when cylinders are moved at any time, the cylinder valve shall be closed.

Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease), a minimum distance of 20 feet (6.1 m) or by a noncombustible barrier at least 5 feet (1.5 m) high having a fire-resistance rating of at least one-half hour.

PURCHASING AND RECEIVING

When purchasing and accepting shipment of gas cylinders, make sure that all cylinders are marked with correct labels (see the labeling section below). Do not rely on the color of the cylinder as the only determination of its contents. Make sure that the label is applied to the cylinder itself, not just the cap.

Cylinders should have a hydrostatic test date within the last five years. It is not legal to transport a cylinder that is past its hydrostatic test certification date.

Cylinder caps and valves should not be more than hand tightened. If you are unable to open the cylinder valve and cap with only hand pressure, do not take receipt of the cylinder.

LABELING

All compressed gases received, used, or stored must be labeled according to the United States Department of Transportation (DOT) and the Occupational Safety and Health Agency (OSHA) Hazard Communication regulations.

Compressed gas cylinders shall be legibly marked for the purpose of identifying the gas content with either the chemical or the trade name of the gas. Such marking shall be by means of stenciling, stamping, or labeling, and shall not be readily removable. Whenever practical, the marking shall be located on the shoulder of the cylinder.

The following rules apply:

- A durable label should be provided that cannot be removed from the compressed gas cylinder
- Compressed gas cylinders that do not clearly identify its contents by name should not be accepted for use
- Color-coding is not a reliable means of identification; cylinder colors vary from supplier to supplier, and labels on caps have no identification value because many caps are interchangeable
- Tags should be attached to the gas cylinders on which the names of the users and dates of use can be entered

If the labeling on the gas cylinder becomes unclear or defaced so that the contents cannot be identified, the cylinder should be marked "contents unknown" and the manufacturer must be contacted regarding appropriate procedures for removal. CCI Forbids the use of any gas cylinders with unknown contents.

Cylinders must be labeled with the following information:

- DOT or ICC (prior to 1968) identification number - ex. DOT3AA2265

- Cylinder serial number - ex. SG12152A
- Original owner of the cylinder - ex. APROINC
- Date of maintenance to indicate the original hydrostatic test (month/year)
- Current owner of the cylinder on the neck ring
- Retest markings to indicate if the cylinder qualifies for a 10 percent overfill or meets the requirements for a 10-year retest
- Cylinder Trak bar code to track cylinders through the filling process
- Cylinder manufacturer's inspection marking, which is unique to the inspector
- Cylinder tare weight, the weight of the cylinder plus the valve without product, preceded by the letters "TW"

Cylinders must also identify their contents in letters at least one inch high, which is typically in the form of a sticker applied near the neck of the cylinder. This is the only acceptable means of identifying non-medical-grade cylinder contents! There are only five medical grade gases that are permitted to be identified by color. All others are not required to be color-coded, and color codes may vary from one supplier to another.

TREATMENT OF CYLINDERS

Cylinders, whether full or empty, shall not be used as rollers or supports. No person other than the gas supplier shall attempt to mix gases in a cylinder. No one except the owner of the cylinder or person authorized by the owner, shall refill a cylinder. No one shall use a cylinder's contents for purposes other than those intended by the supplier.

The cylinder valve shall always be opened slowly to prevent damage to the regulator. For quick closing, valves on fuel gas cylinders shall not be opened more than 1 1/2 turns. When a special wrench is required, it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel gas flow can be shut off quickly in case of an emergency. In the case of manifolded or coupled cylinders, at least one such wrench shall always be available for immediate use. Nothing shall be placed on top of a fuel gas cylinder, when in use, which may damage the safety device or interfere with the quick closing of the valve.

Fuel gas shall not be used from cylinders through torches or other devices which are equipped with shutoff valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.

Before a regulator is removed from a cylinder valve, the cylinder valve shall always be closed, and the gas released from the regulator.

Hose which has been subject to flashback, or which shows evidence of severe wear or damage, shall be tested to twice the normal pressure to which it is subject, but in no case less than 300

p.s.i. Defective hose, or hose in doubtful condition, shall not be used. Boxes used for the storage of gas hose shall be ventilated.

Torches in use shall be inspected at the beginning of each working shift for leaking shutoff valves, hose couplings, and tip connections. Defective torches shall not be used.

Regulators and Gauges

Oxygen and fuel gas pressure regulators, including their related gauges, shall be in proper working order while in use.

Oil and Grease Hazards

Oxygen cylinders and fittings shall be kept away from oil or grease. Cylinders, cylinder caps and valves, couplings, regulators, hose, and apparatus shall be kept free from oil or greasy substances and shall not be handled with oily hands or gloves. Oxygen shall not be directed at oily surfaces, greasy clothes, or within a fuel oil or other storage tank or vessel.

TUBING AND PIPING CONNECTIONS

Hazardous gases must be dispensed using systems that are properly cleaned and compatible with the gas in use. "Burst pressure" of tubing and piping must be twice the maximum pressure on the second stage regulator. Exceptions to this requirement may be made for short sections of tubing when it and the compressed gas cylinder are completely enclosed in a fume hood and low pressures and flow rates are used.

Use "hard" piping (such as copper and stainless-steel tubing) whenever possible (as opposed to flexible or plastic tubing). Never use cast iron pipe or fittings.

Teflon tape should never be used on cylinder connections or tube-fitting connections. Use Teflon tape only on pipe threads where the seal is made at the threads. All other connections have metal to metal face seals or gasket seals.

When flexible tubing must be used, select tubing compatible with the chemical and pressure properties of the gas being used in the system. Do not use flexible tubing for highly toxic gases. Flexible tubing should only be used within "line of sight." Do not run flexible tubing through walls, ceiling spaces, doorways, or other non-visible pathways if chafing is likely to occur.

Always clamp flexible tubing connections. Use a clamp approved for the maximum allowable pressure that the connection is subject to. Never use wire, which may cut the flexible tubing.

Most flexible tubing deteriorates with age or exposure to chemicals or UV light. Replace old flexible tubing before it deteriorates.

Always leak-check tubing or piping connections when using hazardous gases. Secure and support tubing or piping to keep it in place and to prevent "whipping" if a connection fails under pressure. Appropriately rated flexible lines are suitable for manifold/cylinder connections.

REGULATORS

Regulators and gauges. Oxygen and fuel gas pressure regulators, including their related gauges, shall be in proper working order while in use.

Before using a gas cylinder an inspection must be made to ensure the regulator is appropriate for use and is free from oil, grease, dirt, and solvents.

Regulators reduce high pressure gas on a cylinder or process line to a lower usable level. Regulators provide additional safety measures by preventing fire/explosions, chemical or cold burns, poisoning and system over-pressurization.

Safety considerations include materials of construction to ensure chemical compatibility, and never use any regulator for gases other than those for which it is intended. Care must also be taken when using left-handed threaded connectors. Do not force connected or over tighten a connection. Check the bolt for hash marks indicating a left-handed threaded connection.

A regulator allows the high pressure in a gas cylinder to be reduced to a manageable and usable pressure. A regulator controls delivery pressure and should not be used for flow control. Regulators can be single-stage or two-stage.

A single-stage pressure regulator is used when inlet pressure does not vary greatly or when readjusting the inlet pressures does not cause a problem with the experiment/application.

The pressure adjustment handle will need to be regularly adjusted to maintain a constant outlet pressure.

A two-stage pressure regulator is used with gas cylinders to deliver a constant pressure of gas without constant minor adjustments of the pressure adjustment handle when the pressure inside the cylinder changes. The first stage of this regulator decreases the inlet pressure to a preset pressure. The second stage then reduces this pressure to the desired delivery pressure.

Most states require that a valve cap is placed over the valve during transport and while the tanks is being stored for more than 24 hours without use.

VALVE PROTECTION

Compressed gas cylinder, container, and tank valves shall be protected from physical damage by means of protective caps, collars, or similar devices.

Valve Protection of individual valves shall not be required to be installed on individual cylinders, containers, or tanks installed on tube trailers or similar transportable bulk gas systems equipped with manifolds that are provided with a means of physical protection that will protect the valves from physical damage when the equipment is in use. Protective systems required by DOT for over the road transport shall provide an acceptable means of protection.

Valve-Protective Caps

Where compressed gas cylinders, containers, and tanks are designed to accept valve-protective caps, the user shall keep such caps on the compressed gas cylinders, containers, and tanks at all times, except when empty, being processed, or connected for use.

Safety Precautions:

- Valve protection caps for a cylinder shall always be in place and hand tight except when cylinders are secured, in use, or connected for use.
- Never force a cap. The cap shall only be hand tight.
- Cylinder valves are to be protected with the standard cap when not in use (empty or full). Regulators are to be protected with covers where there is likelihood of damage
- Never use a cylinder without a regulator.
- Regulators are gas specific and are generally not interchangeable. Make sure that the regulator and valve fittings are compatible.
- After attaching the regulator, and before the cylinder valve is opened, check the adjusting screw of the regulator to see that it is released. Never permit the gas to enter the regulator suddenly.
- Never try to stop a leak between a cylinder and regulator by tightening the union nut unless the valve has been closed first.
- Never use adapters to fit valves to cylinders or regulators to valves.

VALVE OUTLET CAPS OR PLUGS

Gastight valve outlet caps or plugs shall be provided and in place for all full or partially full cylinders, containers, and tanks containing toxic, highly toxic, pyrophoric, or unstable reactive Class 3 or Class 4 gases that are in storage.

General

Compressed gas containers, cylinders, tanks, and systems in storage or use shall be separated from materials and conditions that present exposure hazards to or from each other. Gas cylinders, containers, and tanks shall be separated.

The distances shall be permitted to be reduced without limit where compressed gas cylinders, tanks, and containers are separated by a barrier of noncombustible construction that has a fire resistance rating of at least 0.5 hour and interrupts the line of sight between the containers.

The 20 ft (6.1 m) distance shall be permitted to be reduced to 5 ft (1.5 m) where one of the gases is enclosed in a gas cabinet or without limit where both gases are enclosed in gas cabinets.

A noncombustible partition without openings or penetrations and extending sides not less than 18 in. (457 mm) above and to the sides of the storage area shall be permitted in the lieu of the minimum distance.

DISPOSAL

Disposal of full or partially full cylinders requires HazMat certification for shipping. To dispose of a cylinder, first ensure that it is empty of its contents. At that point you have three choices, depending on the type of cylinder and type of gas stored:

- Contact a recycling facility which accepts shipping of empty cylinders.
- Refill the cylinder for reuse if refilling of that substance is allowed and the cylinder is rated for refilling.
- Dispose of the cylinder via landfill if allowed in your area, or have it recycled for scrap metal.

PERSONAL PROTECTIVE EQUIPMENT

The Safety Data Sheets for each gas you will be using should detail the types of Personal Protective Equipment (PPE) that should be used. Staff should be trained on the use of PPE, and it should be maintained and stored correctly. Commonly required PPE may include:

- Eye protection, often full goggles instead of standard safety glasses
- Protective gloves, possibly including some type of cold insulation, depending on the type of gas
- Protective footwear to prevent damage from cylinders slipping or falling
- Breathing apparatus
- Protective clothing, like coveralls or overalls
- Hearing protection

EMERGENCY PROCEDURES

Emergencies can develop related to compressed gas cylinders due to:

- Fire threatening a cylinder
- Leaking of toxic gases
- Inert gas leaks causing low oxygen in a room

- Unplanned chemical or other reaction

If a leak cannot be fixed by tightening fittings, or any other emergency situation arises, the area should be evacuated. No one should attempt to move the cylinder, and emergency personnel should be contacted and notified of the location of the cylinders. More extensive emergency procedures should be developed by each organization housing cylinders.

DEPARTMENT OF TRANSPORTATION

Over the road transport is regulated by the Department of Transportation (DOT) where the movement is taking place. Check with the DOT in your State for specific requirements. All cylinders used shall meet the Department of Transportation requirements published in 49 CFR Part 178, Subpart C, Specification for Cylinders.

TRAINING

Employees who use and handle compressed gas cylinders will be trained before initial job assignment and/or job reassignment. Employees will be trained in the hazards, safe use, inspection, handling, and storage of compressed gas cylinders. Refresher training shall be provided at the discretion of the supervisor.

Concrete/Masonry Construction

PURPOSE

To outline Concrete/Masonry Construction expectations and guidelines for all employees and subcontractors performing work on behalf of **Cirks Construction Inc.**; hereafter referred to as "CCI,"

RESPONSIBILITIES

Responsible Safety Person

- Maintain records of safety training and any applicable craft skill certifications and or licenses for the task

Supervisors

- Ensure that all personnel performing work on behalf of CCI possess a sufficient level of competency for the task
- Administering toolbox talks safety meetings
- Observation and monitoring of crew members to ensure compliance
- Reassignment of any worker not competent for assigned task
- Ensure employee adherence to this policy

POLICY

Each employee shall comply with occupational safety and health standards and all rules, regulations, and CCI policy which are applicable to his own actions and conduct.

EXPOSURE TO RESPIRABLE CRYSTALLINE SILICA

Reference Silica Exposure Control Policy

CONSTRUCTION LOADS

No construction loads will be placed on a concrete structure or portion of a concrete structure unless CCI determines, based on information received from a person who is qualified in structural design, that the structure or portion of the structure can support the loads.

When Reinforcing steel, all protruding reinforcing steel, onto and into which employees could fall, will be guarded to eliminate the hazard of impalement.

POST-TENSIONING OPERATIONS

No employee (except those essential to the post-tensioning operations) will be permitted to be behind the jack during tensioning operations. Signs and barriers will be erected to limit employee access to the post-tensioning area during tensioning operations.

Note: No employee will be permitted to ride concrete buckets.

WORKING UNDER LOADS

No employee will be permitted to work under concrete buckets while buckets are being elevated or lowered into position. To the extent practical, elevated concrete buckets will be routed so that no employee, or the fewest number of employees, are exposed to the hazards associated with falling concrete buckets.

No employee will be permitted to apply a cement, sand, and water mixture through a pneumatic hose unless the employee is wearing protective head and face equipment.

REQUIREMENTS FOR EQUIPMENT AND TOOLS/BULK CEMENT STORAGE

Bulk storage bins, containers, and silos will be equipped with the following:

- Conical or tapered bottoms
- Mechanical or pneumatic means of starting the flow of material

No employee will be permitted to enter storage facilities unless the ejection system has been shut down, locked out, and tagged to indicate that the ejection system is not to be operated.

Concrete mixers with one cubic yard (-8 m (3)) or larger loading skips will be equipped a mechanical device to clear the skip of materials; and guardrails installed on each side of the skip.

Powered and rotating type concrete troweling machines that are manually guided will be equipped with a control switch that will automatically shut off the power whenever the hands of the operator are removed from the equipment handles.

Concrete buggy handles will not extend beyond the wheels on either side of the buggy.

CONCRETE PUMPING SYSTEMS

Concrete pumping systems using discharge pipes will be provided with pipe supports designed for 100 percent overload. Compressed air hoses used on concrete pumping system will be provided with positive fail-safe joint connectors to prevent separation of sections when pressurized. Concrete delivery hoses shall not be used as end hoses, an end hose is a flexible concrete delivery hose which has only one end coupling. Concrete pumping equipment and

placing booms shall be set-up and operated in accordance with the manufacturer's operation and safety manuals. Concrete placing booms shall be posted with durable warning signs. A qualified attendant or operator shall visually inspect the machine's controls and functional mechanisms for maladjustment, damage or deterioration prior to daily use. Any condition that affects the safe operation shall be corrected prior to use. Inspection, maintenance and repairs shall be performed by a qualified person.

Concrete Buckets

Concrete buckets equipped with hydraulic or pneumatic gates will have positive safety latches or similar safety devices installed to prevent premature or accidental dumping. Concrete buckets will be designed to prevent concrete from hanging up on top and the sides.

Tremies

Sections of tremies and similar concrete conveyances will be secured with wire rope (or equivalent materials) in addition to the regular couplings or connections.

Bull Floats

Bull float handles used where they might contact energized electrical conductors, will be constructed of nonconductive material, or insulated with a nonconductive sheath whose electrical and mechanical characteristics provide the equivalent protection of a handle constructed of nonconductive material.

Masonry Saws

Masonry saw will be guarded with a semicircular enclosure over the blade. A method for retaining blade fragments will be incorporated in the design of the semicircular enclosure.

LOCKOUT/TAGOUT PROCEDURES

No employee will be permitted to perform maintenance or repair activity on equipment (such as compressors mixers, screens or pumps used for concrete and masonry construction activities) where the inadvertent operation of the equipment could occur and cause injury, unless all potentially hazardous energy sources have been locked out and tagged. Tags will read "**Do Not Start**" or similar language to indicate that the equipment is not to be operated.

GENERAL REQUIREMENTS FOR FORMWORK

Formwork will be designed, fabricated, erected, supported, braced, and maintained so that it will be capable of supporting without failure all vertical and lateral loads that may reasonably be anticipated to be applied to the formwork.

Drawings or plans, including all revisions, for the jack layout, formwork (including shoring equipment,) working decks, and scaffolds, will be available at the jobsite.

SHORING AND RESHORING

All Shoring equipment (including equipment used in reshoring operations) will be inspected prior to erection to determine that the equipment meets the requirements specified in the formwork drawings.

Shoring equipment found to be damaged such that its strength is reduced to less than that required by this section will not be used for shoring.

Erected shoring equipment will be inspected immediately prior to, during, and immediately after concrete placement. Shoring equipment that is found to be damaged or weakened after erection, such that its strength is reduced to less than that required by this section, will be immediately reinforced. The sills for shoring will be sound, rigid, and capable of carrying the maximum intended load.

All base plates, shore heads, extension devices, and adjustment screws will be in firm contact, and secured, when necessary, with the foundation and the form. Eccentric loads on shore heads and similar members will be prohibited unless these members have been designed for such loading.

Whenever single post shores are used one on top of another (tiered), CCI will comply with the following specific requirements in addition to the general requirements for formwork:

- The design of the shoring will be prepared by a qualified designer and the erected shoring will be inspected by an engineer qualified in structural design.
- The single post shores will be vertically aligned.
- The single post shores will be spliced to prevent misalignment.
- The single post shores will be adequately braced in two mutually perpendicular directions at the splice level. Each tier will also be diagonally braced in the same two directions.

Adjustment of single post shores to raise formwork will not be made after the placement of concrete.

Reshoring will be erected, as the original forms and shores are removed, whenever the concrete is required to support loads more than its capacity.

VERTICAL SLIP FORMS

The steel rods or pipes on which jacks climb or by which the forms are lifted will be specifically designed for that purpose; and adequately braced where not encased in concrete.

Forms will be designed to prevent excessive distortion of the structure during the jacking operation. All vertical slip forms will be provided with scaffolds or work platforms where employees are required to work or pass. Jacks and vertical supports will be positioned in such a manner that the loads do not exceed the rated capacity of the jacks.

The jacks or other lifting devices will be provided with mechanical dogs or other automatic holding devices to support the slip forms whenever failure of the power supply or lifting mechanism occurs.

The form structure will be maintained within all design tolerances specified for plumbness during the jacking operation. The predetermined safe rate of lift will not be exceeded.

Reinforcing Steel

Reinforcing steel for walls, piers, columns, and similar vertical structures will be adequately supported to prevent overturning and to prevent collapse. CCI will take measures to prevent unrolled wire mesh from recoiling. Such measures may include, but are not limited to, securing each end of the roll, or turning over the roll.

REMOVAL OF FORMWORK

Forms and shores (except those used for slabs on grade and slip forms) will not be removed until CCI determines that the concrete has gained sufficient strength to support its weight and superimposed loads. Such determination will be based on compliance with one of the following:

- The plans and specifications stipulate conditions for removal of forms and shores, and such conditions have been followed.
- The concrete has been properly tested with an appropriate ASTM standard test method designed to indicate the concrete compressive strength, and the test results indicate that the concrete has gained sufficient strength to support its weight and superimposed loads.

Reshoring will not be removed until the concrete being supported has attained adequate strength to support its weight and all loads in place upon it.

PRECAST CONCRETE

Precast concrete wall units, structural framing, and tilt-up wall panels will be adequately supported to prevent overturning and to prevent collapse until permanent connections are completed. Lifting inserts which are embedded or otherwise attached to tilt-up precast concrete members will be capable of supporting at least two times the maximum intended load applied or transmitted to them.

Lifting inserts which are embedded or otherwise attached to precast concrete members, other than the tilt-up members, will be capable of supporting at least four times the maximum intended load applied or transmitted to them. Lifting hardware will be capable of supporting at least five times the maximum intended load applied transmitted to the lifting hardware.

No employee will be permitted under precast concrete members being lifted or tilted into position except those employees required for the erection of those members.

LIFT-SLAB OPERATIONS

Lift-slab operations will be designed and planned by a registered professional engineer who has experience in lift-slab construction. Such plans and designs will be implemented by CCI and will include detailed instructions and sketches indicating the prescribed method of erection.

These plans and designs will also include provisions for ensuring lateral stability of the building/structure during construction.

Jacks/lifting units will be marked to indicate their rated capacity as established by the manufacturer. Jacks/lifting units will not be loaded beyond their rated capacity as established by the manufacturer.

Jacking equipment will be capable of supporting at least two and one-half times the load being lifted during jacking operations and the equipment will not be overloaded. To this provision, jacking equipment includes any load bearing component which is used to carry out the lifting operation(s).

Such equipment includes, but is not limited, to the following:

- Threaded rods, lifting attachments, lifting nuts, hook-up collars, T-caps, shear heads, columns, and footings.

Jacks/lifting units will be designed and installed so that they will neither lift nor continue to lift when they are loaded more than their rated capacity. Jacks/lifting units will have a safety device installed which will cause the jacks/lifting units to support the load in any position in the event

any jack lifting unit malfunctions or loses its lifting ability. Jacking operations will be synchronized in such a manner to ensure even and uniform lifting of the slab.

During lifting, all points at which the slab is supported will be kept within 1/2 inch of that needed to maintain the slab in a level position. If leveling is automatically controlled, a device will be installed that will stop the operation when the 1/2-inch tolerance set forth in this section is exceeded or where there is a malfunction in the jacking (lifting) system.

If leveling is maintained by manual controls, such controls will be located in a central location and attended by a competent person while lifting is in progress. In addition, the competent person must be experienced in the lifting operation and with the lifting equipment being used. The maximum number of manually controlled jacks/lifting units on one slab will be limited to a number that will permit the operator to maintain the slab level within specified tolerances of this section, but in no case will that number exceed 14.

No employee, except those essential to the jacking operation, will be permitted in the building/structure while any jacking operation is taking place unless the building/structure has been reinforced sufficiently to ensure its integrity during erection. The phrase "reinforced sufficiently to ensure its integrity" used in this paragraph means that a registered professional engineer, independent of the engineer who designed and planned the lifting operation, has determined from the plans that if there is a loss of support at any jack location, that loss will be confined to that location and the structure will remain stable. Under no circumstances, will any employee who is not essential to the jacking operation be permitted immediately beneath a slab while it is being lifted.

To this section, a jacking operation begins when a slab or group of slabs is lifted and ends when such slabs are secured (with either temporary connections or permanent connections).

When making temporary connections to support slabs, wedges will be secured by tack welding, or an equivalent method of securing the wedges to prevent them from falling out of position. Lifting rods may not be released until the wedges at that column have been secured.

All welding on temporary and permanent connections will be performed by a certified welder, familiar with the welding requirements specified in the plans and specifications for the lift-slab operation. Load transfer from jacks/lifting units to building columns will not be executed until the welds on the column shear plates (weld blocks) are cooled to air temperature.

Jacks/lifting units will be positively secured to building columns so that they do not become dislodged or dislocated. Equipment will be designed and installed so that the lifting rods cannot slip out of position or CCI will institute other measures, such as the use of locking or blocking

devices, which will provide positive connection between the lifting rods and attachments and will prevent components from disengaging during lifting operations.

MASONRY

A limited access zone will be established whenever a masonry wall is being constructed. The limited access zone will conform to the following.

- The limited access zone will be established prior to the start of construction of the wall.
- The limited access zone will be equal to the height of the wall to reconstructed plus four feet and will run the entire length of the wall.
- The limited access zone will be established on the side of the wall which will be un-scaffolded.
- The limited access zone will be restricted to entry by employees actively engaged in constructing the wall. No other employees will be permitted to enter the zone.
- The limited access zone will remain in place until the wall is adequately supported to prevent overturning and to prevent collapse unless the height of wall is over eight feet, in which case, the limited access zone will remain in place until the requirements of the following paragraph have been met.

All masonry walls over eight feet in height will be adequately braced to prevent overturning and to prevent collapse unless the wall is adequately supported so that it will not overturn or collapse. The bracing will remain in place until permanent supporting elements of the structure are in place.

Confined Spaces - Federal

PURPOSE

The purpose of this document is to outline the Confined Space Safety Policy for **Cirks Construction Inc.**; hereafter referred to as "CCI," To prevent injury to personnel, this policy will ensure specific precautions are taken while working in and around confined spaces.

RESPONSIBILITIES

CCI shall:

- Provide training to all employees and personnel
- Maintain records of all training
- Audit/inspect work conditions, operations, and documentation
- Provide each manager/supervisor with necessary training and assist each manager in identifying confined spaces encountered by the supervisor's employees canceled permits to evaluate the overall effectiveness of the Confined Space Entry Program and ensure that employees participating in entry operations are protected from permit space hazards.

Supervisors

Supervisors shall identify and report all job areas and locations that are or may be confined spaces to the Responsible Safety Person.

A Competent Person

Before work begins at a worksite, a Competent Person identifies:

- Location of each known permit space
- Hazards or potential hazards in each space
- Precautions that the Controlling Contractor or any previous controlling contractor or entry employer have implemented for the protection of employees in the permit space.)

Attendant

An individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned. The attendant summons helps in the event of an emergency and does not enter the permit space.

Entrant

An employee who is authorized by CCI to enter a permit space. The entrant communicates with the attendant to check-in or request rescue. The entrant must obey all commands of the attendant to exit the space.

Entry Supervisor

The person (such as the 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.

All affected company employees must understand the hazards prior to participating in entry into a permit required confined space.

POLICY

CCI shall follow all OSHA requirements for practices and procedures to protect employees engaged in construction activities at a worksite with one or more confined spaces.

Locations where confined spaces may occur include, but are not limited to, the following: Bins; boilers; pits (such as elevator, escalator, pump, valve or other equipment); manholes (such as sewer, storm drain, electrical, communication, or other utility); tanks (such as fuel, chemical, water, or other liquid, solid or gas); incinerators; scrubbers; concrete pier columns; sewers; transformer vaults; heating, ventilation, and air-conditioning (HVAC) ducts; storm drains; water mains; precast concrete and other pre-formed manhole units; drilled shafts; enclosed beams; vessels; digesters; lift stations; cesspools; silos; air receivers; sludge gates; air preheaters; step up transformers; turbines; chillers; bag houses; and/or mixers/reactors.

PERMIT REQUIRED CONFINED SPACE

CCI shall evaluate the workplace to determine if any spaces are permit-required confined spaces. If the workplace contains permit spaces, CCI shall 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 the permit spaces.

DANGER
PERMIT-REQUIRED CONFINED SPACE
DO NOT ENTER

CCI shall:

- Implement the measures necessary to prevent unauthorized entry
- Identify and evaluate the hazards of permit spaces before employees enter them
- Develop and implement the means, procedures, and practices necessary for safe permit space entry operations, including, but not limited to, the following:
 - Specifying acceptable entry conditions
 - Providing each authorized entrant or that employee's authorized representative with the opportunity to observe any monitoring or testing of permit spaces
 - Isolating the permit space and physical hazard(s) within the space

- Purging, inserting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards

Field Supervisor

The field supervisor with confined space entry oversight responsibilities shall be trained in the significance of confined space entry procedures and shall be responsible for the implementation and enforcement of the elements of this procedure in operation. Field supervisors are responsible for all elements listed in the definition for Entry Supervisor (see definition section).

All spaces operated by CCI that meet the definition of permit required confined spaces shall be identified and appropriately marked, and access to such spaces shall be controlled. Employees are prohibited from entering any space meeting the definition of permit required confined space, unless the following conditions are met:

- CCI determines that employees must enter permit required confined spaces to perform the mission of the Unit and/or the duties of the employee.
- Employees are trained in the duties under this policy which they are to perform.
- The space is rendered safe for entry by:
 - Issuance and compliance with the conditions of a permit
 - The space is reclassified as a non-permit space; or
 - Alternate Entry Procedures are performed.

Permits issued under the procedures in this policy shall be limited in duration to no longer than eight hours. A formal review of the confined space procedure shall be performed by CCI during the annual inspection that covers site-specific situations, changes in working practice and as part of an annual document review process, i.e., enhances existing content, removes system deficiencies.

CCI shall review entry operations when the measures taken under the permit space program may not protect employees and revise the program to correct deficiencies found to exist before subsequent entries are authorized

CCI shall Review the permit space program, using the canceled permits retained within 1 year after each entry and revise the program as necessary to ensure that employees participating in entry operations are protected from permit space hazards.

CCI must consult with affected employees and their authorized representatives on the development and implementation of all aspects of the permit space program. CCI must make available to each affected employee and his/her authorized representatives all information required to be developed by this standard.

Alternate Procedures to Enter a Space Under Non-Permit Conditions

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

EMPLOYEE CONTROLLED CONFINED SPACE

Identification of Confined Spaces

- CCI shall identify each space under their jurisdiction which meets the definition of confined space, if any exist, and shall maintain a list of such spaces.
- CCI shall determine if the confined space meets the definition of permit required confined space.
- Each confined space on the list shall be designated as a non-permit or permit space.
- The hazards of each permit space shall be catalogued.

Distribution

The list shall be distributed to all affected managers and employees.

Signage

CCI shall provide for a Danger sign to be posted at the means of ingress to each identified permit and non-permit confined space. Signs shall meet the requirements of Danger signs.

- The legend on the signs for permit spaces shall state:

**PERMIT REQUIRED CONFINED SPACE
DO NOT ENTER WITHOUT AUTHORIZATION AND PERMIT**

- The legend on the signs for non-permit spaces shall state:

**CONFINED SPACE
DO NOT ENTER WITHOUT AUTHORIZATION**

The supervisor with jurisdiction over employees who are required to enter an identified confined space shall:

- Receive training as an Entry Supervisor.
- Determine whether employees enter permit spaces or perform work within non-permit spaces that may cause the space to meet the definition for permit required confined space during the work activities. If so, the supervisor shall:
 - Select an Entry Supervisor(s) to oversee entry activities, and provide for training of the employee(s)
 - Ensure that affected employees receive training as entrants
 - Procure the necessary equipment to perform the tests required for entry

- Ensure that an adequate number of employees have received training as attendants
- Contact the local emergency rescue agency and establish assurance that they will perform rescue coverage during entry operations.
- The supervisor, with the assistance of CCI management as necessary, shall ensure that the rescue services are adequately trained and equipped to perform rescue operations from the space in compliance with safety regulations.
- Rescue service must be on-site for immediately dangerous to life and health (IDLH) conditions while work is being performed.
- The supervisor shall procure this assurance in writing
 - The supervisor should invite rescue personnel to the site to pre-plan rescue operations; and
 - If the rescue services cannot or will not perform such services, the supervisor or employee shall develop and implement a means to perform rescue for the space.

For each entry into **a non-permit space**, the designated Entry Supervisor shall review the work to be performed, to determine and carry out the following:

- If the work introduces a hazard into the space that will cause it to meet the definition for permit required confined space, the supervisor shall:
 - Temporarily reclassify the space as a permit space
 - Follow the procedures for entry into a permit space
- Upon termination of the permit, re-inspect the space and take whatever actions necessary to remove the created hazards; and
- Reclassify the space as a non-permit space.

If the work does not introduce a hazard, the Entry Supervisor may authorize entry into the space.

For each entry into **a permit space**, the designated Entry Supervisor shall:

- Perform the pre-entry duties of the Entry Supervisor on the permit space to be entered
- Prepare an entry permit, reclassify the space as a non-permit space, or authorize alternate entry procedures, in compliance with the relevant procedures of this section
- Perform the post-entry duties of the Entry Supervisor
- Collect the permit from the attendant at the end of entry, or prepare the documentation for reclassification or alternate entry; and
- Maintain the permit or documentation for the required retention period.

For the duration of each entry into a permit space, the entrants and attendants shall perform the duties outlined in these procedures and shall return the permit or documentation to the Entry Supervisor upon termination of entry. An attendant **MUST** be on duty outside the confined space

for the duration of entry operations. If multiple spaces are to be assigned to a single attendant, include in the permit program the means and procedures to enable the attendant to respond to an emergency.

A person MUST NOT ENTER a confined space at a work site without a valid entry permit. An employer must establish an entry permit system for a confined space that:

- Lists the name of each worker who enters the confined space and the reason for their entry
- Gives the location of the confined space
- Specifies the time during which an entry permit is valid
- Considers the work being done in the confined space; and
- Considers the code of practice requirements for entering, being in, and leaving a confined space.

CCI will ensure that, before a worker enters a permit required confined space an entry permit is properly completed, signed by a competent person and a copy kept readily available.

CONTRACTORS

CCI shall ensure that every contract for work within an identified permit space, or work within a non-permit space that will introduce a reclassifying hazard, shall:

- Apprise the contractor that the space is a permit-required confined space and of the hazards within the space
- Require the contractor to control entry into the space by a permit system meeting; and
- Require the contractor to eliminate any temporary hazards created by the work or notify the supervisor responsible for the space of any permanent hazards created by the work.

The Contractor or its designee shall notify the responsible supervisor prior to entry.

- The supervisor shall notify any employees near or affected by entry; and
- If employees shall enter the space with contracted employees, the supervisor shall ensure that entry operations are coordinated with the contractor or designee to assure that:
 - All entrants of both employers can be accounted for during the entry
 - The work of one employer does not endanger the employees of the second employer
 - There is a properly trained attendant in place whenever employees of either employer have entered the space; and
 - Temporary hazards are eliminated, and the supervisor is apprised of new permanent hazards.

The Contractor or designee shall meet with the supervisor after completion of the entry to provide notification of:

- Any new permanent hazards created by the work; and/or
- Any unidentified hazards encountered during the entry.

REEVALUATION

CCI shall re-evaluate identified confined spaces within their jurisdiction to determine if such spaces should be added, deleted, or reclassified.

- Re-Evaluation shall be performed:
 - After notification by the responsible supervisor of a change in the hazards of a confined space
 - After review by CCI during the annual inspection; and
 - After notification of changes in hazards in a confined space by employees, managers, or any other source.

FIELD STAFF

Each manager shall determine by job title any field staff that may enter permit required confined spaces and shall document the determination. Managers of employees authorized to enter permit spaces shall:

- Procure the equipment necessary for entry testing and develop procedures to provide Entry Supervisors with the equipment as necessary
- Designate and train Entry Supervisors, Attendant and Entrants.
 - Field employees entering a permit space may be both the Entry Supervisor and the Entrant, or the Entry Supervisor and the Attendant.
 - Field employees serving as an Attendant for a permit space entry shall not be an Entrant during that entry unless relieved by another authorized attendant.
- Designate and train a Program Coordinator responsible for maintaining the required canceled permits and documentation.
- Establish procedures to provide for rescue operations.
 - The manager may contact emergency rescue personnel in each location employees are likely to encounter permit spaces, and procure in writing assurance that the emergency service:
 - Is trained in rescue procedures for the type of space employees enter
 - Is equipped to perform rescue from the type of space; and
 - If contacted prior to entry by the Entry Supervisor, will indicate whether they will or will not provide rescue coverage during that entry.
- The manager may elect to develop procedures requiring Entry Supervisors to contact emergency services prior to each entry to procure coverage. Such procedures shall ensure that the Entry Supervisor determines that the contacted rescue services are

properly trained and equipped to perform rescue in the specified space, are aware of the entry and exit times, agree to provide rescue coverage for that time, and will notify the attendant should rescue coverage end for any reason.

- The manager may elect to establish other means of guaranteeing and certifying rescue coverage. Such procedures shall address training, practice, equipment, and other relevant issues.
- Authorized employees encountering a permit space which they need to enter to carry out their job duties shall have a trained Entry Supervisor to coordinate with the entity controlling the space prior to entry.
- The Entry Supervisor shall perform the pre-entry duties for the permit space in concert with the controlling entity.
- If the controlling entity has a permit required confined space program:
 - The Entry Supervisor shall conform to the requirements of that program where they do not conflict or provide less protection than our procedures
 - The Entry Supervisor may authorize the use of an adequately trained attendant provided by the controlling entity, upon provision or verification of training. The attendant's name, position, and employer shall be recorded on the permit
 - The Entry Supervisor may accept actions taken by the controlling entity to authorize Alternate Entry Procedures or to reclassify the space as non-permit, after verifying and documenting the effectiveness of such actions. The Entry Supervisor may accept a copy of the controlling entity's documentation to meet the documentation requirement
 - The Entry Supervisor may accept the controlling entity's rescue procedures if the entity agrees, but must verify that rescue personnel are notified prior to entry
 - Upon request by the controlling entity, the Entry Supervisor shall obtain and provide the following documents as proof of program and entrant training:
 - A copy of this policy
 - A copy of our training protocol for Entrants
 - A copy of the entrant's training documentation; and
 - The name and telephone number of the employer contact.
- If the controlling entity does not have a permit required confined space program or has not identified the space as permit required:
 - If the controlling entity agrees to take the actions necessary for reclassifying a space to non-permit, the Entry Supervisor may oversee such actions, test their effectiveness, and reclassify the space
 - If conditions for Alternate Entry Procedures can be met, the Entry Supervisor may verify the achievement of the conditions and authorize Alternate Entry Procedures
 - If the controlling entity agrees to supply and require an individual to perform the functions of an Attendant, and if the Entry Supervisor can meet the conditions outlined in this policy for Special Attendants, the Entry Supervisor may authorize

- the individual as the attendant for the entry and prepare the required documentation.
- The Entry Supervisor shall prepare and issue the permit or prepare the required documentation for Alternate Entry Procedures or reclassification.
 - The Entrant and Attendant shall follow the procedures for their classification for the duration of the entry and return the permit or documentation to the Entry Supervisor at completion of the entry.
 - The Entry Supervisor shall perform post-entry duties in concert with the controlling entity.
 - If the controlling entity has a permit required confined space program, the Entry Supervisor shall allow the controlling entity to perform the post-entry activities required by that program
 - If the controlling entity does not have a permit required confined space program, the Entry Supervisor shall oversee the return of the space to the condition prior to entry.
 - The Entry Supervisor shall immediately meet with the controlling entity to provide information on:
 - Hazards within the space of which the controlling entity was unaware, and/or
 - Any unexpected problems occurring during entry procedures.

The Entry Supervisor shall submit the canceled permit, and/or any documentation prepared because of entry to the Safety Coordinator, who shall retain the document for the required retention period. The Entry Supervisor shall also report any emergencies, evacuations, or other unexpected events related to the entry, which shall be recorded in writing by the Safety.

PERMITS

This program shall undergo an annual review, using the cancelled permits retained within 1 year after each entry shall be conducted by the EHS Officer to revise the program as necessary, and ensure that employees are protected. If no confined space entries were performed during a 12-month period, no review is necessary.

CCI must consult with affected employees and their authorized representatives on the development and implementation of all aspects of the permit space program required and must make available to each affected employee and his/her authorized representatives all information required to be developed by this standard [1926.1212](#).

ENTRY PERMIT

Before entry is authorized, CCI shall prepare an entry permit. The Entry Supervisor identified on the permit shall sign it to authorize entry. The completed permit shall be made available at the time of entry to all authorized entrants or their authorized representatives. The duration of the

permit may not exceed the time required to complete the assigned task or job identified on the permit.

The entry permits that documents compliance and authorizes entry to a permit space shall identify:

- The permit space to be entered
- The purpose of the entry
- The date and the authorized duration of the entry permit
- The authorized entrants within the permit space, by name or by such other means (for example, using rosters or tracking systems) as will enable the attendant to determine quickly and accurately, for the duration of the permit, which authorized entrants are inside the permit space

This requirement may be met by inserting a reference on the entry permit as to the means used, such as a roster or tracking system, to keep track of the authorized entrants within the permit space.

Content of the 'Permit Required' Entry Permit

- Space to be entered
- Purpose of the entry
- Date and the authorized duration
- Names of authorized entrants
- Means of detecting an increase in atmospheric hazard levels in the event the ventilation system stops working
- Names of entry attendants
- Name And signature of Entry Supervisor
- Hazards of the permit space to be entered
- Measures used to isolate the permit space and to eliminate or control permit space hazards before entry
- Acceptable entry conditions
 - Results of tests and monitoring performed {names or initials of the testers and by an indication of when the tests were performed}
 - Rescue and emergency services that can be summoned and the means {such as the equipment to use and the numbers to call}
- Communication procedures used by authorized entrants and attendants to maintain contact during the entry
- Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment, to be provided
- Any additional permits, such as for hot work, that have been issued to authorize work in the permit space.

TERMINATION AND CLOSING OR CANCELLING OF PERMITS

The Entry Supervisor shall terminate the confined space permit, at the end of the job operation, at the end of the shift or when the Entry Supervisor or Attendant determine that conditions in or near the confined space have changed and are potentially hazardous to the Entrants.

The Entry Supervisor shall, at the conclusion of entry operation, close out the permit and provide the Responsible Safety Person with the original copy of the Confined Space Permit.

EMERGENCY AND RESCUE SERVICES

Emergency and rescue services must be at each job site containing confined spaces for the immediately dangerous to life and health conditions. Emergency and rescue services shall be:

- Provided by the Controlling Contractors facility
- Provided by an outside service who has examined the entry site, practice rescue and decline as appropriate, or
- Provided by CCI by selecting a rescue team that is equipped and trained to perform necessary emergency and rescue services.

CCI shall evaluate a prospective rescuer's ability to respond to a rescue summons in a timely manner, considering the hazard(s) identified. What will be considered timely will vary according to the specific hazards involved in each entry. For example, Respiratory Protection, requires that employers provide a standby person or persons capable of immediate action to rescue employee(s) wearing respiratory protection while in work areas defined as IDLH atmospheres.

Rescue Team

CCI shall evaluate a prospective rescue service's ability, in terms of proficiency with rescue-related tasks and equipment, to function appropriately while rescuing entrants from the particular permit space or types of permit spaces identified.

CCI shall select a rescue team or service from those evaluated that:

- Has the capability to reach the victim(s) within a time frame that is appropriate for the permit space hazard(s) identified.
- Is equipped for and proficient in performing the needed rescue services.

CCI shall inform each rescue team or service of the hazards they may confront when called on to perform rescue at the site and provide the rescue team or service selected with access to all permit spaces from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations.

EMPLOYEES DESIGNATED FOR RESCUE

Personnel, equipment, and services necessary to perform an effective rescue shall be identified by CCI. They shall be identified in a way that uniquely marks them apart from regular personnel and equipment prior to entry into a permit required confined space.

CCI shall also ensure the employees that have been designated to provide permit space rescue and emergency services shall take the following measures:

- Provide affected employees with the personal protective equipment (PPE) needed to conduct permit space rescues safely and train affected employees, so they are proficient in the use of that PPE, at no cost to those employees.
- Train affected employees to perform assigned rescue duties. CCI shall ensure that such employees successfully complete the training required to establish proficiency as an authorized entrant.
- Train affected employees in basic first aid and cardiopulmonary resuscitation (CPR). CCI shall ensure that at least one member of the rescue team or service holding a current certification in first aid and CPR is available.
- Ensure that affected employees practice making permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, manikins, or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces shall, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescue is to be performed.

NON ENTRY RESCUE

To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant.

Retrieval Systems

Each authorized entrant shall use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, above the entrant's head, or at another point which CCI can establish presents a profile small enough for the successful removal of the entrant. Wristlets may be used in lieu of the chest or full body harness if the use of a chest or full body harness is infeasible or creates a greater hazard and that the use of wristlets is the safest and most effective alternative.

The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet (1.52 m) deep.

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

PRE-PERMIT DUTIES

Pre-Permit Duties of the Entry Supervisor

- The Entry Supervisor shall record on the permit a descriptive identification of the permit space and its location.
- The Entry Supervisor shall record on the permit the date of entry, the time of issuance, and the time of expiration. No permit shall be issued for a period longer than eight hours.
- The Entry Supervisor shall record on the permit the reason for the entry.
- The Entry Supervisor shall survey the permit space without entry and review the work to be performed, to identify the existing or potential hazards. Such hazards shall be recorded on the permit.
 - Gases or vapors which could displace the oxygen or processes which could consume oxygen
 - Flammable gases
 - Any other chemicals, gases, fumes, or mists which could be present or released by entry activities
 - A potential for low levels of oxygen from a lack of adequate ventilation
 - A potential for high levels of oxygen
 - Liquids or flowable solids which could engulf an entrant
 - Inwardly converging walls, sloped floors that taper to a smaller cross-section, pits, or holes in the floor into which an entrant could stumble into and become wedged, and/or other characteristics of the configuration of the space which could trap or asphyxiate an entrant
 - Radiation
 - Bare, exposed, or ungrounded conductive parts of electrical equipment, machinery, wiring, fixtures, or installations
 - Unguarded points of operation or moving parts of machinery; and
 - Any other recognized hazard that could result in accidental injury or occupational illness requiring treatment greater than first aid.
- The Entry Supervisor shall determine the actions necessary prior to entry to eliminate or control the hazards and shall record them on the permit.
 - Notification of the selected rescue personnel shall be required for each entry.
 - Atmospheric Hazards.
- If a potential or actual atmospheric hazard exists, testing shall be required.
 - Oxygen, flammable gas, and carbon monoxide tests shall be conducted.

- The Entry Supervisor shall obtain and list the Permissible Exposure Limits (PEL) for each identified air contaminant.
- The Entry Supervisor shall test for each identified air contaminant.

The Entry Supervisor shall determine if the atmospheric hazard can be eliminated or controlled by purging, venting, inserting, continuous forced air ventilation, or combination.

If the only hazard in a space is a hazardous atmosphere and Alternate Entry Procedures are the desired means of entry, forced air is required.

- Engulfment Hazard elimination or control by blanking, binding, double block and bleed, line braking, or other methods.
- Configuration Control means. Configuration hazards usually cannot be eliminated.
- Other Serious Hazards elimination or control by lock-out/tag-out or other means.
- The need for traffic control devices to isolate the permit space from vehicular and pedestrian traffic as well as any other potential external hazard.

The Entry Supervisor shall determine and record the required equipment for entry.

- Equipment for the Attendant to summon rescue and the Entry Supervisor is required for all permit entries.
- Equipment designed to test oxygen, flammable gases, and carbon monoxide shall be required for all permit spaces with hazardous atmospheres.
- Equipment designed to test levels of identified airborne contaminants shall be required where such have been identified.
- A forced air ventilation system is required for Alternate Entry Procedures and shall be required if determined by the Entry Supervisor.
- Personal protective equipment is required where hazards cannot be effectively eliminated or controlled.
- Traffic control equipment is required if the permit space is not effectively isolated from vehicle or pedestrian traffic.
- Mechanical rescue equipment is required unless its use creates a greater hazard or would not effectively contribute to rescue.
- Body Harness with retrieval line attached at the upper back should be used whenever feasible.
- Wristlets may be used where body harnesses are not feasible.
- Mechanical retrieval devices shall be used for vertical entries into spaces deeper than five feet. Mechanical devices or fixed-point connection may be used otherwise.
- Communication equipment is required where entrants will be out of voice range with the Attendant
- Other equipment shall be selected as need requires.

The Entry Supervisor shall identify the authorized entrants and at least one attendant and shall

record their names on the permit. The Entry Supervisor shall determine the type of entry that is allowed.

If the pre-entry survey proves that the only hazard existing in the space is atmospheric and continuous forced air ventilation is provided, the Entry Supervisor may authorize Alternate Entry Procedures under stipulation that:

- The initial atmospheric tests indicate the atmosphere meets the entry requirements
- Forced Air Ventilation continues for the duration of the entry; and
- The Attendant performs atmospheric tests once per hour and records them on the Air Monitoring Log on the permit.

If the pre-entry survey proves that there are no atmospheric or configuration hazards in the permit space, and that all other identified hazards can be eliminated (as opposed to controlled) from outside the space prior to entry, the Entry Supervisor may reclassify the space as non-Permit contingent upon the completion of all hazard elimination activities.

- If a non-permit entry is approved, the employee designated as Attendant on the permit shall serve as Lead Entrant. The permit shall serve as the required documentation.
- If no other type of entry is obtainable or selected, entry shall be by the permit process.
- The Entry Supervisor shall indicate any other permits issued for simultaneous work within the space and shall indicate the means to contact rescue personnel.
- The Entry Supervisor shall sign and issue the permit, effective upon the date issued and contingent upon completion of all pre-entry activities and expiring on the date indicated on the permit.

FORCED AIR VENTILATION

Continuous forced air ventilation shall be used, as follows:

- An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.
- The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space.
- The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.

The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. Any employee who enters the space, or that employee's authorized representative, shall be provided with an opportunity to observe the periodic testing required by this paragraph.

[1910.146\(c\)\(5\)\(ii\)\(E\)-\(F\)](#)

AIR MONITORING

Before an employee enters the space, the internal atmosphere shall be tested, with a calibrated direct-reading instrument, for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order. Any employee who enters the space, or that employee's authorized representative, shall be provided an opportunity to observe the pre-entry testing required by this paragraph. CCI shall also reveal the atmospheric testing results to requested affected employees.

The purpose of air monitoring is to identify and quantify airborne contaminants in order to determine the level of worker protection needed. Initial screening for identification is often qualitative, i.e., the contaminant, or the class to which it belongs, is demonstrated to be present but the determination of its concentration (quantification) must await subsequent testing. Two principal approaches are available for identifying and/or quantifying airborne contaminants:

- The onsite use of direct-reading instruments.
- Laboratory analysis of air samples obtained by gas sampling bag, filter, sorbent, or wet-contaminant collection methods.

Portable Air Monitoring Equipment

- Portable air monitors are hand-held instruments that measure the concentration of combustible or toxic gases and vapors as well as oxygen concentration. All instruments used in USPL sound an audible alarm when concentrations exceed preset limits. Since air monitoring equipment is designed for various applications, each instrument may have its own operating characteristics and limitations.
- Specific initial and continuous monitoring requirements for Hot Work, Confined Space, and Excavations are specified in the respective policies. These policies should be referenced for air monitoring specifics.
- The Responsible Safety Person should be consulted regarding air monitoring equipment and procedures.

PRE-ENTRY ACTIONS

If the hazard assessment identifies a potential atmospheric hazard and a worker is required or authorized by an employer to enter the confined space, the employer must ensure that a competent worker performs a pre-entry atmospheric test of the confined space to:

- Verify that the oxygen content is between 19.5 percent and 23.0 percent by volume,
- Identify the amount of toxic, flammable, or explosive substance that may be present.

CCI must ensure that as often as necessary after the first time a worker enters the confined space, a competent worker:

- Performs atmospheric testing, and
- Identifies and records any additional hazards.

CCI must ensure that if there is a potential for the atmosphere to change unpredictably after a worker enters the confined space, the atmosphere is continuously monitored.

If atmospheric testing identifies that a hazardous atmosphere exists or is likely to exist in a confined space, CCI must ensure that the confined space is ventilated, purged, or both before a worker enters the confined space.

If ventilating or purging a confined space is impractical or ineffective in eliminating a hazardous atmosphere, the employer must ensure that a worker who enters the confined space uses personal protective equipment appropriate for the conditions within the confined space.

The Entry Supervisor shall ensure that required equipment is procured and available, and that pre-entry actions are completed prior to entry. The Entry Supervisor may perform these duties or may delegate them to the Attendant and/or other authorized Entrants.

Each pre-entry requirement successfully met shall be checked off in the block provided on the permit. When all requirements are completed, the responsible employee shall verify the actions by signing the permit.

Required atmospheric testing shall be performed in the order indicated below after the pre-entry actions to address atmospheric hazards have been performed. Entry may proceed only if the tests indicate:

- The percentage of oxygen in the permit space is between 19.5% and 23.5%.
- The percentage of flammable gases is at or lower than 10 percent of the Lower Flammable Limit.
- The parts per million parts (ppm) of carbon monoxide is at or lower than 17.
- The amount of other identified air contaminants is/are less than one-half the PEL. Where more than one air contaminant is observed, those contaminants will be reviewed for additive effects.
- The permit shall be posted at the point of entry into the space, and each authorized employee shall review it to become familiar with the hazards of the space and the acceptable entry conditions.

CCI will ensure that workers within a confined space are protected against the release of hazardous substances or energy that could harm them.

CCI shall also ensure that a worker does not enter a confined space unless adequate precautions are in place to protect a worker from drowning, engulfment, or entrapment.

CCI will ensure that any hazardous energy in a restricted space is locked/tagged out.

A person must not enter or work in a confined space if more than 20 percent of the lower explosive limit of a flammable or explosive substance is present in the atmosphere.

Barriers and barricades will be set up and used to prevent unauthorized entry into the confined space.

CCI shall implement pre-entry testing and periodic monitoring, provide an early warning system that continuously monitors for non-isolated engulfment hazards, and continuously monitor atmospheric hazards.

CCI shall implement pre-entry testing and periodic monitoring, provide an early warning system that continuously monitors for non-isolated engulfment hazards, and continuously monitor atmospheric hazards [1926.1204\(e\)](#).

ENTRY

Entrants shall:

- Enter the space and perform the assigned work as expediently as possible
- Wear and use all equipment required by the permit
- Notify the Attendant or Lead Entrant periodically or upon request that all is well
- Know all potential hazards that may be encountered during entry, including information on the signs, symptoms, and consequences of the exposure
- Use all required PPE such as eye protection, gloves and breathing equipment
- Shall witness and verify calibrated air monitoring data and if approved, sign off, before entry is made
- Is entitled to additional monitoring at any time
- Always maintain communication with Attendant to ensure the Attendant can monitor the Entrants status and to identify the need for rescue
- Immediately evacuate the space and alert the Attendant or Lead Entrant whenever any of the following occurs:
 - The development of a condition not in compliance with the permit
 - The development of a sign or symptom of exposure to a dangerous situation
 - Failure of any required equipment; and/or
 - The Attendant or Lead Entrant orders an evacuation.

Lead/Supervisor Entrants shall:

- Maintain awareness of the location of the entrants, either inside or outside of the permit space
- If entry is by Alternate Entry Procedures, perform hourly atmospheric monitoring of the space and record on the Gas Monitoring Log of the permit
- Order an immediate evacuation upon becoming aware of:

- Any sign or symptom of exposure to a dangerous situation
- Any development of a condition not in compliance with the permit; and/or
- Failure of any required equipment.

Attendants

Single attendants are not permitted to monitor more than one confined space at any given time.

For every confined space or restricted space entry, CCI shall designate a competent worker to be in communication with a worker in the confined space or restricted space. CCI will also ensure that the designated worker has a suitable system for summoning assistance.

If more than a single attendant monitors one confined space, the following means and procedures shall be used to enable the attendant to respond to emergencies in one or more permit spaces that he/she is monitoring without distraction from all responsibilities.

- Station themselves outside the permit space at the opening to the space, and remain in place throughout the duration of the entry or until relieved by another authorized Attendant
- Perform no other duties beyond those stated for Attendants
- Maintain an accurate count of entrants within and without the space, by use of the Entry Log on the permit
- Perform hourly atmospheric monitoring of spaces containing hazardous atmospheres, and record on the Gas Monitoring Log on the permit
- Communicate with entrants by voice or communication equipment periodically to assure that all is well
- Order an immediate evacuation of the space:
 - Upon becoming aware of the development of a sign or symptom of an exposure to a dangerous situation
 - Upon becoming aware of the development of a condition out of compliance with the permit
 - Upon failure of an entrant to answer an attempt at communication; and/or
 - If unable to continue the performance of functions as an Attendant.
- Summon rescue services if needed
- CCI shall provide entrants with a form of communication such as radio, cell phone, or walkie-talkie like device and provide procedures to summon rescue in the case of an emergency
- Warn unauthorized persons away from the permit space; and
- Summon the Entry Supervisor if unauthorized persons refuse to leave the space.

The Entry Supervisor shall remove unauthorized persons from the permit space, as needed.

MONITOR INSPECTION AND CALIBRATION

All gas monitors shall be inspected and calibrated per manufacturer's recommendations and have a current calibration sticker on the monitor. Third party calibration is required.

Bump Tests

Daily bump tests are performed to ensure the monitor and alarms are working correctly. Bump tests are required to be completed at the beginning of each day the monitor is in use per the requesting client and manufacturer's guidelines to ensure the monitor is functioning correctly

COMPLETION OF ENTRY

The Attendant or Lead Entrant shall assure that all entrants have exited the space. If the space was evacuated prior to completion of work:

- The Attendant or Lead Entrant shall immediately terminate the permit by checking the appropriate box and describing the reasons for evacuation on the permit, then contacting the Entry Supervisor.
- The Entry Supervisor shall:
 - Immediately notify the employee's supervisor of any injured or overexposed employee
 - Determine if reentry is required to complete work, eliminate a created hazard, or return the space to normal operation.
- If reentry must be performed:
 - Resurvey the space to determine the cause of the evacuation; and
 - Issue another permit which includes the elimination or control of the hazard causing the evacuation.
 - Alternate Entry Procedures and Reclassification to Non-Permit Space shall not be approved.
- If reentry is unnecessary:
 - Oversee the completion of the post-entry activities indicated on the permit; and
 - End the entry activities.
- If the entry was successfully completed, the Attendant or Lead Entrant shall:
 - Indicate such by checking the appropriate block on the permit
 - Oversee the completion of post-entry actions indicated on the permit, and verify by signing in the appropriate location
 - Add any pertinent information concerning the entry on the permit; and
 - Return the permit to the Entry Supervisor.

ILLUMINATION

CCI will make sure adequate illumination be provided for safe working where applicable.

When natural lighting is not sufficient, additional lighting will be provided. It must not exceed 12 volts in damp conditions and will be equipped with a ground fault circuit interrupter. In hazardous atmospheres, explosion-proof lighting will be required.

TRAINING

CCI must provide training to each employee whose work is regulated by this standard, at no cost to the employee, and ensure that the employee possesses the understanding, knowledge, and skills necessary for the safe performance of the duties assigned under this standard. This training must result in an understanding of the hazards in the permit space and the methods used to isolate, control or in other ways protect employees from these hazards, and for those employees not authorized to perform entry rescues, in the dangers of attempting such rescues. OSHA [1926.1207\(a\)](#). CCI shall ensure that at least one member of the rescue team or service holds a current certification in first aid and CPR. In addition, CCI shall ensure affected employees practice making permit space rescues at least once every 12 months by means of simulated rescue operations in which they remove dummies, manikins, or actual persons from the actual permit spaces or from representative permit spaces.

Training required by this section must be provided to each affected employee in both a language and vocabulary that the employee can understand:

- Before the employee is first assigned duties under this standard
- Before there is a change in assigned duties
- Whenever there is a change in permit space entry operations that presents a hazard about which an employee has not previously been trained
- Whenever there is any evidence of a deviation from the permit space entry procedures required by § [1926.1204\(c\)](#) or there are inadequacies in the employee's knowledge or use of these procedures.

The training must establish employee proficiency in the duties required by this standard and must introduce new or revised procedures, as necessary, for compliance with this standard. [1926.1207\(c\)](#)

The employer must maintain training records to show that the training required has been accomplished. The training records must contain each employee's name, the name of the trainers, and the dates of training. The documentation must be available for inspection by employees and their authorized representatives, for the period the employee is employed by that employer.

The documentation must be available for inspection by employees for the period the employee is employed by that employer.

CCI shall ensure that a worker assigned duties related to confined space or restricted space entry

is trained by a competent person in:

- Recognizing hazards associated with working in confined spaces or restricted spaces
- Performing the worker's duties in a safe and healthy manner

CCI will ensure that competence in the following is represented in the workers responding to a confined space or restricted space emergency:

- First aid
- The use of appropriate emergency response equipment
- Procedures appropriate to the confined space or restricted space

Training may be performed in-house or by a 3rd party.

Training for All Authorized Employees

The supervisor shall ensure that each employee receives awareness training on:

- The identifying characteristics of a confined space
- The identifying characteristics of a permit space
- The authorization or prohibition of their job classification to enter permit spaces
- Required actions when working around or near a permit space entry
- The authority of authorized Attendants and Entry Supervisors

Each affected employee shall be trained prior to initial assignment, prior to a change in assigned duties, if a new hazard has been created or special deviations have occurred.

Training records will be maintained accordingly.

ENTRY OPERATIONS

CCI shall develop and implement procedures (such as closing off a permit space and canceling the permit) necessary for concluding the entry after entry operations have been completed.

CCI shall review entry operations when there is reason to believe that the measures taken under the permit space program may not protect employees and revise the program to correct deficiencies found to exist before subsequent entries are authorized.

Examples of circumstances requiring the review of the permit space program are:

- Any unauthorized entry of a permit space
- The detection of a permit space hazard not covered by the permit
- The detection of a condition prohibited by the permit
- The occurrence of an injury or near-miss during entry
- A change in the use or configuration of a permit space, and employee complaints about the effectiveness of the program

Multiple Entrants

When CCI arranges to have employees of another employer perform work that involves permit space entry or confined space entries, CCI shall:

- A. Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with a permit
- B. Apprise the contractor of the elements, including the hazards identified and CCI's experience with the space, that make the space in question a permit space
- C. Apprise the contractor of any precautions or procedures that CCI has implemented for the protection of employees in or near permit spaces where contractor personnel will be working
- D. Coordinate entry operations with the contractor, when both CCI personnel and contractor personnel will be working in or near permit spaces
- E. Debrief the contractor at the conclusion of the entry operations regarding the permit spaced program followed and regarding any hazards confronted or created in permit spaces during entry operations

ENTRY SUPERVISORS, ATTENDANTS, AND ENTRANTS

The Supervisor shall ensure that employees designated as Entry Supervisors, Attendants, and/or Entrants receive training in:

- The requirements of this policy and any Procedures
- The duties, authority, and responsibilities of Entry Supervisors, Attendants, Lead Entrants, and Entrants
- The types of hazards expected to be encountered in permit spaces
- The calibration, use, care, and cleaning of equipment expected to be used during entry operations
- The performance of pre-entry actions expected to be required in permit spaces

Training shall be provided:

- Prior to assignment or authorization of duties within permit spaces
- Within one month after revisions of this policy or procedures -Assignment or authorization for permit space entry shall be suspended until training is completed.
- Whenever the supervisor becomes aware that an employee is deviating from the procedures of this policy. Assignment or authorization for permit space entry shall be suspended until training is completed; and annually.

The supervisor shall develop written certification that each affected employee has successfully completed training.

Certification shall include:

- Employee Name
- Authorized Duty (Entry Supervisor, Attendant, and/or Entrant)
- Name And signature of the Trainer

- Synopsis of topics covered
- Date of training

A copy of the certification shall be provided to the employee and Program Coordinator/authorized representative.

MULTI EMPLOYER PROCEDURE

When CCI arranges to have employees of another employer perform work that involves permit space entry CCI shall:

- Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with a permit space program meeting the requirements of this section.
- Appraise the contractor of the elements, including the hazards identified and the Controlling Contractor's experience with the space, that make the space in question a permit space.
- Appraise the contractor of any precautions or procedures that CCI has implemented for the protection of employees in or near permit spaces where contractor personnel will be working.
- Coordinate entry operations with the contractor, when both CCI personnel and contractor personnel will be working in or near permit spaces.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

CCI will ensure that the personal protective equipment and emergency equipment is available to workers undertaking rescue operations in a confined space to perform a timely rescue and will ensure that a worker does not enter or remain in a confined space unless an effective rescue can be carried out.

CCI will ensure that the emergency response plan includes the emergency procedures to be followed if there is an accident or other emergency, including procedures in place to evacuate the confined space immediately.

DEFINITIONS

Confined Space - A space large enough and so configured that an employee can bodily enter and perform assigned work and has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry,) is not designed for continuous employee occupancy.

Entrant Attendant - An individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

Rescue - To free from danger, harm, or confinement. Confined space rescue can be a very dangerous act. Statistics show that more than 60 percent of those who die in confined spaces are people attempting to perform a rescue.

Confined Space Rescues are technically challenging because of the environment in which they occur. The spaces, such as underground vaults, silos, storage tanks, and sewers, are often narrow and constricting, preventing easy access by rescuers.

Spotter - An employee trained to look. The purpose of a spotter is to assist the operator in maneuvering equipment into position to prevent injury to the operator, spotter or other personnel or prevent property damage.

Confined Spaces – CA

PURPOSE

To outline and control the hazards encountered and associated with entering and working in confined spaces for **Cirks Construction Inc.**; hereafter referred to as "CCI," This plan was written in accordance with the California Code of Regulations Title 8. Sec. 5157.

RESPONSIBILITIES

Managers/Supervisors

- Ensure only trained personnel participate in confined space operations
- Provide and maintain the equipment required to work, ventilate, rescue, and if required, to monitor confined spaces
- Ensure that all employees in the area are aware of confined space operations, and measures are taken to prevent inadvertent or unplanned entries
- Ensure that all employees are aware of emergency procedures

Entry Team

- Pre-entry work
- Entry and egress
- Work to be accomplished on site
- Tools to be used
- Potential hazards
- Personal protective equipment
- Recognition of symptoms following exposure and what to do when it does occur
- Communication
- Emergency procedures and equipment

Attendants

- Does not enter the confined space
- Is prepared to perform non-entry rescue or call for a rescue team
- Performs entry rescue only when the employer's permit entry program authorizes
- Knows the hazards or potential hazards of the space
- Maintains accurate count of authorized entrants in the space
- Stays alert to possible behavioral changes of entrants
- Monitors activities inside and outside the space to ensure that it is safe for entrant to remain in the area
- Remains outside the confined space until relieved by another attendant and prevents entry of unauthorized personnel
- Communicates with entrants

- Orders evacuation if prohibited or hazardous conditions arise

The Entry Supervisor

- Knows confined space hazards
- Ensures that atmospheric testing and proper confined space preparations have been done prior to entry
- Verifies that safe conditions have been attained
- Ensures that acceptable entry conditions are maintained
- Ensures that proper equipment is on site and operational
- Makes sure that site is clear of unauthorized personnel
- Verifies emergency plan and confirms rescue team availability
- Signs permit
- Cancels permit once operation is completed

An Authorized Entrant

- Knows confined space hazards, exposure routes, signs, symptoms, and adverse health effects that could result from exposure
- Uses adequate PPE
- Uses proper entry equipment
- Follows proper entry procedures
- Performs assigned job
- Is alert to any prohibited condition
- Communicates with attendant
- Evacuates immediately, if necessary

SCOPE

This standard sets forth requirements for practices and procedures to protect employees engaged in construction activities at a worksite with one or more confined spaces.

Examples of locations where confined spaces may occur include, but are not limited to, the following: grease interceptors, trenches, excavations, bins; boilers; pits (such as elevator, escalator, pump, valve or other equipment); manholes (such as sewer, storm drain, electrical, communication, or other utility); tanks (such as fuel, chemical, water, or other liquid, solid or gas); incinerators; scrubbers; concrete pier columns; sewers; transformer vaults; heating, ventilation, and air-conditioning (HVAC) ducts; storm drains; water mains; precast concrete and other pre-formed manhole units; drilled shafts; enclosed beams; vessels; digesters; lift stations; cesspools; silos; air receivers; sludge gates; air preheaters; step up transformers; turbines; chillers; bag houses; and/or mixers/reactors.

Exceptions

This standard does not apply to:

- Construction work regulated by Construction Safety Orders, Article 6, Excavations
- Construction work regulated by the Tunnel Safety Orders
- Construction work regulated by General Industry Safety Orders, Group 26, Diving Operations
- Construction work regulated by the General Industry Safety Orders, Article 154, Pressurized Worksite Operations

Where this standard applies and there is a provision that addresses a confined space hazard in another applicable Title 8 standard, the employer shall comply with both that requirement and the applicable provisions of this standard.

GENERAL REQUIREMENTS

Before CCI begins work at a worksite, CCI shall ensure that a competent person identifies all confined spaces in which one or more of the employees it directs may work, and identifies each space that is a permit space, through consideration and evaluation of the elements of that space, including testing as necessary. Prior to work commencing CCI Confined Space Permit must be completed by Competent Person.

If the workplace contains one or more permit spaces, CCI shall 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 permit space. A sign reading "**DANGER - PERMIT-REQUIRED - CONFINED SPACE - DO NOT ENTER**" or using other similar language would satisfy the requirement for a sign.

CCI shall inform, in a timely manner and in a manner other than posting, its employees' authorized representatives and the controlling contractor of the existence and location of, and the danger posed by, each permit space. After CCI identifies, or receives notice of, a permit space and has not authorized employees it directs to work in that space shall take effective measures to prevent those employees from entering that permit space.

If CCI decides that employees will enter a permit space, CCI shall have a written permit space program implemented at the site.

The written program shall be made available prior to and during entry operations for inspection by employees and their authorized representatives.

PERMIT-REQUIRED VS. NON-PERMIT CONFINED SPACES

There are two types of confined spaces. Those that require a permit for entry are classified as permit-required confined spaces (PRCS) and those that can be entered without a permit are called non-permit confined spaces (NPCS).

No permit system is required to enter and work in confined spaces. However, similar written operating and rescue procedures are needed. Also, results of atmospheric testing of the space shall be written and maintained at the work site for all affected employees to review.

Permit-Required Confined Space

A permit-required confined space fits the definition of a confined space and has one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere
- Contains a material that has a potential for engulfing the entrant
- Contains inwardly converging walls or a floor that slopes downward and tapers to a smaller cross-section where an entrant could be trapped or asphyxiated
- Contains any other recognized serious safety or health hazard (e.g., unsafe temperature, electrical shock, corrosive chemicals)

A Non-Permit Confined Space

A non-permit confined space fits the definition of a confined space but does not contain or have the potential to contain any atmospheric hazard capable of causing death or serious physical harm.

Warning Signs or Barriers

Warning signs or barriers shall be used to prevent unauthorized entry or to protect employees or contract employees from external hazards. These will be placed at least 6 feet from the work area to prevent access and potential falls into a top-opening confined space entry.

ALTERNATE PROCEDURES

CCI may use alternate procedures for entering a permit space if all the following conditions can be met:

- CCI can demonstrate that all physical hazards in the space are eliminated or isolated through engineering controls so that the only hazard posed by the permit space is an actual or potential hazardous atmosphere.
- CCI can demonstrate that continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry, and that, in the event the ventilation system stops working, entrants can exit the space safely.
- CCI develops monitoring and inspection data that supports the demonstrations.
- If an initial entry of the permit space is necessary to obtain the data required, the entry is performed in compliance.
- The determinations and supporting data are documented by CCI and are made available to each employee who enters the permit space or to that employee's authorized representative.
- Entry into the permit space is performed in accordance with these requirements.

Safe Entry Level

This is a general safety guideline of 50 percent of the permissible flammable level or permissible toxic substance level recommended during confined space entry under the alternate procedures.

The "safe for entry" level is a guideline that offers additional protection to the worker whose safety is totally dependent upon an effective ventilation system.

Because alternate procedures, permit space safety is maintained solely by continuous forced-air ventilation, it is important to prevent the atmosphere inside the confined space from reaching hazardous concentrations to ensure that, in the event of ventilation failure (such as a fan breakdown), the employees will still have enough time to recognize the hazards and leave the space.

It is permissible to enter a PRCS when the atmosphere is at or below 10 percent of the LEL; however, to protect entrants from fluctuations in the concentration of gases, it is recommended that gaseous levels be reduced by an additional 50 percent. If toxic substances are present, the "safe for entry" guideline recommends that concentration of toxics be reduced to 50 percent of the PEL.

The following requirements apply to entry into permit spaces:

- Any conditions making it unsafe to remove an entrance cover shall be eliminated before the cover is removed
- When entrance covers are removed, the opening shall be immediately guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space
- Before an employee enters the space, the internal atmosphere shall be tested, with a calibrated direct-reading instrument, for:
 - a) Oxygen content
 - b) Flammable gases and vapors
 - c) Potential toxic air contaminants, in that order.
- Any employee who enters the space, or that employee's authorized representative, shall be provided an opportunity to observe the pre-entry testing
- No hazardous atmosphere is permitted within the space whenever any employee is inside the space.
- Continuous forced air ventilation shall be used, as follows:
 - An employee shall not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.
 - The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space.

- The air supply for the forced air ventilation shall be from a clean source and shall not increase the hazards in the space.

The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

If a hazardous atmosphere is detected during entry:

- Each employee shall leave the space immediately.
- The space shall be evaluated to determine how the hazardous atmosphere developed.
- Measures shall be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.

CCI shall verify that the space is safe for entry and that the pre-entry measures have been taken, through a written certification that contains the date, the location of the space, and the signature of the person providing the certification.

The certification shall be made before entry and shall be made available to each employee entering the space or to that employee's authorized representative.

RECLASSIFICATION

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

When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrants, or some indication that the initial evaluation of the space may not have been adequate, each entry employer shall have a competent person reevaluate that space and, if necessary, reclassify it as a permit-required confined space.

A space classified by CCI as a permit-required confined space may only be reclassified as a non-permit confined space when a competent person determines that all of the applicable requirements have been met:

- If the permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated or isolated without entry into the space (unless CCI can demonstrate that doing so without entry is infeasible), the permit space may be reclassified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated or isolated.
- The entry employer shall eliminate or isolate the hazards without entering the space, unless it can demonstrate that this is infeasible. If it is necessary to enter the permit space to eliminate or isolate hazards, such entry shall be performed.

If testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated or isolated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated or isolated.

- The entry employer shall document the basis for determining that all hazards in a permit space have been eliminated or isolated, through a certification that contains the date, the location of the space, and the signature of the person making the determination. The certification shall be made available to each employee entering the space or to that employee's authorized representative.
- If hazards arise within a permit space that has been reclassified as a non-permit space under, each employee in the space shall exit the space. CCI shall then reevaluate the space and reclassify it as a permit space as appropriate in accordance with all other applicable provisions of this standard.

Note: Control of atmospheric hazards through forced air ventilation does not constitute elimination or isolation of the hazards.

PERMIT SPACE ENTRY COMMUNICATION AND COORDINATION

Before entry operations begin, the host employer shall provide the following information, if it has it, to the controlling contractor:

- The location of each known permit space
- The hazards or potential hazards in each space or the reason it is a permit space
- Any precautions that the host employer or any previous controlling contractor entry employer implemented for the protection of employees in the permit space

Before entry operations begin, the controlling contractor shall:

- Obtain the host employer's information about the permit space hazards and previous entry operations
- Provide the following information to each entity entering a permit space and any other entity at the worksite whose activities could foreseeably result in a hazard in the permit space:
 - The information received from the host employer
 - Any additional information the controlling contractor has
 - The precautions that the host employer, controlling contractor, or other entry employers implemented for the protection of employees in the permit spaces

Before entry operations begin, each entry employer shall:

- Obtain all of the controlling contractor's information regarding permit space hazards and entry operations

- Inform the controlling contractor of the permit space program that the entry employer will follow, including any hazards likely to be confronted or created in each permit space

The controlling contractor and CCI shall coordinate entry operations when:

- More than one entity performs permit space entry at the same time
- Permit space entry is performed at the same time that any activities that could foreseeably result in a hazard in the permit space are performed

After Entry Operations

The controlling contractor shall 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) during entry operations.

CCI shall inform the controlling contractor in a timely manner of the permit space program followed and of any hazards confronted or created in the permit space(s) during entry operations. The controlling contractor shall apprise the host employer of the information exchanged with the entry entities.

Note: Unless a host employer or controlling contractor has or will have employees in a confined space, it is not required to enter any confined space to collect the information.

If there is no controlling contractor present at the worksite, the requirements for, and role of, controlling contractors shall be fulfilled by the host employer or other employer who arranges to have employees of another employer perform work that involves permit space entry.

ENTRY WITHOUT A PERMIT OR ATTENDANT

Confined spaces may be entered without the need for a written permit or attendant provided that the space can be maintained in a safe condition for entry by mechanical ventilation. All spaces shall be considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise. Any employee required or permitted to pre-check or enter an enclosed/confined space shall have successfully completed, as a minimum, the training as required by the following sections of these procedures.

A written copy of operating and rescue procedures shall be at the work site for the duration of the job. The Confined Space Pre-Entry Check List must be completed by the lead worker before entry into a confined space. check list shall be kept at the job site for duration of the job. If circumstances dictate an interruption in the work, the permit space must be re-evaluated, and a new check list must be completed.

PERMIT-REQUIRED CONFINED SPACE PROGRAM

Permits

Confined Space Entry Permit. All spaces shall be considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise. Any employee required or permitted to pre-check or enter a permit-required confined space shall have successfully completed, as a minimum, the training as required by the following sections of these procedures.

A written copy of operating and rescue procedures as required by these procedures shall be at the work site for the duration of the job. The Confined Space Entry Permit must be completed before approval can be given to enter a permit-required confined space. This permit verifies completion of items listed below. This permit shall be kept at the job site for the duration of the job. If circumstances cause an interruption in the work or a change in the alarm conditions for which entry was approved, a new Confined Space Entry Permit must be completed.

If CCI decides that employees will enter permit spaces, CCI shall develop and implement a written permit required confined space program.

Each entry employer shall:

- Implement the measures necessary to prevent unauthorized entry
- Identify and evaluate the hazards of permit spaces before employees enter them
- Develop and implement the means, procedures, and practices necessary for safe permit space entry operations, including, but not limited to, the following:
 - Specifying acceptable entry conditions
 - Providing each authorized entrant or that employee's authorized representative with the opportunity to observe any monitoring or testing of permit spaces
 - Isolating the permit space and physical hazard(s) within the space
 - Purging, inerting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards
- Determining that, in the event the ventilation system stops working, the monitoring procedures will detect an increase in atmospheric hazard levels in sufficient time for the entrants to safely exit the permit space
- Providing pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards
- Verifying conditions in the permit space are acceptable for entry throughout the duration of an authorized entry, and ensuring that employees are not allowed to enter, or remain in, a permit space with a hazardous atmosphere 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
- Eliminating any conditions (for example, high pressure) that could make it unsafe to remove an entrance cover

Note: When CCI is unable to reduce the atmosphere below 10 percent LFL, CCI may only enter if the space is inerted to render the entire atmosphere in the space non-combustible, and the employees use PPE to address any other atmospheric hazards (such as oxygen deficiency), and CCI eliminates or isolates all physical hazards in the space.

CCI Provided Equipment

CCI shall provide the following equipment when a Confined Space exposure is identified, maintain that equipment properly, and ensure that each assigned employee uses that equipment properly:

- Testing and monitoring equipment needed
- Ventilating equipment needed to obtain acceptable entry conditions
- Communications equipment, including any necessary electronic communication equipment for attendants assessing entrants' status in multiple spaces
- Personal protective equipment insofar as feasible engineering and work-practice controls do not adequately protect employees
- Lighting equipment that meets the minimum illumination requirements, that is approved for the ignitable or combustible properties of the specific gas, vapor, dust, or fiber that will be present, and that is sufficient to enable employees to see well enough to work safely and to exit the space quickly in an emergency
- Barriers and shields as required
- Equipment, such as ladders, needed for safe ingress and egress by authorized entrants
- Rescue and emergency equipment, except to the extent that the equipment is provided by rescue services
- Any other equipment necessary for safe entry into, safe exit from, and rescue from, permit spaces

Evaluate Permit Space Conditions

Evaluate permit space conditions when entry operations are conducted:

- Test conditions in the permit space to determine if acceptable entry conditions exist before changes to the space's natural ventilation are made, and before entry is authorized to begin, except that, if an employer demonstrates that isolation of the space is infeasible because the space is large or is part of a continuous system (such as a sewer), the employer shall:
 - Perform pre-entry testing to the extent feasible before entry is authorized
 - If entry is authorized, continuously monitor entry conditions in the areas where authorized entrants are working, except CCI may use periodic monitoring for monitoring an atmospheric hazard if they can demonstrate that equipment for continuously monitoring that hazard is not commercially available

- Provide an early-warning system that continuously monitors for non-isolated engulfment hazards. The system shall alert authorized entrants and attendants in sufficient time for the authorized entrants to safely exit the space
- Continuously monitor atmospheric hazards unless the employer can demonstrate that the equipment for continuously monitoring a hazard is not commercially available or that periodic monitoring is of sufficient frequency to ensure that the atmospheric hazard is being controlled at safe levels. If continuous monitoring is not used, periodic monitoring is required with sufficient frequency to ensure that acceptable entry conditions are being maintained during entry operations
- When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors
- Provide each authorized entrant or that employee's authorized representative an opportunity to observe the pre-entry and any subsequent testing or monitoring of permit spaces
- Re-evaluate the permit space in the presence of any authorized entrant or that employee's authorized representative who requests that the employer conduct such reevaluation because there is some indication that the evaluation of that space may not have been adequate
- Immediately provide each authorized entrant or that employee's authorized representative with the results of any testing conducted.

CCI shall provide at least one attendant outside the permit space into which entry is authorized for the duration of entry operations. Attendants may be assigned to more than one permit space provided the duties can be effectively performed for each permit space.

Attendants may be stationed at any location outside the permit space if the duties can be effectively performed for each permit space to which the attendant is assigned.

If multiple spaces are to be assigned to a single attendant, include in the permit program the means and procedures to enable the attendant to respond to an emergency affecting one or more of those permit spaces without distraction from the attendant's responsibilities.

Designate each person who is to have an active role (as, for example, authorized entrants, attendants, entry supervisors, or persons who test or monitor the atmosphere in a permit space) in entry operations, identify the duties of each such employee, and provide each such employee with the training.

CCI shall develop and implement procedures for summoning rescue and emergency services (including procedures for summoning emergency assistance in the event of a failed non-entry rescue), for rescuing entrants from permit spaces, for providing necessary emergency services to rescued employees, and for preventing unauthorized personnel from attempting a rescue.

CCI shall develop and implement a system for the preparation, issuance, use, and cancellation of entry permits as required by this standard, including the safe termination of entry operations under both planned and emergency conditions.

CCI shall develop and implement procedures to coordinate entry operations, in consultation with the controlling contractor, when employees of more than one employer are working simultaneously in a permit space or elsewhere on the worksite where their activities could, either alone or in conjunction with the activities within a permit space, foreseeably result in a hazard within the confined space, so that employees of one employer do not endanger the employees of any other employer.

CCI shall develop and implement procedures (such as closing off a permit space and canceling the permit) necessary for concluding the entry after entry operations have been completed.

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

Examples of circumstances requiring the review of the permit space program include, but are not limited to:

- Any unauthorized entry of a permit space
- The detection of a permit space hazard not covered by the permit
- The detection of a condition prohibited by the permit
- The occurrence of an injury or near-miss during entry
- A change in the use or configuration of a permit space, and employee complaints about the effectiveness of the program

CCI shall review the permit space program, using the canceled permits retained within 1 year after each entry and revise the program as necessary to ensure that employees participating in entry operations are protected from permit space hazards. Employers may perform a single annual review covering all entries performed during a 12-month period. If no entry is performed during a 12-month period, no review is necessary.

ENTRY PERMIT

Before entry is authorized, each CCI shall document the completion of measures by preparing an entry permit. Before entry begins, the entry supervisor identified on the permit shall sign the entry permit to authorize entry. The completed permit shall 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, so that the entrants can confirm that pre-entry preparations have been completed.

The entry permit should include:

- The location of the permit space to be entered
- The purpose of the entry
- The date and the authorized duration of the entry permit
- The names of authorized entrants, attendants, and entry supervisors
- The hazards of the permit space
- The measures used to eliminate, isolate, or control permit space hazards before entry
- The acceptable entry conditions
- The results of initial and periodic tests performed, along with the names of the testers and when these tests were performed
- The verified rescue and emergency services to be summoned
- The communication system
- The equipment to be used during entry
- Any additional information necessary to ensure employee safety
- Any additional permits issued to authorize special work in the space (such as hot work)

The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit.

The entry supervisor shall terminate entry and take the following action when any of the following apply:

- Cancel the entry permit when the entry operations covered by the entry permit have been completed
- Suspend or cancel the entry permit and fully reassess the space before allowing reentry when a condition that is not allowed under the entry permit arises in or near the permit space and that condition is temporary in nature and does not change the configuration of the space or create any new hazards within it
- Cancel the entry permit when a condition that is not allowed under the entry permit arises in or near the permit space and that condition is not covered

CCI shall retain each canceled entry permit for at least 1 year to facilitate the review of the permit-required confined space program. Any problems encountered during an entry operation shall be noted on the pertinent permit so that appropriate revisions to the permit space program can be made.

DUTIES OF AUTHORIZED ENTRANTS

CCI shall ensure that all authorized entrants:

- Are familiar with and understand the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure

- Properly use equipment
- Communicate with the attendant as necessary to enable the attendant to assess entrant status and to alert entrants of the need to evacuate the space
- Alert the attendant whenever:
 - There is any warning sign or symptom of exposure to a dangerous situation
 - The entrant detects a prohibited condition

Exit from the permit space as quickly as possible whenever:

- An order to evacuate is given by the attendant or the entry supervisor
- There is any warning sign or symptom of exposure to a dangerous situation
- The entrant detects a prohibited condition
- An evacuation alarm is activated

ATMOSPHERIC HAZARDS

A hazardous atmosphere is any atmosphere that may incapacitate, injure, or impair an employee's self-rescue or lead to acute illness or death to workers and rescuers who enter confined spaces.

The following are examples of hazardous atmospheres:

- Flammable or explosive gas, vapor, or mist in a concentration greater than 10 percent of its lower flammable limit (LFL) or lower explosive limit (LEL)
- Combustible dust at a concentration that meets or exceeds its LFL. This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less
- Atmospheric oxygen concentration levels below 19.5% (oxygen deficiency) or above 23.5% (oxygen enrichment) at sea level
- Atmospheric concentration of any substance with an acutely toxic effect above its PEL, and any other atmospheric condition that is IDLH
- This does not include atmospheric concentrations of substances that are not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness.

This does not include atmospheric concentrations of substances that are not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness.

Dangerous air contaminant levels for flammable atmospheres are defined as greater than 20 percent of the LEL. Dangerous combustible particle levels are defined as greater than 20 percent of the minimum explosive concentration of the particulate.

OXYGEN DEFICIENCY

Air normally contains 21 percent oxygen. Oxygen deficiency is created when the oxygen level falls below 19.5 percent. Oxygen deficiency can be caused by the following:

- Combustion (fire, welding, and operation of internal combustion engines all consume oxygen)
- Formation of rust (consumes oxygen)
- Decomposition of organic matter (consumes oxygen and produces flammable methane gas, which can also displace oxygen)
- Displacement by a heavy gas that has settled in a low-lying space or by another vapor (an inert gas such as argon, carbon dioxide, or nitrogen) used to purge the space

Oxygen deficiency impairs judgment and breathing, often making self-rescue difficult or impossible. A severe oxygen deficiency can lead to loss of consciousness and eventual death.

Note: Do not enter confined spaces containing less than 19.5 percent oxygen without approved SCBA or SAR.

FLAMMABLE ATMOSPHERES

Flammable atmospheres are generally the result of flammable gases, vapors, dust mixed in certain concentrations with air, or an oxygen-enriched atmosphere. Flammable gases or vapors can accumulate within a confined space when there is inadequate ventilation. Gases that are heavier than air will accumulate in the lower levels of a confined space. Therefore, it is especially important that atmospheric tests be conducted near the bottom of all confined spaces.

The work being conducted in a confined space can generate a flammable atmosphere. Work such as spray-painting, coating or the use of flammable solvents for cleaning can result in the formation of an explosive atmosphere. Welding or cutting with oxyacetylene equipment can cause an explosion through small leaks in hoses, which could generate an explosive atmosphere and should be removed when not in use.

Oxygen-enriched atmospheres are those atmospheres that contain an oxygen concentration greater than 23.5%. An oxygen-enriched atmosphere will cause flammable and combustible materials such as clothing and hair to burn violently when ignited.

TOXIC ATMOSPHERES

The Product Stored in the Confined Space

When a product is stored in a confined space, the product can be absorbed into the walls and give off toxic vapors when removed or when cleaning the residual material. The product can also produce toxic vapors that will remain in the atmosphere due to poor ventilation.

The Work Being Conducted in the Confined Space

Toxic atmospheres can be generated as the result of work being conducted inside the confined space.

Examples of such work include welding or brazing with metals capable of producing toxic vapors, painting, scraping, sanding, etc. Many of the solvents used for cleaning and/or degreasing produce highly toxic vapors.

Areas Adjacent to the Confined Space

Toxic gas, vapors or fumes produced by processes near the confined space may enter and accumulate in the confined space. For example, if the confined space is lower than the adjacent area and the toxic gas, vapor or fume is heavier than air, it may "settle" into the confined space.

Mechanical and Physical Hazards

Problems such as rotating or moving mechanical parts or energy sources can create hazards within a confined space. All rotating or moving equipment such as pumps, process lines, electrical sources, etc., within a confined space must be identified and locked and tagged out.

Physical factors such as heat, cold, noise, vibration, and fatigue can contribute to accidents. These factors must be evaluated for all confined spaces.

Acceptable Limits

The atmosphere of the confined spaces should be considered within acceptable limits whenever the following conditions are maintained:

- Oxygen – 19.5% to 23.5%
- Flammability – less than 10% of the Lower Flammable Limit (LFL)
- Toxicity – less than recognized ACGIH exposure limits or other published exposure levels (OSHA PELs, NIOSH RELs).

ATMOSPHERIC TESTING

Atmospheric testing is required for two distinct purposes, evaluation of the hazards of the permit space and verification that acceptable entry conditions for entry into that space exist.

Evaluation Testing

The atmosphere of a confined space should be analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmospheres that may exist or arise, so that appropriate permit entry procedures can be developed and acceptable entry conditions stipulated for that space. Evaluation and interpretation of these data, and development of the

entry procedure, should be done by, or reviewed by, a technically qualified professional (e.g., Cal/OSHA consultation service, or certified industrial hygienist, registered safety engineer, certified safety professional, certified marine chemist, etc.) based on evaluation of all serious hazards.

Verification Testing

The atmosphere of a permit space that may contain a hazardous atmosphere should be tested for residues of all contaminants identified by evaluation testing using permit specified equipment to determine that residual concentrations at the time of testing and entry are within the range of acceptable entry conditions. Results of testing (i.e., actual concentration, etc.) should be recorded on the permit in the space provided adjacent to the stipulated acceptable entry condition.

Duration of Testing

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

Testing Stratified Atmospheres

When monitoring for entries involving a descent into atmospheres that may be stratified, the atmospheric envelope should be tested a distance of approximately 4 feet (1.22 m) in the direction of travel and to each side. If a sampling probe is used, the entrant's rate of progress should be slowed to accommodate the sampling speed and detector response.

Order of Testing

A test for oxygen is performed first because most combustible gas meters are oxygen dependent and will not provide reliable readings in an oxygen deficient atmosphere. Combustible gases are tested for next because the threat of fire or explosion is both more immediate and more life threatening, in most cases, than exposure to toxic gases and vapors. If tests for toxic gases and vapors are necessary, they are performed last.

CONTINUOUS ATMOSPHERIC MONITORING

Monitoring is the only way to detect whether a hazardous atmosphere has developed during entry. If this is the case, employees will be alerted to the change so they can leave the space immediately. The atmosphere within the space shall be continuously monitored unless the entry employer can demonstrate that equipment for continuous monitoring is not commercially available or periodic monitoring is sufficient.

If continuous monitoring is used, CCI shall ensure that the monitoring equipment has an alarm that will notify all entrants if a specified atmospheric threshold is achieved, or that an employee will check the monitor with sufficient frequency to ensure that entrants have adequate time to escape. If continuous monitoring is not used, periodic monitoring is required. All monitoring shall ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous

atmosphere. Any employee who enters the space, or that employee's authorized representative, shall be provided with an opportunity to observe the testing.

If a hazard is detected during entry:

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

CONTROLS FOR ATMOSPHERIC HAZARDS

One primary control measure effective in preventing toxic hazardous atmospheres from developing in the first place is the use of less toxic products that vaporize less readily. Keep less of the product at the site and keep containers closed inside the confined space at all times.

Ventilation

Once it has been determined that the confined space contains a harmful atmosphere, the next step is to clear it. Ventilation blows out oxygen-deficient or contaminated atmospheres and replaces harmful vapors with clean, fresh air. Make sure to ventilate the space thoroughly so that there are no contaminated pockets left, and then test the atmosphere again.

Welding, cutting, burning, and continuous brazing generate hazardous fumes and dusts that can be effectively removed by local exhaust ventilation systems at or near the point of generation.

Ventilation helps to:

- Provide adequate oxygen to the air in the space
- Control atmospheric contaminants
- Prevent fire and explosion hazards
- Control heat and humidity

There may be no hazardous atmosphere within the space whenever any employee is inside it.

Initially determine:

- Number and size of openings
- Volume and configuration of the space to be entered
- Capacity and positioning of the ventilation equipment to be used
- Existing and potential atmospheric hazards

After beginning ventilation:

- Routinely test the confined space until levels stabilize at acceptable entry conditions.

Once entry and work start:

- Continue ventilation and frequent atmospheric testing for the entire duration of entry

- Consider atmospheric hazards created by work in the space

Continuous forced air ventilation shall be used, as follows:

- An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.
- The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space.
- The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.

The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

Inerting

Ventilation may not control all atmospheric hazards. In some cases, the introduction of air may bring the fuel-air mixture into the flammable range. Instead, it may be necessary to fill the confined space with an inert gas such a nitrogen to control vapor or gases that have the potential to ignite.

Remember that while inert gases eliminate the hazard of combustion or explosion, they also create an oxygen deficiency hazard that is immediately dangerous to life or health.

HOT WORK

Hot work includes any operation capable of providing a source of ignition. Examples include electrical tools with open brushes and commutators or any device that produces sparks, arc, flame or could become an ignition source. One of the dangers of hot work operations is the increased risk of fire and explosion because of the introduction of an ignition source into a space with an already-hazardous atmosphere.

Special Precautions

Hot work is prohibited within a confined space or any adjacent space with a common wall, floor or ceiling, which contains, or is likely to develop, oxygen enrichment or dangerous air contamination due to flammable and/or explosive substances. CCI shall evaluate existing hazards within the space and potential hazards created from hot work operations.

Take special precautions (such as improving ventilation, inspecting for frayed wires, implementing fire-suppression measures, or using low-voltage, non-sparking tools) to reduce potential hazards.

Welding (tanks carriers etc.)

Local exhaust ventilation shall be used to remove welding fumes once the tank or carrier is completed to the point that workers may enter and exit only through a manhole. (Follow the requirements of California Code of Regulations, Title 8, welding standards.) Welding gas tanks may never be brought into a tank or carrier that is a permit entry confined space.

In addition to tank cleaning for control of atmospheric hazards, coating and surface materials shall be removed 4 inches (10.16 cm) or more from any surface area where welding or other torch work will be done, and care taken that the atmosphere within the tank remains well below the LFL. (Follow the requirements of California Code of Regulations, Title 8, welding standards)

Have a written hot work permit for every hot work operation as specified by CAL/OSHA section 5157(f)(15) along with other applicable Title 8 standards for hot work.

CONTROL FOR PHYSICAL HAZARDS

Isolation of Equipment

Isolation includes:

- Identifying potential mechanical hazards
- Completing the de-energizing of all electrical, mechanical, pneumatic, and hydraulic systems and all other energy sources
- Locking out and tagging out all electrical circuits and valves
- Blocking or otherwise securing equipment that could have stored energy
- Guarding or removing equipment from the area
- Ensuring isolation procedures are fully implemented

The best safeguards are physical guards that preclude contact with moving parts and isolation and/or barricading of machinery or equipment that may be accidentally contacted or activated.

Safeguards Against Electrical Hazards

- Inspect all electrical equipment and circuits for proper classification (wet locations or areas otherwise classified as being hazardous)
- Use ground fault circuit interrupters (GFCI) where required
- and ensure proper grounding for all circuits
- De-energize circuits and implement lockout/tagout programs
- where required
- Use only explosion-proof equipment and spark-proof tools
- where required
- Ensure that all electrical parts are properly covered, protected,
- and maintained

Safeguards for Pressurized Lines, Ducts, or Pipes

- Blanking or blinding refers to the absolute closure of a pipe, line, or duct - This is done by completely covering the bore with a fastened solid plate that can withstand the maximum pressure of the pipe, line, or duct without leaking.
- Double block and bleed refer to the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

Engulfment

Engulfment means 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, or crushing. To avoid engulfment hazards:

- Remove material prior to entry
- Institute isolation procedures to keep out any potential hazardous substances
- Wear full body harnesses and retrieval lines
- Allow entry only if entrant can be rapidly pulled out

COMMUNICATIONS AND OBSERVATION

Proper communication verifies that the work is proceeding well and the situation is normal. This alerts the entrant to any change, including those in surroundings or atmospheres, and allows the attendant to order immediate evacuation in the event of imminent danger.

Communications between attendant and entrant(s) shall be maintained throughout entry. Methods of communication that may be specified by the permit include voice, voice powered radio, tapping or rapping codes on tank walls, signaling tugs on a rope, and the attendant's observation that work activities such as chipping, grinding, welding, spraying, etc., which require deliberate operator control continue normally. These activities often generate so much noise that the necessary hearing protection makes communication by voice difficult.

Effective methods of communication include:

- Verbal
- Hand signals
- Two-way radios
- Signaling through safety lines when oral communication is not possible
- Intercom system
- Light signals
- Tapping or rapping codes

Remember, all electronic equipment must:

- Be intrinsically safe (there must be no chance of becoming an ignition source).
- Not interfere with atmospheric monitors.

- Always be backed up by a non-electronic communication system.
- Controls of Atmospheric and Engulfment Hazards (Sewer Entry)

Pumps and Lines

All pumps and lines which may reasonably cause contaminants to flow into the space shall be disconnected, blinded, and locked out, or effectively isolated by other means to prevent development of dangerous air contamination or engulfment. Not all laterals to sewers or storm drains require blocking. However, where experience or knowledge of industrial use indicates there is a reasonable potential for contamination of air or engulfment into an occupied sewer, then all affected laterals shall be blocked. If blocking and/or isolation requires entry into the space the provisions for entry into a permit-required confined space must be implemented.

Surveillance

The surrounding area shall be surveyed to avoid hazards such as drifting vapors from the tanks, piping, or sewers.

Testing

The atmosphere within the space will be tested to determine whether dangerous air contamination and/or oxygen deficiency exists. Detector tubes, alarm only type gas monitors and explosion meters are examples of equipment that may be used to test permit space atmospheres.

Testing shall be performed by the supervisor or designated employee who has successfully completed the Gas detector training for the monitors used. The minimum parameters to be monitored are oxygen deficiency, LFL, and hydrogen sulfide concentration.

A written record of the pre-entry test results shall be made and kept at the work site for the duration of the job. The supervisor will certify in writing, based upon the results of the pre-entry testing, that all hazards have been eliminated. Affected employees shall be able to review the testing results. The most hazardous conditions shall govern when work is being performed in two adjoining, connecting spaces.

Entry Procedures

If there are no non-atmospheric hazards present and if the pre-entry tests show there is no dangerous air contamination and/or oxygen deficiency within the space and there is no reason to believe that any is likely to develop, entry into and work within may proceed. Continuous testing of the atmosphere in the immediate vicinity of the workers within the space shall be accomplished.

The workers will immediately leave the permit space when any of the gas monitor alarm set points are reached.

Workers will not return to the area until a supervisor who has completed the gas detector training has used a direct reading gas detector to evaluate the situation and has determined that it is safe to enter.

RESPIRATORY PROTECTION

Respiratory protection is needed whenever:

- An emergency exists and entry cannot be delayed
- It is assumed that an IDLH atmosphere exists
- There is an inert atmosphere or testing shows that an IDLH exists and additional ventilation cannot reduce concentrations to safe levels
- Current testing indicates atmosphere to be safe, but unsafe conditions could reasonably be expected to develop at any time

RESCUE AND EMERGENCY SERVICES

Everyone involved in a rescue should assume that the space is deadly, and that entry rescue may be required in the worst case. Rescues can be performed by another employee or a professional rescuer so long as at least one rescuer is immediately available onsite, and all rescuers are fully trained, familiar with the space and qualified to act as a rescuer. Qualifications include knowledge of and experience working with all hazards associated with rescue and confined space entry operations.

Rescue Team and Services

When designating a rescue and emergency service, CCI shall:

- Evaluate a prospective rescuer's ability to respond to a rescue summons in a timely manner, considering the hazard(s) identified
- Evaluate a prospective rescue service's ability, in terms of proficiency with rescue-related tasks and equipment, to function appropriately while rescuing entrants from the permit space or types of permit spaces identified

CCI shall select a rescue team or service from those evaluated that:

- Has the capability to reach the victim(s) within a time frame that is appropriate for the permit space hazard(s) identified
- Is equipped for, and proficient in, performing the needed rescue services
- Agrees to notify CCI immediately if the rescue service becomes unavailable

CCI shall inform each rescue team of the hazards they may confront when called on to perform rescue at the site. CCI shall ensure the rescue team is provided with access to all permit spaces from which rescue may be necessary so that the rescue team or service can develop appropriate rescue plans and practice rescue operations.

Employees Designated for Rescue

Personnel, equipment, and services necessary to perform an effective rescue shall be identified by CCI. They shall be identified in a way that uniquely marks them apart from regular personnel and equipment prior to entry into a permit required confined space.

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

- Provide each affected employee with the personal protective equipment (PPE) needed to conduct permit space rescues safely and train each affected employee so the employee is proficient in the use of that PPE
- Train each affected employee to perform assigned rescue duties - CCI shall ensure that each employee successfully completes the training required and establish proficiency as authorized entrants.
- Train each affected employee in basic first aid and cardiopulmonary resuscitation (CPR) - CCI shall ensure that at least one member of the rescue team or service holding a current certification in basic first aid and CPR is available.
- Ensure that affected employees practice making permit space rescues before attempting an actual rescue, and at least once every 12 months, by means of simulated rescue operations in which they remove dummies, manikins, or actual persons from the actual permit spaces or from representative permit spaces, except practice rescue is not required where the affected employees properly performed a rescue operation during the last 12 months in the same permit space the authorized entrant will enter, or in a similar permit space. Representative permit spaces shall, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescue is to be performed.

Rescue equipment may include:

- Chest or full body harness with retrieval line attached
- Wristlets (may be used in rescue when it can be shown that they are the safest and most effective means of rescue)
- Hand-cranked mechanical winch and tripod (required when entrant is five feet or more below the entrance)
- Ladder
- Explosion-proof lighting
- SCBA/SAR
- Stretcher
- Approved head protection
- Anklets or wristlets can be used in the lieu of the chest or full body harness

Self-Rescue

Depending on the severity of the emergency, different rescue methods can be employed. Self-rescue is the first approach to consider if the entrant can perform a self-rescue with communication and possible assistance of the standby person. Self-rescue is vital because the entrant is:

- Conscious and alert.
- Able to recognize his or her own signs and symptoms.
- Still physically able to evacuate space more rapidly than waiting for someone else to rescue him or her.
- Able to alert fellow workers of impending dangers.
- Not endangering anyone else

Non-Entry Rescue

Non-entry rescue is the next-best approach when self-rescue is not possible because non-entry rescue can be started right away and prevents additional personnel from being exposed to unidentified and/or uncontrolled confined space hazards. Usually, equipment and other rescue aids are employed to assist in removing endangered entrants. In situations where configuration of the space or other elements prevent the removal of the worker, entry rescue may be the only solution.

To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant.

Non-entry rescue is required unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. The employer shall designate an entry rescue service whenever non-entry rescue is not selected.

Whenever non-entry rescue is selected, CCI shall ensure that retrieval systems or methods are used whenever an authorized entrant enters a permit space, and shall confirm, prior to entry, that emergency assistance would be available if non-entry rescue fails. Retrieval systems shall meet the following requirements:

- Each authorized entrant shall use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, above the entrant's head, or at another point which the employer can establish presents a profile small enough for the successful removal of the entrant. Wristlets or anklets may be used in lieu of the chest or full body harness if the employer can demonstrate that the use of a chest or full body harness is infeasible or creates a greater hazard and that the use of wristlets or anklets is the safest and most effective alternative.
- The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as

the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet (1.52 meters) deep.

- Equipment that is unsuitable for retrieval shall not be used, including, but not limited to, retrieval lines that have a reasonable probability of becoming entangled with the retrieval lines used by other authorized entrants, or retrieval lines that will not work due to the internal configuration of the permit space.

Retrieval Systems

Each authorized entrant shall use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, above the entrant's head, or at another point which CCI can establish presents a profile small enough for the successful removal of the entrant.

Wristlets may be used in lieu of the chest or full body harness if the use of a chest or full body harness is infeasible or creates a greater hazard and that the use of wristlets is the safest and most effective alternative. The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet (1.52 m) deep.

Entry Rescue and Rescue Plan

Entry rescue involves rescuers entering the space to retrieve the entrant and provide the victim with emergency assistance such as CPR, first aid, and air via SCBA or a supplied air respirator (SAR), if needed. An entry rescue plan needs to be developed ahead of time in the event of an emergency for which the non-entry rescue plan is not appropriate. A thorough rescue plan includes:

- A barricade area for crowd control
- Additional ventilation options
- Control of other hazards (cave-ins, traffic, etc.)
- Protective clothing and equipment
- Appropriate lighting equipment (explosion-proof)
- Methods of communication
- A standby rescue teams
- Victim removal procedures and devices
- Available emergency vehicles
- Medically trained personnel

Re-evaluate the plan whenever:

- Conditions change within the space
- Workers discover any new hazards
- There are changes in the rescue personnel and/or personnel availability

- New equipment is purchased
- Routine proficiency training results are unsatisfactory
- A rescue plan is found to be deficient (e.g., a failed simulated rescue).

Rescuers will need to know:

- Number of victims and location of emergency
- Length of time victims have been exposed to hazard
- Suspected cause of accident
- All information on entry permit, including:
 - Atmospheric testing results
 - Isolation procedures
 - SDS information

Rescue practices in simulated or actual spaces should be performed at least once every 12 months, or more frequently if deemed necessary.

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

CCI shall consult with affected employees and their authorized representatives on the development and implementation of all aspects of the permit space program. CCI shall make available to each affected employee and his/her authorized representatives all information required to be developed by this standard.

For each document required to be retained, CCI shall make the document available on request to the Chief of the Division of Occupational Safety and Health or designee.

Preparing for an Emergency

CCI shall have on-site rescue ability; however, may also supplement rescue operation with an off-site rescue team.

On-Site Rescue

At least one on-site employee shall be trained in first aid and CPR. Each member of the rescue team shall be trained to:

- Properly use and maintain PPE and rescue equipment.
- Act as a rescuer in annual simulated emergencies.
- Assume individual roles and take on any emergency

Off-Site Rescue

Disclose all known hazards associated with the space(s) so that appropriate rescue plans can be developed.

Provide access to the space so that off-site rescue personnel can familiarize themselves with the site, develop a rescue plan, and practice rescue operations.

Verifying the Availability of the Off-site Rescue Service

The verification task is usually assigned to the entry supervisor. If the off-site rescue service indicates for any reason that it would be unable to respond to a rescue summons, entry must not be authorized unless and until an adequate back-up rescue service is arranged and confirmed.

TRAINING

CCI shall provide training to each employee whose work is regulated by this standard, at no cost to the employee, and ensure that the employee possesses the understanding, knowledge, and skills necessary for the safe performance of the duties assigned under this standard. This training shall result in an understanding of the hazards in the permit space and the methods used to isolate, control or in other ways protect employees from these hazards, and for those employees not authorized to perform entry rescues, in the dangers of attempting such rescues.

The elements included are characteristics of the space as well as specific duties of the entrant, attendant, supervisor, and rescuer:

- Atmospheric monitoring and ventilation
- Communication
- Emergency, self-rescue, and rescue operations
- Hazard communication—SDS
- Hazard recognition and control
- Injury and Illness Prevention Program
- Permit program
- Personal protective equipment, first aid, and CPR
- Signs, symptoms, and consequences of exposures

Training required by this section shall be provided to each affected employee:

- In both a language and vocabulary that the employee can understand
- Before the employee is first assigned duties under this standard
- Before there is a change in assigned duties
- Whenever there is a change in permit space entry operations that presents a hazard about which an employee has not previously been trained
- Whenever there is a deviation from the permit procedures or there are inadequacies in the employee's knowledge

The training shall establish employee proficiency in the duties required by this standard and shall introduce new or revised procedures, as necessary, for compliance with this standard. CCI shall maintain training records to show that the training has been accomplished. The training records shall contain each employee's name, the name of the trainers, and the dates of training. The documentation shall be available for inspection by employees and their authorized representatives, for the period of time the employee is employed by CCI.

DEFINITIONS

Acceptable Entry Conditions - The conditions that shall exist in a permit space, before an employee may enter that space, to ensure that employees can safely enter into, and safely work within, the space.

Attendant - Individual stationed outside one or more permit spaces who assesses the status of authorized entrants and who shall perform their specified duties.

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

Barrier - means a physical obstruction that blocks or limits access.

Blanking or Blinding - The absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that can withstand the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

Competent Person - One who can identify existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Confined Space means a space that:

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

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

Controlling Employer - The employer who was responsible, by contract or through actual practice, for safety and health conditions on the worksite; the employer who had the authority for ensuring that the hazardous condition is corrected.

Double Block and Bleed - The closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

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

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

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

Entry - The action by which any part of a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space, whether such action is intentional, or any work activities are performed in the space.

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

Entry permit - (permit) means 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 Section 1955.

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

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

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

Hazard - A physical hazard or hazardous atmosphere.

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

- Flammable gas, vapor, or mist more than 10 percent of its lower flammable limit (LFL)
- Airborne combustible dust at a concentration that meets or exceeds its LFL
- Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent
- Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Article 4 of the Construction Safety Orders and Group 16 of the General Industry Safety Orders
- Any other atmospheric condition that is immediately dangerous to life or health

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

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

Hot Work Permit means the employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

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

Inerting - Displacing the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

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

Limited or Restricted - Entry or exit means 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.

Line Breaking - The intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

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

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

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

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

Non-Permit Confined Space - A confined space that meets the definition of a confined space but does not meet the requirements for a permit-required confined space, as defined in this Article.

Oxygen Deficient Atmosphere - An atmosphere containing less than 19.5 percent oxygen by volume.

Oxygen Enriched Atmosphere - An atmosphere containing more than 23.5 percent oxygen by volume.

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

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

Permissible exposure limits, or PEL - are occupational exposure standards that refer to the maximum concentration of airborne chemicals to which nearly all healthy persons can be exposed day after day without adverse health effects.

Permit-Required Confined Space Program (permit space program) - The employer's overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.

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

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

Representative Permit Space - A mock-up of a confined space that has entrance openings that are like, and is of similar size, configuration, and accessibility to, the permit space that authorized entrants enter.

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

Rescue Service - The personnel designated to rescue employees from permit spaces.

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

SCBA - Self-contained breathing apparatus.

SAR - Supplied air respirator.

Serious Physical Damage - An impairment or illness in which a body part is made functionally useless or is substantially reduced in efficiency.

Such impairment or illness may be permanent or temporary and includes, but is not limited to, loss of consciousness, disorientation, or other immediate and substantial reduction in mental efficiency. Injuries involving such impairment would usually require treatment by a physician or other licensed health-care professional.

Tagout - Placement of a tagout device on a circuit or equipment that has been deenergized, in accordance with an established procedure, to indicate that the circuit or equipment being controlled may not be operated until the tagout device is removed. The employer shall ensure that:

- Tagout provides equivalent protection to lockout
- That lockout is infeasible, and the employer has relieved, disconnected, restrained, and otherwise rendered safe stored (residual) energy.

Test or Testing - The process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

Ventilate or Ventilation - Controlling a hazardous atmosphere using continuous forced-air mechanical systems that meet the requirements of for Mechanical Ventilation Systems.

Confined Space - WA

PURPOSE

The purpose of this program is to ensure personnel safety and prevent personal injury or illness from work in Confined Spaces for **Cirks Construction Inc.**; hereafter referred to as "CCI," This program is written in accordance with Washington Administrative Code (WAC) 296-809 (Confined Spaces)

RESPONSIBILITIES

CCI

It is the general responsibility of CCI to:

- Designate a Confined Space Program Administrator
- Develop a Written Confined Space Program
- Develop and implement the means, procedures, and practices necessary for safe entry into permit spaces
- Have the primary responsibility to identify and evaluate all confined spaces in workplaces under their control and to determine which are to be permit required
- Be responsible for implementing this policy and procedure
- Ensure that employees receive the training necessary to have the knowledge, skills and understanding to carry out the duties associated with permit space entry
- Conduct required evaluations of program effectiveness

Supervisors shall:

- Ensure no unauthorized entry into permit spaces
- Ensure that their employees are aware of the permit spaces they may encounter and the precautions that must be followed

Employees shall:

- Be aware of the permit spaces they may encounter
- Perform only authorized entries
- Follow all procedures precisely

POLICY

It is the policy of CCI to ensure all employees that enter a confined space have been trained, the space has been evaluated, a confined space entry permit or alternate method documentation has been completed (for permit required confined spaces), and all other safety and health considerations have been met.

SCOPE

This program applies to all confined spaces and provides requirements to protect employees from the hazards of entering and working in confined spaces. This chapter applies in any of the following circumstances:

- You have confined spaces in your workplace
- Your employees will enter another employer's confined spaces
- A contractor will enter your confined spaces
- You provide confined space rescue services

IDENTIFY PERMIT-REQUIRED CONFINED SPACES

You must identify all permit-required confined spaces in your workplace. Use a person with the knowledge, skills, and abilities, capable of identifying actual and potential hazards related to permit-required confined spaces and with the authority to take prompt corrective action, such as an entry supervisor or competent person. Identification of Permit-Required Confined Space(s) involves a two-step process.

Step 1

Identify confined spaces - A space that is:

- Large enough and arranged so an employee could fully enter the space and work
- Has limited or restricted entry or exit. Examples of spaces with limited or restricted entry are tanks, vessels, silos, storage bins, hoppers, vaults, excavations, and pits
- Not primarily designed for continuous human occupancy

Step 2

Evaluate the actual and potential hazards of each confined space to identify the permit-required confined space(s). Permit-required confined space or permit space. A confined space that has one or more of the following characteristics capable of causing death or serious physical harm.

- Contains or has a potential to contain a hazardous atmosphere
- Contains a material with the potential for engulfing someone who enters
- Has an internal configuration that could allow someone entering to be trapped or asphyxiated by inwardly converging walls or by a floor, which slopes downward and tapers to a smaller cross section
- Contains any physical hazard. This includes any recognized health or safety hazards including engulfment in solid or liquid material, electrical shock, or moving parts
- Contains any other recognized serious safety or health hazard that could either:
 - Impair the ability to self-rescue
 - Result in a situation that presents an immediate danger to life or health

Inform Employees and Control Entry to Permit-Required Confined Spaces

You must provide information about confined spaces as follows:

- Make available to affected employees and their authorized representatives all information and documents required by this chapter.
- Inform affected employees about the existence, location, and danger of any permit-required confined spaces in your workplace by:
 - Posting danger signs
 - Using any other equally effective means to inform employees
- You must take effective measures to prevent unauthorized employees from entering permit-required confined spaces

PERMIT-ENTRY PROCEDURES

CCI shall identify and evaluate, before employees enter, potential hazards from the permit-required confined space and the work to be performed.

An entry permit must be completed before entry is authorized, documenting that you have completed the means, procedures, and practices necessary for safe entry and work.

You must make sure that entrants or their representatives have an opportunity to observe any monitoring or testing, or any actions to eliminate or control hazards, performed to complete the permit.

Identify the entry supervisor and make sure the entry supervisor signs the entry permit, authorizing entry, before the space is entered. The completed permit must be made available to entrants or their authorized representatives at the time of entry so they can confirm the implementation of the pre-entry preparations. Do this by either posting the completed permit at the entry location, or by any other equally effective means. CCI shall make sure the duration of the permit does not exceed the time required to complete the assigned task or job identified on the permit note any problems encountered during an entry operation on the permit. Use the information to make appropriate revisions to your program, entry operations, means, systems, procedures, and practices.

Required Information for Entry Permits

You must make sure your entry permit identifies all of the following that apply to your entry operation:

- The space to be entered
- Purpose of the entry
- Date and the authorized duration of the entry permit
- Hazards of the space to be entered
- Acceptable entry conditions

- Results of initial and periodic tests performed to evaluate and identify the hazards and conditions of the space, accompanied by the names or initials of the testers and by an indication of when the tests were performed
- Appropriate measures used before entry to isolate the space and eliminate or control hazards. Examples of appropriate measures include the lockout or tagging of equipment and procedures for purging, inerting, ventilating, and flushing permit-required confined spaces
- Names of entrants and current attendants. Other means include the use of rosters or tracking systems as long as the attendant can determine quickly and accurately, for the duration of the permit, which entrants are inside the space
- The current entry supervisor
- The signature or initials of the original supervisor authorizing entry
- Communication procedures for entrants and attendants to maintain contact during the entry
- Equipment provided for safe entry, such as:
 - Personal protective equipment (PPE)
 - Testing equipment, including equipment capable of detecting an increase in atmospheric hazard levels in the event the ventilation system stops working
 - Communications equipment
 - Alarm systems
 - Rescue equipment
- Rescue and emergency services available, and how to contact them. Include equipment to use, and names and contact information
- Other information needed for safety in the particular confined space
- Additional permits issued for work in the space, such as for hot work

Review Entry Permits

CCI shall review program and entry operations when measures taken under your permit-required confined space entry program may not protect employees. Review your program as necessary to correct deficiencies before allowing subsequent entries. Examples of circumstances requiring the review of your program include the following:

- There is unauthorized entry of a permit space
- A permit space hazard not covered by the permit is found
- A condition prohibited by the permit occurs
- An injury or near-miss occurs during entry
- There is a change in the use or configuration of a permit space
- An employee complains about the effectiveness of the program

Canceled entry permits must be kept for at least one year to facilitate the review of the permit-required confined space program. Use the canceled entry permits within one year following each

entry to review and evaluate both your program and the protection provided to employees entering permit-required confined spaces.

Update your written permit-required confined space entry programs as necessary to correct deficiencies before allowing subsequent entries.

You must keep entry permits or other atmospheric monitoring records that show the actual atmosphere an employee entered or worked in, as employee exposure records.

Prevent Unauthorized Entry

Necessary measures shall be implemented to prevent unauthorized entry into permit required confined spaces, when conducting authorized entry. You must protect entrants and those outside the confined space from hazards when removing entrance covers.

Note: Measures to prevent unauthorized entry are signs, physical barricades, warning tape, and an attendant.

Provide, Maintain, and use Proper Equipment

CCI shall provide the equipment when needed and at no cost to employees ensure that employees use provided equipment properly and maintain the provided equipment. Equipment may include but is not limited to:

- Testing and monitoring equipment
- Ventilating equipment
- Communication equipment
- Personal protective equipment (PPE)
- Lighting equipment
- Barriers or shields, such as pedestrian, vehicle or other barriers
- Ladders
- Rescue and emergency equipment, except provided by the rescue service
- Any other equipment

Note: Equipment that is unsuitable for retrieval must not be used including, but not limited to, retrieval lines that have reasonable probability of becoming entangled with the retrieval lines used by other authorized entrants, or retrieval lines that will not work due to the internal configuration of the permit space.

Evaluate and Control Hazards for Safe Entry

You must evaluate and control hazards for safe entry into permit-required confined spaces by doing all the following:

- Test for atmospheric hazards, in this order:
 - Oxygen

- Combustible gases and vapors
- Toxic gases and vapors
- Provide each entrant or their authorized representative an opportunity to observe any of the following:
 - Pre-entry testing
 - Subsequent testing
 - Monitoring of permit-required spaces
- Reevaluate the permit-required space in the presence of any entrant, or their authorized representative, who requests this to be done because they have reason to believe that the evaluation of that space may not have been adequate
- Upon request, immediately provide each entrant or their authorized representative, with the results of any testing required by this rule
- Continuously monitor the atmosphere in areas where entrants are working, when isolation of the space is not feasible. Examples include large spaces or a space that is part of a continuous system, such as a sewer

Evaluating Space Conditions

CCI shall evaluate space conditions during entry as follows:

- Test conditions before entry - Determine that acceptable entry conditions exist before entry is authorized by the entry supervisor
- Test or evaluate space conditions during entry - Determine that acceptable entry conditions are being maintained during entry operations
- Evaluate entry operations - Make sure entrants of more than one employer working at the same time in or around a permit-required confined space, do not endanger each other

Adequate Rescue and Emergency Services

CCI shall ensure adequate rescue and emergency services available during your permit-required confined space entry operations. Evaluate and select rescue teams or services who can:

- Respond to a rescue call in a timely manner
- Timeliness is based on the identified hazards. Rescuers must have the capability to reach potential victims within an appropriate time frame based on the identified permit space hazards
- Proficiently rescue employees from a permit-required confined space in your workplace. Rescuers must have the appropriate equipment for the type of rescue
- Agree to notify you immediately in the event that the rescue service becomes unavailable

Ensure that at least one member of the rescue team or service holds a current certification in first aid and cardiopulmonary resuscitation (CPR). Inform each rescue team or service about the hazards they may confront when called to perform rescue. Provide the rescue team or service

with access to all permit spaces from which rescue may be necessary. This will allow them to develop appropriate rescue plans and to practice rescue operations.

CCI shall provide employees assigned to perform permit-required confined space rescue and emergency services, at no cost to the employee, with:

- Personal protective equipment (PPE) needed for safe entry.
- Other equipment required to conduct rescues safely.
- Training so they are:
 - Proficient in the use of the PPE and other equipment
 - Proficient as an entrant of permit-required confined spaces
 - Able to safely perform assigned rescue and emergency duties
 - Knowledgeable in basic first aid and cardiopulmonary resuscitation (CPR)
- Practice sessions for permit-required confined space rescues at least once every 12 months where dummies, manikins, or actual persons are removed from either:
 - The actual permit spaces
 - Representative permit spaces that simulate the opening size, configuration, and accessibility, of permit spaces where rescue will be performed

CCI shall establish procedures for the following:

- Contacting rescue and emergency services
- Rescuing entrants from permit-required confined spaces
- Providing necessary emergency services to rescued entrants
- Preventing unauthorized persons from attempting a rescue

Use Nonentry Rescue Systems or Methods Whenever Possible

CCI shall use nonentry retrieval systems or methods to rescue entrants in a permit-required confined space unless this would increase the overall risk of injury to entrants or would not contribute to the rescue of the entrant.

Employers must make sure each entrant uses a chest or full-body harness, with a retrieval line attached to the harness at one of the following locations:

- At the center of the employee's back, near shoulder level
- Above the employee's head
- At another point which presents a profile small enough for the successful removal of the employee

The retrieval line must be attached to a mechanical device or fixed point outside the space, so rescue can begin as soon as necessary. Employers must ensure a mechanical device is available to retrieve entrants from vertical spaces more than 5 feet (1.52 m) deep.

Note: When you can demonstrate that the use of a chest or full-body harness is not feasible or creates a greater hazard, then you may use wristlets, or another method shown to be the safest and most effective alternative.

Entry Supervisors

CCI shall ensure the Entry Supervisor is trained and qualified for permit-required confined space entries. CCI shall ensure that an entry supervisor:

- Authorizes the entry into a permit-required confined space by signing the entry permit
- Oversees entry operations
- Knows about the hazards that may be faced during entry, including the mode, signs or symptoms, and consequences of the exposure
- Verifies and checks all of the following:
 - The appropriate entries have been made on the permit
 - All tests specified by the permit have been conducted
 - All procedures and equipment specified by the permit are in place before approving the permit and allowing entry to the space
- Terminates the entry and cancels the permit when:
 - The assigned task or job has been completed
 - A condition in the space that is not covered by the entry permit is discovered
- Verifies rescue services are available and the means to contact them is operable; and the employer will be notified as soon as the service becomes unavailable
- Removes unauthorized individuals who enter or attempt to enter the permit-required confined space during entry operations
- Determines that entry operations remain consistent with the terms of the entry permit and acceptable entry conditions are maintained:
- Whenever responsibility for a permit-required space entry operation is transferred
- At regular intervals dictated by the hazards and operations performed within the space. If the rescue service becomes unavailable during the course of the permit-required confined space entry, you must immediately cancel the entry and permit

Attendants

CCI shall ensure at least one attendant who must remain outside the permit-required confined space during entry operations. Each permit-required confined space attendant shall:

- Understands the hazards that may be faced during entry, including the mode, signs or symptoms, and results of exposure to the hazards
- Is aware of the behavioral effects of exposure to the hazard
- Continuously maintains an accurate count of entrants in the space
- Maintains an accurate record of who is in the permit-required confined space
- Communicates with entrants as necessary to monitor their status or alert them of the need to evacuate the space

- Monitors activities inside and outside the space to determine if it is safe for entrants to remain in the space
- Orders entrants to evacuate the space immediately if any of the following conditions occur:
 - A prohibited condition
 - The behavioral effects of hazardous exposure in an entrant
 - A situation outside the space that could endanger entrants
 - The attendant cannot effectively and safely perform all the duties required in this chapter
- Takes the following actions when unauthorized persons approach or enter a space:
 - Warn unauthorized persons to stay away from the space
 - Tells the unauthorized persons to exit immediately if they have entered the space
 - Informs entrants and the entry supervisor if unauthorized persons have entered the space
 - Performs nonentry rescues as specified by the rescue procedure
- Has the means to respond to an emergency affecting one or more of the permit spaces being monitored without preventing performance of the attendant's duties to the other spaces being monitored
- Carries out no duties that might interfere with their primary duty to monitor and protect the entrants
- Calls for rescue and other emergency services as soon as entrants may need assistance to escape from the space
- Monitors entry operations until relieved by another attendant or all entrants are out of the space

Entrants

CCI shall ensure that entrants know the hazardous conditions and their duties. This includes:

- Know the hazards they may face during entry, including the mode, signs or symptoms, and results of exposure to the hazards
- Use equipment properly
- Communicate with the attendant as necessary so the attendant can:
 - Monitor entrant status
 - Alert entrants of the need to evacuate
- Alert the attendant whenever either of these situations exist:
 - A warning sign or symptom of exposure to a dangerous situation such as, behavioral changes, euphoria, giddiness potentially from lack of oxygen or exposure to solvents
 - A prohibited condition

- Exit from the permit-required confined space as quickly as possible when one of the following occurs:
 - The attendant or entry supervisor gives an order to evacuate
 - The entrant recognizes any warning sign or symptom of exposure to dangerous situation
 - The entrant detects a prohibited condition
 - An evacuation alarm is activated

Terminate the entry when entry operations are completed, including securing an entrance cover and canceling the permit.

ALTERNATIVE METHODS

A permit-required confined space can be entered without a permit using alternative methods when there is monitoring and inspection data that supports the hazards have been eliminated.

Ensure all physical hazards have been eliminated and continuous forced air ventilation controls the actual or potential hazardous atmosphere. There must also be monitoring data that demonstrates the use of continuous forced air ventilation will maintain the permit-required confined space for safe entry. In the event the ventilation system stops working, entrants can exit the space safely.

CCI shall have written documentation for the entrants before each entry that includes the following information:

- The location of the space
- Date of entry
- Duration of the entry
- The hazards of the space and the work
- The specific measures used to eliminate the hazards
- The ventilation system used to control atmospheric hazards, when applicable, direct reading instruments used to test the atmosphere, and results of the atmospheric testing that demonstrate the absence of a hazardous atmosphere
- All conditions that required evacuation of the space
- The name, title, and signature of the entry supervisor ensuring safe entry procedures

CCI shall ensure all documentation produced is available to each affected employee and their authorized representative. All monitoring and inspection data shall be documented and available to each affected employee and their authorized representative.

If you must enter prior to the completion of the hazard elimination, you must perform the entry according to WAC 296-809-500 Permit entry procedures. For example – To collect monitoring

inspection data or apply hazard elimination measures.

Alternative Methods for Each Permit-Required Confined Space

You must implement your procedures for hazard elimination and alternative methods from your written program.

Before entry, eliminate any unsafe conditions including removing an entrance cover. When entrance covers are removed, promptly guard the opening with a railing, temporary cover, or other temporary barrier to prevent any accidental falls through the opening and protect entrants from objects falling into the space.

For spaces with potential atmospheric hazards, you must test before an employee enters the confined space. Use a calibrated, direct-reading instrument to test the internal atmosphere for all of the following, in this order:

- Oxygen content
- Flammable gases and vapors
- Potential toxic air contaminants

Make sure the atmosphere within the space is not hazardous when entrants are present. Continuously test the atmosphere within the space to ensure hazards do not accumulate. Use continuous forced air ventilation, as follows:

- Wait until the forced air ventilation has removed any hazardous atmosphere before allowing entrants into the space
- Direct forced air ventilation toward the immediate areas where employees are or will be working. Continue ventilation until all employees have left the space
- Provide the air supply from a clean source and make sure it does not increase hazards in the space

CCI shall provide entrants, or their authorized representatives, with an opportunity to observe the pre-entry and periodic testing. Evacuate employees from the space immediately when any of the following occurs:

- Detection of a hazardous atmosphere by air-monitoring instrumentation
- Failure of a direct-reading instrument
- Any failure of the ventilation
- Introduction of a hazard; a hazard develops; or conditions change within a space

When a space is evacuated, it cannot be reentered as alternative methods unless you do all of the following:

- Correct conditions that necessitated evacuation
- Treat any reentry as a new entry

EMPLOYEE TRAINING

CCI shall ensure employees are trained to perform their designated roles safely at no cost to each employee involved in permit-required confined space activities. The training must be in a language and vocabulary they understand, so they acquire the understanding, knowledge, and skills necessary to safely perform assigned duties:

- Establish employee proficiency in their confined space duties
- Introduce new or revised procedures as necessary

Training shall be provided to each affected employee:

- Before an employee is first assigned to duties covered by this chapter
- Before there is a change in an employee's assigned duties
- When there is a permit-required confined space hazard for which the employee has not already been trained
- Retrain your employees if there are either:
 - Deviations from your procedures for permit-required confined space entry
 - Employee knowledge or use of your procedures is inadequate

Certify Employee Proficiency

- You must determine and certify employee proficiency in their assigned duties.
- You must make sure the certification:
 - Contains each employee's name, the trainer's written or electronic signature or initials, and the dates of training
 - Is available for inspection by employees and their authorized representatives

DEFINITIONS

Acceptable entry conditions - The conditions that must exist in a permit-required confined space to allow safe entry and work.

Alternative methods - Permit-required confined space using alternative methods. An alternative process for entering a permit space under very specific conditions outlined in WAC 296-809-60002 and 296-809-60004. The employer must complete documentation as required to communicate to the workers the space conditions.

Attendant - An individual stationed outside one or more permit-required confined spaces to monitor the entrants. Attendants must perform the duties required in WAC 296-809-50020.

Barrier - A physical obstruction that blocks or limits access.

Blanking or blinding - The absolute closure of a pipe, line, or duct by fastening a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore. It is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

Calibration - Checking a direct reading instrument against an accurate standard such as a calibration gas to determine deviation and correct for analytical errors.

Competent person - A person capable of identifying existing and predictable hazards in the surroundings or working conditions including those that are unsanitary, hazardous, or dangerous to employees, and has the authorization to take prompt corrective measures to eliminate them. They must be knowledgeable in this program.

Confined space - A space that is all of the following:

- Large enough and arranged so an employee could fully enter the space and work
- Has limited or restricted entry or exit. Examples of spaces with limited or restricted entry are tanks, vessels, silos, storage bins, hoppers, vaults, excavations, and pits
- Not primarily designed for continuous human occupancy

Control - The action taken to reduce the level of any hazard inside a confined space using engineering methods (for example, ventilation), and then using these methods effectively 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 (employer) - The employer that has overall responsibility for construction at the worksite. If the controlling contractor (employer) owns or manages the property, then it is both a controlling employer and a host employer.

Double block and bleed - The closure of a line, duct, or pipe by closing and locking or tagging 2 in-line valves and by opening and locking or tagging a drain or vent valve in the line between the 2 closed valves. See also chapter 296-803 WAC, Lockout/tagout (control of hazardous energy).

Early-warning system - The method used to alert authorized entrants and attendants that an engulfment hazard may be developing. Examples of early-warning systems include: Alarms activated by remote sensors; and lookouts with equipment for immediately communicating with the authorized entrants and attendants.

Emergency - Any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit-required confined space that could endanger authorized entrants.

Energy-isolating device - A mechanical device that physically prevents transmitting or releasing energy. This includes, but is not limited to:

- Manually operated electrical circuit breakers
- Disconnect switches
- Manually operated switches that disconnect the conductors of a circuit from all ungrounded supply conductors if no pole of the switch can be operated independently
- Line valves
- Blocks
- Similar devices

Engulfment - The surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be inhaled 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, or crushing.

Enter (entry) - The action where any part of a person's body breaks the plane (passes through an opening) into a confined space. Entry occurs as soon as any part of the entrant's body breaks the plane of the opening into the space whether or not such action is intentional, or any work activities are actually performed in the space.

Entrant - An employee who is authorized by the employer to enter a permit-required confined space.

Entry employer - Any employer who has an employee enter a permit space.

Entry permit (permit) - The written or printed document that is provided by you to allow and control entry into a permit-required confined space and that contains the information required in WAC 296-809-500, Permit entry procedures.

Entry rescue - Occurs when a rescue service enters a permit space to rescue one or more employees.

Entry supervisor - The qualified and trained person (such as the employer, crew leader, or crew chief) responsible for identifying permit-required confined spaces and performing responsibilities and job duties as outlined by WAC 296-809-50018. For example:

- Determining if acceptable entry conditions are present at a permit-required confined space where entry is planned
- Authorizing entry and overseeing entry operations
- Terminating entry as required by this standard

Hazardous atmosphere - An atmosphere that may expose employees to the risk of death, incapacitation, impair their ability to self-rescue (escape unaided from a permit-required confined space), injury, or acute illness caused by one or more of the following:

- Flammable gas, vapor, or mist in excess of ten percent of its lower flammable limit (LFL) or lower explosive limit (LEL)
- Airborne combustible dust at a concentration that meets or exceeds its LFL. The concentration may be approximated as a condition in which the dust obscures vision at a distance of five feet (1.52 m) or less
- Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent
- Atmospheric concentration of any substance which may exceed a permissible exposure limit. (PEL)
- Any other atmospheric condition that is immediately dangerous to life or health

Hazard elimination - The temporary or permanent action taken to remove a hazard from the work environment. For confined spaces, this definition includes isolation. It does not include the use of forced air ventilation. For a hazard to be considered eliminated, the conditions that create or cause the hazard must no longer exist within the confined space.

Host employer - The employer that owns or manages the property where the work is taking place. In no case will there be more than one host employer.

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

Hot work permit - A written authorization to perform hot work operations, for example, riveting, welding, cutting, burning, and heating, that can provide a source of ignition.

Immediately dangerous to life or health (IDLH) - Any of the following conditions:

- An immediate or delayed threat to life
- Anything that would cause irreversible adverse health effects
- Anything that would interfere with an individual's ability to escape unaided from a permit-required confined space

Inerting - The displacement of the atmosphere in a permit-required confined space by a noncombustible gas (such as nitrogen or argon) to such an extent that the resulting atmosphere is noncombustible. Inerting produces an IDLH oxygen-deficient atmosphere.

Isolation - The process of removing a permit-required confined space from service and completely protecting the employees against the release of energy and material into the space by:

- Blanking or blinding

- Misaligning or removing sections of lines, pipes, or ducts
- Double block and bleed system
- Machine guarding
- Blocking or disconnecting all mechanical linkages
- Placement of barriers to eliminate the potential for employee contact with a physical hazard
- Lockout of all sources of energy

Limited or restricted means of entry or exit - A condition that has a potential to impede an employee's movement into or out of a confined space. A space has limited or restricted means of entry or exit, if an entrant's ability to escape in an emergency would be hindered. Examples include, but are not limited to, trip hazards, poor illumination, slippery floors, inclining surfaces and ladders.

Line breaking - The intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

Lockout - Placing a lockout device on an energy-isolating device using an established procedure to make sure the machine or equipment cannot be operated until the lockout device is removed. For more information, see chapter 296-803 WAC, Lockout/tagout (control of hazardous energy).

Lockout device - A device that uses a positive means, such as a key or combination lock, to hold an energy-isolating device in the "safe" or "off" position. This includes blank flanges and bolted slip blinds. Lower flammable limit (LFL) or lower explosive limit (LEL). The minimum concentration of a substance in air needed for an ignition source to cause a flame or explosion.

Mobile worker - An employee who performs work in multiple locations such as: Customer sites, company offices, private homes, vendor offices, or construction sites.

Monitor or monitoring (see also testing) - The process used to identify and evaluate a potential hazardous atmosphere after an authorized entrant enters the space. This process checks for atmospheric changes. It is performed in a periodic or continuous manner after the completion of the initial testing or evaluation of that space.

Nonentry rescue - Retrieval of an entrant from a permit-required space without entering the permit space.

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

Oxygen enriched atmosphere - An atmosphere containing more than 23.5 percent oxygen by volume. Permit-required confined space or permit space. A confined space that has one or more of the following characteristics capable of causing death or serious physical harm:

- Contains or has a potential to contain a hazardous atmosphere;
- Contains a material with the potential for engulfing someone who enters;
- Has an internal configuration that could allow someone entering to be trapped or asphyxiated by inwardly converging walls or by a floor, which slopes downward and tapers to a smaller cross section
- Contains any physical hazard. This includes any recognized health or safety hazards including engulfment in solid or liquid material, electrical shock, or moving parts
- Contains any other recognized serious safety or health hazard that could either:
 - Impair the ability to self-rescue
 - Result in a situation that presents an immediate danger to life or health

Permit-required confined space program - An overall program for controlling and appropriately protecting employees from permit-required confined space hazards; and regulating employee entry into permit-required confined spaces.

Physical hazard - An existing or potential hazard that can cause death or serious physical damage. Examples include but are not limited to: Explosives (as defined by WAC 296-52- 60130); mechanical, electrical, hydraulic, and pneumatic energy; radiation; temperature extremes; engulfment; noise; and inwardly converging surfaces. Physical hazards also include chemicals that can cause death or serious physical damage through skin or eye contact (rather than through inhalation).

Potential hazards - All reasonable anticipated conditions within a space and outside the space that can adversely affect the conditions within the space.

Prohibited condition - Any condition in a permit-required confined space not allowed by the permit during the authorized entry period. For example: 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 - A person who has successfully demonstrated the ability to solve problems relating to the subject matter, work, or project, either by:

- Possession of recognized degree, certificate, or professional standing
- Extensive knowledge, training, and experience

Rescue - Retrieving and providing medical assistance to one or more employees in a permit space.

Rescue service - The personnel designated to rescue employees from permit-required confined spaces.

Retrieval system - The equipment used for nonentry rescue of persons from permit-required confined spaces including; a retrieval line, chest or full-body harness, wristlets, or anklets if appropriate, and a lifting device or anchor.

Serious physical damage - An impairment or illness in which a body part is made functionally useless or is substantially reduced in efficiency. Such impairment or illness may be permanent or temporary and includes, but is not limited to, loss of consciousness, disorientation, or other immediate and substantial reduction in mental efficiency. Injuries involving such impairment would usually require treatment by a physician or other licensed health care professional.

Testing (see also monitoring) - The process of identifying and evaluating the hazards that entrants may be exposed to in a permit-required confined space. Testing includes specifying the initial atmospheric tests that are to be performed in the permit-required confined space.

Ventilate or ventilation - The process of controlling a hazardous atmosphere using continuous forced-air mechanical systems. Ventilation is a method of hazard control, not hazard elimination.

Crane, Derrick and Hoist Safety

PURPOSE

To outline the Crane, Derrick and Hoist Safety Program for **Cirks Construction Inc.**; hereafter referred to as "CCI," CCI policy is to maintain a safe workplace for its employees; therefore, only qualified, and licensed individuals shall operate these devices. The safety rules and guidance in this program apply to all operations at CCI that involve the use of cranes and hoists installed in or attached to buildings and to all CCI employees, supplemental labor, and subcontractor personnel who use such devices.

OSHA's Definition of a Crane - A crane is a machine for lifting and lowering a load and moving it horizontally, with the hoisting mechanism an integral part of the machine. Cranes whether fixed or mobile are driven manually or by power.

RESPONSIBILITIES

Supervisors

- Ensuring a CCI Safety representative has been notified of a scheduled worksite lift 48 hours (2 days) prior to execution
- Ensuring the Crane Operator/Contractor has completed a Lift Plan and the completed plan has been reviewed by a CCI Safety representative prior to execution
- Ensuring that employees under their supervision receive the required training and are certified and licensed to operate the cranes and hoists in their areas
- Providing training for prospective crane and hoist operators. This training must be conducted by a qualified, designated instructor who is a licensed crane and hoist operator and a full-time employee
- Evaluating crane and hoist trainees using the Crane Safety Checklist and submitting the Qualification Request Form to the Safety Office to obtain the operator's license
- Ensuring that hoisting equipment is inspected and tested monthly by a responsible individual and that rigging equipment is inspected annually

Crane and Hoist Operators

- Ensuring the CCI Lift Plan has been completed and submitted for review by a CCI Safety representative prior to execution
- Operating hoisting equipment safely
- Conducting functional tests prior to using the equipment
- Selecting and using rigging equipment appropriately
- Having a valid operator's license on their person while operating cranes or hoists
- Participating in the medical certification program, as required

Engineering/Maintenance/Operations Department

- Performing annual maintenance and inspection of all cranes and hoists that are not covered by a program with maintenance responsibility
- Conducting periodic and special load tests of cranes and hoists
- Maintaining written records of inspections and tests and providing copies of all inspections and test results to facility managers and building coordinators who have cranes and hoists on file
- Inspecting and load testing cranes and hoists following modification or extensive repairs (e.g., a replaced cable or hook, or structural modification)
- Scheduling a non-destructive test and inspection for crane and hoist hooks at the time of the periodic load test, and testing and inspecting before use new replacement hooks and other hooks suspected of having been overloaded.
 - The evaluation, inspection, and testing may include, but are not limited to visual, dye penetrant, and magnetic particle techniques referenced in ASME B30.10 (Hooks, Inspection and Testing)
- Maintaining all manuals for cranes and hoists in a central file for reference

POLICY

All workers who use any crane or hoists shall have an operator's license.

TRAINING

CCI requires that crane operators be trained and licensed at an approved training facility.

CRANE AND HOIST OPERATORS

Only designated personnel shall be permitted to operate a crane. To be qualified as a Crane and Hoist Operator, the candidate shall have received hands-on training from a licensed, qualified crane and hoist operator designated by the candidate's supervisor.

Crane and Hoist Operators must renew their license every three years by satisfying the requirements described above.

Only those employees qualified by training or experience shall be allowed to operate equipment and machinery. Operators shall be qualified/certified by one of the following methods:

- Certification by an accredited crane operator testing organization
- Qualification by an audited employer program
- Qualification by the U.S. military
- Licensing by a government entity
- Trainer

Personal Protective Equipment

General Recommendations

The general PPE is recommended for all response/recovery tasks/operations; only the additional PPE that may be needed for a specific hazard is noted below.

General PPE includes:

- Hard hat for overhead impact or electrical hazards
- Eye protection with side shields when the risk is present
- Gloves chosen for job hazards expected (e.g., heavy-duty leather work gloves for handling debris with sharp edges and/or chemical protective gloves appropriate for chemicals potentially contacted)
- ANSI-approved protective footwear
- Respiratory protection as necessary-N, R, or P95, filtering facepieces may be used for nuisance dusts (e.g., dried mud, dirt, and silt) and mold (except mold remediation)
 - Filters with a charcoal layer may be used for odors.

GENERAL SAFETY RULES

Operators shall comply with the following rules while operating the cranes and hoists:

- Do not engage in any practice that will divert your attention while operating the crane.
- Respond to signals only from the person who is directing the lift or any appointed signal person. Always obey a stop signal, no matter who gives it.
- Do not move a load over people:
 - People shall not be placed in jeopardy by being under a suspended load.
 - Do not work under a suspended load unless the load is supported by blocks, jacks, or a solid footing that will safely support the entire weight.
 - Have a crane or hoist operator remain at the controls or lock open and tag the main electrical disconnect switch.
- Ensure that the rated load capacity of a crane's bridge, individual hoist, or any sling or fitting is not exceeded. Know the weight of the object being lifted or use a dynamometer or load cell to determine the weight.
- Check that all controls are in the OFF position before closing the main line disconnect switch.
- If spring-loaded reels are provided to lift pendants clear off the work area, ease the pendant up into the stop to prevent damaging the wire

Avoid Side Pulls

These can cause the hoist rope to slip out of the drum groove, damaging the rope or destabilizing the crane or hoist.

To Prevent Shock Loading, Avoid Sudden Stops or Starts

- Make no sudden acceleration or deceleration of the moving load.
- Ensure load does not contact any obstructions.
- Cranes shall not be used for side pulls except when specifically authorized by a responsible person, no hoisting, lowering, traveling while an employee is on the load or hook.
- Operator avoids carrying loads over people, load shall not be lowered where there is less than two full wraps of rope on the hoisting drum.
- Operator does not leave his position at the controls while the load is suspended.

Shock loading can occur when a suspended load is accelerated or decelerated and can overload the crane or hoist. When completing an upward or downward motion, ease the load slowly to a stop.

Equipment must not be assembled or used unless ground conditions are firm, drained, and graded to a sufficient extent so that, in conjunction (if necessary) with the use of supporting materials, the equipment manufacturer's specifications for adequate support and degree of level of the equipment are met.

The manufacturer's procedures and prohibitions must be complied with when assembling and disassembling equipment.

The assembly/disassembly of equipment must be directed by a competent and qualified person.

The A/D director must be knowledgeable in the processes and procedures involved in the assembly and disassembly of the crane.

The competent person deemed the A/D director is required to review the A/D processes and procedures prior to commencing operations unless he or she understands and is familiar with the applicable processes and procedures and has experience in A/D operations regarding the same type and configuration of the crane and associated equipment. The work zone shall be identified by demarcating boundaries such as flag and range limiting devices or defining the work zone as 360 degrees around the equipment up to the maximum working radius. The hazard assessment must determine if any part of the equipment could get closer than 20 feet to a power line.

All manufacturer procedures applicable to the operational functions of equipment, including its use with attachments, must be complied with.

A CO₂, dry chemical, or equivalent fire extinguisher shall be kept in the crane cab or vicinity of the crane.

Operating and maintenance personnel shall receive training and be made familiar with the use and care of the fire extinguishers provided.

A competent person performs a documented inspection, at least monthly. The inspection documentation must at a minimum include the name and signature of the competent person conducting the inspection, date, items inspected, and the findings of the inspection.

CCI shall maintain the inspection records for a minimum of three months. A daily inspection by a competent person can be utilized in lieu of the monthly inspection if the daily inspection contains the same required information.

Any and all equipment shall be inspected prior to use.

GENERAL REQUIREMENTS

Wind Indicators and Rail Clamps

Outdoor storage bridges shall be provided with automatic rail clamps. A wind-indicating device shall be provided which will give a visible or audible alarm to the bridge operator at a predetermined wind velocity. If the clamps act on the rail heads, any beads or weld flash on the rail heads shall be ground off.

Clearance From Obstruction

Minimum clearance of three inches overhead and two inches laterally shall be provided and maintained between crane and obstructions in conformity with Crane Manufacturers Association of America, Inc.

Where passageways or walkways are provided obstructions shall not be placed so that safety of personnel will be jeopardized by movements of the crane.

Clearance Between Parallel Cranes

If the runways of two cranes are parallel, and there are no intervening walls or structure, there shall be adequate clearance provided and maintained between the two bridges.

Note: Only designated personnel shall be permitted to operate a crane covered by this section.

Cab Location

The general arrangement of the cab and the location of control and protective equipment shall be such that all operating handles are within convenient reach of the operator when facing the area to be served by the load hook, or while facing the direction of travel of the cab. The arrangement shall allow the operator a full view of the load hook in all positions.

The cab shall be located to afford a minimum of three inches clearance from all fixed structures within its area of possible movement.

Access to Crane

Access to the car and/or bridge walkway shall be by a conveniently placed fixed ladder, stairs, or platform requiring no step over any gap exceeding 12 inches (30 cm).

Fire Extinguisher

Carbon tetrachloride extinguishers shall not be used.

Lighting

Light in the cab shall be sufficient to enable the operator to see clearly enough to perform his work.

FOOTWALKS AND LADDERS

Location of Foot walks

If sufficient headroom is available on cab-operated cranes, a foot walk shall be provided on the drive side along the entire length of the bridge of all cranes having the trolley running on the top of the girders. Where foot walks are, in no case shall less than 48 inches of headroom be provided.

Construction of Foot walks

Foot walks shall be of rigid construction and designed to sustain a distributed load of at least 50 pounds per square foot. Foot walks shall have a walking surface of anti-slip type.

The inner edge shall extend at least to the line of the outside edge of the lower cover plate or flange of the girder.

Ladders and Stairways

Gantry cranes shall be provided with ladders or stairways extending from the ground to the foot walk or cab platform.

Stairways shall be equipped with rigid and substantial metal handrails. Walking surfaces shall be of an anti-slip type.

Ladders shall be permanently and securely fastened in place.

STOPS, BUMPERS, RAIL SWEEPS, AND GUARDS

Trolley Stops

Stops shall be provided at the limits of travel of the trolley. Stops shall be fastened to resist forces applied when contacted. A stop engaging the tread of the wheel shall be of a height at least equal to the radius of the wheel.

Bridge Bumpers

A crane shall be provided with bumpers or other automatic means providing equivalent effect, unless the crane travels at a slow rate of speed and has a faster deceleration rate due to the use of sleeve bearings, or is not operated near the ends of bridge and trolley travel, or is restricted to a limited distance by the nature of the crane operation and there is no hazard of striking any object in this limited distance, or is used in similar operating conditions. The bumpers shall be capable of stopping the crane (not including the lifted load) at an average rate of deceleration not to exceed 3 ft/s/s when traveling in either direction at 20 percent of the rated load speed.

The bumpers shall have sufficient energy absorbing capacity to stop the crane when traveling at a speed of at least 40 percent of rated load speed. The bumper shall be so mounted that there is no direct shear on bolts. Bumpers shall be so designed and installed as to minimize parts falling from the crane in case of breakage.

Trolley Bumpers

A trolley shall be provided with bumpers or other automatic means of equivalent effect, unless the trolley travels at a slow rate of speed, or is not operated near the ends of bridge and trolley travel, or is restricted to a limited distance of the runway and there is no hazard of striking any object in this limited distance, or is used in similar operating conditions. The bumpers shall be capable of stopping the trolley (not including the lifted load) at an average rate of deceleration not to exceed 4.7 ft/s/s when traveling in either direction at one-third of the rated load speed.

When more than one trolley is operated on the same bridge, each shall be equipped with bumpers or equivalent on their adjacent ends.

Bumpers or equivalent shall be designed and installed to minimize parts falling from the trolley in case of age.

Rail sweeps. Bridge trucks shall be equipped with sweeps which extend below the top of the rail and project in front of the truck wheels.

Guards for Hoisting Ropes

If hoisting ropes run near enough to other parts to make fouling or chafing possible, guards shall be installed to prevent this condition. A guard shall be provided to prevent contact between bridge conductors and hoisting ropes if they could come into contact.

Guards for Moving Parts

Exposed moving parts such as gears, set screws, projecting keys, chains, chain sprockets, and reciprocating components which might constitute a hazard under normal operating conditions shall be guarded.

Guards Shall be Securely Fastened

Each guard shall be capable of supporting without permanent distortion the weight of a 200-pound person unless the guard is located where it is impossible for a person to step on it.

BRAKES

Brakes for Hoists

Each independent hoisting unit of a crane shall be equipped with at least one self-setting brake, hereafter referred to as a holding brake, applied directly to the motor shaft or some part of the gear train.

Each independent hoisting unit of a crane, except worm-gear hoists, the angle of whose worm is such as to prevent the load from accelerating in the lowering direction shall, in addition to a holding brake, be equipped with control braking means to prevent over speeding.

Holding Brakes

Holding brakes for hoist motors shall have not less than the following percentage of the full load hoisting torque at the point where the brake is applied:

- 125 percent when used with a control braking means other than mechanical
- 100 percent when used in conjunction with a mechanical control braking means
- 100 percent each if two holding brakes are provided

Holding brakes on hoists shall have ample thermal capacity for the frequency of operation required by the service. Holding brakes on hoists shall be applied automatically when power is removed.

Where necessary holding brakes shall be provided with adjustment means to compensate for wear. The wearing surface of all holding-brake drums or discs shall be smooth.

Each independent hoisting unit of a crane handling hot metal and having power control braking means shall be equipped with at least two holding brakes.

Control Braking

A power control braking means such as regenerative, dynamic, or counter torque braking, or a mechanically controlled braking means shall be capable of maintaining safe lowering speeds of rated loads.

The control braking means shall have ample thermal capacity for the frequency of operation required by service.

Brakes for Trolleys and Bridges

Foot-operated brakes shall not require an applied force of more than 70 pounds to develop manufacturer's rated brake torque.

Brakes may be applied by mechanical, electrical, pneumatic, hydraulic, or gravity means. Where necessary brakes shall be provided with adjustment means to compensate for wear.

The wearing surface of all brake drums or discs shall be smooth. All foot-brake pedals shall be constructed so that the operator's foot will not easily slip off the pedal. Foot-operated brakes shall be equipped with automatic means for positive release when pressure is released from the pedal.

Brakes for stopping the motion of the trolley or bridge shall be of sufficient size to stop the trolley or bridge within a distance in feet equal to 10 percent of full load speed in feet per minute when traveling at full speed with full load.

If holding brakes are provided on the bridge or trolleys, they shall not prohibit the use of a drift point in the control circuit.

Brakes on trolleys and bridges shall have ample thermal capacity for the frequency of operation required by the service to prevent impairment of functions from overheating.

Application of Trolley Brakes

On cab-operated cranes with cab on trolley, a trolley brake is required. A drag brake may be applied to hold the trolley in a desired position on the bridge and to eliminate creep with the power off.

Application of Bridge Brakes

On cab-operated cranes with cab on bridge, a bridge brake is required as specified. On cab-operated cranes with cab on trolley, a bridge brake of the holding type shall be required. On all floor, remote and pulpit-operated crane bridge drives, a brake of non-coasting mechanical drive shall be provided.

CONTROLLERS

Cranes not equipped with spring-return controllers or momentary contact pushbuttons shall be provided with a device which will disconnect all motors from the line on failure of power and will not permit any motor to be restarted until the controller handle is brought to the "off" position, or a reset switch or button is operated.

Lever operated controllers shall be provided with a notch or latch which in the "off" position prevents the handle from being inadvertently moved to the "on" position. An "off" detent or spring return arrangement is acceptable.

The controller operating handle shall be located within convenient reach of the operator. As far as practicable, the movement of each controller handle shall be in the same general directions as the resultant movements of the load.

The control for the bridge and trolley travel shall be so located that the operator can readily face the direction of travel.

For floor-operated cranes, the controller, or controllers if rope operated, shall automatically return to the "off" position when released by the operator. Pushbuttons in pendant stations shall return to the "off" position when pressure is released by the crane operator.

Automatic cranes shall be so designed that all motions shall fail-safe if any malfunction of operation occurs.

Remote-operated cranes shall function so that if the control signal for any crane motion becomes ineffective the crane motion shall stop.

RESISTORS

Enclosures for resistors shall have openings to provide adequate ventilation and shall be installed to prevent the accumulation of combustible matter too near to hot parts. Resistor units shall be supported to be as free as possible from vibration.

Provision shall be made to prevent broken parts or molten metal falling upon the operator or from the crane.

SHEAVES

Sheave grooves shall be smooth and free from surface defects which could cause rope damage. Sheaves carrying ropes which can be momentarily unloaded shall be provided with close-fitting guards or other suitable devices to guide the rope back into the groove when the load is applied again.

The sheaves in the bottom block shall be equipped with close-fitting guards that will prevent ropes from becoming fouled when the block is lying on the ground with ropes loose.

Pockets and flanges of sheaves used with hoist chains shall be of such dimensions that the chain does not catch or bind during operation.

All running sheaves shall be equipped with means for lubrication. Permanently lubricated, sealed and/or shielded bearings meet this requirement.

GROUND CONDITIONS

Ground Conditions - The ability of the ground to support the equipment (including slope, compaction, and firmness.)

Supporting Materials - Blocking, mats, cribbing, marsh buggies (in marshes/wetlands) or similar supporting materials or devices.

Equipment must not be assembled or used unless ground conditions are firm, drained, and graded to a sufficient extent so that, in conjunction (if necessary) with the use of supporting materials, the equipment manufacturer's specifications for adequate support and degree of level of the equipment are met. [CFR 1926.1402 \(b\)\(c\)](#)

ASSEMBLY/DISASSEMBLY

Before commencing assembly/disassembly operations, the A/D director must ensure that the crew members understand all the following:

- Their tasks
- The hazards associated with their tasks
- The hazardous positions/locations that they need to avoid

Protecting Crew Members Out of Operator View

Before a crew member goes to a location that is out of view of the operator and is either in, on, or under the equipment, or near the equipment (or load) where the crew member could be injured by movement of the equipment (or load), the crew member must inform the operator that he/she is going to that location.

Where the operator knows that a crew member went to a location, the operator must not move any part of the equipment (or load) until the operator is informed in accordance with a pre-arranged system of communication that the crew member is in a safe position.

The employee to oversee Assembly/Disassembly when performing covered tasks shall be a Competent Employee appointed by CCI.

IDENTIFYING THE WORK ZONE

The work zone must be identified by either 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 b) Defining the work zone as the area 360 degrees around the equipment, up to the equipment's maximum working radius.

CCI shall 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, CCI shall meet the requirements in the following Options:

Option (1) - Deenergize and Ground

Confirm from the utility owner/operator that the power line has been deenergized 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.

Option (3) - Table A Clearance

Determine the line's voltage and the minimum approach distance permitted. Determine if any part of the equipment, load line or load, 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. If so, then the employer must 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. [CFR 1926.1408 \(a\),\(b\)](#)

TABLE A—MINIMUM CLEARANCE DISTANCES

Voltage (nominal, kV, alternating current)	Minimum clearance distance (feet)
up to 50	10
over 50 to 200	15
over 200 to 350	20
over 350 to 500	25
over 500 to 750	35
over 750 to 1,000	45
over 1,000	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).

OPERATION RULES

The operator shall have access to a substantial and durable chart with clearly legible letters. Figures shall be provided with each crane and securely fixed to the crane cab in a location easily

visible to the operator while seated at this control station as well as procedures applicable to the operation of the equipment.

Procedures include rated capacities (load charts), recommended operating speeds, special hazard warnings, instructions, and operator's manual. The operator's manual must be always readily available in the cab of the crane. Whenever there is a safety concern, the operator is granted the authority to stop and refuse to handle loads until a qualified person has determined that safety has been assured.

The Responsible Safety Person or competent person available on the worksite shall identify hazard areas by marking the boundaries of the crane swing radius with warning lines, railings, or similar barriers. Workers within proximity of the operational equipment shall not stand or work within this safety boundary or at any place where the potential to be struck by, pinched, or crushed by the equipment or other related moving parts.

CCI shall train each employee assigned to work on or near the equipment and erect and maintain control lines, warning lines, railings, or similar barriers to mark the boundaries of the hazard areas, unless it is not feasible. Only employees essential to the operation are permitted in the fall zone.

OPERATIONAL AIDS

Operational aids are required on all equipment. Operations must not begin unless the operational aids are in proper working order, except where an operational aid is being repaired CCI uses the specified temporary alternative measures.

Load Charts

The procedures applicable to the operation of the equipment, including rated capacities (load charts), recommended operating speeds, special hazard warnings, instructions, and operator's manual, must be always readily available in the cab for use by the operator. [1926.1417\(c\)\(1\)](#)

MOVING LOAD

- Center the hook over the load to keep the cables from slipping out of the drum grooves and overlapping, and to prevent the load from swinging when it is lifted. Inspect the drum to verify that the cable is in the grooves.
- Use a tag line when loads must traverse long distances or must otherwise be controlled. Manila rope may be used for tag lines.
- Plan and check the travel path to avoid personnel and obstructions.
- Lift the load only high enough to clear the tallest obstruction in the travel path.
- Start and stop slowly.

- Land the load when the move is finished. Choose a safe landing.

Never Leave Suspended Loads Unattended

In an emergency where the crane or hoist has become inoperative, if a load must be left suspended, barricade and post signs in the surrounding area, under the load, and on all four sides. Lock open and tag the crane or hoist's main electrical disconnect switch.

PARKING CRANE AND HOIST

- Remove all slings and accessories from the hook. Return the rigging device to the designated storage racks.
- Raise the hook at least 2.1 m (7-ft) above the floor.
- Store the pendant away from aisles and work areas or raise it at least 2.1 m (7 ft) above the floor.

RIGGING

General Rigging Safety Requirements

Only select rigging equipment that is in good condition. All rigging equipment shall be inspected prior to lift; defective equipment is to be removed from service and destroyed to prevent inadvertent reuse. The load capacity limits shall be stamped or affixed to all rigging components.

CCI policy requires a minimum safety factor of five to be maintained for wire rope slings.

Nylon slings with the following shall be rejected destroyed:

- Abnormal wear
- Torn stitching
- Broken or cut fibers
- Discoloration or deterioration

Wire-rope slings with the following shall be rejected destroyed:

- Kinking, crushing, bird caging, or other distortions
- Evidence of heat damage
- Cracks, deformation, or worn end attachments
- Six randomly broken wires in a single rope lay
- Three broken wires in one strand of rope
- Hooks opened more than 15% at the throat
- Hooks twisted sideways more than 10deg. from the plane of the unbent hook

Alloy steel chain slings with the following shall be rejected destroyed:

- Cracked, bent, or elongated links or components
- Cracked hooks

- Shackles, eye bolts, turnbuckles, or other components that are damaged or deformed

RIGGING A LOAD

Do the following when rigging a load:

- Determine the weight of the load. Do not guess.
- Determine the proper size for slings and components.
- Do not use manila rope for rigging.
- Make sure that shackle pins and shouldered eyebolts are installed in accordance with the manufacturer's recommendations.
- Make sure that ordinary (shoulder less) eyebolts are threaded in at least 1.5 times the bolt diameter.
- Use safety hoist rings (swivel eyes) as a preferred substitute for eye bolts wherever possible.
- Pad sharp edges to protect slings. Remember that machinery foundations or angle-iron edges may not feel sharp to the touch but could cut into rigging when under several tons of load. Wood, tire rubber, or other pliable materials may be suitable for padding.
- Do not use slings, eyebolts, shackles, or hooks that have been cut, welded, or brazed.
- Install wire-rope clips with the base only on the live end and the U-bolt only on the dead end. Follow the manufacturer's recommendations for the spacing for each specific wire size.
- Determine the center of gravity and balance the load before moving it.
- Initially lift the load only a few inches to test the rigging and balance.

RIGGERS

CCI shall ensure only qualified riggers are used during hoisting activities for assembly and disassembly. 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.

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. CCI shall 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.

Riggers do not have to be certified by an accredited organization or assessed by a third party. CCI may choose to use a third-party entity to assess the qualifications of the rigger candidate, but they are not required to do so.

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.

USE OF PERSONNEL PLATFORM

When using equipment to hoist employees, the employees must be in a personnel platform that meets the requirements. Hoisting of the personnel platform must be performed in a slow, controlled, cautious manner with no sudden movements of the equipment or the platform.

A personnel platform is not required for hoisting employees:

- Into and out of drill shafts that are up to and including eight feet in diameter
- In pile driving operations
- Solely for transfer to or from a marine worksite in a marine-hoisted personnel transfer device
- In storage-tank (steel or concrete) shaft and chimney operations

CRITICAL LIFT

A critical lift is any lift utilizing multiple cranes exceeding 70% of total capacity of the crane at lift radius over an occupied structure or public street of lifting an item of high value or long replacement time.

A critical lift procedure should contain the following, as applicable:

- Identify the items to be moved
- Special precautions, if any (such as outrigger or track cribbing for mobile cranes)
- Weight of the item and total weight of the load (For mobile cranes, see the manufacturer's instructions regarding components and attachments that must be considered as part of the load.)
- Center of gravity location
- A list of each piece of equipment (e.g., crane, hoist, fork truck), accessory, and rigging component (e.g., slings, shackles, spreader bars, yokes) to be used for the lift. (This list shall identify each piece of equipment by type and rated capacity.)
- Designated checkpoints and hold points and estimated instrument readings, as relevant, so that job progress can be checked against the plan

CRANE OVERLOADING

Cranes or hoists shall not be loaded beyond their rated capacity for normal operations. Any crane or hoist suspected of having been overloaded shall be removed from service by locking open and tagging the main disconnect switch. Additionally, overloaded cranes shall be inspected, repaired, load tested, and approved for use before being returned to service.

WORKING AT HEIGHTS ON CRANES OR HOISTS

Anyone working on cranes, to include, conducting maintenance or repair on cranes or hoists at heights greater than 1.8 m (6 ft) shall use fall protection. CCI will provide and ensure the use of fall protection equipment for employees who are on a walking/working surface with an unprotected side or edge more than 6 feet above a lower-level. Fall protection should also be considered for heights less than 1.8 m. Fall protection includes safety harnesses that are fitted with a lifeline and securely attached to a structural member of the crane or building or properly secured safety nets.

Use of a crane as a work platform should only be considered when conventional means of reaching an elevated worksite are hazardous or not possible.

Workers shall not ride a moving bridge crane without an approval from the Safety Office, which shall specify the following as a minimum:

- Personnel shall not board any bridge crane unless the main disconnect switch is locked and tagged open.
- Personnel shall not use bridge cranes without a permanent platform (catwalk) as work platforms. Bridge catwalks shall have a permanent ladder access.

- Personnel shall ride seated on the floor of a permanent platform with approved safety handrails, wear safety harnesses attached to designated anchors, and be always in clear view of the crane operator.
- Operators shall lock and tag open the main (or power) disconnect switch on the bridge catwalk when the crane is parked.

HAND SIGNALS

A signal person shall be provided anytime the operator's view is obstructed, if site specific safety concerns require it, or if the operator determines that it is necessary.

Each signal person must:

- Know and understand the type of signals used. If hand signals are used, the signal person must know and understand the Standard Method for hand signals
- Be competent in the application of the type of signals used
- Have a basic understanding of equipment operation and limitations, including the crane dynamics involved in swinging and stopping loads and boom deflection from hoisting loads

The signal person must also be provided for the following situations:

- The point of operation is not in full view of the operator
- The view is obstructed when the equipment is traveling
- The operator or the person handling the load determines it is necessary due to site specific concerns
- Communication with multiple cranes/derricks

Signals to the operator shall be in accordance with the standard hand signals unless voice communications equipment (telephone, radio, or equivalent) is used. Signals shall be always discernible or audible. Some special operations may require addition to or modification of the basic signals. For all such cases, these special signals shall be agreed upon and thoroughly understood by both the person giving the signals and the operator and shall not conflict with the standard signals.

Signal Person's Qualifications

CCI shall 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.

INSPECTION, MAINTENANCE, AND TESTING

1926.1412(f)(1) At least every 12 months the equipment must be inspected by a qualified person in accordance with paragraph (d) of this section (each shift) except that the corrective action set forth in paragraphs (f)(4), (f)(5), and (f)(6) of this section must apply in place of the corrective action required by paragraphs (d)(2) and (d)(3) of this section.

CCR 5031(c) [CALIFORNIA] Periodic inspections shall be conducted at least four times a year. The annual certification, as required by Section 5021(a), can serve as one of the required periodic inspections. The periodic inspections shall be evenly spaced or as close to evenly spaced as scheduling permits through the year. Cranes shall not be operated more than 750 hours, between periodic inspections.

A competent person must begin a visual inspection prior to each shift the equipment is used, which must be completed before or during that shift.

The inspection must consist of observation of wire ropes (running and standing) that are likely to be in use during the shift for apparent deficiencies, including control mechanisms, pressurized lines, hooks and latches, wire rope, electrical apparatus, tires (when used), and ground conditions. All tests and inspections shall be conducted in accordance with the manufacturer's recommendations.

Note: Equipment that has had modifications, additions, repairs or adjustments which affect the safe operation of the equipment must be inspected by a qualified person prior to initial use and CCI shall keep and maintain written inspections made by the qualified person in accordance with [OSHA 1926.1412\(a-b\)](#).

Equipment not in Regular Use

Equipment that has been idle for 3 months or more must be inspected by a qualified person in accordance with the requirements of [1926.1412 \(h\)](#) before initial use. All cranes shall be thoroughly inspected before crane is put back in service after three or more months of storage. A competent person shall perform a monthly inspection prior to crane being put back in service.

FREQUENT INSPECTION

The following items shall be inspected for defects in intervals, including observation during operation for any defects which might appear between regular inspections. All deficiencies such as listed shall be carefully examined and determination made as to whether they constitute a safety hazard:

- ✓ All functional operating mechanisms for maladjustment interfering with proper operation – **Daily**

- ✓ Deterioration or leakage in lines, tanks, valves, drain pumps, and other parts of air or hydraulic systems – **Daily**

Hooks with deformation or cracks require:

- ✓ Visual inspection - **Daily**
- ✓ **Monthly** inspection with a certification record which includes:
 - The date of inspection
 - The signature of the person who performed the inspection and the serial number, or other identifier, of the hook inspected

Hoist Chains

Hoist chains, including end connections, for excessive wear, twist, distorted links interfering with proper function, or stretch beyond manufacturer's recommendations. Visual inspection daily; monthly inspection with a certification record which includes the date of inspection, the signature of the person who performed the inspection and an identifier of the chain which was inspected.

CRANE INSPECTION

1926.1412(f)(1) At least every 12 months the equipment must be inspected by a qualified person in accordance with paragraph (d) of this section (each shift) except that the corrective action set forth in paragraphs (f)(4), (f)(5), and (f)(6) of this section must apply in place of the corrective action required by paragraphs (d)(2) and (d)(3) of this section.

CCR 5031(c) [CALIFORNIA] Periodic inspections shall be conducted at least four times a year. The annual certification, as required by Section 5021(a), can serve as one of the required periodic inspections. The periodic inspections shall be evenly spaced or as close to evenly spaced as scheduling permits through the year. Cranes shall not be operated more than 750 hours, between periodic inspections.

Complete inspections of the crane shall be performed at intervals, depending upon its activity, severity of service, and environment, or as specifically indicated below.

These inspections shall include the following items. Any deficiencies such as listed shall be carefully examined and determination made as to whether they constitute a safety hazard in the crane structure or boom:

- ✓ Deformed, cracked, or corroded members
- ✓ Loose bolts or rivets
- ✓ Cracked or worn sheaves and drums
- ✓ Worn, cracked or distorted parts such as pins, bearings, shafts, gears, rollers, locking and clamping devices
- ✓ Excessive wear on brake system parts, linings, pawls, and ratchets
- ✓ Load, wind, and other indicators over their full range, for any significant inaccuracies

- ✓ Gasoline, diesel, electric, or other powerplants for improper performance or noncompliance with applicable safety requirements
- ✓ Excessive wear of chain drive sprockets and excessive chain stretch

HANDLING THE LOAD

Size of Load

The crane shall not be loaded beyond its rated load except for test purposes.

Attaching the Load

The hoist chain or hoist rope shall be free from kinks or twists and shall not be wrapped around the load. The load shall be attached to the load block hook by means of slings or other approved devices. Care shall be taken to make certain that the sling clears all obstacles.

Moving the Load

The load shall be well secured and properly balanced in the sling or lifting device before it is lifted more than a few inches.

Before starting to hoist the following conditions shall be noted:

- Hoist rope shall not be kinked.
- Multiple part lines shall not be twisted around each other.
- The hook shall be brought over the load in such a manner as to prevent swinging.

During hoisting care shall be taken that:

- There is no sudden acceleration or deceleration of the moving load.
- The load does not contact any obstructions.

Cranes shall not be used for side pulls except when specifically authorized by a responsible person who has determined that the stability of the crane is not thereby endangered and that various parts of the crane will not be overstressed.

While any employee is on the load or hook, there shall be no hoisting, lowering, or traveling. CCI shall require that the operator avoid carrying loads over people.

The operator shall test the brakes each time a load approaching the rated load is handled. The brakes shall be tested by raising the load a few inches and applying the brakes.

The load shall not be lowered below the point where less than two full wraps of rope remain on the hoisting drum.

When two or more cranes are used to lift a load one qualified responsible person shall oversee the operation. He shall analyze the operation and instruct all personnel involved in the proper positioning, rigging of the load, and the movements to be made.

CCI shall ensure that the operator does not leave his position at the controls while the load is suspended.

When starting the bridge and when the load or hook approaches near or over personnel, the warning signal shall be sounded.

HOIST LIMIT SWITCH

At the beginning of each operator's shift, the upper limit switch of each hoist shall be tried out under no load. Extreme care shall be exercised; the block shall be "inched" into the limit or run in at slow speed. If the switch does not operate properly, the appointed person shall be immediately notified.

The hoist limit switch which controls the upper limit of travel of the load block shall never be used as an operating control.

PREVENTIVE MAINTENANCE

CCI shall ensure the crane operator maintains a preventive maintenance program based on the crane manufacturer's recommendations

Maintenance Procedure

Before adjustments and repairs are started on a crane the following precautions shall be taken:

- The crane to be repaired shall be run to a location where it will cause the least interference with other cranes and operations in the area.
- All controllers shall be at the off position.
- The main or emergency switch shall be open and locked in the open position.
- Warning or "out of order" signs shall be placed on the crane, also on the floor beneath or on the hook where visible from the floor.

ROPE INSPECTION

Running Ropes

A thorough inspection of all ropes shall be made.

Any deterioration, resulting in appreciable loss of original strength, shall be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard. Some of the conditions that could result in an appreciable loss of strength are the following:

- Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires
- Several broken outside wires and the degree of distribution or concentration of such broken wires
- Worn outside wires
- Corroded or broken wires at end connections
- Corroded, cracked, bent, worn, or improperly applied end connections
- Severe kinking, crushing, cutting, or un-stranding

Other Ropes

All rope which has been idle for a period of a month or more due to shut down or storage of a crane on which it is installed shall be given a thorough inspection before it is used. This inspection shall be for all types of deterioration and shall be performed by an appointed person whose approval shall be required for further use of the rope.

A certification record shall be available for inspection which includes the date of inspection, the signature of the person who performed the inspection and an identifier for the rope which was inspected.

Equipment must be inspected monthly by a competent person. The inspection must be documented. Documentation must include the following:

- ✓ Items Checked
- ✓ Results of Inspection
- ✓ Name and Signature of the Inspector

Documentation must be retained for three months.

Defective cranes and hoists shall be locked and tagged "out of service" until all defects are corrected. The inspector shall initiate corrective action by notifying the facility manager or building coordinator.

LOAD TESTING

- Newly installed cranes and hoists shall be load tested at 125% of the rated capacity by designated personnel.
- Slings shall have appropriate test data when purchased. It is the responsibility of the purchaser to ensure that the appropriate test data are obtained and maintained.
- Re-rated cranes and hoists shall be load tested to 125% of the new capacity if the new rating is greater than the previous rated capacity.
- Fixed cranes or hoists that have had major modifications or repair shall be load tested to 125% of the rated capacity.
- Cranes and hoists that have been overloaded shall be inspected prior to being returned to service.

- Personnel platforms, baskets, and rigging suspended from a crane or hoist hook shall be load tested initially, then re-tested annually thereafter or at each new job site.
- All cranes and hoists with a capacity greater than 2722 kg (3 tons) should be load tested every four years to 125% of the rated capacity. Cranes and hoists with a lesser capacity should be load tested every eight years to 125% of the rated capacity.

RATED LOAD/RATED LOAD MARKING

Rated Load - The load a machine is designed to carry as usually stated on the nameplate in appropriate power units (as of horsepower for motors and engines or of kilovolt amperes for alternating-current generators) The rated load of the crane shall be plainly marked on each side of the crane, and if the crane has more than one hoisting unit, each hoist shall have its rated load marked on it or its load block and this marking shall be clearly legible from the ground or floor. [1910.179\(B\)\(5\)](#)

DERRICKS (DEFINITIONS)

Derrick - An apparatus consisting of a mast or equivalent member held at the head by guys or braces, with or without a boom, for use with a hoisting mechanism and operating ropes.

Frame derrick - A derrick in which the boom is hinged from a cross member between the bottom ends of two upright members spread apart at the lower ends and joined at the top; the boom point secured to the junction of the side members, and the side members are braced or guyed from this junction point.

Basket derrick- A derrick without a boom, like a gin pole, with its base supported by ropes attached to corner posts or other parts of the structure. The base is at a lower elevation than its supports. The location of the base of a basket derrick can be changed by varying the length of the rope supports. The top of the pole is secured with multiple reeved guys to position the top of the pole to the desired location by varying the length of the upper guy lines. The load is raised and lowered by ropes through a sheave or block secured to the top of the pole.

Breast derrick - A derrick without boom. The mast consists of two side members spread farther apart at the base than at the top and tied together at top and bottom by rigid members. The mast is prevented from tipping forward by guys connected to its top. The load is raised and lowered by ropes through a sheave or block secured to the top crosspiece.

Chicago boom derrick - A boom which is attached to a structure, an outside upright member of the structure serving as the mast, and the boom being stepped in a fixed socket clamped to the upright. The derrick is complete with load, boom, and boom point swing line falls.

Gin pole derrick - A derrick without a boom. Its guys are so arranged from its top as to permit leaning the mast in any direction. The load is raised and lowered by ropes reeved through sheaves or blocks at the top of the mast.

Guy derrick - A fixed derrick consisting of a mast capable of being rotated, supported in a vertical position by guys, and a boom whose bottom end is hinged or pivoted to move in a vertical plane with a reeved rope between the head of the mast and the boom point for raising and lowering the boom, and a reeved rope from the boom point for raising and lowering the load.

Shear leg derrick- A derrick without a boom and like a breast derrick. The mast, wide at the bottom and narrow at the top, is hinged at the bottom, and has its top secured by a multiple reeved guy to permit handling loads at various radii by means of load tackle suspended from the mast top.

Stiff leg - A derrick like a guy derrick except that the mast is supported or held in place by two or more stiff members, called stiff legs, which can resist either tensile or compressive forces. Sills are generally provided to connect the lower ends of the stiff legs to the foot of the mast.

Appointed - means assigned specific responsibilities by CCI or the employer's representative.

Boom - A timber or metal section or strut, pivoted or hinged at the heel (lower end) at a location fixed in height on a frame or mast or vertical member, and with its point (upper end) supported by chains, ropes, or rods to the upper end of the frame, mast, or vertical member. A rope for raising and lowering the load is reeved through sheaves or a block at the boom point. The length of the boom shall be taken as the straight-line distance between the axis of the foot pin and the axis of the boom point sheave pin, or where used, the axis of the upper load block attachment pin.

Boom harness - The block and sheave arrangement on the boom point to which the topping lift cable is reeved for lowering and raising the boom.

Boom point- The outward end of the top section of the boom.

Derrick bull wheel- A horizontal ring or wheel, fastened to the foot of a derrick, for the purpose of turning the derrick by means of ropes leading from this wheel to a powered drum.

Designated - Selected or assigned by CCI or CCI representative as being qualified to perform specific duties.

Eye - A loop formed at the end of a rope by securing the dead end to the live end at the base of the loop.

Fiddle block - A block consisting of two sheaves in the same plane held in place by the same cheek plates.

Foot bearing or "foot block" (sill block) is the lower support on which the mast rotates.

Gudgeon pin - A pin connecting the mast cap to the mast allowing rotation of the mast.

Guy - A rope used to steady or secure the mast or other member in the desired position.

Load, working - The external load, in pounds, applied to the derrick, including the weight of load attaching equipment such as load blocks, shackles, and slings.

Load block, lower - The assembly of sheaves, pins, and frame suspended by the hoisting rope.

Load block, upper - The assembly of sheaves, pins, and frame suspended from the boom.

Mast - The upright member of the derrick.

Mast cap (spider) - The fitting at the top of the mast to which the guys are connected.

Reeving - A rope system in which the rope travels around drums and sheaves.

Rope refers to wire rope unless otherwise specified.

Safety Hook - A hook with a latch to prevent slings or load from accidentally slipping off the hook.

Side loading - A load applied at an angle to the vertical plane of the boom.

Sill - A member connecting the foot block and stiff leg or a member connecting the lower ends of a double member mast.

Standby derrick - A derrick not in regular service which is used occasionally or intermittently as required.

Stiff leg - A rigid member supporting the mast at the head.

Swing rotation of the mast and/or boom for movements of loads in a horizontal direction about the axis of rotation.

DERRICKS (GENERAL REQUIREMENTS)

New and existing equipment." All new derricks constructed and installed on or after August 31, 1971, shall meet the design specifications of the American National Standard Safety Code for Derricks, ANSI B30.6-1969, which is incorporated by reference as specified in Sec. 1910.6.

Designated Personnel

Only designated personnel shall be permitted to operate a derrick covered by this section.

Rated Load Marking

For permanently installed derricks with fixed lengths of boom, guy, and mast, a substantial, durable, and clearly legible rating chart shall be provided with each derrick and securely affixed where it is visible to personnel responsible for the safe operation of the equipment.

The chart shall include the following data:

- Manufacturer's approved load ratings at corresponding ranges of boom angle or operating radii
- Specific lengths of components on which the load ratings are based
- Required parts for hoist reeving. Size and construction of rope may be shown either on the rating chart or in the operating manual

Nonpermanent Installations

For nonpermanent installations, the manufacturer shall provide sufficient information from which capacity charts can be prepared for the installation. The capacity charts shall be located at the derricks or the jobsite office.

Inspection and Inspection Classification

Prior to initial use all new and altered derricks shall be inspected to ensure compliance. Inspection procedure for derricks in regular service is divided into two general classifications based upon the intervals at which inspection should be performed. The intervals in turn are dependent upon the nature of the critical components of the derrick and the degree of their exposure to wear, deterioration, or malfunction.

The two general classifications are herein designated as frequent and periodic with respective intervals between inspections as defined below:

- Frequent inspection - Daily to monthly intervals
- Periodic inspection 1-to-12-month intervals, or as specified by the manufacturer

Frequent Inspection

Items such as the following shall be inspected for defects at intervals as defined above or as specifically indicated, including observation during operation for any defects which might appear between regular inspections.

Deficiencies shall be carefully examined for any safety hazard:

- ✓ All control mechanisms - Inspect daily for adjustment, wear, and lubrication
- ✓ All chords and lacing - Inspect daily, visually
- ✓ Tension in guys – Daily
- ✓ Plumb of the mast
- ✓ Deterioration or leakage in air or hydraulic systems - Daily
- ✓ Derrick hooks for deformations or cracks; for hooks with cracks or having more than 15 percent more than normal throat opening or more than 10-degree twist from the plane of the unbent hook
- ✓ Rope reeving; visual inspection for noncompliance with derrick manufacturer's recommendations
- ✓ Hoist brakes, clutches, and operating levers: check daily for proper functioning before beginning operations
- ✓ Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, and moisture accumulation

Periodic Inspection

Complete inspections of the derrick shall be performed at intervals depending upon its activity, severity of service, and environment, or as specifically indicated below. These inspections shall include items such as the following. Deficiencies shall be carefully examined, and a determination made as to whether they constitute a safety hazard:

- ✓ Structural members for deformations, cracks, and corrosion
- ✓ Bolts or rivets for tightness
- ✓ Parts such as pins, bearings, shafts, gears, sheaves, drums, rollers, locking and clamping devices, for wear, cracks, and distortion
- ✓ Gudgeon pin for cracks, wear, and distortion each time the derrick is to be erected
- ✓ Powerplants for proper performance and compliance with applicable safety requirements
- ✓ Hooks
- ✓ Foundation or supports shall be inspected for continued ability to sustain the imposed loads

Derricks not in Regular Use

A derrick which has been idle for a period of 1 month or more, but less than 6 months, should be inspected before placing in service.

A derrick which has been idle for a period of over 6 months shall be given a complete inspection before placing in service.

Standby derricks should be inspected at least semiannually.

Testing/Operational Tests

Prior to initial use all new and altered derricks should be tested to ensure compliance including the following functions:

- ✓ Load hoisting and lowering
- ✓ Boom up and down
- ✓ Swing
- ✓ Operation of clutches and brakes of hoist

Anchorage

All anchorages shall be approved by the competent person. Rock and hairpin anchorages may require special testing.

Preventive Maintenance

A preventive maintenance program based on the derrick manufacturer's recommendations shall be established.

Maintenance Procedure

Before adjustments and repairs are started on a derrick the following precautions shall be taken:

- The derrick to be repaired shall be arranged so it will cause the least interference with other equipment and operations in the area.
- All hoist drum dogs shall be engaged.
- The main or emergency switch shall be locked in the open position if an electric hoist is used.
- Warning or out of order signs shall be placed on the derrick and hoist.
- The repairs of booms of derricks shall either be made when the booms are lowered and adequately supported or safely tied off.
- A good communication system shall be set up between the hoist operator and the appointed individual in charge of derrick operations before any work on the equipment is started.
- After adjustments and repairs have been made the derrick shall not be operated until all guards have been reinstalled, safety devices reactivated, and maintenance equipment removed.

Adjustment and Repairs

Any unsafe conditions disclosed by inspection shall be corrected before operation of the derrick is resumed. Adjustments shall be maintained to assure correct functioning of components.

Repairs or replacements shall be provided promptly as needed for safe operation. The following are examples of conditions requiring prompt repair or replacement:

- Hooks showing defects shall be discarded.

- All critical parts which are cracked, broken, bent, or excessively worn.
- All replacement and repaired parts shall have at least the original safety factor.

Rope Inspection

A thorough inspection of all ropes in use shall be made.

Some of the conditions that could result in an appreciable loss of strength are the following:

- Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires
- Several broken outside wires and the degree of distribution or concentration of such broken wires
- Worn outside wires
- Corroded or broken wires at end connections
- Corroded, cracked, bent, worn, or improperly applied end connections
- Severe kinking, crushing, cutting, or unstranding

Limited Travel Ropes

Heavy wear and/or broken wires may occur in sections in contact with equalizer sheaves or other sheaves where rope travel is limited, or with saddles. Care shall be taken to inspect ropes at these locations.

Idle Ropes

All rope which has been idle for a period of a month or more due to shut down or storage of a derrick on which it is installed shall be given a thorough inspection before it is used. This inspection shall be for all types of deterioration. A certification record shall be prepared and kept readily available which includes the date of inspection, the signature of the person who performed the inspection, and an identifier for the ropes which were inspected.

Nonrotating Ropes

Care shall be taken in the inspection of nonrotating rope.

Derrick operations shall be directed only by the individual specifically designated for that purpose.

Handling the Load

No derrick shall be loaded beyond the rated load. When loads approach the maximum rating of the derrick, it shall be ascertained that the weight of the load has been determined within plus or minus 10 percent before it is lifted.

Attaching the Load

The hoist rope shall not be wrapped around the load. The load shall be attached to the hook by means of slings or other suitable devices.

Moving the Load

The load shall be well secured and properly balanced in the sling or lifting device before it is lifted more than a few inches. Before starting to hoist, the following conditions shall be noted:

- Hoist rope shall not be kinked.
- Multiple part lines shall not be twisted around each other.
- The hook shall be brought over the load in such a manner as to prevent swinging.

During hoisting, care shall be taken that:

- There is no sudden acceleration or deceleration of the moving load
- Load does not contact any obstructions
- A derrick shall not be used for side loading except when specifically authorized by a responsible person who has determined that the various structural components will not be overstressed.
- No hoisting, lowering, or swinging shall be done while anyone is on the load or hook.
- The operator should avoid carrying loads over people.
- The operator shall test the brakes each time a load approaching the rated load is handled by raising it a few inches and applying the brakes.
- Neither the load nor boom shall be lowered below the point where less than two full wraps of rope remain on their respective drums.
- When rotating a derrick, sudden starts and stops shall be avoided. Rotational speed shall be such that the load does not swing out beyond the radius at which it can be controlled.
- Boom and hoisting rope systems shall not be twisted.

Holding the Load

The operator shall not be allowed to leave his position at the controls while the load is suspended. People should not be permitted to stand or pass under a load on the hook. If the load must remain suspended for any considerable length of time, a dog, or pawl and ratchet, or other equivalent means, rather than the brake alone, shall be used to hold the load.

Use of Winch Heads

Ropes shall not be handled on a winch head without the knowledge of the operator. While a winch head is being used, the operator shall be within convenient reach of the power unit control lever.

Securing Boom

Dogs, pawls, or other positive holding mechanism on the hoist shall be engaged. When not in use, the derrick boom shall:

- Be laid down

- Be secured to a stationary member, as nearly under the head as possible, by attachment of a sling to the load block
- Be hoisted to a vertical position and secured to the mast

OUTRIGGERS AND STABILIZERS

When the load to be handled and the operating radius require the use of outriggers or stabilizers, or at any time when outriggers or stabilizers are used, all the following requirements must be met (except as otherwise indicated):

- The outriggers or stabilizers must be either fully extended or, if manufacturer procedures permit, deployed as specified in the load chart.
- The outriggers must be set to remove the equipment weight from the wheels, except for locomotive. This provision does not apply to stabilizers.
- When outrigger floats are used, they must be attached to the outriggers. When stabilizer floats are used, they 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 only under the outrigger or stabilizer float/pad of the jack or, where the outrigger or stabilizer is designed without a jack, under the outer bearing surface of the extended outrigger or stabilizer beam.

MODIFICATIONS

The manufacturer must approve all modifications/additions in writing. A registered professional engineer must be qualified with respect to the equipment involved and must ensure the original safety factor of the equipment is not reduced.

CCI shall comply with all manufacturer procedures applicable to the operational functions of equipment, including its use with attachments. Where the manufacturer procedures are unavailable, a qualified person must develop and ensure compliance with all procedures necessary for the safe operation of the equipment and attachments.

TAGGING OUT OF SERVICE EQUIPMENT/FUNCTIONS

Where CCI has taken the equipment out of service, a tag must be placed in the cab stating that the equipment is out of service and is not to be used. Where the employer has taken a function(s) out of service, a tag must be placed in a conspicuous position stating that the function is out of service and is not to be used.

Demolition

PURPOSE

The purpose of this document is to outline Demolition Work policy for **Cirks Construction Inc.**; hereafter referred to as "CCI". This policy is designed to provide a structured process to prevent unsafe Demolition Work practices.

RESPONSIBILITIES

Responsible Safety Person

- Ensure that all personnel are trained in the awareness and avoidance of unsafe work practices while performing demolition work.

Personnel

- Follow all aspects of this safety policy

POLICY

Preparation

Prior to permitting employees to start demolition operations, a Demolition Plan must be completed. If deemed necessary, an engineering survey will be made, by a competent person, of the structure to determine the condition of the framing, floors, and walls, and possibility of unplanned collapse of any portion of the structure. Any adjacent structure where employees may be exposed will also be similarly checked. CCI will have in writing evidence that such a survey has been performed.

Health Hazards

When employees are required to work within a structure to be demolished which has been damaged by fire, flood, explosion, or other cause, the walls or floor will be shored or braced.

When required, all electric, gas, water, steam, sewer, and other service lines will be shut off, capped, or otherwise controlled, outside the building line before demolition work is started. In each case, any utility company which is involved will be notified in advance. If it is necessary to maintain any power, water or other utilities during demolition, such lines will be temporarily relocated, as necessary, and protected.

It will also be determined if any type of hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances have been used in any pipes, tanks, or other equipment on the property. When the presence of any such substances is apparent or suspected, testing and purging will be performed, and the hazard eliminated before demolition is started.

Where a hazard exists from fragmentation of glass, such hazards will be removed.

Where a hazard exists to employees falling through wall openings, the opening will be protected to a height of approximately 42 inches.

When debris is dropped through holes in the floor without the use of chutes, the area onto which the material is dropped will be completely enclosed with barricades not less than 42 inches high and not less than 6 feet back from the projected edge of the opening above.

Signs, warning of the hazard of falling materials, will be posted at each level. Removal will not be permitted in this lower area until debris handling ceases above.

All floor openings, not used as material drops, will be covered over with material substantial enough to support the weight of any load which may be imposed. Such material will be properly secured to prevent its accidental movement.

Except for the cutting of holes in floors for chutes, holes through which to drop materials, preparation of storage space, and similar necessary preparatory work - the demolition of exterior walls and floor construction will begin at the top of the structure and proceed downward. Each story of exterior wall and floor construction will be removed and dropped into the storage space before commencing the removal of exterior walls and floors in the story next below.

Employee entrances to multistory structures being demolished will be completely protected by sidewalk sheds or canopies, or both, providing protection from the face of the building for a minimum of 8 feet. All such canopies will be at least 2 feet wider than the building entrances or openings (1 foot wider on each side thereof) and will be capable of sustaining a load of 150 pounds per square foot.

Passageways

Only those stairways, passageways, and ladders, designated as means of access to the structure of a building, will be used. Other access ways will be entirely always closed.

All stairs, passageways, ladders and incidental equipment thereto, which are covered by this section, will be periodically inspected and maintained in a clean safe condition.

In a multistory building, when a stairwell is being used, it will be properly illuminated by either natural or artificial means, and completely and substantially covered over at a point not less than two floors below the floor on which work is being performed, and access to the floor where the work is in progress will be through a properly lighted, protected, and separate passageway.

Chutes

No material will be dropped to any point lying outside the exterior walls of the structure unless the area is effectively protected. All materials chutes, or sections thereof, at an angle of more than 45 deg. from the horizontal, will be entirely enclosed, except for openings equipped with closures at or about floor level for the insertion of materials. The openings will not exceed 48 inches in height measured along the wall of the chute. At all stories below the top floor, such openings will be kept closed when not in use.

A substantial gate will be installed in each chute at or near the discharge end. A competent employee will be assigned to control the operation of the gate, and the backing and loading of trucks. When operations are not in progress, the area surrounding the discharge end of a chute will be securely closed off. Any chute opening, into which workmen dump debris, will be protected by a substantial guardrail approximately 42 inches above the floor or other surface on which the men stand to dump the material. Any space between the chute and the edge of openings in the floors through which it passes will be solidly covered over. Where the material is dumped from mechanical equipment or wheelbarrows, a securely attached toe board or bumper, not less than four inches thick and six inches high, will be provided at each chute opening. Chutes will be designed and constructed of such strength as to eliminate failure due to impact of materials or debris loaded therein.

Any openings cut in a floor for the disposal of materials will be no larger in size than 25 percent of the aggregate of the total floor area, unless the lateral supports of the removed flooring remain in place. Floors weakened or otherwise made unsafe by demolition operations will be shored to carry safely the intended imposed load from demolition operations.

WALLS AND MASONRY

Masonry walls, or other sections of masonry, will not be permitted to fall upon the floors of the building in such masses as to exceed the safe carrying capacities of the floors.

No wall section, which is more than one story in height, will be permitted to stand alone without lateral bracing, unless such wall was originally designed and constructed to stand without such lateral support, and is in a condition safe enough to be self-supporting. All walls will be left in a stable condition at the end of each shift. Employees will not be permitted to work on the top of a wall when weather conditions constitute a hazard.

Structural or load-supporting members on any floor will not be cut or removed until all stories above such a floor have been demolished and removed. This provision will not prohibit the cutting of floor beams for the disposal of materials or for the installation of equipment, provided that the requirements per CFR Standards 1926.853 and 1926.855 are met.

Floor openings within 10 feet of any wall being demolished will be planked solid, except when employees are kept out of the area below.

In buildings of "skeleton-steel" construction, the steel framing may be left in place during the demolition of masonry. Where this is done, all steel beams, girders, and similar structural supports will be cleared of all loose material as the masonry demolition progresses downward.

Walkways or ladders will be provided to enable employees to safely reach or leave any scaffold or wall.

Walls, which serve as retaining walls to support earth or adjoining structures, will not be demolished until such earth has been properly braced or adjoining structures have been properly underpinned. Walls, which are to serve as retaining walls against which debris will be piled, will not be so used unless capable of safely supporting the imposed load.

Floor Removal

Openings cut in a floor will extend the full span of the arch between supports. Before demolishing any floor arch, debris and other material will be removed from such arch and other adjacent floor area. Planks not less than 2 inches by 10 inches in cross section, full size undressed, will be provided for, and will be used by employees to stand on while breaking down floor arches between beams. Such planks will be so located as to provide a safe support for the workmen should the arch between the beams collapse. The open space between planks will not exceed 16 inches.

Safe walkways, not less than 18 inches wide, formed of planks not less than 2 inches thick if wood, or of equivalent strength if metal, will be provided and used by workmen when necessary to enable them to reach any point without walking upon exposed beams.

Stringers of ample strength will be installed to support the flooring planks, and the ends of such stringers will be supported by floor beams or girders, and not by floor arches alone.

Planks will be laid together over solid bearings with the ends overlapping at least 1 foot.

When floor arches are being removed, employees will not be allowed in the area directly underneath, and such an area will be barricaded to prevent access to it.

Demolition of floor arches will not be started until they, and the surrounding floor area for 20 feet, have been cleared of debris and any other unnecessary materials.

Mechanical equipment will not be used on floors or working surfaces unless such floors or surfaces are of sufficient strength to support the imposed load.

Floor openings will have curbs or stop-logs to prevent equipment from running over the edge.

Storage

The storage of waste material and debris on any floor will not exceed the allowable floor loads.

In buildings having wooden floor construction, the flooring boards may be removed from not more than one floor above grade to provide storage space for debris, provided falling material is not permitted to endanger the stability of the structure. When wood floor beams serve to brace interior walls or free-standing exterior walls, such beams will be left in place until other equivalent support can be installed to replace them. Floor arches, to an elevation of not more than 25 feet above grade, may be removed to provide storage area for debris: Provided, That such removal does not endanger the stability of the structure. Storage space into which material is dumped will be blocked off, except for openings necessary for the removal of material. Such openings will be kept always closed when material is not being removed.

Steel

When floor arches have been removed, planking in accordance with CFR 1926.855(b) will be provided for the workers engaged in razing the steel framing. Steel construction will be dismantled column length by column length, and tier by tier (columns may be in two-story lengths). Any structural member being dismembered will not be overstressed.

Mechanical Demolition

No workers will be permitted in any area, which can be adversely affected by demolition operations, when balling or clamming is being performed. Only those workers necessary for the performance of the operations will be permitted in this area at any other time.

The weight of the demolition ball will not exceed 50 percent of the crane's rated load, based on the length of the boom and the maximum angle of operation at which the demolition ball will be used, or it will not exceed 25 percent of the nominal breaking strength of the line by which it is suspended, whichever results in a lesser value.

The crane boom and load line will be as short as possible.

The ball will be attached to the load line with a swivel-type connection to prevent twisting of the load line and will be attached by positive means in such manner that the weight cannot become accidentally disconnected.

When pulling over walls or portions thereof, all steel members affected will have been previously cut free. All roof cornices or other such ornamental stonework will be removed prior to pulling walls over.

During demolition, continuing inspections by a competent person will be made as the work progresses to detect hazards resulting from weakened or deteriorated floors, or walls, or loosened material. No employee will be permitted to work where such hazards exist until they are corrected by shoring, bracing, or other effective means.

Selective demolition by explosives will be conducted in accordance with CFR 1926 Subpart U.

Equipment and Tools

It will be the responsibility of CCI to ensure all equipment and tools in the use of Demolition is in good working order and free of defects and/or unnecessary hazards.

CCI will ensure regular inspections of the, materials, and equipment to be made by competent persons designated by CCI.

The use of any machinery, tool, material, or equipment which is not in compliance with any applicable requirement is prohibited. Such machine, tool, material, or equipment will either be identified as unsafe by tagging or locking the controls to render them inoperable or will be physically removed from its place of operation.

CCI will permit only those employees qualified by training or experience to operate equipment and machinery.

DEMOLITION BY USE OF POWERED VEHICLES

Pile Driving Equipment

Boilers and piping systems which are a part of, or used with, pile driving equipment will meet the applicable requirements of the American Society of Mechanical Engineers, Power Boilers (section I).

All pressure vessels which a part of are, or used with, pile driving equipment will meet the applicable requirements of the American Society of Mechanical Engineers, Pressure Vessels (section VIII).

Overhead protection, which will not obscure the vision of the operator, and which meets the requirements of Subpart N of this part, will be provided. Protection will be the equivalent of 2-inch planking or other solid material of equivalent strength.

Stop blocks will be provided for the leads to prevent the hammer from being raised against the head block.

A blocking device, capable of safely supporting the weight of the hammer, will be always provided for placement in the leads under the hammer while employees are working under the hammer.

Guards will be provided across the top of the head block to prevent the cable from jumping out of the sheaves.

When the leads must be inclined in the driving of batter piles, provisions will be made to stabilize the leads.

Fixed leads will be provided with ladder, and adequate rings, or similar attachment points, so that the loft worker may engage his safety belt lanyard to the leads. If the leads are provided with loft platforms(s), such platform(s) will be protected by standard guardrails.

Steam hose leading to a steam hammer or jet pipe will be securely attached to the hammer with an adequate length of at least 1/4-inch diameter chain or cable to prevent whipping in the event the joint at the hammer is broken. Air hammer hoses will be provided with the same protection as required for steam lines.

Safety chains, or equivalent means, will be provided for each hose connection to prevent the line from thrashing around in case the coupling becomes disconnected.

Steam line controls will consist of two shutoff valves, one of which will be a quick-acting lever type within easy reach of the hammer operator.

Guys, outriggers, thrust outs, or counterbalances will be provided as necessary to maintain stability of pile driver rigs.

Engineers and winchmen will accept signals only from the designated signalmen.
All employees will be kept clear when piling is being hoisted into the leads.

When piles are being driven in an excavated pit, the walls of the pit will be sloped to the angle of repose or sheet-piled and braced.

When steel tube piles are being "blown out", employees will be kept well beyond the range of falling materials.

When it is necessary to cut off the tops of driven piles, pile driving operations will be suspended except where the cutting operations are located at least twice the length of the longest pile from the driver.

When driving jacked piles, all access pits will be provided with ladders and bulkheaded curbs to prevent material from falling into the pit.

Training



Cirks Construction Inc.

Responsible Safety Person:
Devon Molitor
Corporate Safety Director

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CCI will ensure all employees are authorized or qualified persons when performing demolition work. CCI will provide training prior to employees performing any demolition work. The training will be provided annually or when needed per applicable CFR regulations require it. Training will be provided in combination of in-house and/or through a 3rd party.

Electrical Safety - Federal

PURPOSE

The purpose of this Electrical Safety Policy is to outline the safe use of low voltage electrical equipment (less than 600), including tools and appliances at **Cirks Construction Inc.;** hereafter referred to as "CCI,"

The goal of this policy is to prevent electrically related injuries and property damage. Since electricity and electrical related injuries and deaths are a reality, this program shall be followed at all times by all personnel except when to do so would place themselves or others in harm's way.

RESPONSIBILITIES

Management

- Ensure that this Electrical Safety Policy is enforced.
- Ensure that provisions and procedures are in place for the protection of employees from external hazards including but not limited to pedestrians, vehicles, and other barriers, by utilizing the Daily Risk Assessment (DRA).

Responsible Safety Person / Supervisor

- Shall provide training for qualified and non-qualified employees
- Shall conduct inspections to identify electrical safety deficiencies
- Guard and correct all electrical deficiencies as soon as reasonably possible
- Shall ensure that all new electrical installations meet codes and regulations

Employees

- Shall report electrical deficiencies as soon as reasonably possible
- Shall not work on electrical equipment unless authorized and trained
- Properly inspect all electrical equipment prior to use

POLICY

Safe work practices must be followed by all personnel of CCI to prevent electric shock or other injuries resulting from direct or indirect electrical contact when work is performed near or on equipment or circuits which are or may be energized. Specific safe work practices shall be consistent with the nature and extent of the associated electrical hazards. The content of this Electrical Safety Policy set forth in accordance with OSHA Subpart S (electrical) 29 CFR 1910.331 through 29 CFR 1910.335.

All energized equipment and installations will be de-energized before the commencement of any work. Proper Lockout/Tagout (LOTO) practices and procedures shall be utilized. If the equipment or installation must be energized for test or other purposes, only qualified and authorized personnel may perform said tasks. THE SAFETY TEAM MUST BE CONTACTED BEFORE THE COMMENCEMENT OF ANY ENERGIZED WORK

Any machine or equipment which has not been shut down per lockout tagout procedures will **not** be considered to be electrically safe, and work may not continue. NO EXCEPTIONS.

REQUIREMENTS FOR SAFETY RELATED POSITIONS

The provisions of these procedures 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) working on, near, or with the following installations:

Premises Wiring - Installations of electric conductors and equipment within or on buildings or other structures, and on other premises such as yards, parking, and other lots, and industrial substations.

Wiring for Connections to Supply - Installations of conductors that connect to the supply of electricity.

Other Wiring - Installations of other outside conductors on the premises.

Optical Fiber Cable - Installations of optical fiber cable where such installations are made along with electric conductors.

Qualified Persons shall, at a minimum, be trained in and familiar with the following:

- The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment.
- The skills and techniques necessary to determine the nominal voltage of exposed live parts.

Safe work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts. All work performed shall be completed in an electrically safe condition (locked out and tagged – LOTO).

TRAINING

The training requirements contained in this document apply to employees who face a risk of shock that is not reduced to a safe level by the installation as required by the National Electrical

Code and [29 CFR 1910 Subpart S](#), Electrical. Each affected employee must be trained prior to initial assignment, prior to a change in initial assignment duties, if a new hazard has been created or special deviations have occurred.

- Other employees who also may reasonably be expected to face comparable risk of injury due to electric shock or other electrical hazards must also be trained.
- Employees who are covered by the scope this policy, but who are not qualified persons shall also be trained in and familiar with any electrically related safety practices not specifically addressed but which are necessary for their safety.
- The training required shall be of the classroom or on-the-job type (preferably both). The degree of training provided shall be determined by the risk to the employee.
- Each affected employee must be trained prior to initial assignment, prior to a change in assigned duties, if new hazard has been created or special deviations have occurred.
- The training record shall include employee name, trainer signature/initials and dates of training. Training records must be made available to employees and their authorized representative(s).

Safe work practices must be used when necessary to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment or circuits which are or may be energized. The specific safety-related work practices shall be consistent with the nature and extent of the associated electrical hazards.

DE-ENERGIZED PARTS

Live parts to which an employee may be exposed shall be de-energized before the employee works on or near them, unless the employer can demonstrate that de-energizing introduces additional or increased hazards or is infeasible 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 not be increased exposure to electrical burns or to explosion due to electric arcs.

ENERGIZED PARTS

If the exposed live parts are not de-energized, (i.e., for reasons of increased or additional hazards or infeasibility), only qualified and authorized personnel may perform said tasks. **THE SAFETY TEAM MUST BE CONTACTED BEFORE THE COMMENCEMENT OF ANY ENERGIZED WORK**

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 in the following order:

- Procedures shall be in place before equipment may be de-energized.
- Circuits and equipment to be worked on shall be disconnected from all electrical energy sources.

- Stored electrical energy, which poses a hazard to workers, shall be released.
- Stored non-electrical energy in devices that could re-energize electric circuit parts shall be blocked or relieved to the extent that the circuit parts could not be accidentally energized by the device.
- A lock and a tag shall be placed on each disconnecting means used to de-energize circuits and equipment on which work is to be performed, except as provided below.
- Each tag shall contain a statement prohibiting unauthorized operation of the disconnecting means and removal of the tag.

If a lock cannot be applied, or if the employer can demonstrate that tagging procedures will provide a level of safety equivalent to that obtained by the use of a lock, a tag may be used without a lock.

A tag used without a lock as permitted above, shall be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by the use of a lock. Examples include the removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnecting device.

A lock may be placed without a tag only under the following conditions:

- Only one circuit or piece of equipment is de-energized.
- The lockout period does not extend beyond the work shift.

Employees exposed to the hazards associated with re-energizing the circuit or equipment are familiar with this procedure.

Before any circuits or equipment can be considered and worked as de-energized:

- A qualified person shall operate the equipment operating controls or otherwise verify that the equipment cannot be restarted.
- A qualified person shall use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and shall verify that the circuit elements and equipment parts are de-energized.

Before circuits and equipment are re-energized, even temporarily, the following requirements shall be met, in the order given:

- A qualified person shall conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuits and equipment can be safely energized.
- Employees exposed to the hazards associated with re-energizing the circuit or equipment shall be warned to stay clear of circuits and equipment.
- Each lock and tag shall be removed by the employee who applied it or under his or her direct supervision. However, if the employee is absent from the workplace, then the lock or tag may be removed by a qualified person designated to perform this task provided that the employer ensures that the employee who applied the lock or

tag is not available at the workplace and is aware that the lock or tag has been removed before he or she resumes work at that workplace.

- There shall be a visual determination that all employees are clear of the circuits and equipment.

PORTABLE ELECTRIC EQUIPMENT

This section applies to the use of cord and plug connected equipment, including flexible cord sets (extension cords).

Extension Cord Use

- Employees using extension cords (drop cords) to power tools and/or equipment for the performance of construction, maintenance, repair, or demolition shall use GFCI protection. This pertains to any part of the plant, both inside and outside.
- All extension cords must be grounding type, made with UL listed parts, and be in good physical condition.
- Extension cords may not be lengthened, or "repaired" with tape.
- Power outlet strips are for equipment needing surge protection (e.g., computers).
- Extension cords shall not be run through holes in walls, ceilings, or floors.
- Extension cords may not be plugged into power strips. Power strips may not be connected to each other (i.e., "piggy-backed").
- An extension cord should not be run across high traffic areas or used in applications where potential damage to the cord might occur.
- The use of an extension cord must not create a trip hazard.
- Extension cords shall not be attached to building surfaces or used in lieu of fixed wiring of a structure.
- Extension cords shall not be run through doorways or windows, or concealed behind walls, ceilings, or floors.

Handling

Portable equipment shall be handled 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.

Visual Inspection

Portable cord-and-plug connected equipment and flexible cord sets (extension cords) shall be visually inspected before use on any shift for external defects and for evidence of possible internal damage. Cord and plug-connected equipment and 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.

Defective or damaged items shall be removed from service until repaired or replaced.

GROUNDING TYPE EQUIPMENT

A flexible cord used with grounding-type equipment shall contain an equipment-grounding conductor.

- 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.
- Adapters (i.e., "cheaters") that interrupt the continuity of the equipment grounding connection may not be used.

Conductive Work Locations

Portable electric equipment and flexible cords used in highly conductive work locations (such as those inundated with water or other conductive liquids), or in job locations where employees are likely to contact water or conductive liquids, shall be approved for those locations.

Connecting Attachment Plugs

Employees hands must not be wet when plugging and unplugging flexible cords and cord and plug-connected equipment, if energized equipment is involved.

- 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 an employee's hand.
- Locking-type connectors shall be properly secured after connection.

LOCKOUT AND TAGGING

While any employee is exposed to contact with parts of fixed electric equipment or circuits which have been de-energized, the circuits shall be locked out or tagged or both.

Note: Lockout and tagging that comply with paragraphs (c) through (f) of [1910.147](#) (Lockout and Tagging Standard) will comply with these requirements provided:

- The procedures address electrical hazards;
- Stored non-electrical energy that could re-energize electrical circuits shall be effectively blocked or relieved;
- A qualified person shall use test equipment (volt-ohm meter, etc.) and shall verify that the circuit and equipment are de-energized. If the circuit is over 600 volts, the test equipment shall be checked for proper operation immediately before and immediately after this test.

PROCEDURES

These written procedures shall be available for inspection by employees or authorized parties.

DE-ENERGIZING EQUIPMENT

Safe procedures for de-energizing circuits and equipment shall be determined before circuits or equipment are de-energized. The circuits and equipment to be worked on shall be disconnected from all electric energy sources. Control circuit devices, such as push buttons, selector switches, and interlocks may not be used as the sole means for de-energizing circuits or equipment. Interlocks for electric equipment may not be used as a substitute for lockout and tagging procedures.

- Stored electric energy which might endanger personnel shall be released. Capacitors shall be discharged and high capacitance elements shall be short-circuited and grounded, if the stored electric energy might endanger personnel.
- Stored non-electrical energy in devices that could re-energize electric circuit parts shall be blocked or relieved so that the circuit parts could not be accidentally energized.

APPLICATION OF LOCKS AND TAGS

A lock and a tag shall be placed on each disconnecting means used to de-energize circuits and equipment on which work is to be performed, except as provided below:

- The lock shall be attached so as to prevent persons from operating the disconnecting means unless they resort to undue force or the use of tools, (bolt cutter, etc.).
- Each tag shall contain a statement prohibiting unauthorized operation of the disconnecting means and removal of the tag.
- If a lock cannot be applied, or tagging procedures will provide a level of safety equivalent to that obtained by the use of a lock, a tag may be used without a lock.
- A tag used without a lock shall be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by the use of a lock. Examples of additional safety measures include the removal of a fuse, blocking a controlling switch, or opening an extra disconnect.
- A lock may be placed without a tag only under the following conditions:
 - Only one circuit or piece of equipment is de-energizing, and
 - The lockout period does not extend beyond the work shift, and
 - Employees exposed to the hazards associated with re-energizing the circuit or equipment are familiar with this procedure.

Verification of De-energizing Condition

These requirements shall be met before any circuits or equipment can be worked as de-energizing.

- A qualified person shall operate the equipment controls or otherwise verify that the equipment cannot be restarted.
- A qualified person shall use test equipment (volt-ohm meter, etc.) to test the circuit elements and electrical parts of equipment to which employees will be exposed and shall verify that the circuit elements and equipment parts are de-energized. The test shall also determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage back feed even though specific parts of the circuit have been de-energized and presumed to be safe. If the circuit to be tested is over 600 volts, the test equipment shall be checked for proper operation immediately before and immediately after this test.

Re-energizing Equipment

These requirements shall be met, in the order given, before circuits or equipment are re-energized, even temporarily.

- A qualified person shall conduct tests and visual inspections to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuits and equipment can be safely energized.
- Employees exposed to the hazards of re-energizing the circuit or equipment shall be warned to stay clear of circuits and equipment.
- Each lock and tag shall be removed by the employee who applied it or under his or her direct supervision. However, if this employee is absent from the workplace, then the lock or tag may be removed by a qualified person designated to perform this task provided that:
- The employer ensures that the employee who applied the lock or tag is not available at the workplace, and
- The employer ensures that the employee is aware that the lock or tag has been removed before he or she resumes work at that workplace.
- There shall be a visual determination that all employees are clear of all circuits and equipment.

Electrical Safety - CA

PURPOSE

The purpose of this Electrical Safety Policy is to outline the safe use of low voltage electrical equipment (less than 600 volts), including tools and appliances at **Cirks Construction Inc.;** hereafter referred to as "CCI,"

The goal of this policy is to prevent electrically related injuries and property damage. Since electricity and electrical related injuries and deaths are a reality, this program shall be followed at all times by all personnel except when to do so would place themselves or others in harm's way.

RESPONSIBILITIES

Management

- To ensure that this Electrical Safety Policy is enforce.
- Should ensure that provisions and procedures are in place for the protection of employees from hazards

Responsible Safety Person / Supervisor

- Shall provide training for qualified and non-qualified employees.
- Shall conduct inspections to identify electrical safety deficiencies.
- Guard and correct all electrical deficiencies as soon as reasonably possible.
- Should ensure that all new electrical installations, maintenance, and repair work meet codes and regulation standards.

Employees

- Should report electrical deficiencies as soon as reasonably possible.
- Should not work on electrical equipment unless authorized and trained.
- Properly inspect all electrical equipment prior to use.

POLICY

Safe work practices must be followed by all personnel of CCI to prevent electric shock or other injuries resulting from direct or indirect electrical contact when work is performed near or on equipment or circuits which are or may be energized. Specific safe work practices should be consistent with the nature and extent of the associated electrical hazards. The content of this Electrical Safety Policy is set forth in accordance with Cal-OSHA Title 8 CCR 1518, 2320-2405, 2940-2945, and 2500-2510.

All energized equipment and installations will be de-energized before the commencement of any work. Proper Lockout/Tagout (LOTO) practices and procedures shall be utilized. If the equipment or installation must be energized for test or other purposes, only qualified and authorized personnel may perform said tasks. THE SAFETY TEAM MUST BE CONTACTED BEFORE THE COMMENCEMENT OF ANY ENERGIZED WORK

Any machine or equipment which has not been shut down per lockout tagout procedures will **not** be considered to be electrically safe, and work may not continue. NO EXCEPTIONS.

REQUIREMENTS FOR SAFETY RELATED POSITIONS

The provisions of these procedures 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) working on, near, or with the following installations:

Premises Wiring - Installations of electric conductors and equipment within or on buildings or other structures, and on other premises such as yards, parking, and other lots, and industrial substations.

Wiring for Connections to Supply - Installations of conductors that connect to the supply of electricity.

Other Wiring - Installations of other outside conductors on the premises.

Optical Fiber Cable - Installations of optical fiber cable where such installations are made along with electric conductors.

Qualified Persons shall, at a minimum, be trained in and familiar with the following:

- The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment.
- The skills and techniques necessary to determine the nominal voltage of exposed live parts.

Safe work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts. All work performed shall be completed in an electrically safe condition (locked out and tagged – LOTO).

TRAINING

Employees must be trained prior to initial assignment, prior to a change in initial assignment duties, if a new hazard has been created or special deviations have occurred.

- Other employees who also may reasonably be expected to face comparable risk of injury due to electric shock or other electrical hazards must also be trained.
- Employees who are covered by the scope this policy, but who are not qualified persons shall also be trained in and familiar with any electrically related safety practices not specifically addressed but which are necessary for their safety.
- The training required shall be of the classroom or on-the-job type (preferably both). The degree of training provided shall be determined by the risk to the employee.
- Each affected employee must be trained prior to initial assignment, prior to a change in assigned duties, if new hazard has been created or special deviations have occurred.
- The training record shall include employee name, trainer signature/initials and dates of training. Training records must be made available to employees and their authorized representative(s).

Safe work practices must be used when necessary to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment or circuits which are or may be energized. The specific safety-related work practices shall be consistent with the nature and extent of the associated electrical hazards.

DE-ENERGIZED PARTS

Live parts to which an employee may be exposed shall be de-energized before the employee works on or near them, unless the employer can demonstrate that de-energizing introduces additional or increased hazards or is infeasible 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 not be increased exposure to electrical burns or to explosion due to electric arcs.

ENERGIZED PARTS

If the exposed live parts are not de-energized, (i.e., for reasons of increased or additional hazards or infeasibility), only qualified and authorized personnel may perform said tasks. **THE SAFETY TEAM MUST BE CONTACTED BEFORE THE COMMENCEMENT OF ANY ENERGIZED WORK**

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 in the following order:

- Procedures shall be in place before equipment may be de-energized.
- Circuits and equipment to be worked on shall be disconnected from all electrical energy sources.
- Stored electrical energy, which poses a hazard to workers, shall be released.

- Stored non-electrical energy in devices that could re-energize electric circuit parts shall be blocked or relieved to the extent that the circuit parts could not be accidentally energized by the device.
- A lock and a tag shall be placed on each disconnecting means used to de-energize circuits and equipment on which work is to be performed, except as provided below.
- Each tag shall contain a statement prohibiting unauthorized operation of the disconnecting means and removal of the tag.

If a lock cannot be applied, or if the employer can demonstrate that tagging procedures will provide a level of safety equivalent to that obtained by the use of a lock, a tag may be used without a lock.

A tag used without a lock as permitted above, shall be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by the use of a lock. Examples include the removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnecting device.

A lock may be placed without a tag only under the following conditions:

- Only one circuit or piece of equipment is de-energized.
- The lockout period does not extend beyond the work shift.

Employees exposed to the hazards associated with re-energizing the circuit or equipment are familiar with this procedure.

Before any circuits or equipment can be considered and worked as de-energized:

- A qualified person shall operate the equipment operating controls or otherwise verify that the equipment cannot be restarted.
- A qualified person shall use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and shall verify that the circuit elements and equipment parts are de-energized.

Before circuits and equipment are re-energized, even temporarily, the following requirements shall be met, in the order given:

- A qualified person shall conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuits and equipment can be safely energized.
- Employees exposed to the hazards associated with re-energizing the circuit or equipment shall be warned to stay clear of circuits and equipment.
- Each lock and tag shall be removed by the employee who applied it or under his or her direct supervision. However, if the employee is absent from the workplace, then the lock or tag may be removed by a qualified person designated to perform this task provided that the employer ensures that the employee who applied the lock or

tag is not available at the workplace and is aware that the lock or tag has been removed before he or she resumes work at that workplace.

- There shall be a visual determination that all employees are clear of the circuits and equipment.

PORTABLE ELECTRIC EQUIPMENT

This section applies to the use of cord and plug connected equipment, including flexible cord sets (extension cords).

Extension Cord Use

- Employees using extension cords (drop cords) to power tools and/or equipment for the performance of construction, maintenance, repair, or demolition shall use GFCI protection. This pertains to any part of the plant, both inside and outside.
- All extension cords must be grounding type, made with UL listed parts, and be in good physical condition.
- Extension cords may not be lengthened, or "repaired" with tape.
- Power outlet strips are for equipment needing surge protection (e.g., computers).
- Extension cords shall not be run through holes in walls, ceilings, or floors.
- Extension cords may not be plugged into power strips. Power strips may not be connected to each other (i.e., "piggy-backed").
- An extension cord should not be run across high traffic areas or used in applications where potential damage to the cord might occur.
- The use of an extension cord must not create a trip hazard.
- Extension cords shall not be attached to building surfaces or used in lieu of fixed wiring of a structure.
- Extension cords shall not be run through doorways or windows, or concealed behind walls, ceilings, or floors.

Handling

Portable equipment shall be handled 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.

Visual Inspection

Portable cord-and-plug connected equipment and flexible cord sets (extension cords) shall be visually inspected before use on any shift for external defects and for evidence of possible internal damage. Cord and plug-connected equipment and 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.

Defective or damaged items shall be removed from service until repaired or replaced.

GROUNDING TYPE EQUIPMENT

A flexible cord used with grounding-type equipment shall contain an equipment-grounding conductor.

- 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.
- Adapters (i.e., "cheaters") that interrupt the continuity of the equipment grounding connection may not be used.

Conductive Work Locations

Portable electric equipment and flexible cords used in highly conductive work locations (such as those inundated with water or other conductive liquids), or in job locations where employees are likely to contact water or conductive liquids, shall be approved for those locations.

Connecting Attachment Plugs

Employees hands must not be wet when plugging and unplugging flexible cords and cord and plug-connected equipment, if energized equipment is involved.

- 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 an employee's hand.
- Locking-type connectors shall be properly secured after connection.

LOCKOUT AND TAGGING

While any employee is exposed to contact with parts of fixed electric equipment or circuits which have been de-energized, the circuits shall be locked out or tagged or both.

Note: Lockout and tagging will comply with these requirements:

- The procedures address electrical hazards;
- Stored non-electrical energy that could re-energize electrical circuits shall be effectively blocked or relieved;
- A qualified person shall use test equipment (volt-ohm meter, etc.) and shall verify that the circuit and equipment are de-energized. If the circuit is over 600 volts, the test equipment shall be checked for proper operation immediately before and immediately after this test.

PROCEDURES

These written procedures shall be available for inspection by employees or authorized parties.

DE-ENERGIZING EQUIPMENT

Safe procedures for de-energizing circuits and equipment shall be determined before circuits or equipment are de-energized. The circuits and equipment to be worked on shall be disconnected from all electric energy sources. Control circuit devices, such as push buttons, selector switches, and interlocks may not be used as the sole means for de-energizing circuits or equipment. Interlocks for electric equipment may not be used as a substitute for lockout and tagging procedures.

- Stored electric energy which might endanger personnel shall be released. Capacitors shall be discharged and high capacitance elements shall be short-circuited and grounded, if the stored electric energy might endanger personnel.
- Stored non-electrical energy in devices that could re-energize electric circuit parts shall be blocked or relieved so that the circuit parts could not be accidentally energized.

APPLICATION OF LOCKS AND TAGS

A lock and a tag shall be placed on each disconnecting means used to de-energize circuits and equipment on which work is to be performed, except as provided below:

- The lock shall be attached so as to prevent persons from operating the disconnecting means unless they resort to undue force or the use of tools, (bolt cutter, etc.).
- Each tag shall contain a statement prohibiting unauthorized operation of the disconnecting means and removal of the tag.
- If a lock cannot be applied, or tagging procedures will provide a level of safety equivalent to that obtained by the use of a lock, a tag may be used without a lock.
- A tag used without a lock shall be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by the use of a lock. Examples of additional safety measures include the removal of a fuse, blocking a controlling switch, or opening an extra disconnect.
- A lock may be placed without a tag only under the following conditions:
 - Only one circuit or piece of equipment is de-energizing, and
 - The lockout period does not extend beyond the work shift, and
 - Employees exposed to the hazards associated with re-energizing the circuit or equipment are familiar with this procedure.

Verification of De-energizing Condition

These requirements shall be met before any circuits or equipment can be worked as de-energizing.

- A qualified person shall operate the equipment controls or otherwise verify that the equipment cannot be restarted.
- A qualified person shall use test equipment (volt-ohm meter, etc.) to test the circuit elements and electrical parts of equipment to which employees will be exposed and shall verify that the circuit elements and equipment parts are de-energized. The test shall also determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage back feed even though specific parts of the circuit have been de-energized and presumed to be safe. If the circuit to be tested is over 600 volts, the test equipment shall be checked for proper operation immediately before and immediately after this test.

Re-energizing Equipment

These requirements shall be met, in the order given, before circuits or equipment are re-energized, even temporarily.

- A qualified person shall conduct tests and visual inspections to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuits and equipment can be safely energized.
- Employees exposed to the hazards of re-energizing the circuit or equipment shall be warned to stay clear of circuits and equipment.
- Each lock and tag shall be removed by the employee who applied it or under his or her direct supervision. However, if this employee is absent from the workplace, then the lock or tag may be removed by a qualified person designated to perform this task provided that:
- The employer ensures that the employee who applied the lock or tag is not available at the workplace, and
- The employer ensures that the employee is aware that the lock or tag has been removed before he or she resumes work at that workplace.
- There shall be a visual determination that all employees are clear of all circuits and equipment.

Electrical Safety - WA

PURPOSE

The purpose of this Electrical Safety Policy is to outline the safe use of low voltage electrical equipment (less than 600 volts), including tools and appliances at **Cirks Construction Inc.;** hereafter referred to as "CCI,"

The goal of this policy is to prevent electrically related injuries and property damage. Since electricity and electrical related injuries and deaths are a reality, this program shall be always followed by all personnel except when to do so would place themselves or others in harm's way.

RESPONSIBILITIES

Management

- Ensure that this Electrical Safety Policy is enforced.
- Ensure that provisions and procedures are in place for the protection of employees from external hazards including but not limited to pedestrians, vehicles, and other barriers and by use of the pre-entry checklist verifying that conditions in the permit space are acceptable for entry during its duration.

Responsible Safety Person / Supervisor

- Shall provide training for qualified and non-qualified employees
- Shall conduct inspections to identify electrical safety deficiencies
- Guard and correct all electrical deficiencies as soon as reasonably possible
- Shall ensure that all new electrical installations meet codes and regulations

Employees

- Shall report electrical deficiencies as soon as reasonably possible
- Shall not work on electrical equipment unless authorized and trained
- Properly inspect all electrical equipment prior to use

POLICY

Washington has adopted safety rules for electrical equipment (Washington Administrative Code WAC 296-24-960). In general industry workplaces these requirements mirror OSHA federal requirements.

Safe work practices must be followed by all personnel of CCI to prevent electric shock or other injuries resulting from direct or indirect electrical contact when work is performed near or on equipment or circuits which are or may be energized.

All energized equipment and installations will be de-energized before the commencement of any work. Proper Lockout/Tagout (LOTO) practices and procedures shall be utilized. If the equipment or installation must be energized for test or other purposes, only qualified and authorized personnel may perform said tasks. THE SAFETY TEAM MUST BE CONTACTED BEFORE THE COMMENCEMENT OF ANY ENERGIZED WORK

Any machine or equipment which has not been shut down per lockout tagout procedures will **not** be considered to be electrically safe, and work may not continue. NO EXCEPTIONS.

REQUIREMENTS FOR SAFETY RELATED POSITIONS

The provisions of these procedures 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) working on, near, or with the following installations:

Premises Wiring - Installations of electric conductors and equipment within or on buildings or other structures, and on other premises such as yards, parking, and other lots, and industrial substations.

Wiring for Connections to Supply - Installations of conductors that connect to the supply of electricity.

Other Wiring - Installations of other outside conductors on the premises.

Optical Fiber Cable - Installations of optical fiber cable where such installations are made along with electric conductors.

Qualified Persons shall, at a minimum, be trained in and familiar with the following:

- The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment.
- The skills and techniques necessary to determine the nominal voltage of exposed live parts.

Safe work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts. All work performed shall be completed in an electrically safe condition (locked out and tagged – LOTO).

TRAINING

Employee must be trained prior to initial assignment, prior to a change in initial assignment duties, if a new hazard has been created or special deviations have occurred.

- Other employees who also may reasonably be expected to face comparable risk of injury due to electric shock or other electrical hazards must also be trained.
- Employees who are covered by the scope this policy, but who are not qualified persons shall also be trained in and familiar with any electrically related safety practices not specifically addressed but which are necessary for their safety.
- The training required shall be of the classroom or on-the-job type (preferably both). The degree of training provided shall be determined by the risk to the employee.
- Each affected employee must be trained prior to initial assignment, prior to a change in assigned duties, if new hazard has been created or special deviations have occurred.
- The training record shall include employee name, trainer signature/initials and dates of training. Training records must be made available to employees and their authorized representative(s).

Safe work practices must be used when necessary to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment or circuits which are or may be energized. The specific safety-related work practices shall be consistent with the nature and extent of the associated electrical hazards.

DE-ENERGIZED PARTS

Live parts to which an employee may be exposed shall be de-energized before the employee works on or near them, unless the employer can demonstrate that de-energizing introduces additional or increased hazards or is infeasible 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 not be increased exposure to electrical burns or to explosion due to electric arcs.

ENERGIZED PARTS

If the exposed live parts are not de-energized, (i.e., for reasons of increased or additional hazards or infeasibility), only qualified and authorized personnel may perform said tasks. **THE SAFETY TEAM MUST BE CONTACTED BEFORE THE COMMENCEMENT OF ANY ENERGIZED WORK**

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 in the following order:

- Procedures shall be in place before equipment may be de-energized.
- Circuits and equipment to be worked on shall be disconnected from all electrical energy sources.
- Stored electrical energy, which poses a hazard to workers, shall be released.

- Stored non-electrical energy in devices that could re-energize electric circuit parts shall be blocked or relieved to the extent that the circuit parts could not be accidentally energized by the device.
- A lock and a tag shall be placed on each disconnecting means used to de-energize circuits and equipment on which work is to be performed, except as provided below.
- Each tag shall contain a statement prohibiting unauthorized operation of the disconnecting means and removal of the tag.

If a lock cannot be applied, or if the employer can demonstrate that tagging procedures will provide a level of safety equivalent to that obtained by the use of a lock, a tag may be used without a lock.

A tag used without a lock as permitted above, shall be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by the use of a lock. Examples include the removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnecting device.

A lock may be placed without a tag only under the following conditions:

- Only one circuit or piece of equipment is de-energized.
- The lockout period does not extend beyond the work shift.

Employees exposed to the hazards associated with re-energizing the circuit or equipment are familiar with this procedure.

Before any circuits or equipment can be considered and worked as de-energized:

- A qualified person shall operate the equipment operating controls or otherwise verify that the equipment cannot be restarted.
- A qualified person shall use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and shall verify that the circuit elements and equipment parts are de-energized.

Before circuits and equipment are re-energized, even temporarily, the following requirements shall be met, in the order given:

- A qualified person shall conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuits and equipment can be safely energized.
- Employees exposed to the hazards associated with re-energizing the circuit or equipment shall be warned to stay clear of circuits and equipment.
- Each lock and tag shall be removed by the employee who applied it or under his or her direct supervision. However, if the employee is absent from the workplace, then the lock or tag may be removed by a qualified person designated to perform this task provided that the employer ensures that the employee who applied the lock or

tag is not available at the workplace and is aware that the lock or tag has been removed before he or she resumes work at that workplace.

- There shall be a visual determination that all employees are clear of the circuits and equipment.

PORTABLE ELECTRIC EQUIPMENT

This section applies to the use of cord and plug connected equipment, including flexible cord sets (extension cords).

Extension Cord Use

- Employees using extension cords (drop cords) to power tools and/or equipment for the performance of construction, maintenance, repair, or demolition shall use GFCI protection. This pertains to any part of the plant, both inside and outside.
- All extension cords must be grounding type, made with UL listed parts, and be in good physical condition.
- Extension cords may not be lengthened, or "repaired" with tape.
- Power outlet strips are for equipment needing surge protection (e.g., computers).
- Extension cords shall not be run through holes in walls, ceilings, or floors.
- Extension cords may not be plugged into power strips. Power strips may not be connected to each other (i.e., "piggy-backed").
- An extension cord should not be run across high traffic areas or used in applications where potential damage to the cord might occur.
- The use of an extension cord must not create a trip hazard.
- Extension cords shall not be attached to building surfaces or used in lieu of fixed wiring of a structure.
- Extension cords shall not be run through doorways or windows, or concealed behind walls, ceilings, or floors.

Handling

Portable equipment shall be handled 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.

Visual Inspection

Portable cord-and-plug connected equipment and flexible cord sets (extension cords) shall be visually inspected before use on any shift for external defects and for evidence of possible internal damage. Cord and plug-connected equipment and 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.

Defective or damaged items shall be removed from service until repaired or replaced.

GROUNDING TYPE EQUIPMENT

A flexible cord used with grounding-type equipment shall contain an equipment-grounding conductor.

- 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.
- Adapters (i.e., "cheaters") that interrupt the continuity of the equipment grounding connection may not be used.

Conductive Work Locations

Portable electric equipment and flexible cords used in highly conductive work locations (such as those inundated with water or other conductive liquids), or in job locations where employees are likely to contact water or conductive liquids, shall be approved for those locations.

Connecting Attachment Plugs

Employees hands must not be wet when plugging and unplugging flexible cords and cord and plug-connected equipment, if energized equipment is involved.

- 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 an employee's hand.
- Locking-type connectors shall be properly secured after connection.

LOCKOUT AND TAGGING

While any employee is exposed to contact with parts of fixed electric equipment or circuits which have been de-energized, the circuits shall be locked out or tagged or both.

Note: Lockout and tagging will comply with:

- The procedures address electrical hazards;
- Stored non-electrical energy that could re-energize electrical circuits shall be effectively blocked or relieved;
- A qualified person shall use test equipment (volt-ohm meter, etc.) and shall verify that the circuit and equipment are de-energized. If the circuit is over 600 volts, the test equipment shall be checked for proper operation immediately before and immediately after this test.

PROCEDURES

These written procedures shall be available for inspection by employees or authorized parties.

DE-ENERGIZING EQUIPMENT

Safe procedures for de-energizing circuits and equipment shall be determined before circuits or equipment are de-energized. The circuits and equipment to be worked on shall be disconnected from all electric energy sources. Control circuit devices, such as push buttons, selector switches, and interlocks may not be used as the sole means for de-energizing circuits or equipment. Interlocks for electric equipment may not be used as a substitute for lockout and tagging procedures.

- Stored electric energy which might endanger personnel shall be released. Capacitors shall be discharged and high capacitance elements shall be short-circuited and grounded, if the stored electric energy might endanger personnel.
- Stored non-electrical energy in devices that could re-energize electric circuit parts shall be blocked or relieved so that the circuit parts could not be accidentally energized.

APPLICATION OF LOCKS AND TAGS

A lock and a tag shall be placed on each disconnecting means used to de-energize circuits and equipment on which work is to be performed, except as provided below:

- The lock shall be attached so as to prevent persons from operating the disconnecting means unless they resort to undue force or the use of tools, (bolt cutter, etc.).
- Each tag shall contain a statement prohibiting unauthorized operation of the disconnecting means and removal of the tag.
- If a lock cannot be applied, or tagging procedures will provide a level of safety equivalent to that obtained by the use of a lock, a tag may be used without a lock.
- A tag used without a lock shall be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by the use of a lock. Examples of additional safety measures include the removal of a fuse, blocking a controlling switch, or opening an extra disconnect.
- A lock may be placed without a tag only under the following conditions:
 - Only one circuit or piece of equipment is de-energizing, and
 - The lockout period does not extend beyond the work shift, and
 - Employees exposed to the hazards associated with re-energizing the circuit or equipment are familiar with this procedure.

Verification of De-energizing Condition

These requirements shall be met before any circuits or equipment can be worked as de-energizing.

- A qualified person shall operate the equipment controls or otherwise verify that the equipment cannot be restarted.
- A qualified person shall use test equipment (volt-ohm meter, etc.) to test the circuit elements and electrical parts of equipment to which employees will be exposed and shall verify that the circuit elements and equipment parts are de-energized. The test shall also determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage back feed even though specific parts of the circuit have been de-energized and presumed to be safe. If the circuit to be tested is over 600 volts, the test equipment shall be checked for proper operation immediately before and immediately after this test.

Re-energizing Equipment

These requirements shall be met, in the order given, before circuits or equipment are re-energized, even temporarily.

- A qualified person shall conduct tests and visual inspections to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuits and equipment can be safely energized.
- Employees exposed to the hazards of re-energizing the circuit or equipment shall be warned to stay clear of circuits and equipment.
- Each lock and tag shall be removed by the employee who applied it or under his or her direct supervision. However, if this employee is absent from the workplace, then the lock or tag may be removed by a qualified person designated to perform this task provided that:
 - The employer ensures that the employee who applied the lock or tag is not available at the workplace, and
 - The employer ensures that the employee is aware that the lock or tag has been removed before he or she resumes work at that workplace.
- There shall be a visual determination that all employees are clear of all circuits and equipment.

Electrical Safety - Lockout Tagout - Control of Hazardous Energy - Federal

PURPOSE

The purpose of this document is to outline the Lockout Tagout Program for **Cirks Construction Inc.**; hereafter referred to as "CCI," Control of Hazardous energy is the purpose of the Lockout Tagout Program.

This program establishes the requirements for isolation of both kinetic and potential electrical, chemical, thermal, hydraulic, pneumatic, and gravitational energy prior to equipment repair, adjustment, or removal. Reference: OSHA Standard [29 CFR 1910.147](#), the control of hazardous energy.

POLICY

Hazards

Improper or failure to use Lockout Tagout procedures may result in:

- * Electrical shock
- * Chemical exposure
- * Skin burns
- * Lacerations and amputation
- * Fires and explosions
- * Chemical releases
- * Eye injury
- * Death

HAZARD CONTROLS

- * Only authorized and trained employees may engage in tasks that require use of Lockout Tagout procedures.
- * All equipment has single sources of electrical power.
- * Lockout procedures have been developed for all equipment and processes.
- * Restoration from Lockout is a controlled operation.

Potential energy may include any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

AUTHORIZED EMPLOYEES TRAINING

All Field Employees, Maintenance Employees, and Field Supervisors will be trained to use the Lockout Tagout Procedures. To ensure the knowledge and skills required for the safe application, usage, and removal of the energy controls are acquired by employees.

The training will be conducted by a Safety Representative at time of initial hire. Retraining shall be held at least annually. The training will consist of the following:

- Review of general procedures
- Review of specific procedures for machinery, equipment, and processes
- Location and use of specific procedures
- Procedures when questions arise
- Recognition of hazardous energy source
- Type and magnitude of energy available
- Methods and means necessary for energy isolation and control
- All affected employees are instructed in the purpose and use of the energy control procedure
- The tag is never to be ignored or defeated in any way

Lockout or tagout shall be performed only by the authorized employees who are performing the servicing or maintenance.

AFFECTED EMPLOYEE TRAINING

- Only trained and authorized Employees will repair, replace, or adjust machinery, equipment, or processes.
- Affected Employees may not remove Locks, locking devices or tags from machinery, equipment, or circuits.
- Purpose and use of the lockout procedures.
- All affected employees are instructed in the purpose and use of the energy control procedure.
- When tagout systems are used including the limitations of a tag (tags are warning devices and do not provide physical restraint).
- The tag is never to be ignored or defeated in any way.

OTHER EMPLOYEE TRAINING

- Only trained and authorized Employees will repair, replace, or adjust machinery or equipment.
- Other Employees may not remove Locks, locking devices or tags from machinery, equipment, or circuits.

- Any other employee whose work operations are or may be in an area where energy control procedures may be utilized.
- The tag is never to be ignored or defeated in any way.

RETRAINING

Retraining is required when there is a change in job assignments, in machines, a change in the energy control procedures, or a new hazard is introduced.

All training and retraining shall be documented, signed, and certified.

PREPARATION OF LOCK OUT AND TAG OUT TRAINING

A Lockout Tagout Survey has been conducted to locate and identify all energy sources to verify which switches or valves supply energy to machinery and equipment. Dual or redundant controls have been removed.

Devices shall indicate the identity of the employee applying the device.

A Tagout Schedule has been developed for each piece of equipment and machinery. This schedule describes the energy sources, location of disconnects, type of disconnect, special hazards and special safety procedures. The schedule will be reviewed each time to ensure employees properly lock and tag out equipment and machinery. If a Tagout Schedule does not exist for a particular piece of equipment, machinery, and process, one must be developed prior to conducting a Lockout Tagout. As repairs and/or renovations of existing electrical systems are made, standardized controls will be used.

ROUTINE MAINTENANCE AND MACHINE ADJUSTMENTS

Lockout Tagout procedures are not required if equipment must be operating for proper adjustment. This rare exception may be used only by trained and authorized Employees when specific procedures have been developed to safely avoid hazards with proper training. All consideration shall be made to prevent the need for an employee to break the plane of a normally guarded area of the equipment by use of tools and other devices.

LOCKS HASPS AND TAGS

All Qualified Personnel will be assigned a lock with one key, hasp, and tag. All locks will be keyed differently, except when a specific individual issues a series of locks for complex Lockout Tagout tasks. In some cases, more than one lock, hasp and tag are needed to completely de-energize equipment and machinery. All locks and hasps shall be uniquely identifiable to a specific employee.

Requirements for Lockout Tagout Devices

Lockout devices and tagout devices shall be singularly identifiable; shall be the only device(s) used for controlling energy; shall not be used for other purposes; and shall meet the following requirements:

- **Durable**
 - Lockout and tagout devices shall be capable of withstanding the environment to which they are exposed for the maximum period that exposure is expected.
 - Tagout devices shall be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.
 - Tags shall not deteriorate when used in corrosive environments such as areas where acid and alkali chemicals are managed and stored.
- **Standardized**
 - Lockout and tagout devices shall be standardized within the worksite in at least one of the following criteria: Color; shape; or size; and additionally, in the case of tagout devices, print and format shall be standardized.
- **Substantial**
 - Lockout devices. Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.
 - Tagout devices. Tagout devices, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all environment-tolerant nylon cable tie.
- **Identifiable**
 - Lockout devices and tagout devices shall indicate the identity of the employee applying the device(s).

GENERAL LOCK AND TAGOUT PROCEDURES

Before working on, repairing, adjusting, or replacing machinery and equipment, the following procedures will be utilized to place the machinery and equipment in a neutral or zero mechanical state. The circuits and equipment to be worked on shall be disconnected from all electric energy sources. Control circuit devices, such as push buttons, selector switches, and interlocks, may not be used as the sole means for deenergizing circuits or equipment. Interlocks for electric equipment may not be used as a substitute for lockout and tagging procedures.

Stored electric energy which might endanger personnel shall be released. Capacitors shall be discharged, and high capacitance elements shall be short-circuited and grounded, if the stored electric energy might endanger personnel.

Note: If the capacitors or associated equipment are handled in meeting this requirement, they shall be treated as energized.

Stored non-electrical energy in devices that could reenergize electric circuit parts shall be blocked or relieved to the extent that the circuit parts could not be accidentally energized by the device. [1910.333\(b\)\(2\)\(ii\)\(B\)](#)

A lock and tag shall be placed on each disconnecting means to deenergize circuits and equipment on which work is to be performed. Each tag shall contain a statement prohibiting unauthorized operation of the disconnecting means and removal of the tag.

A Qualified Person

A qualified person shall verify that the equipment cannot be restarted as well as test and verify that the circuit elements and equipment part(s) are deenergized. A qualified person shall conduct tests and visual inspections to verify all tools, shorts, grounds, etc. have been removed so that circuits and equipment can be safely energized. [1910.333\(b\)\(2\)\(v\)\(A\)](#)

SHIFT OR PERSONNEL CHANGES

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

ENERGY ISOLATING DEVICE

If an energy isolating device is not capable of being locked out, CCI energy control program shall utilize a tagout system. If an energy isolating device is capable of being locked out, CCI's energy control program shall utilize lockout, unless CCI can demonstrate that the utilization of a tagout system will provide full employee protection as set forth in [1910.147\(c\)\(2\)\(iii\)](#) paragraph [\(c\)\(3\)](#) of this section. After January 2, 1990, whenever replacement or major repair, renovation or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machine or equipment shall be designed to accept a lockout device.

FULL EMPLOYEE PROTECTION

When a tagout device is used on an energy isolating device which is capable of being locked out, the tagout device shall be attached at the same location that the lockout device would have been

attached, and CCI shall demonstrate that the tagout program will provide a level of safety equivalent to that obtained by using a lockout program. [1910.147\(c\)\(3\)\(i\)](#)

In demonstrating that a level of safety is achieved in the tagout program which is equivalent to the level of safety obtained by using a lockout program, CCI shall demonstrate full compliance with all tagout-related provisions of this standard together with such additional elements as are necessary to provide the equivalent safety available from the use of a lockout device. Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of additional safety measures such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energization.

Notification of Employees

Affected employees shall be notified by CCI or authorized employee of the application and removal of lockout devices or tagout devices. Notification shall be given before the controls are applied, and after they are removed from the machine or equipment. [1910.147\(c\)\(9\)](#)

Preparation for Shutdown

- Before authorized or affected employees turn off a machine or piece of equipment, the authorized employee will have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the means to control the energy.
- An orderly shutdown must be utilized to avoid any additional or increased hazard(s) to employees because of the equipment stoppage.
- Notify all affected Employees that the machinery, equipment, or process will be out of service.

Machine or Equipment Shutdown

- The machine or equipment will be turned or shut down using the specific procedures for that specific machine.
- An orderly shutdown will be utilized to avoid any additional or increased hazards to employees because of equipment de-energization.
- If the machinery, equipment, or process is in operation, follow normal stopping procedures (depress stop button, open toggle switch, etc.).
- Move switch or panel arms to "Off" or "Open" positions and close all valves or other energy isolating devices so that the energy source(s) is disconnected or isolated from the machinery or equipment.

Machine or Equipment Isolation

All energy control devices that are needed to control the energy to the machine or equipment will be physically located and operated in such a manner as to isolate the machine or equipment from the energy source.

Protective Materials and Hardware

- Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided by CCI for isolating, securing, or blocking of machines or equipment from energy sources.
- Lockout devices and tagout devices shall be singularly identified; shall be the only devices(s) used for controlling energy; shall not be used for other purposes; and shall meet the requirements for [29 CFR 1910.147](#).

Lockout or Tagout Device Application

- Lockout or tagout devices will be affixed to energy isolating devices by authorized employees.
- Lockout devices will be affixed in a manner that will hold the energy isolating devices from the "Safe" or "Off" position.
- Where tagout devices are used they will be affixed in such a manner that will clearly state that the operation or the movement of energy isolating devices from the "Safe" or "Off" positions is prohibited.
- The tagout devices will be attached to the same point a lock would be attached.
- If the tag cannot be affixed at that point, the tag will be located as close as possible to the device in a position that will be immediately obvious to anyone attempting to operate the device.
- Lock and tag out all energy devices by use of hasps, chains and valve covers with an assigned individual lock.

Stored Energy

- Following the application of the lockout or tagout devices to the energy isolating devices, all potential or residual energy will be relieved, disconnected, restrained, and otherwise rendered safe.
- Where the re-accumulation of stored energy to a hazardous energy level is possible, verification of isolation will be continued until the maintenance or servicing is complete, or until the possibility of such accumulation no longer exists.
- Release stored energy (capacitors, springs, elevated members, rotating fly wheels, and hydraulic/air/gas/steam systems) must be relieved or restrained by grounding, repositioning, blocking and/or bleeding the system.

Verification of Isolation

- Prior to starting work on machines or equipment that have been locked or tagged out, the authorized employees will verify that isolation or de-energization of the machine or equipment have been accomplished.

- After assuring that no Employee will be placed in danger, evaluate all lock and tag outs by following the normal start up procedures (depress start button, etc.).

Caution: After test, place controls in neutral position.

GROUP LOCKOUT SETTINGS/MULTIPLE WORKERS

Where a crew of authorized employees may use a lockout or tagout device, the following procedures shall be followed to ensure the group of employees a level of protection equal to that provided by a personal lockout or tagout device.

An authorized employee will be designated to have primary responsibility for a set number of employees working under the protection of a group lockout or tagout device.

- A pre-work kick-off safety meeting will be held to review the lockout tagout procedure for the project
- Each employee shall attach a personal lockout or tagout device to the group's device while he/she is working and then removes it when finished
- During shift change or personnel changes, there should be specific procedures to ensure the continuity of lockout or tagout procedures
- Documentation shall be specific and shall be retained

Extended Lockout Tagout

Should the shift change before the machinery or equipment can be restored to service, the lock and tag out must remain. If the task is reassigned to the next shift, those Employees must lock and tag out before the previous shift may remove their lock and tag.

Release from Lockout Tagout

Before lockout or tagout devices are removed and the energy restored to the machine or equipment, the following actions will be taken:

- The work area will be thoroughly inspected to ensure that nonessential items have been removed and that machine or equipment components are operational.
- The work area will be checked to ensure that all employees have been safely positioned or removed. Before the lockout or tagout devices are removed, the affected employees will be notified that the lockout or tagout devices are being removed.
- Each lockout or tagout device will be removed from each energy isolating device by the employee who applied the device.

LOTO PROCEDURE FOR ELECTRICAL PLUG TYPE EQUIPMENT

This procedure covers all Electrical Plug-Type Equipment such as Battery Chargers, some Product Pumps, Office Equipment, Powered Hand Tools, Powered Bench Tools, Lathes, Fans, etc.

When working on, repairing, or adjusting the above equipment, the following procedures must be utilized to prevent accidental or sudden startup:

- Unplug Electrical Equipment from wall socket or in-line socket.
- Attach "Do Not Operate" Tag and Plug Box and Lock on end of power cord.

An exception is granted to not lock and tag the plug if the cord and plug remain in the exclusive control of the Employee working on, adjusting, or inspecting the equipment.

- Test Equipment to assure power source has been removed by depressing the "Start" or "On" Switch.
- Perform required operations.
- Replace all guards removed.
- Remove Lock and Plug Box and Tag.
- Inspect power cord and socket before plugging equipment into power source. Any defects must be repaired before placing the equipment back in service.

Note: Occasionally used equipment may be unplugged from power source when not in use.

LOTO PROCEDURE INVOLVING MORE THAN ONE EMPLOYEE

In the preceding SOPs, if more than one Employee is assigned to a task requiring a lock and tagout, each must also place his or her own lock and tag on the energy isolating device(s).

MANAGEMENT OF LOCK AND TAGOUTS

Only the Employee that locks and tags out machinery, equipment or processes may remove his/her lock and tag. However, should the Employee leave the facility before removing his/her lock and tag, the Responsible Safety Person may remove the lock and tag. The Responsible Safety Person must be assured that all tools have been removed, all guards have been replaced and all Employees are free from any hazard before the lock and tag are removed and the machinery, equipment or process are returned to service. Notification of the employee who placed the lock is required prior to lock removal.

REMOVAL OF AN AUTHORIZED EMPLOYEE'S LOCKOUT TAGOUT BY CCI

Locks/tags will only be removed in cases where the authorized employee who applied it is not available. When the authorized employee who applied the Lockout tagout device is not available to remove it, that device may be removed by the safety manager or their designee by following the specific procedure.

Each location must develop written procedures that comply with [29 CFR 1910.147\(e\)\(3\)](#).

Emergency procedures for removing Lockout Tagout should include the following:

- Making all reasonable efforts to contact the authorized and affected employees to inform them that their LOTO device has been removed.
- Verification by CCI that the authorized employee who applied the LOTO device is not at the facility by checking timecards, parking lot, radio announcement, etc.
- Responsible Safety Person shall make a thorough inspection of the machine or device to confirm that the machine or equipment components are operationally intact.
- **Responsible Safety Person** or designee shall remove the LOTO device, providing that they have determined that the starting up of the machine/equipment will not endanger other personnel.
- Informing and providing the employee who's locks/tags were removed with replacement locks/tags.

LOCKOUT OR TAGOUT DEVICES REMOVAL

Each lockout or tagout device shall be removed from each energy isolating device by the employee who applied the device. When the authorized employee who applied the lockout or tagout device is not available to remove it, that device may be removed under the direction of CCI, provided that specific procedures and training for such removal have been developed, documented, and incorporated into CCI's energy control program. CCI shall demonstrate that the specific procedure provides equivalent safety to the removal of the device by the authorized employee who applied it. [29 CFR 1910.147 \(e\)\(3\)](#)

The specific procedure shall include at least the following elements:

- Verification by CCI that the authorized employee who applied the device is not at the facility;
- Making all reasonable efforts to contact the authorized employee to inform him/her that his/her lockout or tagout device has been removed; and
- Ensuring that the authorized employee has this knowledge before he/she resumes work at that facility.

If an energy isolating device is **not** capable of being locked out, CCI's energy control program under this section shall utilize a tagout system. If an energy isolating device is capable of being locked out, the employer's energy control program under this section shall utilize lockout, unless CCI can demonstrate that the utilization of a tagout system, will provide full employee protection as set forth in paragraph (c)(3) of section [1910.147\(c\)\(3\)\(iii\)](#).

After January 2, 1990, whenever replacement or major repair, renovation or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machine or equipment shall be designed to accept a lockout device.

TESTING OR POSITIONING OF MACHINES, EQUIPMENT OR COMPONENTS

In situations in which lockout or tagout devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment or component thereof, the following sequence of actions in accordance to [29 CFR 1910.147 \(f\)\(1\)\(i\)](#) shall be followed:

- Clear the machine or equipment of tools
- Remove employees from the machine or equipment area
- Remove the lockout or tagout devices as specified in [29 CFR 1910.147 \(e\)\(3\)](#);
- Energize and proceed with testing or positioning
- Deenergize all systems and reapply energy control measures

INSPECTION

CCI shall conduct a periodic inspection of the energy control procedure, at least annually, to ensure that the procedure and the requirements of this standard are being followed. Periodic inspection shall be performed by an authorized company employee other than the ones(s) utilizing the energy control procedure being inspected. Periodic inspection is to be conducted to correct any deviations or inadequacies identified.

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

CCI shall certify that the periodic inspections have been performed.

The certification shall identify the machine or equipment on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection. [1910.147\(c\)\(6\)\(i\)](#) through [1910.147\(c\)\(6\)\(ii\)](#)

CONTRACTORS

Contractors, working on company worksites and equipment must use this Lockout Tagout procedure while servicing or maintaining equipment, machinery, or processes.

DEFINITIONS

Authorized (Qualified) Employees are the only ones certified to lock and tagout equipment or machinery. Whether an employee is qualified will depend upon various circumstances in the workplace. It is likely for an individual to be considered "qualified" about certain equipment in the workplace, but "unqualified" as to other equipment. An employee who is undergoing on-the-job training and who, during such training, has demonstrated an ability to perform duties safely at

his or her level of training and who is under the direct supervision of a qualified person, is "qualified" for the performance of those duties.

Affected Employees are those employees who operate machinery or equipment upon which lockout or tagging out is required under this program. All affected employees will be notified before the application of lockout or tagout devices. Training of these individuals will be less stringent in that it will include the purpose and use of the lockout procedures.

Other Employees are identified as those that do not fall into the authorized, affected, or qualified employee category. It will include all other employees. These employees will be provided instruction in what the program is and not to touch any machine or equipment when they see that it has been locked or tagged out.

Zero Energy State is a condition in which all sources of energy have been removed or neutralized.

Electrical Safety - Lockout Tagout - Control of Hazardous Energy - WA

PURPOSE

The purpose of this document is to outline the control of hazardous energy within the Lockout Tagout program for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

POLICY

It is the policy of CCI to establish the requirements for isolation of both kinetic and potential electrical, chemical, thermal, hydraulic, pneumatic, and gravitational energy prior to equipment repair, adjustment, or removal. Reference: Washington's Administrative Code [WAC 296-803](#), the control of hazardous energy.

HAZARD CONTROLS

Hazards

Improper or failure to use Lockout Tagout procedures may result in:

- * Electrical shock
- * Chemical exposure
- * Skin burns
- * Lacerations and amputation
- * Fires and explosions
- * Chemical releases
- * Eye injury
- * Death

Potential energy may include any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, gravitational, or other energy. Energy control procedures consist of:

- * Only authorized and trained employees may engage in tasks that require use of Lockout Tagout procedures
 - o Verifies the machine or equipment is in operating condition and ready to energize
 - o Check that employees in the area are in positions that make it safe to energize the machine or equipment
- * All equipment has single sources of electrical power
- * Lockout procedures have been developed for all equipment and processes
- * Restoration from Lockout is a controlled operation

AUTHORIZED EMPLOYEES TRAINING

All Field Employees, Maintenance Employees, and Field Supervisors will be trained to use the Lockout Tagout Procedures. To ensure the knowledge and skills required for the safe application, usage, and removal of the energy controls are acquired by employees.

The training will be conducted by a Safety Representative at time of initial hire. Retraining shall be held at least annually and as necessary. The training will consist of the following:

- Review of General Procedures
- Review of Specific Procedures for machinery, equipment, and processes
- Location and use of Specific Procedures
- Procedures when questions arise
- Recognition of hazardous energy source
- Type and magnitude of energy available
- Methods and means necessary for energy isolation and control
- All affected employees are instructed in the purpose and use of the energy control procedure
- The tag is never to be ignored or defeated in any way
- A tags role as a warning device and differences in physical protection locks provide
- The importance of tags legibility and being understandable to be effective
- Securely attaching to energy-isolating devices in a manner where they cannot be inadvertently detached
- Methods necessary for tags to withstand environmental conditions to which they will be exposed

Lockout or tagout shall be performed only by the authorized employees who are performing the servicing or maintenance.

AFFECTED EMPLOYEE TRAINING

- Only trained and authorized Employees will repair, replace, or adjust machinery, equipment, or processes.
- Affected Employees may not remove Locks, locking devices or tags from machinery, equipment, or circuits.
- Purpose and use of the lockout procedures.
- All affected employees are instructed in the purpose and use of the energy control procedure.
- When tagout systems are used including the limitations of a tag (tags are warning devices and do not provide physical restraint.)
- The tag is never to be ignored or defeated in any way.

OTHER EMPLOYEE TRAINING

- Only trained and authorized Employees will repair, replace, or adjust machinery or equipment.
- Other Employees may not remove Locks, locking devices or tags from machinery, equipment, or circuits.
- Any other employee whose work operations are or may be in an area where energy control procedures may be utilized.
- The tag is never to be ignored or defeated in any way.

RETRAINING

Retraining is required when there is a change in job assignments, in machines, a change in the energy control procedures, or a new hazard is introduced.

All training and retraining shall be documented, signed, and certified.

PREPARATION OF LOCK OUT AND TAG OUT TRAINING

A Lockout Tagout Survey has been conducted to locate and identify all energy sources to verify which switches or valves supply energy to machinery and equipment. Dual or redundant controls have been removed.

Devices shall indicate the identity of the employee applying the device.

A Tagout Schedule has been developed for each piece of equipment and machinery. This schedule describes the energy sources, location of disconnects, type of disconnect, special hazards and special safety procedures. The schedule will be reviewed each time to ensure employees properly lock and tag out equipment and machinery. If a Tagout Schedule does not exist for a particular piece of equipment, machinery, and process, one must be developed prior to conducting a Lockout Tagout. As repairs and/or renovations of existing electrical systems are made, standardized controls will be used.

ROUTINE MAINTENANCE AND MACHINE ADJUSTMENTS

Lockout Tagout procedures are not required if equipment must be operating for proper adjustment. This rare exception may be used only by trained and authorized Employees when specific procedures have been developed to safely avoid hazards with proper training. All consideration shall be made to prevent the need for an employee to break the plane of a normally guarded area of the equipment by use of tools and other devices.

LOCKS HASPS AND TAGS

All Qualified Personnel will be assigned a lock with one key, hasp, and tag. All locks will be keyed differently, except when a specific individual issues a series of locks for complex Lockout Tagout tasks. In some cases, more than one lock, hasp and tag are needed to completely de-energize equipment and machinery. All locks and hasps shall be uniquely identifiable to a specific employee.

REQUIREMENTS FOR LOCKOUT TAGOUT DEVICES

Lockout devices and tagout devices shall be singularly identifiable; shall be the only device(s) used for controlling energy; shall not be used for other purposes; and shall meet the following requirements:

- **Durable**
 - Lockout and tagout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.
 - Tagout devices shall be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.
 - Tags shall not deteriorate when used in corrosive environments such as areas where acid and alkali chemicals are handled and stored.
- **Standardized**
 - Lockout and tagout devices shall be standardized within the worksite in at least one of the following criteria: color; shape; or size; and additionally, in the case of tagout devices, print and format shall be standardized.
- **Substantial**
 - Lockout devices. Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.
 - Tagout devices. Tagout devices, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all environment-tolerant nylon cable tie.
- **Identifiable**
 - Lockout devices and tagout devices shall indicate the identity of the employee applying the device(s).

GENERAL LOCK AND TAGOUT PROCEDURES

Before working on, repairing, adjusting, or replacing machinery and equipment, the following procedures will be utilized to place the machinery and equipment in a neutral or zero mechanical state. The circuits and equipment to be worked on shall be disconnected from all electric energy sources. Control circuit devices, such as push buttons, selector switches, and interlocks, may not be used as the sole means for deenergizing circuits or equipment. Interlocks for electric equipment may not be used as a substitute for lockout and tagging procedures.

Stored electric energy which might endanger personnel shall be released. Capacitors shall be discharged, and high capacitance elements shall be short-circuited and grounded, if the stored electric energy might endanger personnel.

Note: If the capacitors or associated equipment are handled in meeting this requirement, they shall be treated as energized.

Stored non-electrical energy in devices that could reenergize electric circuit parts shall be blocked or relieved to the extent that the circuit parts could not be accidentally energized by the device.
WAC 296-803-50030

A lock and tag shall be placed on each disconnecting means to deenergize circuits and equipment on which work is to be performed. Each tag shall contain a statement prohibiting unauthorized operation of the disconnecting means and removal of the tag.

A Qualified Person

A qualified person shall verify that the equipment cannot be restarted as well as test and verify that the circuit elements and equipment part(s) are deenergized. A qualified person shall conduct tests and visual inspections to verify all tools, shorts, grounds, etc. have been removed so that circuits and equipment can be safely energized. [WAC 296-803-50035](#).

SHIFT OR PERSONNEL CHANGES

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

ENERGY ISOLATING DEVICE

If an energy isolating device is not capable of being locked out, CCI energy control program shall utilize a tagout system. If an energy isolating device is capable of being locked out, The

Companies energy control program shall utilize lockout, unless CCI can demonstrate that the utilization of a tagout system will provide full employee protection as set forth WAC 296-803-500 and WAC 296-803-300. After July 2, 1990, whenever replacement or major repair, renovation or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machine or equipment shall be designed to accept a lockout device. Lockout or tagout devices must be applied for each energy-isolating device, but only by the authorized employee doing the service or maintenance.

FULL EMPLOYEE PROTECTION

When a tagout device is used on an energy isolating device which is capable of being locked out, the tagout device shall be attached at the same location that the lockout device would have been attached, and CCI shall demonstrate that the tagout program will provide a level of safety equivalent to that obtained by using a lockout program. [1910.147\(c\)\(3\)\(i\)](#)

In demonstrating that a level of safety is achieved in the tagout program which is equivalent to the level of safety obtained by using a lockout program, CCI shall demonstrate full compliance with all tagout-related provisions of this standard together with such additional elements as are necessary to provide the equivalent safety available from the use of a lockout device. Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of additional safety measures such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energization.

Notification of Employees

Affected employees shall be notified by CCI or authorized employee of the application and removal of lockout devices or tagout devices. Notification shall be given before the controls are applied, and after they are removed from the machine or equipment. [1910.147\(c\)\(9\)](#)

Preparation for Shutdown

- Before authorized or affected employees turn off a machine or piece of equipment, the authorized employee will have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the means to control the energy.
- An orderly shutdown must be utilized to avoid any additional or increased hazard(s) to employees because of the equipment stoppage.
- Notify all affected Employees that the machinery, equipment, or process will be out of service.

Machine or Equipment Shutdown

- The machine or equipment will be turned or shut down using the specific procedures for that specific machine.

- An orderly shutdown will be utilized to avoid any additional or increased hazards to employees because of equipment de-energization.
- If the machinery, equipment, or process is in operation, follow normal stopping procedures (depress stop button, open toggle switch, etc.)
- Move switch or panel arms to "Off" or "Open" positions and close all valves or other energy isolating devices so that the energy source(s) is disconnected or isolated from the machinery or equipment.

Machine or Equipment Isolation

- All energy control devices that are needed to control the energy to the machine or equipment will be physically located and operated in such a manner as to isolate the machine or equipment from the energy source.

Protective Materials and Hardware

- Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided by CCI for isolating, securing, or blocking of machines or equipment from energy sources.
- Lockout devices and tagout devices shall be singularly identified; shall be the only devices(s) used for controlling energy; shall not be used for other purposes; and shall meet the requirements for WAC 296-803-500.

Lockout or Tagout Device Application

- Lockout or tagout devices will be affixed to energy isolating devices by authorized employees.
- Lockout devices will be affixed in a manner that will hold the energy isolating devices from the "Safe" or "Off" position.
- Where tagout devices are used they will be affixed in such a manner that will clearly state that the operation or the movement of energy isolating devices from the "Safe" or "Off" positions is prohibited.
- The tagout devices will be attached to the same point a lock would be attached.
- If the tag cannot be affixed at that point, the tag will be located as close as possible to the device in a position that will be immediately obvious to anyone attempting to operate the device.
- Lock and tag out all energy devices by use of hasps, chains and valve covers with an assigned individual lock.

Stored Energy

- Following the application of the lockout or tagout devices to the energy isolating devices, all potential or residual energy will be relieved, disconnected, restrained, and otherwise rendered safe.

- Where the re-accumulation of stored energy to a hazardous energy level is possible, verification of isolation will be continued until the maintenance or servicing is complete, or until the possibility of such accumulation no longer exists.
- Release stored energy (capacitors, springs, elevated members, rotating fly wheels, and hydraulic/air/gas/steam systems) must be relieved or restrained by grounding, repositioning, blocking and/or bleeding the system.

Verification of Isolation

- Prior to starting work on machines or equipment that have been locked or tagged out, the authorized employees will verify that isolation or de-energization of the machine or equipment have been accomplished.
- After assuring that no Employee will be placed in danger, test all lock and tag outs by following the normal start up procedures (depress start button, etc.).

Caution: After test, place controls in neutral position.

GROUP LOCKOUT SETTINGS/MULTIPLE WORKERS

Where a crew of authorized employees may use a lockout or tagout device, the following procedures shall be followed to ensure the group of employees a level of protection equal to that provided by a personal lockout or tagout device.

An authorized employee will be designated to have primary responsibility for a set number of employees working under the protection of a group lockout or tagout device.

- A pre-work kick-off safety meeting will be held to review the lockout tagout procedure for the project
- Each employee shall attach a personal lockout or tagout device to the group's device while he/she is working and then removes it when finished
- During shift change or personnel changes, there should be specific procedures to ensure the continuity of lockout or tagout procedures
- Documentation shall be specific and shall be retained

Extended Lockout Tagout

Should the shift change before the machinery or equipment can be restored to service, the lock and tag out must remain. If the task is reassigned to the next shift, those Employees must lock and tag out before the previous shift may remove their lock and tag.

Release from Lockout Tagout

Before lockout or tagout devices are removed and the energy restored to the machine or equipment, the following actions will be taken:

- The work area will be thoroughly inspected to ensure that nonessential items have been removed and that machine or equipment components are operational.

- The work area will be checked to ensure that all employees have been safely positioned or removed. Before the lockout or tagout devices are removed, the affected employees will be notified that the lockout or tagout devices are being removed.
- Each lockout or tagout device will be removed from each energy isolating device by the employee who applied the device.

LOTO PROCEDURE FOR ELECTRICAL PLUG TYPE EQUIPMENT

This procedure covers all Electrical Plug-Type Equipment such as Battery Chargers, some Product Pumps, Office Equipment, Powered Hand Tools, Powered Bench Tools, Lathes, Fans, etc.

When working on, repairing, or adjusting the above equipment, the following procedures must be utilized to prevent accidental or sudden startup:

- Unplug Electrical Equipment from wall socket or in-line socket.
- Attach "Do Not Operate" Tag and Plug Box and Lock on end of power cord.

An exception is granted to not lock and tag the plug if the cord and plug remain in the exclusive control of the Employee working on, adjusting, or inspecting the equipment.

- Test Equipment to assure power source has been removed by depressing the "Start" or "On" Switch.
- Perform required operations.
- Replace all guards removed.
- Remove Lock and Plug Box and Tag.
- Inspect power cord and socket before plugging equipment into power source. Any defects must be repaired before placing the equipment back in service.

Note: Occasionally used equipment may be unplugged from power source when not in use.

LOTO PROCEDURE INVOLVING MORE THAN ONE EMPLOYEE

In the preceding SOPs, if more than one Employee is assigned to a task requiring a lock and tag out, each must also place his or her own lock and tag on the energy isolating device(s).

MANAGEMENT OF LOCK AND TAGOUTS

Only the Employee that locks and tags out machinery, equipment or processes may remove his/her lock and tag. However, should the Employee leave the facility before removing his/her lock and tag, the Responsible Safety Person may remove the lock and tag. The Responsible Safety Person must be assured that all tools have been removed, all guards have been replaced and all Employees are free from any hazard before the lock and tag are removed and the machinery,

equipment or process are returned to service. Notification of the employee who placed the lock is required prior to lock removal.

REMOVAL OF AN AUTHORIZED EMPLOYEE'S LOCKOUT TAGOUT BY CCI

Locks/tags will only be removed in cases where the authorized employee who applied it is not available. When the authorized employee who applied the Lockout Tagout device is not available to remove it, that device may be removed by the safety manager or their designee by following the specific procedure.

Each location must develop written procedures that comply with [29 CFR 1910.147\(e\)\(3\)](#) and [WAC 296-803-20005](#).

Emergency procedures for removing Lockout Tagout should include the following:

- Making all reasonable efforts to contact the authorized and affected employees to inform them that their LOTO device has been removed.
- Verification by CCI that the authorized employee who applied the LOTO device is not at the facility by checking timecards, parking lot, radio announcement, etc.
- A thorough inspection of the machine or device shall be made by Responsible Safety Person (or designee) to confirm that the machine or equipment components are operationally intact.
- Responsible Safety Person (or designee) shall remove the LOTO device, providing that they have determined that the starting up of the machine/equipment will not endanger other personnel.
- Informing and providing the employee who's locks/tags were removed with replacement locks/tags.

LOCKOUT OR TAGOUT DEVICES REMOVAL

Each lockout or tagout device shall be removed from each energy isolating device by the employee who applied the device. When the authorized employee who applied the lockout or tagout device is not available to remove it, that device may be removed under the direction of CCI, provided that specific procedures and training for such removal have been developed, documented, and incorporated into CCI's energy control program in accordance with and [WAC 296-803-20005](#). CCI shall demonstrate that the specific procedure provides equivalent safety to the removal of the device by the authorized employee who applied it.

The specific procedure shall include at least the following elements:

- Verification by CCI that the authorized employee who applied the device is not at the facility:
- Making all reasonable efforts to contact the authorized employee to inform him/her that his/her lockout or tagout device has been removed; and

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

If an energy isolating device is **not** capable of being locked out, CCI's energy control program under this section shall utilize a tagout system. If an energy isolating device is capable of being locked out, the employer's energy control program under this section shall utilize lockout, unless CCI can demonstrate that the utilization of a tagout system, will provide full employee protection as set forth in WAC 296-803-50045.

After January 2, 1990, whenever replacement or major repair, renovation or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machine or equipment shall be designed to accept a lockout device.

TESTING OR POSITIONING OF MACHINES, EQUIPMENT OR COMPONENTS

In situations in which lockout or tagout devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment, or component thereof, the following sequence of actions in accordance with WAC 296-803-50040 shall be followed:

- Clear the machine or equipment of tools
- Remove employees from the machine or equipment area
- Remove the lockout or tagout devices as specified in [29 CFR 1910.147 \(e\)\(3\)](#)
- Energize and proceed with testing or positioning
- Deenergize all systems and reapply energy control measures

INSPECTION

CCI shall conduct a periodic inspection of the energy control procedure, at least annually, to ensure that the procedure and the requirements of this standard are being followed. Periodic inspection shall be performed by an authorized company employee other than the ones(s) utilizing the energy control procedure being inspected. Periodic inspection is to be conducted to correct any deviations or inadequacies identified.

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

CCI shall certify that the periodic inspections have been performed.

The certification shall identify the machine or equipment on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection. WAC 296-803-700

CONTRACTORS

Contractors, working on company property and equipment must use this Lockout Tagout procedure while servicing or maintaining equipment, machinery, or processes.

DEFINITIONS

Authorized (Qualified) Employees are the only ones certified to lock and tagout equipment or machinery. Whether an employee is qualified will depend upon various circumstances in the workplace. It is likely for an individual to be considered "qualified" about certain equipment in the workplace, but "unqualified" as to other equipment. An employee who is undergoing on-the-job training and who, during such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified person, is considered to be "qualified" for the performance of those duties.

Affected Employees are those employees who operate machinery or equipment upon which lockout or tagging out is required under this program. All affected employees will be notified before the application of lockout or tagout devices. Training of these individuals will be less stringent in that it will include the purpose and use of the lockout procedures.

Other Employees are identified as those that do not fall into the authorized, affected, or qualified employee category. Essentially, it will include all other employees. These employees will be provided instruction in what the program is and not to touch any machine or equipment when they see that it has been locked or tagged out.

Zero Energy State is a condition in which all sources of energy have been removed or neutralized, also referred to as "can be locked out."

Energized is defined as being connected to an energy source or containing residual or stored energy.

Emergency Action Plan

PURPOSE

The purpose of the **Cirks Construction Inc.** Emergency Action Plan is to prepare employees for dealing with emergency situations. This plan is designed to minimize injury and loss of human life and company resources by training employees, procuring, and maintaining necessary equipment, and assigning responsibilities. This plan applies to all emergencies that may reasonably be expected to occur at CCI

RESPONSIBILITIES

Emergency Plan Manager

Devon Molitor shall manage the Emergency Action Plan for CCI. The Emergency Plan Manager shall also maintain all training records pertaining to this plan. The plan manager is responsible for scheduling routine tests of CCI Emergency notification system with the appropriate authorities.

The Emergency Plan Manager shall also coordinate with local public resources, such as fire department and emergency medical personnel, to ensure that they are prepared to respond as detailed in this plan.

Emergency Plan Coordinators

CCI Emergency Plan Coordinators are as follows:

Bldg. Number/ Section/Dept.	Primary Name and Position	Primary Phone #	Alternate Name and Position	Alternate Phone #
Headquarters	Devon Molitor	(714) 632-6717		

The Emergency Plan Coordinators are responsible for instituting the procedures in this plan in their designated areas in the event of an emergency. (Note: Coordinators may also be given the responsibility of accounting for employees/visitors after an evacuation has occurred.)

The following individuals shall be responsible for assisting employees who have disabilities or who do not speak English during evacuation:



Responsible Safety Person:
Devon Molitor
Corporate Safety Director

Bldg. Number / Section / Dept.	Name of Person Requiring Assistance	Phone #	Assigned Assistant's Name and Position	Assistant's Phone #
Multiple	TBD Assigned by location/worksite			

Management

CCI will provide adequate controls and equipment that, when used properly, will minimize, or eliminate risk of injury to employees in the event of an emergency.

CCI management will ensure proper adherence to this plan through regular review.

CCI shall review the organization's emergency action plan with each company employee covered by the plan when the plan is developed, upon initial assignment, when responsibilities under the plan change, and when the plan is changed.

Supervisors

Supervisors shall themselves follow and ensure that their employees are trained in the procedures outlined in this plan.

Employees

Employees are responsible for following the procedures described in this plan.

Contractors

Contract employees are responsible for complying with this plan and shall be provided the training described herein by the Responsible Safety Person

POLICY

CCI shall keep this written emergency action plan in the workplace, and it will be available to employees for review, if fewer than 10 employees, must be communicated orally.

REPORTING FIRE AND EMERGENCY SITUATIONS

All fires and emergency situations will be reported as soon as possible to the Responsible Safety Person (or designee) by one of the following means:

- Verbally as soon as possible during normal work hours; or
- By telephone if after normal work hours or on weekends.

To eliminate confusion and the possibility of false alarms, only the Responsible Safety Person or other designated responsible person(s) is/are authorized to contact the appropriate community emergency response personnel.

Under no circumstances shall an employee attempt to fight a fire that has passed the incipient stage (that which can be put out with a fire extinguisher), nor shall any employee attempt to enter a burning building to conduct search and rescue. These actions shall be left to emergency services professionals who have the necessary training, equipment, and experience (such as the fire department or emergency medical professionals). Untrained individuals may endanger themselves and/or those they are trying to rescue.

ALARM SYSTEMS

CCI shall have and maintain an employee alarm system. The employee alarm system shall have a distinctive signal for each purpose and comply with the requirements in [29 CFR 1926.35](#).

Note: (Subcontractors who rely on the EAP of CCI, must be made aware of the meaning and tone of the CCI's alarm system)

CCI shall develop and maintain an employee alarm system that uses a distinctive signal for each purpose. For companies with less than ten employees, direct voice communication is acceptable for sounding an alarm provided all employees can hear the alarm.

The alarm system shall be distinctive and recognizable as a signal to evacuate the work area or perform actions designated under the emergency action plan.

Informing CCI Employees of Fires and Emergency Situations

In the event of a fire or emergency, the Responsible Safety Person or other designated responsible person(s) shall ensure that all employees are notified as soon as possible using the designated alarm system.

If a fire or emergency occurs after normal business hours, the Responsible Safety Person or other designated responsible person(s) shall contact all employees not on shift of future work status, depending on the nature of the situation.

ELEMENTS OF THE EMERGENCY ACTION PLAN

The following procedures are to be followed by employees who remain to operate critical operations before they evacuate. (Suppliers who rely on the EAP of the Client, must be made aware if they have employees who are part of critical operations. If so, the Client shall make prior contractual provisions for additional Supplier employee training, tools and equipment) in accordance with [29 CFR 1926.35](#)

EMERGENCY CONTACT INFORMATION

The Responsible Safety Person or other designated responsible person(s) shall maintain a list of all employees' personal emergency contact information and shall keep the list in designated area for easy access in the event of an emergency. [29 CFR 1926.35](#)

Note: (Suppliers who rely on the EAP of the Client, must be made aware of the name of the Client employee who is assigned site ownership of the EAP).

EMERGENCY EVACUATION PLAN

Emergency Evacuation Plan shall include procedures for reporting a fire or other emergency, emergency evacuation, including type of evacuation and exit route assignments, procedures to follow by employees who remain to operate critical operations before they evacuate, accounting for all employees after evacuation, and procedures to follow by employees who perform medical or rescue duties in accordance with [29 CFR 1926.35](#).

EVACUATION ROUTES

Emergency evacuation escape route plans are posted in designated areas throughout CCI. If a fire/emergency alarm is sounded or instructions for evacuation are given by a safety coordinator, all employees shall immediately exit the worksite(s) at the nearest exits as shown in the escape route plans and shall meet as soon as possible at the Designated assembly area. Employees with offices shall close the doors (unlocked) as they exit the area.

Mobility impaired employees and their assigned assistants will gather at the Designated Area within the building to ensure safe evacuation in the pre-determined fashion.

Exit routes shall be adequately lit, clearly visible and marked by a sign reading "EXIT". Always keep the line of sight to exit signs clearly visible. Exit routes must be unobstructed and clear of any hazardous materials. Route should not take any occupant through or past a hazardous area. The width of an exit route must be sufficient to accommodate the maximum permitted occupant load of each floor served by the exit route. An outdoor exit route must be protected by guardrails if a fall hazard is present, covered, or protected from slipping hazards. Exit opening must be protected by using a self-closing approved fire door that remains closed or automatically closes in an emergency.

SECURING PROPERTY AND EQUIPMENT

If evacuation of the premises is necessary, some items may need to be secured to prevent further detriment to the facility and personnel on hand (such as shutting down equipment to prevent release of hazardous materials).

All individuals remaining behind to shut down critical systems or utilities shall be capable of recognizing when to abandon the operation or task. Once the property and/or equipment has been secured, or the situation becomes too dangerous to remain, these individuals shall exit the building by the nearest escape route as soon as possible and meet the remainder of the employees at the designated assembly area.

PPE

For some emergencies, an employee will experience hazards that require personal protective equipment (PPE). Training preparation and procedures will include consideration for any necessary PPE.

ADVANCED MEDICAL CARE

Under no circumstances shall an employee provide advanced medical care and treatment. These situations shall be left to emergency services professionals, or Designated Person(s), who have the necessary training, equipment, and experience. Untrained individuals may endanger themselves and/or those they are trying to assist.

ACCOUNTING FOR EMPLOYEES/VISITORS AFTER EVACUATION

Once an evacuation has occurred, designated Responsible Person(s) shall account for each employee/visitor assigned to them at the Designated assembly area. Each employee is responsible for reporting to the appropriate Responsible Person(s) so an accurate head count can

be made. All employee counts shall then be reported to the Emergency Action Plan Manager as soon as possible.

All employees must be accounted for after evacuation.

RE-ENTRY

Once the building has been evacuated, no one shall re-enter the worksite for any reason, except for designated and properly trained rescue personnel (such as fire department or emergency medical professionals). Untrained individuals may endanger themselves and/or those they are trying to rescue.

All employees shall remain at the Designated assembly area until the fire department or other emergency response agency notifies Responsible Person that either:

- The worksite is safe for re-entry, in which case personnel shall return to their workstations; or
- The worksite/designated assembly area is not safe, in which case personnel shall be instructed by a designated Responsible Person on how/when to vacate the premises.

TERRORISM

Bomb Threats

Take all bomb threats seriously. Do not use fire alarms or mobile phones in the workplace, as they generate radio waves that could initiate a bomb. If someone finds a package that may be or contain a bomb, they must note its size, shape, and whether it emits a sound. With this information notify an incident commander and call 911 to determine next steps.

Threat of Violence

Every threat is serious. If you receive or are aware of a threat of violence, contact a supervisor immediately, if you can do so safely.

Active Shooter

In the case of an active shooter look for all possible "escape to safety" locations, anywhere behind lockable doors, or doors that can be barricaded. Employees are to be informed on evacuation routes and procedures for once law enforcement is on scene and threat may no longer be active.

EARTHQUAKE

Training will emphasize the need to be flexible in response to all emergencies. During an earthquake, most workplaces are at greatest risk of collapsing ceiling, windows, light fixtures, and other falling objects. If you are indoors, the safest response is to take cover under sturdy furniture or to brace yourself against an inside wall. Stay away from windows, skylights, bookcases, and other heavy objects. Protect your head and neck.

SEVERE WEATHER

The Emergency Action Plan Coordinator shall announce severe weather alerts (such as tornados) by public address system or other means of immediate notification available at worksite.

All employees shall immediately retreat to the Designated Area until the threat of severe weather has passed as communicated by the Emergency Action Plan Coordinator. The Emergency Action Plan Coordinator must communicate with employees unexpected schedule changes because of severe weather conditions.

EXPLOSION

Any workplace that handles, stores, or processes flammable gases, liquids, and solids is vulnerable to explosions. If flammable substances are identified at your worksite, take extra caution. The SDS (safety data sheets) will have in house chemical flammability/combustibility, LEL (lower explosive limit) as well as the fighting and reactivity directions and information.

TRAINING

CCI will designate and train employees to assist in a safe and orderly evacuation of other employees. Training will be provided at no cost to the employee.

Employee Training

All employees shall receive instruction on this Emergency Action Plan as part of New Employee Orientation upon hire. Additional training shall be provided:

- When the plan is developed, or the employee is assigned initially to a job.
- When there are any changes to the plan and/or facility
- When an employee's responsibilities change
- When the plan is changed; and
- Annually as refresher training.

Items to be reviewed during the training include:

- Proper housekeeping
- Fire prevention practices

- Fire extinguisher locations, usage, and limitations
- Threats, hazards, and protective actions
- Means of reporting fires and other emergencies
- Names of Emergency Action Plan Manager and Coordinators
- Individual responsibilities
- Alarm systems
- Escape routes and procedures
- Emergency shut-down procedures
- Procedures for accounting for employees and visitors
- Closing doors
- Severe weather procedures; and
- Emergency Action Plan availability

Fire Extinguisher Training

Where CCI has provided portable fire extinguishers for employees use in the workplace. CCI also will provide an educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved in incipient stage firefighting.

Training will be conducted prior to initial assignment and at least annually thereafter.

TRAINING RECORDS

Responsible Person shall document all training pertaining to this plan and shall maintain records at Designated Area. Training documents shall include, dates of training sessions, contents of the training, names and qualifications of person conducting the training, and names and job titles of all persons attending the training session.

FIRE/EVACUATION DRILLS

Fire/Evacuation drills shall be conducted at on a periodic basis. Additional drills shall be conducted if physical properties of the business change, processes change, or as otherwise deemed necessary.

The Designated Safety Person will ensure the fire extinguishers are in good working condition by doing monthly inspections, as well as an annual inspection.

PLAN EVALUATION

This Emergency Action Plan shall be reviewed annually, or as needed if changes to the worksite are made, by Responsible Person. Following each fire drill, Responsible Management and Employee Representatives shall evaluate the drill for effectiveness and weaknesses in the plan and shall implement changes to improve it.

Fall Prevention/Protection

PURPOSE

The purpose of this document is to outline safety policy and procedures surrounding fall prevention/protection for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

The hazards of potential falls at heights of six feet and above will be addressed in this document. This instruction describes a systematic approach that must be used to protect and prevent people from falling. This instruction also lists some of the most common fall hazards and provides recommendations and guidelines for selecting fall arrest systems.

OSHA [1926.500-503](https://www.osha-slc.gov)

RESPONSIBILITIES

Many workers are injured or killed from falls each year, and it is the policy of CCI to provide a healthy work environment for its employees. Therefore, CCI management commits the necessary resources and time to ensure that all persons on worksites are protected from injury and illness hazards. Management staff at CCI, including the executive team, will lead in the design, implementation and continuous monitoring and improvement of the site's safety and health activities.

Responsible Safety Person

Responsible for the administration of this program and has full authority to make necessary decisions to ensure success of the program. All company employees are responsible for safety at all times. CCI has expressly authorized this person to halt any company operation where there is danger of serious personal injury.

The fall protection plan shall be prepared by a qualified person for the specified work site.

Management shall perform annual reviews of this safety policy and any corresponding training programs/records to ensure that all workers are trained in the awareness and avoidance of unsafe acts and situations surrounding the use and or exposure of fall protection.

Subcontractor Responsibilities

In addition to complying with the fall protection requirements that apply to all company employees, each subcontractor who is retained to perform operations that involve fall protection will:

- Obtain any available information regarding fall hazards and protective measures from CCI.

- Coordinate fall protection operations with CCI when both company personnel and subcontractor personnel will be working in recognized fall hazard locations.
- Inform CCI of the fall protection program that the contractor will follow and of any hazards confronted or created in conducting operations involving fall protection through a debriefing immediately prior to the operation.

It will remain the duty of CCI's Safety Team to ensure that all fall prevention equipment is properly maintained and used by trained personnel.

Employees and personnel of CCI, including part-time and temporary labor, shall follow this written health and safety policy to ensure a safe work environment for all.

Competent Person – One who can identify existing and predictable hazards in the surrounding or working conditions which are unsanitary, hazardous, or dangerous to personnel, and who has authorization to take prompt corrective measures to eliminate them.

POLICY

Fall protection is required whenever employees are potentially exposed to falls from heights that exceed applicable regulatory thresholds. Guard rails, or personal fall arrest systems should be used.

CCI employees will adhere to the fall protection standards set forth below depending upon which job function they are performing:

Construction Industry [1926.501\(b\)\(1\)](#) - Unprotected sides and edges. Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet (1.8 m) or more above a lower level shall be protected from falling using guardrail systems, fall restrain systems, or personal fall arrest systems.

When conventional fall protection is not used these locations will be identified and classified as controlled access zones. The Safety Team must be contacted for evaluation prior to the start of work.

A Competent Person will be assigned to:

- Recognize fall hazards
- Warn employees if they are unaware of a fall hazard or is acting in an unsafe manner
- Be on same working surface and in visual sight
- Stay close enough for verbal communication

- Not have other assignments that would take monitor' s attention from the monitoring function

All accidents and serious incidents (near miss) shall be investigated, implementing changes to the fall protection plan as necessary.

When purchasing equipment and raw material for use in fall protection systems applicable OSHA, ANSI and ASTM requirements will be met.

The workplace shall be assessed before each assigned job for potential fall hazards. Proper fall arrest equipment will be used for jobs requiring fall protection when elimination of the hazard(s) is not possible. CCI will evaluate the facilities by department to determine fall hazards. This preliminary evaluation will detail the required steps for protecting employees from fall hazards.

Rescue

The employer shall provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves. Subcontractors will provide their own rescue operations.

FALL PROTECTION SYSTEMS

When fall hazards cannot be eliminated through any other means, fall arrest systems will be used to control falls. Proper training on the use of fall arrest equipment is essential and will be provided prior to use.

Standard Harness

Harnesses for general purpose work should be constructed with a sliding back D-ring. Standard harnesses are suitable for continuous fall protection. They are suitable for positioning, fall arrest, and the rescue and evacuation of people who are working at elevated heights. Harness shall be equivalent to ANSI/ASSE Z359.11-2021 standard. Class A rated for 130lbs to 310lbs.

Full Body Harness Systems

A full body harness system consists of a full-body harness, lanyard, energy shock absorber, and self-locking snap hook. Before using a full-body harness system, the supervisor and/or the user must address such issues as:

- Has the user been trained to recognize fall hazards and to use fall arrest systems properly?
- Are all components of the system compatible according to the manufacturer's instructions?
- Have appropriate anchorage points and attachment techniques been reviewed?

- Has free fall distance been considered so that a worker will not strike a lower surface or object before the fall is arrested?
- Have swing fall hazards been eliminated?
- Have safe methods to retrieve fallen workers been planned?
- Has the full-body harness and all its components been inspected both before each use and on a regular semi-annual basis?
- Is any of the equipment, including lanyards, connectors, and lifelines, subject to such problems as welding damage, chemical corrosion, or sandblasting operations?

Retractable Lifelines

- A retractable lifeline is a fall arrest device used in conjunction with other components of a fall arrest system. Retractable lifelines should be used by one person at a time.
- A properly inspected and maintained retractable lifeline, when correctly installed and used as part of the fall arrest system, automatically stops a person's descent in a short distance after the onset of an accidental fall.
- Retractable lifelines may be considered when working in areas such as on roofs and scaffolds, or in tanks, towers, vessels, and manholes. Also, retractable lifelines should be considered when climbing such equipment as vertical fixed ladders. Before using a retractable lifeline, the supervisor and/or the user must address the following questions:
 - Has the user been trained to use a retractable lifeline correctly?
 - Is the retractable lifeline being used in conjunction with a complete fall arrest system?
 - Is the equipment under a regular maintenance program?
 - Has the equipment been inspected within the last six months?

Lanyards

- Lanyards are Class I anchor points at or above rear dorsal ring. Class II anchor points at or below rear dorsal ring.

TRAINING

CCI shall provide a training program for each employee who may be exposed to fall hazards, or who may have the likelihood of exposure to this risk.

Training shall enable each employee to recognize the hazards of falling and shall train each employee in the procedure to follow to minimize all associated falling hazards.

CCI will have written certification records showing the following:

- Who was trained, and dates of training.

- Signature of person providing training and dates employer determined training was deemed adequate.

CCI will provide re-training when the following are noted, occur, or observed:

- Deficiencies in training
- Workplace changes
- Fall protection systems or equipment changes that render previous training obsolete

INITIAL TRAINING

Training will be conducted prior to job assignment. CCI will provide training to ensure that the purpose, function, and proper use of fall protection is understood by employees and that the knowledge and skills required for the safe application and usage is acquired by employees. This standard practice instruction will be provided to and read by all employees receiving training. The training will include, as a minimum the following:

- Types of fall protection equipment appropriate for use
- Recognition of applicable fall hazards associated with the work to be completed and the locations of such
- Load determination and balancing requirements
- Procedures for removal of protection devices from service for repair or replacement
- All other employees whose work operations are or may be in an area where protection devices fall may be utilized, will be instructed to an awareness level concerning hazards associated with fall protection operations
- Fall protection equipment identification. Fall protection equipment having identification numbers will be checked for legibility. Fall protection equipment having illegible identification markings will be turned in to the supervisor for inspection.
- Equipment maintenance and inspection requirements
- Equipment donning and doffing procedures
- Equipment strengths and limitations.
- Fall clearance calculations

REFRESHER TRAINING

This standard practice instruction will be provided to and read by all employees receiving refresher training. Refresher training will be conducted on an annual basis or when the following conditions are met, whichever event occurs sooner.

Additional retraining will also be conducted whenever a periodic inspection reveals, or whenever this employer has reason to believe, that there are deviations from or inadequacies in CCI's knowledge or use of fall protection equipment or procedures.

Whenever a fall protection procedure fails. The retraining will reestablish employee proficiency and introduce new or revised methods and procedures, as necessary.

CONTROLLED ACCESS ZONES

Where conventional methods of fall protection are not utilized, the following requirements need to be met for designated controlled access plans:

- Where no other alternate methods have been implemented, a safety monitoring system will be implemented.
- When used to control access to areas where leading edge and other operations are taking place the controlled access zone shall be defined by a control line or by any other means that restricts access.
 - When control lines are used, they shall be erected not less than six feet (1.8 m) nor more than 25 feet (7.7 m) from the unprotected or leading edge, except when erecting precast concrete members.
 - When erecting precast concrete members, the control line shall be erected not less than six feet (1.8 m) nor more than 60 feet (18 m) or half the length of the member being erected, whichever is less, from the leading edge.
 - The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge.
 - The control line shall be connected on each side to a guardrail system or wall.
- When used to control access to areas where overhand bricklaying and related work are taking place:
 - The controlled access zone shall be defined by a control line erected not less than 10 feet (3.1 m) nor more than 15 feet (4.5 m) from the working edge.
 - The control line shall extend for a distance sufficient for the controlled access zone to enclose all employees performing overhand bricklaying and related work at the working edge and shall be approximately parallel to the working edge.
 - Additional control lines shall be erected at each end to enclose the controlled access zone.
 - Only employees engaged in overhand bricklaying or related work shall be permitted in the controlled access zone.
- Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:
 - Each line shall be flagged or otherwise clearly marked at not more than 6-foot (1.8 m) intervals with high-visibility material.
 - Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches (1 m) from the walking/working surface and its highest point is not more than 45 inches (1.3 m) [50 inches (1.3 m) when

- overhand bricklaying operations are being performed] from the walking/working surface.
- Each line shall have a minimum breaking strength of 200 pounds (.88 kN).
 - On floors and roofs where guardrail systems are not in place prior to the beginning of overhand bricklaying operations, controlled access zones shall be enlarged, as necessary, to enclose all points of access, material handling areas, and storage areas.
 - On floors and roofs where guardrail systems are in place but need to be removed to allow overhand bricklaying work or leading-edge work to take place, only that portion of the guardrail necessary to accomplish that day's work shall be removed.

When used to control access to areas where leading edge and other operations are taking place the controlled access zone shall be defined by a control line or by any other means that restricts access. When control lines are used, they shall be erected not less than six feet (1.8 m) nor more than 25 feet (7.7 m) from the unprotected or leading edge, except when erecting precast concrete members.

When erecting precast concrete members, the control line shall be erected not less than six feet (1.8 m) nor more than 60 feet (18 m) or half the length of the member being erected, whichever is less, from the leading edge. The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge.

The control line shall be connected on each side to a guardrail system or wall.

When used to control access to areas where overhand bricklaying and related work are taking place:

- The controlled access zone shall be defined by a control line erected not less than 10 feet (3.1 m) nor more than 15 feet (4.5 m) from the working edge.
- The control line shall extend for a distance sufficient for the controlled access zone to enclose all employees performing overhand bricklaying and related work at the working edge and shall be approximately parallel to the working edge.
- Control lines shall be erected at each end to enclose the controlled access zone.

Note: Only employees engaged in overhand bricklaying or related work shall be permitted in the controlled access zone.

Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:

- Each line shall be flagged or otherwise clearly marked at not more than 6-foot (1.8 m) intervals with high-visibility material.

- Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches (1 m) from the walking/working surface and its highest point is not more than 45 inches (1.3 m) [50 inches (1.3 m) when overhand bricklaying operations are being performed] from the walking/working surface.
- Each line shall have a minimum breaking strength of 200 pounds (.88 kN)
- On floors and roofs where guardrail systems are not in place prior to the beginning of overhand bricklaying operations, controlled access zones shall be enlarged, as necessary, to enclose all points of access, material handling areas, and storage areas.

On floors and roofs where guardrail systems are in place, but need to be removed to allow overhand bricklaying work or leading-edge work to take place, only that portion of the guardrail necessary to accomplish that day's work shall be removed

PROTECTIVE MATERIALS AND EQUIPMENT

Appropriate fall protection devices will be provided for potential fall hazards. Selection of the equipment will be based on the fall protection evaluation. Evaluations will be conducted by the personnel authorized to evaluate fall protection requirements.

Fall Protection devices will be singularly identified; will be the only devices(s) used for controlling falls; will not be used for other purposes; and will meet the following requirements:

- Capable of withstanding the environment to which they are exposed for the maximum period that exposure is expected.
- Anchor points will not deteriorate when located in corrosive environments such as areas where acid and alkali chemicals are handled and stored.
- Capable of withstanding the ultimate load of 5,000 lbs. for the maximum period that exposure is expected.
- Standardization within company facilities. Fall protection devices will be standardized whenever possible.

INSPECTION AND MAINTENANCE

To ensure that fall protection systems are ready and able to perform their required tasks, a program of inspection and maintenance will be implemented and maintained. The following as a minimum, will comprise the basic requirements of the inspection and maintenance program:

- Equipment manufacturer's instructions will be incorporated into the inspection and preventive maintenance procedures.
- All fall protection equipment will be inspected prior to each use, and a documented inspection at intervals not to exceed 6 months, or in accordance with the manufacturer's guidelines.

- CCI Designated Competent Person will inspect equipment and check the inspection date before each usage.
- The user will inspect his/her equipment prior to each use for any signs of defects and the inspection date.
- Any fall protection equipment subjected to a fall or impact load will be removed from service immediately and inspected by a competent person (sent back to the manufacturer).
- Check all equipment for mold, damage, wear, mildew, or distortion.
- Hardware should be free of cracks, sharp edges, or burns.
- Ensure that no straps are cut, broken, torn, or scraped.
- Special situations such as radiation, electrical conductivity, and chemical effects will be considered.
- Equipment that is damaged or in need of maintenance will be tagged as unusable and **will not be stored** in the same area as serviceable equipment.
- A detailed inspection policy will be used for equipment stored for periods exceeding one month.
- Anchors and mountings will be inspected before each use by the user and supervisor for signs of damage.

Accident investigations shall be conducted to evaluate the fall protection plan for potential updates to practices, procedures, or training to prevent reoccurrence.

Fall Arrest Systems

Personal fall arrest systems shall be inspected prior to each use for wear, damage and other deterioration, and defective components shall be removed from service. [1926.502\(d\)\(21\)](#)

MOST COMMON AND MOST DANGEROUS FALL HAZARDS

The tasks and situations listed below present inherent fall hazards. Give special attention to providing fall prevention and/or fall control for them, remembering that this attention is necessary in the design, engineering, planning, and execution stages of work. Supervisors will give special consideration to fall protection for the following tasks:

- Working from crane booms and tower cranes
- Working on top of machinery and equipment
- Other work that involves fall hazards, such as piping in duct work
- Working on roofs, with deteriorating or unsupported sections and framing
- Working over open pits or exposed rebar
- Working from fixed or portable ladders or climbing systems

SAFETY MONITORING SYSTEMS

Whereas fall protection is not utilized and controlled access zones are designated, CCI shall designate a competent person to monitor the safety of other employees and ensure the safety monitor complies with the following requirements:

- The safety monitor shall be competent to recognize fall hazards
- The safety monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner
- The safety monitor shall be on the same walking/working surface and within visual sighting distance of the employee being monitored
- The safety monitor shall be close enough to communicate orally with the employee and
- The safety monitor shall not have other responsibilities which could take the monitor's attention from the monitoring function. [1926.502\(h\)](#)

Mechanical equipment shall not be used or stored in areas where safety monitoring systems are being used to monitor employees engaged in roofing operations on low-slope roofs. No employee, other than an employee engaged in roofing work [on low-sloped roofs] or an employee covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system.

Each employee working in a controlled access zone shall be directed to comply promptly with fall hazard warnings from safety monitors.

FALL PROTECTION PLAN

The fall protection plan shall be prepared by a qualified person and developed specifically for the site where the leading-edge work or precast concrete work is being performed and the plan must be maintained up to date. Any changes to the fall protection plan shall be approved by a qualified person.

The implementation of the fall protection plan shall be under the supervision of a competent person. The fall protection plan shall document the reasons why the use of conventional fall protection systems (guardrail systems, personal fall arrest systems, or fall restrain systems) are infeasible or why their use would create a greater hazard.

The fall protection plan must include a statement which provides the name or other method of identification for each employee who is designated to work in controlled access zones. No other employees may enter controlled access zones.

In the event an employee falls, or some other related, serious incident occurs, (e.g., a near miss) the employer shall investigate the circumstances of the fall or other incident to determine if the

fall protection plan needs to be changed (e.g., new practices, procedures, or training) and shall implement those changes to prevent similar types of falls or incidents. [1926.502\(k\)](#)

DEFINITIONS

Anchorage - A secure point of attachment for lifelines, lanyards, or deceleration devices.

Body Belt - A strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.

Body Harness - Straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with means for attaching it to other components of a personal fall arrest system.

Competent Person - A person who can identify hazardous or dangerous conditions in any personal fall arrest system or any component thereof, as well as in their application and use with related equipment.

Connector - A device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabiner, or it may be an integral component of part of the system.

Deceleration Device - Any mechanism with a maximum length of 3.5 feet, such as a rope grab, rip stitch lanyard, tearing or deforming lanyards, self-retracting lifelines, etc. which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.

Energy Shock Absorber - A device that limits shock-load forces on the body.

Failure - Load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.

Fall Arrest System - A system specifically designed to secure, suspend, or assist in retrieving a worker in or from a hazardous work area. The basic components of a fall arrest system include anchorage, anchorage connector, lanyard, shock absorber, harness, and self-locking snap hook.

Fall Restraint System - A system specifically designed to prevent the user from falling any distance by not allowing the worker to reach any unprotected side or edge. It can also be used to keep a worker within the confines of an aerial boom lift basket.

Free Fall - Means the act of falling before a personal fall arrest system begins to apply force to arrest the fall.

Free Fall Distance - Means the vertical displacement of the fall arrest attachment point on the employee's body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall (maximum of six feet). This distance excludes deceleration distance, and lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.

Hole - A gap or void two inches or more in its least dimension, in a floor, roof, or other walking/working surface.

Lanyard - Flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage.

Leading Edge - The edge of a floor roof, or formwork for a floor or other walking/working surface which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed. A leading edge is an unprotected side and edge during periods when it is not actively and continuously under construction.

Lifeline - A component consisting of a flexible line for connection to an anchorage at one end to hang vertically or for connection to anchorages at both ends to stretch horizontally and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

Opening - A gap or void 30 inches, or more, high and 18 inches or more wide, in a wall or partition, through which employees can fall to a lower level.

Personal Fall Arrest System - System used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt, or body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. As of January 1, 1998, the use of a body belt for fall arrest is prohibited.

Positioning Device System - Body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.

Qualified Person - Recognized degree or professional certificate and extensive knowledge and experience in the subject field who is capable of design, analysis, evaluation and specifications in the subject work, project, or product.

Retractable Lifeline - A fall arrest device that allows free travel without slack rope but locks instantly when a fall begins.

Rope Grab - A deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking, or both.

Safety-Monitoring System - A safety system in which a competent person is responsible for recognizing and warning employees of fall hazards when a conventional fall arrest system is not feasible.

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

Snap Hook - A connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snap hooks are generally one of two types:

- The locking type with a self-closing, self-locking keeper who remains closed and locked until unlocked and pressed open for connection or disconnection
- The non-locking type with a self-closing keeper which remains closed until pressed open for connection or disconnection (As of January 1, 1998, the use of a non-locking snap hook as part of personal fall arrest systems and positioning device systems is prohibited.)

FALLING OBJECT PREVENTION/PROTECTION

Reference [OSHA 1926.502\(J\)](#)

Toe Board

A low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.

CCI will ensure that Toe-boards, when used as falling object protection, will be erected along the edge of the overhead walking/working surface for a distance sufficient to protect employees below.

Any toe-board used by CCI must be capable of withstanding, without failure, a force of at least 50 pounds (222 N) applied in any downward or outward direction at any point along the toe-board.

Toe-boards shall be a minimum of 3 ½ inches (9cm) in vertical height from their top edge to the level of the walking/working surface. They shall have not more than 1/4-inch (0.6 cm) clearance

above the walking/working surface. They shall be solid or have openings not over 1 inch (2.5 cm) in greatest dimension.

Guardrail Systems

Guardrail systems, when used as falling object protection, shall have all openings small enough to prevent passage of potential falling objects.

During the performance of overhead bricklaying and related work:

No materials or equipment except masonry and mortar shall be stored within four feet (1.2m) of the working edge.

- Excess mortar, broken or scattered masonry units, and all other materials and debris shall be kept clear from the work area by removal at regular intervals, to prevent injury from falling objects.

During the performance of roofing work:

- Materials which are piled, grouped, or stacked near a roof edge shall be stable and self-supporting.

Canopies

Canopies, when used as falling object protection, shall be strong enough to prevent collapse and to prevent penetration by any objects which may fall onto the canopy.

Walking/Working Surface

Any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork, and concrete reinforcing steel but not including ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.

Warning Line System

A barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect employees in the area.

Fall Protection – CA Construction Industry T8 1670

PURPOSE

The purpose of this document is to outline safety policy and procedures surrounding Cal/OSHA fall protection for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

POLICY

Fall protection is required whenever employees are exposed to unprotected sides and edges. Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet (1.8 m) or more above a lower level shall be protected from falling using guardrail systems, safety net systems, or personal fall arrest systems. Although the CA requirement is 7 ½ feet, CCI has chosen to adhere to a stricter standard of 6 feet.

RESCUE

Rescue

Workers cannot stay suspended for long and are at risk of reduced blood flow, oxygen deprivation, brain damage, cardiac arrest, and death. According to the American National Standards Institute (ANSI) Standard Z359, rescue should be completed within six minutes of a fall arrest. All workers using fall arrest systems must be monitored and promptly rescued in the event of a fall. In addition to rescue equipment available onsite, use of self-rescue devices is recommended.

Fall arrest rescue equipment that need to be available onsite when fall arrest equipment are used include:

- Ladders
- Rescue poles
- Rescue ropes
- Rescue wench
- Crane
- Aerial lift
- Scaffold
- Lifting or lowering device

Fall Protection - WA

PURPOSE

The purpose of this document is to outline the Fall Protection program for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

RESPONSIBILITIES

CCI

It is the general responsibility of CCI to provide fall protection to affected employees, and to ensure that all employees understand and adhere to the procedures of this plan and follow the instructions.

Supervisor/Managers

- Performing routine safety checks of work operations
- Enforcing CCI safety policy and procedures
- Correcting any unsafe practices or conditions immediately
- Training employees and supervisors in recognizing fall hazards and the use of fall protection systems
- Maintaining records of employee training, equipment issue, and fall protection systems used at CCI jobsites
- Investigating and documenting all incidents that result in employee injury

Employees

- Understand and adhere to the procedures outlined in this Fall Protection Program
- Bring to management's attention any unsafe or hazardous conditions or practices that may cause injury to either themselves or any other employees
- Report any incident that causes injury to an employee, regardless of the nature of the injury

POLICY

It is the policy of CCI to ensure that workers understand proper use of Fall Protection equipment. CCI shall ensure that all surfaces on which employees will be working or walking on are structurally sound and will support them safely prior to allowing employees to work or walk on them.

CCI shall identify and evaluate fall hazards to which employees will be exposed, and to provide specific training as required by 296-880 WAC Unified Safety Standards for Fall Protection.

Inspections

CCI shall inspect all components (including hardware, lanyards, and positioning harnesses or full body harnesses depending on which system is used) of personal fall arrest systems, personal fall restraint systems, and positioning device systems prior to each use according to manufacturer's specifications for mildew, wear, damage, and other deterioration. Defective components shall be removed from service if their function or strength has been adversely affected.

Personal fall arrest systems, personal fall restraint systems, positioning device systems, and their components are to be used for employee protection and not to hoist materials

CCI shall ensure a plan for a prompt rescue of employees in the event of a fall or must assure the self-rescue capability of employees.

FALL PROTECTION REQUIRED

CCI shall ensure pursuant to WAC 296-10020, that all open-sided floors, walkways, platforms, or runways above or adjacent to dangerous equipment, such as dip tanks and material handling equipment, and similar hazards are equipped with a standard guardrail system.

All holes shall be guarded that an employee can trip, step into, or step through by a cover of standard strength and construction or a standard guardrail system.

CCI shall protect employees from falling into or onto impalement hazards, such as: Reinforcing steel (rebar), exposed steel, or wood.

FALL PROTECTION PLAN

Pursuant to WAC 296-155 (24605) CCI shall develop and implement a written fall protection work plan including each area of the workplace where the employees are assigned and where fall hazards of **ten feet** or more exist. This plan shall:

- Identify all fall hazards in the work area
- Describe the method of fall arrest or fall restraint to be provided
- Describe the proper procedures for the assembly, maintenance, inspection, and disassembly of the fall protection system to be used
- Describe the proper procedures for the handling, storage, and securing of tools and materials
- Describe the method of providing overhead protection for workers who may be in, or pass through the area below the work area
- Describe the method for prompt, safe removal of injured workers
- Be available on-site for inspection by the department

Employees shall be trained prior to entering areas where fall hazards of ten feet or more exist.

Note: A fall protection work plan is not required where the use of a guardrail system eliminates the fall hazard.

FALL PROTECTION REQUIRED AT FOUR FEET OR MORE

Walking/Working Surfaces with Unprotected Sides or Edges

WAC 296-880-20005-20005(10) CCI shall ensure that each employee on a walking/working surface with an unprotected side or edge **four feet (48 inches)** or more above the ground or lower level is protected by one of the following fall protection systems:

- A standard guardrail system, or the equivalent
- A personal fall restraint system
- A personal fall arrest system
- A safety net system
- A catch platform
- A warning line system

Standard Guardrail System

A standard guardrail system, or the equivalent, shall be located on all open sides, except where there is entrance to a ramp, stairway, or ladder. The guardrail must be provided with a standard toeboard wherever: Beneath the open sides, persons can pass, there is moving machinery, or there is equipment with which falling materials could create a hazard.

When employees are using stilts, the height of the top rail or equivalent member of the guardrail system must be increased (or additional rails may be added) an amount equal to the height of the stilts while maintaining the strength specifications of the guardrail system.

Where employees are working on or from platforms or ladders above the protection of the guardrail system, CCI shall either increase the height of the guardrail system (or additional rails may be added) or select and implement another fall protection.

When guardrails must be temporarily removed to perform a specific task, the area must be constantly attended by an employee until the guardrail is replaced. The only duty the employee must perform is to warn persons entering the area of the fall hazard. The employee must be protected from the fall hazard by a personal fall arrest system or personal fall restraint system.

Guarding of Ramps, Runways, and Inclined Walkways

Ramps, runways, and inclined walkways that are four feet or more above the ground or lower level must be equipped with a standard guardrail system or the equivalent, along each open side. Wherever tools, machine parts, or materials are likely to be used on the runway, a toeboard must also be installed on each open side to protect persons working or passing below.

Runways used exclusively for special purposes may have the guardrail on one side omitted where operating conditions necessitate such omission, provided the falling hazard is minimized by using a runway not less than eighteen inches wide.

HOLES

The employer must protect employees from falling into or through holes four feet or more to the ground or lower level by one of the following fall protection systems:

- A standard guardrail system, or the equivalent on all open sides, except where there is entrance to a ramp, stairway, or ladder. The guardrail must be provided with a standard toeboard wherever, beneath the open sides, persons can pass, or there is moving machinery, or there is equipment with which falling materials could create a hazard
- A warning line system erected at least fifteen feet from all unprotected sides or edges of the hole
- When the cover, guardrail system, or warning line system must be temporarily removed to perform a specific task, an employee must remain at the hole until the cover, guardrail system, or warning line system is replaced. The only duty the employee must perform is to warn persons entering the area of the fall hazard. The employee must be protected from the fall hazard by a personal fall arrest system or personal fall restraint system
- Personal fall arrest systems or personal fall restraint systems
- A cover

Skylight Holes and Skylights

Unprotected skylight holes must be guarded by covers of standard strength and construction, standard guardrail systems on all exposed sides, or employees must be protected by personal fall restraint systems, or personal fall arrest systems.

If the skylight has been installed and is not capable of supporting, without failure, at least twice the weight of employees, equipment, and materials that may be imposed on the skylight at any one time, the skylight must be guarded by a cover of standard strength and construction, a standard guardrail system on all sides, or employees must be protected by personal fall restraint systems, or personal fall arrest systems.

Hatchways and Chute Holes

Hinged covers of standard strength and construction and a standard guardrail system with only one exposed side. When the hole is not in use, the cover must be closed, or the exposed side must be guarded at both top and intermediate positions by removable standard guardrail systems.

A removable standard guardrail system with toeboard on not more than two sides of the hole and fixed standard guardrail system with toeboards on all other exposed sides. The removable guardrail must be kept in a place when the hole is not in use and must be hinged or otherwise mounted to be conveniently replaceable.

A removable standard guardrail system with toeboard on not more than two sides of the hole and fixed standard guardrail system with toeboards on all other exposed sides. The removable guardrail must be kept in a place when the hole is not in use and must be hinged or otherwise mounted to be conveniently replaceable.

Ladders or Platforms

A removable standard guardrail system with toeboard on not more than two sides of the hole and fixed standard guardrail system with toeboards on all other exposed sides. The removable guardrail must be kept in a place when the hole is not in use and must be hinged or otherwise mounted to be conveniently replaceable.

Pits and Trap Door Holes

CCI shall guard pits and trap door holes by covers of standard strength and construction. While the cover is not in place, the pit or trap door holes must be protected on all exposed sides by a standard guardrail system. Repair pits, service pits, and assembly pits shall be guarded by a cover, a guardrail system, a fall restraint system or fall arrest system.

Manholes

Manholes shall be guarded by standard covers which need not be hinged in place. While the cover is not in place, the hole must be constantly attended or must be protected by a removable standard guardrail system.

Guarding of openings

Each employee working on, at, above, or near openings (including those with chutes attached) where the outside bottom edge of the opening is four feet or more above a lower level and the inside bottom edge of the opening is less than thirty-nine inches above the working surface, shall be protected from falling using a guardrail system, a safety net system, a personal fall arrest system, or personal fall restraint system.

Fall Protection During form and Reinforcing Work

Employees exposed to fall hazards of four feet or more while placing or tying reinforcing steel or working on the face of formwork or reinforcing steel shall be protected by personal fall arrest systems, positioning device systems, or safety net systems.

Fall Protection on Steep Pitched Roofs

Regardless of the work activity, the employer must ensure that employees exposed to fall hazards of four feet or more while working on a roof with a pitch greater than four in twelve use one of the following:

- Fall restraint system. Safety monitor systems and warning line systems are prohibited on steep pitched roofs
- A personal fall arrest system
- A positioning device system

Fall Protection on Low Pitched Roofs

The employer must ensure that employees exposed to fall hazards of four feet or more while engaged in work, other than roofing work or constructing a leading edge on low pitched roofs use one of the following:

- A personal fall restraint system
- A personal fall arrest system
- A positioning device system
- A warning line system

Hazardous Slopes

Employees exposed to falls of four feet or more while performing construction work on a hazardous slope must use personal fall restraint systems or positioning device systems.

Vehicles and Rolling Stock

The employer must ensure that employees exposed to fall hazards of four feet or more to the ground or lower level from vehicles or rolling stock on which employees must be in order to perform their job duties are protected by fall arrest systems, fall restraint systems, or positioning device systems.

CONSTRUCTION WORK (SPECIFIC REQUIREMENTS)

CCI shall ensure that a fall arrest system, fall restraint system, or positioning device system is provided, installed, and implemented in accordance with this chapter when employees are exposed to fall hazards of ten feet or more to the ground or lower-level while:

- Engaged in roofing work on a low-pitched roof
- Constructing a leading edge
- Engaged in the erection or placement of structural members

- Engaged in excavation and trenching operations

Note: Employees not directly involved with constructing the leading edge or are not performing roofing work must comply with WAC 296-880-200 Fall protection required at four feet or more.

When the erection or placement of structural members is performed on or from a floor, deck, roof, or similar surface you must comply with WAC 296-880-200 Fall protection required at four feet or more.

Fall protection is not required at excavations when employees are:

- Directly involved with the excavation process and on the ground at the top edge of the excavation
- Working at an excavation site where appropriate sloping of side walls has been implemented as the excavation protective system

Fall protection is required for employees standing in or working in the affected area of a trench or excavation exposed to a fall hazard of ten feet or more; and:

- The employees are not directly involved with the excavation process
- The employees are on the protective system or any other structure in the excavation

ORDER PICKERS/POWERED INDUSTRIAL TRUCKS (IF APPLICABLE)

This section applies to powered industrial trucks under the scope of chapter 296-863 WAC, Forklifts, and other powered industrial trucks. CCI shall ensure all persons operating an order picker are protected by standard guardrails on all open sides or a full body harness and lanyard that are connected to a tie-off point that has been approved by the PIT manufacturer.

ELEVATING WORK PLATFORMS (IF APPLICABLE)

This section applies to the following types of elevating work platforms:

- Aerial lifts
- Manually propelled elevating work platforms that have a platform that cannot be positioned completely beyond the base
- Self-propelled elevating work platforms that have a platform that cannot be positioned completely beyond the base
- Boom-supported elevating work platforms that have a boom-supported platform that can be positioned completely beyond the base

Vehicle Mounted Aerial Devices

Before elevating the platform, the employer must ensure all persons on the platform wear a full body harness with a lanyard attached to either the manufacturer's recommended attachment point or the boom or platform if the manufacturer does not specify an attachment point.

Manually Propelled and Self-propelled Elevating Work Platforms

The employee must never attach a lanyard to an adjacent pole, structure, or equipment. Before elevating the platform, the employer must ensure all persons on the platform are wearing fall protection devices and other safety gear, if required by the manufacturer of the platform.

Boom Supported Elevating Work Platforms

Before elevating the platform, the employer must ensure all persons on the platform of boom-supported elevating work platforms wear a full body harness and lanyard fixed to manufacturer provided and approved attachment points.

SCAFFOLDS

This section applies to suspended and supported scaffolds. CCI shall protect each employee on a scaffold from falling ten feet or more to a lower level, by ensuring use of either:

- A personal fall arrest system
- Guardrails

CCI shall ensure personal fall arrest systems are attached by a lanyard to one of the following:

- Vertical lifeline
- Horizontal lifeline
- Appropriate structural member of the scaffold

Fall Protection for Erecting or Dismantling Scaffolds

A competent person determines the feasibility of ensuring use of fall protection for persons erecting or dismantling supported scaffolds.

CCI shall ensure use of fall protection if the installation and use of fall protection is feasible and does not create a greater hazard. Employees erecting the scaffold must install the guardrail system, if required, before the scaffold is used by any other employees.

Scaffolds Too Far from the Work Face

CCI shall ensure installation of a guardrail system along the front edge of the platform, or have employees use a personal fall arrest system, if the distance from the front edge of the platform to the work face is greater than:

- Eighteen inches (46 cm) for scaffolds used for plastering and lathing operations
- Fourteen inches (36 cm) for all other scaffolds

Specific Types of Fall Protection for Specific Types of Scaffolds

CCI shall use a personal fall arrest system to protect employees on the following scaffolds:

- Float scaffold
- Ladder jack scaffold
- Tubular scaffold

Personal fall arrest system and a guardrail system shall be used to protect employees on single-point adjustable suspension scaffolds and two-point adjustable suspension scaffolds.

CCI shall protect employees working on a self-contained adjustable scaffold that has the platform:

- Supported by the frame structure, using a guardrail system with a minimum two-hundred-pound top rail capacity
- Suspended by ropes, using:
 - A guardrail system with a minimum two-hundred-pound top rail capacity
 - A personal fall arrest system

Employees on walkways located within a scaffold shall be protected by using a guardrail system that meets all of the following:

- Has a minimum two-hundred-pound top rail capacity
- Is installed within nine and one-half inches (24.1 cm) of the walkway
- Is installed along at least one side of the walkway

CCI shall ensure vertical lifelines used with personal fall arrest systems meet these requirements:

- Fastened to a fixed, safe point of anchorage
- Independent of the scaffold
- Protected from sharp edges and abrasion

CCI shall ensure vertical lifelines, independent support lines, and suspension ropes are not attached to any of the following:

- Each other
- The same point of anchorage
- The same point on the scaffold

CCI shall ensure vertical lifelines, independent support lines, and suspension ropes do not use the same point of anchorage. Independent support lines and suspension ropes shall not be attached to a personal fall arrest system.

Vertical lifelines are not to be used with single-point or two-point adjustable suspension scaffolds that have overhead components such as overhead protection or additional platform levels.

Horizontal Lifelines used with Personal Fall Arrest Systems

CCI shall equip single-point or two-point adjustable suspension scaffolds that use horizontal lifelines or structural members of the scaffold for fall protection with both additional independent support lines that are equal in number and equivalent in strength to the suspension ropes; and automatic locking devices capable of stopping the scaffold from falling if one or both suspension ropes fail.

Horizontal lifelines must be secured to either two or more structural members of the scaffold or looped around both the suspension ropes and independent support lines above the hoist and brake attached to the end of the scaffold.

Independent support lines and suspension ropes shall not be attached to each other or the same point on the scaffold or attached to or use the same point of anchorage.

Independent support lines and suspension ropes shall not be attached to either a personal fall arrest system, or the same point on the scaffold as a personal fall arrest system.

CCI shall ensure, if a horizontal lifeline is used where it may become a vertical lifeline, that the device used to connect a lanyard to the horizontal lifeline is capable of locking in both directions on the lifeline.

Independent support lines and suspension ropes shall not be attached to each other or the same point on the scaffold or attached to or use the same point of anchorage.

CCI shall ensure independent support lines and suspension ropes are not attached to either a personal fall arrest system or the same point on the scaffold as a personal fall arrest system.

If a horizontal lifeline is used where it may become a vertical lifeline, that the device used to connect a lanyard to the horizontal lifeline must be capable of locking in both directions on the lifeline.

CCI shall ensure guardrails, if required, are installed along all open sides, and ends of platforms.

The employer must ensure the height of the top rail, top edge, or the equivalent member, of supported scaffolds is:

- At least thirty-six inches (0.9 m) and not more than forty-five inches (1.2 m) above the platform surface for scaffolds manufactured or first placed in service before January 1, 2000
- At least thirty-eight inches (0.97 m) and not more than forty-five inches (1.2 m) above the platform surface for scaffolds manufactured or first placed in service after January 1, 2000
- The height of the top rail, top edge, or the equivalent member, of suspended scaffolds that require guardrails and personal fall arrest systems, shall be at least

thirty-six inches (0.9 m) and not more than forty-five inches (1.2 m) above the platform surface

The top edge of the top rail must not drop below the required height when the minimum load, shown below are used.

CCI shall ensure each top rail and midrail, or equivalent member, of a guardrail system is able to withstand, without failure, the force shown in Minimum Top Rail and Midrail Strength Requirements below, when the force is applied as follows:

- To the top rail in a downward or horizontal direction at any point along its top edge
- To the midrail in a downward or horizontal direction at any point

Note: Midrail includes screens, mesh, intermediate vertical members, solid panels, and equivalent structural members of the guardrail system.

Top Rail and Midrail Strength Requirements

Type of Scaffold	Top Rail Capacity	Midrail Capacity
Single-point adjustable suspension scaffolds	100 pounds (445 N)	75 pounds (333 N)
Two-point adjustable suspension scaffolds		
All other scaffolds Walkways within a scaffold	200 pounds (890 N)	150 pounds (666 N)

CCI shall install midrails, screens, mesh, intermediate vertical members, solid panels, or equivalent structural members as follows:

- Midrails at a height approximately midway between the top edge of the guardrail system and the platform surface
- Screens and mesh; from the top edge of the guardrail system to the scaffold platform and along the entire opening between the supports
- Intermediate members, such as balusters or additional rails, not more than nineteen inches (48 cm) apart

CCI shall ensure steel or plastic banding is not used as a top rail or midrail.

CCI shall have a competent person inspect manila rope and plastic or other synthetic rope that is used as a top rail or midrail as frequently as necessary to make sure it continues to meet the strength requirements for a top rail or midrail.

CRANES

Fall protection systems:

- Personal fall arrest systems must conform to the criteria in WAC 296-880-40020
- Personal fall restraint systems must conform to the criteria in WAC 296-880-40025
- Positioning device systems must conform to the criteria in WAC 296-880-40030

For non-assembly/disassembly work on cranes/derricks except tower cranes, CCI shall provide and ensure the use of fall protection equipment for employees six feet or more above a lower level as follows:

- When moving point-to-point:
 - On non-lattice booms (whether horizontal or not horizontal)
 - On lattice booms that are not horizontal
 - On horizontal lattice booms where the fall distance is ten feet or more above a lower level
- While at a workstation on any part of the crane (including the boom, of any type)

For assembly/disassembly work on cranes/derricks except tower cranes, CCI shall provide and ensure the use of fall protection equipment for employees ten feet or more above a lower level.

Tower Cranes

For work other than erecting, climbing, and dismantling, CCI shall provide and ensure the use of fall protection equipment for employees six feet or more above a lower level.

For erecting, climbing, and dismantling work, CCI shall provide and ensure the use of fall protection equipment for employees ten feet or more above a lower level.

Anchorage Criteria Applicable to All Cranes

Anchorage used for attachment of personal fall arrest equipment must be independent of any anchorage being used to support or suspend platforms and capable of supporting at least five thousand pounds (22.2 kN) per employee attached, or must be designed, installed, and used as part of a complete personal fall arrest system which maintains a safety factor of at least two and under the supervision of a qualified person.

Positioning devices must be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or three thousand pounds (13.3 kN), whichever is greater.

Anchorage for Personal Fall Arrest and Positioning Device Systems

Personal fall arrest systems may be anchored to any apparently substantial part of the equipment unless a competent person, from a visual inspection, without an engineering analysis, would conclude that the criteria would not be met.

Positioning device systems may be anchored to any apparently substantial part of the crane unless a competent person, from a visual inspection, without an engineering analysis, would conclude that the criteria in would not be met.

Attachable anchor devices (portable anchor devices that are attached to the crane) must meet the anchorage criteria for personal fall arrest systems and for positioning device systems.

Anchorage for Fall Restraint Systems

Fall restraint systems may be anchored to any part of the crane that is capable of withstanding twice the maximum load that an employee may impose on it during reasonably anticipated conditions of use.

Anchoring to the Load Line

A personal fall arrest system is permitted to be anchored to the crane/derrick's hook (or other part of the load line) where all the following requirements are met:

- A qualified person has determined that the set-up and rated capacity of the crane/derrick (including the hook, load line, and rigging) meets or exceeds the requirements in (a) of this subsection
- The crane operator must be at the worksite and informed that the crane is being used for this purpose
- No load is suspended from the load line when the personal fall arrest system is anchored to the crane/derrick's hook (or other part of the load line)

Training

CCI shall train each employee who may be exposed to fall hazards while on, or hoisted by, cranes/derricks covered by this section in accordance with WAC 296-880-10015.

GUARDRAIL SYSTEMS

A standard guardrail system must consist of top rail, intermediate rail, and posts, and must have a vertical height of thirty-nine to forty-five inches from upper surface of top rail to floor, platform, runway, or ramp level. When conditions warrant, the height of the top edge may exceed the forty-five-inch height, provided the guardrail system meets all other criteria of this subsection. The intermediate rail must be halfway between the top rail and the floor, platform, runway, or ramp. The ends of the rails must not overhang the terminal posts except where such overhang does not constitute a projection hazard.

Specified Minimum Requirements for Standard Guardrail Systems

For wood guardrails, the posts must be of at least two-inch by four-inch stock spaced not to exceed eight feet. The top rail must be of at least two-inch by four-inch stock and each length of lumber must be smooth surfaced throughout the length of the guardrail. The intermediate rail must be of at least one inch by six-inch stock.

For pipe guardrails, posts and top and intermediate rails must be at least one and one-half inches nominal OD diameter with posts spaced not more than eight feet on centers.

For structural steel guardrails, posts and top and intermediate rails must be of two-inch by two-inch by three-eighths inch angles or other metal shapes of equivalent bending strength, with posts spaced not more than eight feet on centers.

For wire rope guardrails, the top and intermediate rails must meet the strength factor. The top rail must be flagged at not more than six-foot intervals with high visibility material. Posts must be spaced not more than eight feet on centers. The rope must be stretched taut and must be between thirty-nine and forty-five inches in height at all points.

Guardrail systems must be of such construction that the completed structure can withstand a load of at least two hundred pounds applied within two inches of the top edge, in any outward or downward direction, at any point along the top edge.

When the two-hundred-pound test load is applied in a downward direction, the top edge of the guardrail must not deflect to a height less than thirty-nine inches above the walking/working surface.

Guardrails receiving heavy stresses from employees trucking or handling materials must be provided additional strength using heavier stock, closer spacing of posts, bracing, or by other means.

Other types, sizes, and arrangements of guardrail construction are acceptable, provided they meet the following conditions:

- A smooth surfaced top rail at a height above floor, platform, runway, or ramp level between thirty-nine and forty-five inches
- When the two-hundred-pound (890 N) load specified in (e) of this subsection is applied in a downward direction, the top edge of the guardrail must not deflect to a height less than thirty-nine inches (1.0 m) above the walking/working surface. Guardrail system components selected and constructed in accordance with this chapter will be deemed to meet this requirement
- Protection between top rail and floor, platform, runway, ramp, or stair treads, equivalent at least to that afforded by a standard intermediate rail

- Elimination of overhang of rail ends unless such overhang does not constitute a hazard

Toeboard Specifications

A standard toeboard must be a minimum of three and one-half inches in vertical height from the top edge to the level of the walking/working surface. Toeboards may be made of any substantial material, either solid, or with openings not over one inch in greatest dimension. Toeboards must be securely fastened in place with no more than one-quarter inch clearance above the walking/working surface.

Where material is piled to such height that a standard toeboard does not provide protection, paneling, or screening from floor to intermediate rail or to top rail must be provided.

RAMPS, RUNWAYS, AND INCLINED WALKWAY REQUIREMENTS

Ramps, runways, and inclined walkways must be at least eighteen inches wide and not be inclined more than twenty degrees from horizontal and when inclined, they must be cleated or otherwise treated to prevent a slipping hazard on the walking surface.

HOLE OPENINGS

Hole covers must be of any material that meets the following strength requirements:

- Conduits, trenches, and manhole covers and their supports, when located in roadways, and vehicular aisles must be designed to carry a truck rear axle load of at least two times the maximum intended load
- Hole covers must be capable of supporting, without failure, at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time

All covers must be secured when installed to prevent accidental displacement by wind, equipment, or employees.

All temporary covers must be color coded, or they must be marked with the word "hole" or "cover" to provide warning of the hazard.

Barriers and Screens Used to Cover Openings

Barriers must be of such construction and mounting that, when in place at the opening, the barrier can withstand a load of at least two hundred pounds applied in any direction (except upward), with a minimum of deflection at any point on the top rail or corresponding member.

Screens must be of such construction and mounting that they can withstand a load of at least two hundred pounds applied horizontally at any point on the near side of the screen. They may

be of solid construction of either grill work with openings not more than eight inches long, or of slat work with openings not more than four inches wide with length unrestricted.

PERSONAL FALL ARREST SYSTEM REQUIREMENTS

CCI shall ensure personal fall arrest systems and their use conform to the following:

- A full body harness must be used
- The attachment point of the full body harness must be in the center of the wearer's back near shoulder level, or above the wearer's head
- Lanyards must have a minimum breaking strength of five thousand pounds (22.2 kN)
- CCI must protect all safety lines and lanyards against being cut or abraded
- D-rings and snap hooks must be proof-tested to a minimum tensile load of thirty-six hundred pounds (16 kN) without cracking, breaking, or taking permanent deformation
- Snap hooks must be a locking type snap hook designed and used to prevent disengagement of the snap hook by the contact of the snap hook keeper by the connected member
- Unless the snap hook is designed for the following connections, snap hooks must not be engaged:
 - Directly to the webbing, rope, or wire rope
 - To each other
 - To a D-ring to which another snap hook or other connector is attached
 - To a horizontal lifeline
 - To any object which is incompatibly shaped or dimensioned in relation to the snap hook such that unintentional disengagement could occur by the connected object being able to depress the snap hook keeper and release itself
- Hardware must be drop forged, pressed, or formed steel, or made of materials equivalent in strength
- Hardware must have a corrosion resistant finish, and all surfaces and edges must be smooth to prevent damage to the attached full body harness or lanyard
- All components of full body harness systems whose strength is not otherwise specified in this section must be capable of supporting a minimum fall impact load of five thousand pounds (22.2 kN) applied at the lanyard point of connection
- Vertical lifelines (droplines) must have a minimum breaking strength of five thousand pounds (22.2 kN), except that self-retracting lifelines and lanyard which automatically limit free fall distance to two feet (.61 m) or less must have a minimum breaking strength of three thousand pounds (13.3 kN)
- When vertical lifelines (droplines) are used, not more than one employee must be attached to any one lifeline

- Horizontal lifelines must be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two

Anchorage for Full Body Harness Systems

Anchorage for full body harness systems must be capable of supporting (per employee):

- Three thousand pounds when used in conjunction with a self-retracting lifeline that limits the maximum free fall distances to two feet or less; or a shock absorbing lanyard that restricts the forces on the body to nine hundred pounds or less
- Five thousand pounds for all other personal fall arrest system applications, or they must be designed, installed, and used as part of a complete personal fall arrest system which maintains a safety factor of at least two; and under the supervision of a qualified person

When stopping a fall, personal fall arrest systems must:

- Be rigged to allow a maximum free fall distance of six feet nor allow an employee to contact any lower level. A free fall may be more than six feet provided the employer can demonstrate the manufacturer designed the system to allow a free fall of more than six feet and the system has been tested to ensure a maximum arresting force of eighteen hundred pounds is not exceeded
- Limit maximum arresting force on an employee to eighteen hundred pounds (8 kN)
- Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to three and one-half feet (1.08 m)
- Have sufficient strength to withstand twice the potential impact energy of an employee free falling a maximum distance of six feet (1.8 m)

Note: Shock absorbers that meet the requirements of ANSI Z359.1 that are used as a part of a personal fall arrest system in accordance with manufacturer's recommendations and instructions for use and installation will limit the maximum arresting forces on an employee's body to eighteen hundred pounds or less.

PERSONAL FALL RESTRAINT SYSTEM REQUIREMENTS

Personal fall restraint systems must be rigged to allow the movement of employees only as far as the unprotected sides and edges of the walking/working surface, and must consist of:

- A full body harness must be used
- The full body harness must be attached to securely rigged restraint lines
- The employer must ensure component compatibility
- Anchorage points used for fall restraint must be capable of supporting four times the intended load

- Rope grab devices are prohibited for fall restraint applications unless they are part of a fall restraint system designed specifically for the purpose by the manufacturer, and used in strict accordance with the manufacturer's recommendations and instructions

POSITIONING DEVICE SYSTEM

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

- Positioning harnesses or full body harnesses must be used
- Positioning devices must be rigged to prevent an employee from a free fall greater than two feet
- Positioning devices must be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or three thousand pounds (13.3 kN), whichever is greater
- Connectors must be drop forged, pressed, or formed steel, or made of equivalent materials
- Connectors must have a corrosion-resistant finish, and all surfaces and edges must be smooth to prevent damage to interfacing parts of this system
- Connecting assemblies must have a minimum breaking strength of five thousand pounds (22.2 kN)
- D-rings and snap hooks must be proof-tested to a minimum tensile load of three thousand six hundred pounds (16 kN) without cracking, breaking, or taking permanent deformation
- Snap hooks must be a locking type snap hook designed and used to prevent disengagement of the snap hook by the contact of the snap hook keeper by the connected member
- Unless the snap hook is designed for the following connections, snap hooks must not be engaged:
 - Directly to webbing, rope, or wire rope
 - To each other
 - To a D-ring to which another snap hook or other connector is attached
 - To a horizontal lifeline
 - To any object which is incompatibly shaped or dimensioned in relation to the snap hook such that unintentional disengagement could occur by the connected object being able to depress the snap hook keeper and release itself

SELF-RESCUE DEVICES

Self-rescue devices are not to be used as a fall protection system. Self-rescue devices must be used according to the manufacturer's instructions and must be addressed in the fall protection work plan.

WARNING LINE SYSTEM REQUIREMENTS

Warning line system specifications used on roofs with a pitch of four in twelve or less for roofing work, leading edge work and on low pitched open sided surfaces for work activities other than roofing work or leading-edge work. Warning lines must be erected around all unprotected sides and edges of the work area.

Warning Lines Used During Roofing Work

When roofing work is taking place or when mechanical equipment is not being used, the warning line must be erected not less than six feet (1.8 m) from the edge of the roof. When mechanical equipment is being used, the warning line must be erected not less than six feet (1.8 m) from the roof edge which is parallel to the direction of mechanical equipment operation, and not less than ten feet (3.1 m) from the roof edge which is perpendicular to the direction of mechanical equipment operation.

Warning Lines Erected for Leading Edge Work

Warning lines must be erected to separate employees who are engaged in leading edge work (between the forward edge of the warning line and the leading edge), from other work areas on the low-pitched surface.

CCI shall ensure the warning line is erected not less than six feet nor more than twenty-five feet from the leading edge.

Warning lines erected on low pitched open sided surfaces for work activities other than roofing work, or leading-edge work must be erected not less than fifteen feet from the unprotected sides or edges of the open sided surface.

The warning line must consist of a rope, wire, or chain and supporting stanchions. The rope, wire, or chain must be flagged at not more than six-foot (1.8 m) intervals with high visibility material. Highly visible caution or danger tape as described in (d) of this subsection, does not need to be flagged.

The rope, wire, or chain must be rigged and supported in such a way that its lowest point (including sag) is no less than thirty-six inches from the surface and its highest point is no more than forty-five inches from the surface.

After being erected, with the rope, wire or chain attached, stanchions must be capable of resisting, without tipping over, a force of at least sixteen pounds (71 N) applied horizontally against the stanchion, thirty inches (0.76 m) above the surface, perpendicular to the warning line, and in the direction of the unprotected sides or edges of the surface.

The rope, wire, or chain must have a minimum tensile strength of five hundred pounds (2.22 kN), and after being attached to the stanchions, must be capable of supporting, without breaking, the

loads applied to the stanchions. Highly visible caution or danger tape may be used in lieu of rope, wire, or chain if it is at least three inches wide and three mils thick and has a tensile strength of at least two hundred pounds.

The line must be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.

Access Paths

Points of access, materials handling areas, and storage areas must be connected to the work area by a clear access path formed by two warning lines. When the path to a point of access is not in use, the employer must place a rope, wire, or chain, equal in strength and height to the warning line, across the path at the point where the path intersects the warning line erected around the work area.

ROOF EDGE MATERIALS HANDLING AND MATERIAL STORAGE

When guardrails are used at hoisting areas, a minimum of four feet of guardrail must be erected along each side of the access point through which materials are hoisted.

A chain or gate must be placed across the opening between the guardrail sections when hoisting operations are not taking place.

When guardrails are used at bitumen pipe outlet, a minimum of four feet of guardrail must be erected along each side of the pipe.

Mechanical equipment must be used or stored only in areas where employees are protected using a fall arrest system as described in WAC 296-880-40020, or a fall restraint system as described in WAC 296-880-40025. Mechanical equipment may not be used or stored where the only protection is provided using a safety monitor.

The hoist must not be used as an attachment/anchorage point for fall arrest or fall restraint systems.

Materials must not be stored within six feet of a roof edge unless guardrails are erected at the roof edge. Guardrails must include a toeboard if employees could be working or passing below.

TRAINING

Fall protection training shall be provided for all employees exposed to fall hazards. The training must enable each employee to recognize the hazards of falling and procedures to be followed in

order to minimize those hazards. Each affected employee must be trained by a competent person to know at least the following:

- The nature of fall hazards in the work area
- When and what fall protection is required
- The correct procedures for erecting, maintaining, assembling, disassembling, and inspecting the fall protection systems to be used
- The use and operation of fall protection systems used
- Limitations of fall protection systems used
- Proper care, maintenance, useful life, removal from service

Before an employee is allowed to perform work requiring the use of fall protection, they must demonstrate an understanding of the training specified above and the ability to use fall protection properly.

Retraining

Employees shall be retrained when CCI has reason to believe the understanding, motivation, and skills required to use fall protection has not been retained. Other circumstances include:

- Changes in the workplace that make previous training out of date
- Changes in the types of fall protection to be used make previous training out of date
- Work habits or demonstrated knowledge indicate that the employee has not retained the necessary understanding, skill, or motivation to use fall protection

CCI shall document in writing that each employee has received and understood the required training.

Fire Protection / Extinguishers

PURPOSE

The purpose of this document is to outline the Fire Protection / Extinguishers Program for **Cirks Construction Inc.**; hereafter referred to as "CCI," This policy applies to all sites, personnel, and contractors; this policy must be always followed.

RESPONSIBILITIES

Management

- Ensure all fire prevention methods are established and enforced
- Ensure fire suppression systems such as sprinklers and extinguishers are periodically inspected and maintained in working order
- Train supervisors and designated employees to use fire extinguishers
- Train employees on evacuation routes and procedures

Supervisors

- Closely monitor the use of flammable materials and liquids
- Train assigned employees in the safe storage, use and handling of flammable materials
- Ensure flammable material storage areas are properly maintained

Employees

- Use, store, and transfer flammable materials in accordance with provided training
- Do not mix flammable materials
- Immediately report violations of the Fire Safety Program
- Know and obey evacuation routes and procedures

POLICY

Where CCI has provided portable fire extinguishers for employees use in the workplace. CCI also will provide an educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved in incipient stage firefighting.

Site specific fire safety plan will be developed to work in conjunction with company emergency plans and other safety programs. This includes reviewing all new building construction and renovations to ensure compliance with applicable state, local, and national fire, and life safety standards. Fire prevention measures reduce the incidence of fires by eliminating opportunities for ignition of flammable materials. The fire safety plan will be identified through the Daily Risk Assessment and communicated to workers orally.

Training will be conducted prior to initial assignment and at least annually thereafter.

HAZARDS

Fire and explosion hazards can exist in almost any work area. Potential hazards include:

- Improper operation or maintenance of gas fired equipment
- Improper storage or use of flammable liquids
- Smoking in prohibited areas
- Accumulation of trash
- Unauthorized Hot Work operations

Note: All materials shall be stored, handled, and piled with due regard to their fire characteristics [1926.151\(d\)\(2\)](#).

ELIMINATION OF IGNITION SOURCES

All nonessential ignition sources must be eliminated where flammable liquids are used or stored. The following is a list of the more common potential ignition sources:

- Open flames, such as cutting and welding torches, furnaces, matches, and heaters- these sources should be kept away from flammable liquids operations. Cutting or welding on flammable liquids equipment should not be performed unless the equipment has been properly emptied and purged with a neutral gas such as nitrogen.
- Chemical sources of ignition such as d.c. motors, switched, and circuit breakers- these sources should be eliminated where flammable liquids are managed or stored. Only approved explosion-proof devices should be used in these areas.
- Mechanical sparks- these sparks can be produced because of friction. Only non-sparking tools should be used in areas where flammable liquids are stored or managed.
- Static sparks- these sparks can be generated because of electron transfer between two contacting surfaces. The electrons can discharge in a small volume, raising the temperature to above the ignition temperature. Every effort should be made to eliminate the possibility of static sparks. Also, proper bonding and grounding procedures must be followed when flammable liquids are transferred or transported.

REMOVAL OF INCOMPATIBLES

Materials that can contribute to a flammable liquid fire should not be stored with flammable liquids. Examples are oxidizers and organic peroxides, which, on decomposition, can generate large amounts of oxygen.

CONTROL OF FLAMMABLE GASES

Generally, flammable gases pose the same type of fire hazards as flammable liquids and their vapors. Many of the safeguards for flammable liquids also apply to flammable gases, other properties such as toxicity, reactivity, and corrosivity also must be considered. Also, a gas that is flammable could produce toxic combustion products.

FIRE EXTINGUISHERS

A portable fire extinguisher is a "first aid" device and is highly effective when used while the fire is small. The use of fire extinguisher that matches the class of fire, by a person who is well trained, can save both lives and property. Portable fire extinguishers must be installed in workplaces regardless of other firefighting measures. The successful performance of a fire extinguisher in a fire situation depends on its proper selection, inspection, maintenance, and distribution.

CLASSIFICATION OF FIRES

Fires are classified into four diverse categories depending on the type of material or fuel involved. The type of fire determines the type of extinguisher that should be used to extinguish it.

- ❖ **Class A** fires involve materials such as wood, paper, and cloth which produce glowing embers or char.
- ❖ **Class B** fires involve flammable gases, liquids, and greases, including gasoline and most hydrocarbon liquids which must be vaporized for combustion to occur.
- ❖ **Class C** fires involve fires in live electrical equipment or in materials near electrically powered equipment.
- ❖ **Class D** fires involve combustible metals, such as magnesium, zirconium, potassium, and sodium.
- ❖ **Class K** fires involve cooking oils and greases (animal fats, vegetable oils.)

Extinguishers will be selected according to the potential fire hazard, the construction and occupancy of facilities, hazard to be protected, and other factors pertinent to the situation.

SELECTION OF EXTINGUISHERS

It is important to use the correct extinguisher for the type of fuel! Using the incorrect agent can allow the fire to re-ignite after being extinguished successfully. Below are extinguishers listed and the classification of fires they can be used against:

Dry Chemical extinguishers (multi-purpose)

- May be used on **Class A, Class B, and/or Class C fires** (check label)
- Red cylinders, ranging in size from 5 to 20 lbs.

- Fire-retardant powder is the extinguishing agent and is propelled by a compressed, non-flammable gas
- Separates fuel from oxygen; powder also interrupts chemical reaction

LOCATION AND MARKING OF EXTINGUISHERS

Extinguishers will be conspicuously located and readily accessible for immediate use in the event of fire. They will be located along normal paths of travel and egress. Wall recesses and/or flush-mounted cabinets will be used as extinguisher locations whenever possible.

Extinguishers will be clearly visible. In locations where, visual obstruction cannot be completely avoided, directional arrows will be provided to indicate the location of extinguishers and the arrows will be marked with the extinguisher classification.

If extinguishers intended for different classes of fire are located together, they will be conspicuously marked to ensure that the proper class extinguisher selection is made at the time of a fire. Extinguisher classification markings will be located on the front of the shell above or below the extinguisher nameplate. Markings will be of a size and form to be legible from 3 feet.

CONDITION

Portable extinguishers will be maintained in a fully charged and operable condition. They will be always kept in their designated locations when not being used. When extinguishers are removed for maintenance or testing, a fully charged and operable replacement unit will be provided.

MOUNTING AND DISTRIBUTING OF EXTINGUISHERS

Extinguishers will be installed on hangers, brackets, in cabinets, or on shelves. Extinguishers having a gross weight not exceeding forty pounds will be so installed that the top of the extinguisher is not more than 3-1/2 feet above the floor.

Extinguishers mounted in cabinets or wall recesses or set on shelves will be placed so that the extinguisher operating instructions face outward. The location of such extinguishers will be made conspicuous by marking the cabinet or wall recess in a contrasting color which will distinguish it from the normal decor.

Extinguishers must be distributed in such a way that the amount of time needed to travel to their location and back to the fire does not allow the fire to get out of control. OSHA requires that the travel distance for Class A and Class D extinguishers not exceed seventy-five feet. The maximum travel distance for Class B extinguishers is fifty feet because flammable liquid fires can get out of control faster than Class A fires. There is no maximum travel distance specified for Class C

extinguishers, but they must be distributed based on appropriate patterns for Class A and B hazards.

INSPECTION AND MAINTENANCE

Once an extinguisher is selected, purchased, and installed, the Responsible Safety Person to oversee the inspection, maintenance, and testing of fire extinguishers to ensure that they are in proper working condition and have not been tampered with or physically damaged.

CCI will assure that all portable fire extinguishers are subjected to monthly visual inspections and an annual maintenance check.

All firefighting equipment shall be periodically inspected and maintained in operating condition. Defective equipment shall be immediately replaced.

FIRE SAFETY INSPECTIONS AND HOUSEKEEPING

First line supervisors and Responsible Safety Persons are responsible for conducting worksite surveys that include observations of compliance with the Fire Safety Program. These surveys should include observations of worksite safety and housekeeping issues and should specifically address proper storage of chemicals and supplies, unobstructed access to fire extinguishers, and emergency evacuation routes. Also, they should determine if an emergency evacuation plan is present in work areas and that personnel are familiar with the plan.

EMERGENCY EXITS

Every exit will be clearly visible, or the route to it conspicuously identified in such a manner that every occupant of the building will readily know the direction of escape from any point. At no time will exits be blocked.

Any doorway or passageway which is not an exit, or access to an exit but which may be mistaken for an exit, will be identified by a sign reading "Not an Exit" or a sign indicating its actual use (i.e., "Storeroom"). Exits and accesses to exits will be marked by a readily visible sign. Each exit sign (other than internally illuminated signs) will be illuminated by a reliable light source providing not less than 5 foot-candles on the illuminated surface.

As warranted by the project, CCI shall provide emergency contact information to include emergency outreach for trained and equipped firefighting organizations (fire departments) to assure adequate protection to life. [1926.150\(a\)\(5\)](#)

EMERGENCY PLANS FOR PERSONS WITH DISABILITIES

The Emergency Coordinator/Supervisor is assigned the responsibility to assist Persons with Disabilities (PWD) evacuation or assure that the PWD is removed from danger.

EMERGENCIES INVOLVING FIRE/FIRE ALARMS

In the event of a fire emergency in a company office, a fire alarm will sound for the building.

Evacuation Routes and Plans

Each facility shall have an emergency evacuation plan. All emergency exits shall conform to NFPA standards. Should evacuation be necessary, go to the nearest exit or stairway and proceed to the predesignated meeting area outside the building. Most stairways are fire resistant and present barriers to smoke if the doors are kept closed. Do not use elevators. Should the fire involve the control panel of the elevator or the electrical system of the building, power in the building may be cut and you could be trapped between floors. Also, the elevator shaft can become a flue, lending itself to the passage and accumulation of hot gases and smoke generated by the fire.

Emergency Coordinators/Supervisors

Emergency Coordinators/Supervisors will be responsible for verifying personnel have evacuated from their assigned areas.

Fire Protection Extinguishers - WA

PURPOSE

The purpose of this document is to outline the Fire Protection Extinguishers Program for **Cirks Construction Inc.**; hereafter referred to as "CCI," This policy applies to all sites, personnel, and contractors; this policy must be followed at all times.

RESPONSIBILITIES

Responsible Safety Person

- Ensures all fire prevention methods are established and enforced
- Ensures fire extinguishers are periodically inspected and maintained in working order
- Trains supervisors to use fire extinguishers
- Trains employees on evacuation routes and procedures

Supervisors

- Closely monitor the use of flammable materials and liquids
- Train assigned employees in the safe storage, use and handling of flammable materials
- Ensure flammable material storage areas are properly maintained

Employees

- Use, store, and transfer flammable materials in accordance with provided training
- Do not mix flammable materials
- Immediately report violations of the Fire Safety Program
- Know and obey evacuation routes and procedures

POLICY

Site specific fire safety plan will be developed to work in conjunction with company emergency plans and other safety programs. This includes reviewing all new building construction and renovations to ensure compliance with applicable state, local, and national fire, and life safety standards. Fire prevention measures reduce the incidence of fires by eliminating opportunities for ignition of flammable materials. The fire safety plan will be identified through the Daily Risk Assessment and communicated to workers orally. WAC 296-307-35018 / WAC 296-155-260.

TRAINING

Where CCI has provided portable fire extinguishers for employees use in the workplace. CCI also will provide an educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved in incipient stage firefighting.

Training will be conducted prior to initial assignment and at least annually thereafter.

HAZARDS

Fire and explosion hazards can exist in almost any work area. Potential hazards include:

- * Improper operation or maintenance of gas fired equipment
- * Improper storage or use of flammable liquids
- * Smoking in prohibited areas
- * Accumulation of trash
- * Unauthorized Hot Work operations

Note: All materials shall be stored, handled, and piled with due regard to their fire characteristics

ELIMINATION OF IGNITION SOURCES

WAC 296-155-265

All nonessential ignition sources must be eliminated where flammable liquids are used or stored. The following is a list of some of the more common potential ignition sources:

- * Open flames, such as cutting and welding torches, furnaces, matches, and heaters- these sources should be kept away from flammable liquids operations. Cutting or welding on flammable liquids equipment should not be performed unless the equipment has been properly emptied and purged with a neutral gas such as nitrogen.
- * Chemical sources of ignition such as D.C. motors, switched, and circuit breakers- these sources should be eliminated where flammable liquids are handled or stored. Only approved explosion-proof devices should be used in these areas.
- * Mechanical sparks- these sparks can be produced as a result of friction. Only non-sparking tools should be used in areas where flammable liquids are stored or handled.
- * Static sparks- these sparks can be generated as a result of electron transfer between two contacting surfaces. The electrons can discharge in a small volume, raising the temperature to above the ignition temperature. Every effort should be made to eliminate the possibility of static sparks. Also, proper bonding and grounding procedures must be followed when flammable liquids are transferred or transported.

REMOVAL OF INCOMPATIBLES

Materials that can contribute to a flammable liquid fire should not be stored with flammable liquids. Examples are oxidizers and organic peroxides, which, on decomposition, can generate large amounts of oxygen.

CONTROL OF FLAMMABLE GASES

Generally, flammable gases pose the same type of fire hazards as flammable liquids and their vapors. Many of the safeguards for flammable liquids also apply to flammable gases, other properties such as toxicity, reactivity, and corrosivity also must be taken into account. Also, a gas that is flammable could produce toxic combustion products.

FIRE EXTINGUISHERS

A portable fire extinguisher is a "first aid" device and is very effective when used while the fire is small. The use of fire extinguisher that matches the class of fire, by a person who is well trained, can save both lives and property. Portable fire extinguishers must be installed in workplaces regardless of other firefighting measures. The successful performance of a fire extinguisher in a fire situation largely depends on its proper selection, inspection, maintenance, and distribution. Extinguishers shall not be rated less than 2A for each 3,000 sqft of a combustibile building area, or major fraction thereof. Travel distance from any point of the protected are to the nearest fire extinguisher must not exceed a horizontal distance of 100 feet.

CLASSIFICATION OF FIRES

Fires are classified into four general categories depending on the type of material or fuel involved. The type of fire determines the type of extinguisher that should be used to extinguish it.

- ❖ **Class A** fires involve materials such as wood, paper, and cloth which produce glowing embers or char.
- ❖ **Class B** fires involve flammable gases, liquids, and greases, including gasoline and most hydrocarbon liquids which must be vaporized for combustion to occur.
- ❖ **Class C** fires involve fires in live electrical equipment or in materials near electrically powered equipment.
- ❖ **Class D** fires involve combustibile metals, such as magnesium, zirconium, potassium, and sodium.
- ❖ **Class K** fires involve cooking oils and greases (animal fats, vegetable oils.)

Extinguishers will be selected according to the potential fire hazard, the construction and occupancy of facilities, hazard to be protected, and other factors pertinent to the situation.

SELECTION OF EXTINGUISHERS

It is important to use the correct extinguisher for the type of fuel. Using the incorrect agent can allow the fire to re-ignite after apparently being extinguished successfully. Extinguishers shall not be rated less than 2A for each 3,000 sqft of a combustibile building area, or major fraction thereof. Travel distance from any point of the protected are to the nearest fire extinguisher must not exceed a horizontal distance of 100 feet. Below are several extinguishers listed and the classification of fires they can be used against:

Dry Chemical extinguishers (multi-purpose)

- May be used on **Class A, Class B, and/or Class C fires** (check label)
- Red cylinders, ranging in size from 5 to 20 lbs.
- Fire-retardant powder is the extinguishing agent and is propelled by a compressed, non-flammable gas
- Separates fuel from oxygen; powder also interrupts chemical reaction

LOCATION AND MARKING OF EXTINGUISHERS

Extinguishers will be conspicuously located and readily accessible for immediate use in the event of fire. They will be located along normal paths of travel and egress. Wall recesses and/or flush-mounted cabinets will be used as extinguisher locations whenever possible.

Extinguishers will be clearly visible. In locations where, visual obstruction cannot be completely avoided, directional arrows will be provided to indicate the location of extinguishers and the arrows will be marked with the extinguisher classification.

If extinguishers intended for different classes of fire are located together, they will be conspicuously marked to ensure that the proper class extinguisher selection is made at the time of a fire. Extinguisher classification markings will be located on the front of the shell above or below the extinguisher nameplate. Markings will be of a size and form to be legible from a distance of 3 feet.

CONDITION

Portable extinguishers will be maintained in a fully charged and operable condition. They will be kept in their designated locations at all times when not being used. When extinguishers are removed for maintenance or testing, a fully charged and operable replacement unit will be provided.

INSPECTION AND MAINTENANCE

CCI will assure that all portable fire extinguishers are subjected to monthly visual inspections and an annual maintenance check. All firefighting equipment shall be periodically inspected and maintained in operating condition. Defective equipment shall be immediately replaced.

FIRE SAFETY INSPECTIONS AND HOUSEKEEPING

First line supervisors and safety committees are responsible for conducting work site surveys that include observations of compliance with the Fire Safety Program. These surveys should include observations of worksite safety and housekeeping issues and should specifically address proper storage of chemicals and supplies, unobstructed access to fire extinguishers, and emergency evacuation routes. Also, they should determine if an emergency evacuation plan is present in work areas and that personnel are familiar with the plan.

CCI shall control accumulations of flammable and combustible waste materials and residues so that they do not contribute to a fire emergency.

EMERGENCY EXITS

Every exit will be clearly visible, or the route to it conspicuously identified in such a manner that every occupant of the building will readily know the direction of escape from any point. At no time will exits be blocked.

EMERGENCIES INVOLVING FIRE/FIRE ALARMS

In the event of a fire emergency the Emergency Coordinator/Supervisor shall alert everyone at the site to evacuate.

Evacuation Routes and Plans

Each site shall have an emergency evacuation plan. All emergency exits shall be clearly marked on the Emergency Evacuation Plan, and shall be reviewed with all employees on the site.

Emergency Coordinators/Supervisors

Emergency Coordinators/Supervisors will be responsible for verifying personnel have evacuated from their assigned areas.

First Aid/CPR

PURPOSE

The purpose of this document is to outline the First Aid/CPR Program for **Cirks Construction Inc.**; hereafter referred to as "CCI," This program is designed to provide prompt medical attention in the case of any injury or illness during any project.

POLICY

It is the policy of CCI to ensure adequate supplies and properly trained personnel are available for employees and visitors of CCI should an injury occur. CCI will ensure that medical personnel are readily available for advice, consultation, and emergency response. In the absence of an infirmary, clinic, hospital, or physician, that is reasonably accessible in terms of time and distance to the worksite, which is available for the treatment of injured employees, a person who is adequately trained in first aid shall be available at the worksite to render first aid. First aid supplies shall be readily available at all locations.

The provisions of this Policy are applicable to all employees and those contracted to CCI. This Policy applies to all personnel who work with or whose job responsibilities require them to be familiar with the contents of this Policy.

RESPONSIBILITIES

CCI

It is the responsibility of CCI to implement, support, and enforce this program, and periodically review and evaluate its overall effectiveness, modifying it as appropriate.

Only those job designations listed in this section whose job duties require them to administer first aid or to respond to medical emergencies shall be covered under this program.

Appropriately Trained Person. CCI shall ensure the availability of a suitable number of appropriately trained persons to render first aid. Where more than one employer is involved in a single construction project on a given construction site, the employers may form a pool of appropriately trained persons. However, such pool shall be large enough to service the combined work forces of such employers.

Good Samaritans. For instance, employees who have been trained in CPR, but are not required to respond to medical emergencies or to administer first aid would do so as "Good Samaritans" only. ("Good Samaritans," however, should provide basic first aid and/or CPR to their level of training.)

The Responsible Safety Person or site supervisor shall conspicuously post emergency telephone numbers of a physician, hospital, ambulance, and local authorities, and train all personnel on the location of the postings.

The employee has the responsibility as well as the authority to stop any job or task conducted in an unsafe manner and should immediately request Responsible Safety Person / site supervisor involvement to rectify the issue. The employee's judgment call, when made in good faith and using good judgment, shall be considered commendable even though the conclusion of the investigation might be found to the contrary. However, if the judgment call was not made in good faith and using good judgment, or was found to be insincere, the employee may be subject to disciplinary action in accordance with this Policy.

Enforcement of this Policy is the responsibility of each employee of CCI.

Management

- Ensure adequate resources are allocated for carrying out first aid
- Determine number of staff to be trained in first aid and/or CPR
- Ensure that appropriate first aid training records are kept
- Ensure that all personnel comply with the first aid / CPR policy
- Develop risk assessments for first aid
- Ensure the provision, maintenance, and proper use of first aid facilities, such as first aid kits and personal protective equipment (PPE)
- Ensure a root cause analysis is performed for all incidents and accidents involving first aid
- In areas where 911 is not available, the telephone numbers of the physicians, hospitals, or ambulances will be conspicuously posted

Employee

- Comply with first aid / CPR policy
- Participate in first aid training programs as instructed
- Ensure emergency procedures and equipment are in place for high-risk activities
- Wear PPE as provided in compliance with first aid training
- Utilize the company Incident and Injury Reporting instruction sheet for reporting all incidents no matter how minor.

Designated First Aid Competent Person

- Ensure first aid qualifications are current
- Administer first aid /CPR refresher training
- Maintenance of first aid kits

- Maintaining contact details including emergency contacts and priority contact personnel
- Administer first aid to injured person(s) in accordance with this policy.

First Aid Provisions

CCI shall ensure available first aid provisions are provided that are adequate for the immediate treatment of injuries that may arise at the workplace.

FIRST AID RESPONSE

While on duty all staff have a duty of care to themselves and others to provide first aid assistance to the level of their competence, and to call on expert assistance if necessary. A supervisor shall be informed of the need for first aid and will respond immediately if available.

Proper equipment for prompt transportation of the injured person to a physician or hospital or a communication system for contacting necessary ambulance service shall be provided. Emergency medical care and/or an ambulance is to be called if required.

Staff trained in first aid shall provide first aid assistance if emergency medical care and/or an ambulance has not yet arrived.

Those providing first aid care shall assume that all blood and other body fluids are infectious, and are aware of universal precautions in relation to managing blood and other body fluids, including wearing gloves when administering first aid.

Cross infection is managed while providing first aid by wearing gloves or washing hands with soap and water:

- Before and after contact with an ill or injured person
- After contact with blood or and/or other body fluids or contaminated items
- When protective gloves are removed

When soap and water are not available, first aiders will use an alcoholic based hand wash or equivalent.

EMERGENCY EYE WASH

The Occupational Safety and Health Administration (OSHA) 29CFR 1910.151 requires that suitable means for flushing and quick drenching of the eyes and body must be provided in any area where corrosive and/or chemical materials are used.

Therefore, where the eyes or body of any person may be exposed to injurious corrosive and/or chemical materials, suitable facilities shall be provided within the work area.

Departments that have areas where corrosive and/or chemical materials are used are responsible for ensuring that emergency eyewash provisions are maintained before allowing work with corrosive and/or chemical materials. In most cases, the initial first aid treatment for a chemical splash is to rinse the affected area with water for at least 15 minutes prior to seeking any other medical treatment. It is often critical that the eyes be flushed during the first few seconds following a chemical splash with contaminant free water if injury is to be minimized. That is why it's important that eyewash provisions are kept in proper working order and inspected with a documented program.

Chemical burns can continue to burn and cause serious tissue damage [without significant pain] (delayed effect) after exposure. Chemical exposure to corrosive and/or chemical materials should be flushed immediately – a lag time of 3 minutes can cause substantially more severe injuries. Ocular burns can result in cornea damage, cataracts and/or complete loss of vision. Flushing should be initiated within the first few seconds of exposure.

Hydrofluoric acid is a particularly hazardous caustic agent. Exposure to HF must be immediately flushed with water for 30 minutes, followed by an application of a topical ointment [such as calcium gluconate solution]. Seek medical attention immediately. Proper eye protection should always be worn when working with hazardous chemicals.

Where installed, eyewash stations will be periodically inspected to ensure proper emergency operation. Damaged or faulty equipment must be repaired immediately. When equipment is damaged, activities that might potentially require the use of the emergency stations must be ceased until repairs are made or a suitable temporary replacement emergency station must be installed.

ENGINEERING CONTROLS

If it is reasonably anticipated that employees will be exposed to blood or other potentially infectious materials while using first aid supplies, CCI will provide appropriate personal protective equipment (PPE) in compliance with the provisions of the Occupational Exposure to Bloodborne Pathogens standard, 29 CFR 1910.1030(d)(3). This standard lists appropriate PPE for this type of exposure, such as gloves, apron, mask, and eye wash and eye protection. Refer to CCI's Personal Protective Equipment Policy found in CCI's Health, Safety and Environmental Manual.

PROCEDURES

First Aid Kits

First aid kits will be maintained at each location and in each company vehicle. All kits will be checked at least once per month by the employee to whom the kit was assigned. The kits will be replenished as necessary and will not be sent to an assignment in a depleted condition.

First aid kits will be stocked/supplied in accordance with applicable regulatory and client/worksite specific guidelines.

First aid kits shall consist of appropriate items which will be adequate for the environment in which they are used. Items shall be stored in a weatherproof container with individual sealed packages of each type of item. Enough supplies, relative to the size of the workforce will be maintained for minor emergencies such as cuts and skin abrasions.

In the event of an incident:

- Effective communication devices will be always provided and made available to workers. This will allow workers to contact emergency medical care and transportation in the case of incident.

RESPONDING TO LIFE THREATENING EMERGENCIES

First aid / CPR training should include first-aid instruction for the management of the following:

Breathing Problems

The training program should be designed or adapted for the specific worksite and may include first-aid instruction in the following:

- Establishing responsiveness
- Establishing and maintaining an open and clear airway
- Performing rescue breathing
- Treating airway obstruction in a conscious victim
- Recognizing asphyxiation and the danger of entering a confined space without appropriate respiratory protection

Physical Injuries

CCI's first aid providers will be able to:

- Recognize the signs and symptoms of shock and provide first aid for shock due to illness or injury
- Assess and treat a victim who has an unexplained change in level of consciousness or sudden illness
- Control bleeding with direct pressure

Sudden Cardiac Arrest and Cardiopulmonary Resuscitation

OSHA standards require training in cardiopulmonary resuscitation (CPR) in some employment situations where sudden cardiac arrest from asphyxiation, electrocution or exertion may occur, as well as permit-required confined spaces; electric power generation, transmission, and distribution; and power transmission and distribution construction. However, sudden cardiac

arrest is a potential risk at **ALL** worksites and those trained in first aid benefit greatly from learning CPR regardless of work hazards.

AUTOMATED EXTERNAL DEFIBRILLATORS

CCI will determine the need for an automated external defibrillator (AED) program as part of the first-aid response plan. If an AED is available at the worksite, CPR training will incorporate AED training.

All AEDs used by CCI will be inspected and maintained as required to ensure they are in good working condition. Any AEDs found to be damaged or defective will be removed from service and replaced immediately.

Perform CPR Until AED Arrives

If a person collapses suddenly, perform an initial assessment of the area-make sure the scene is safe for you to be in or enter. Tap patient's shoulder and shout: "Are you OK?" If unresponsive, activate your emergency response plan (includes calling 911):

- Resuscitation is successful when quality chest compressions (pushing hard and fast) are started immediately.
- Pursuant to current CPR protocol, the steps are Compressions, Airway, Breathing, or CAB. This encourages early CPR and avoids bystanders mistaking agonal breathing as signs of life and withholding CPR.
- Begin CPR if the person is not breathing (or gasping for breath), has no pulse (or unsure), or is unresponsive. Don't perform any respiration assessment. The goal is quick delivery of chest compressions.
- Target compression rate of 100-120 per minute. Increasing the compression rate past 120 compressions/minute may decrease cardiac output due to incomplete cardiac filling during chest recoil.
- Target depth for adult compressions is 2-2.4 inches. Compressions beyond this depth may result in resuscitation related injuries such as rib fractures.

High-quality chest compressions are most valuable in saving a life. Chest compressions are better than doing nothing. First responders are likely to have a speakerphone equipped cell phone, and bystanders calling 911 can be instructed by EMS dispatchers to perform hands only CPR. If not successful, begin AED process.

Defibrillator Usage

- Place AED near head of patient on same side as the rescuer.
- Turn on the AED and follow voice prompts.
- When patient is a child under 8 years old or 55 pounds, use infant/child pads if available.

Bare, Prepare, and Place Defibrillation Pads

- Bare and prepare chest.
 - Cut or tear away clothing.
 - Shave or clip excessive chest hair.
- Place pads on bare skin exactly as shown in illustrations on pads.
 - Do not place pads over nipples, medication patches, or visible implanted devices.

Defibrillate if Prompted by the Device

- Allow the AED to analyze automatically when it is fully attached to the patient.
 - Make sure no one is touching patient during analysis.
- If prompted by defibrillator, deliver shock. Make sure no one is touching patient when delivering shock.
- Follow voice prompts and deliver additional shocks if indicated.

If no shock is indicated by defibrillator, reassess the patient.

- Reassess patient and begin CPR if indicated and continue until prompted by defibrillator or EMS to stop.
- If normal breathing is present, roll patient on side to keep fluids out of the airway.
- Continue to follow voice prompts until EMS arrives.
- Continue care until EMS is ready to assume control.

When EMS Arrives

- If you are able, provide basic information to EMS personnel:
 - Patient's name
 - Estimated time patient collapsed or was found
 - Initial and current assessment of patient
 - Number of shocks delivered
 - Any known medical problems, allergies, or medications
 - Assist the EMS providers as requested.

DOCUMENTATION

Accurate records shall be maintained electronically regarding personal injuries occurring at the workplace.

Records

An Incident Report form will be completed by the Responsible Safety Person (or designee) and includes:

- Date and time
- Name of person receiving treatment
- Description of symptoms
- Treatment provided
- Name of person providing first aid
- Referral arrangements (e.g., ambulance, hospital, medical service)
- Name of person completing Incident Report form

The Incident Report form will be retained electronically.

TRAINING

First Aid providers shall be certified by the American Red Cross or an equivalent organization. Training must be documented. CCI expects employees trained in first aid and CPR to provide emergency services in the workplace while awaiting response from emergency services. In the absence of medical assistance that is reasonably accessible in terms of time and distance to the worksite, a person certified in first aid shall be readily available to assist injured employees and transport them to a hospital or medical facility.

Fit for Duty

PURPOSE

The purpose of this document is to provide a standard industry approach in establishing and implementing a Fit for Duty (FFD) program for evaluating the suitability of personnel performing work on behalf of **Cirks Construction Inc.**; hereafter referred to as "CCI,"

RESPONSIBILITIES

Management

- Enforce a Fit for Duty policy
- Ensure each worker is fit for duty

Employees

- Follow the FFD policy
- Shall notify a supervisor if they feel that they are unable to safely conduct work

EXAMINATIONS

To ensure that field employees are physically capable of performing their job functions, CCI requires that pre-employment physicals are to be included in the hiring process, as well as when changing into certain job functions and different environments.

DRUG AND ALCOHOL SCREENING

Employees are subject to drug and alcohol screening for pre-employment, post-accident, or due to reasonable suspicion.

Workers are prohibited from entering the workplace while under the influence of drugs or alcohol.

MEDICATIONS

Employees should consider the influence of all medications they are taking. Over-the-counter medications such as allergy, cold and flu medications could impair one's ability to perform safely. Employees should consult their supervisor if they are concerned about the potential impairment effects of the medication they are taking.

REPORTING/COMMUNICATING

Employees are responsible for ensuring they are physically and mentally fit to perform their job function(s) safely. Employees must take responsibility for their own safety as well as reporting to work in a condition that does not endanger the safety of their fellow workers.

Fleet Safety Program – General Information

POLICY

Employees that operate company-owned, leased, rental, or personal vehicles as part of their jobs are expected to operate vehicles safely to prevent accidents that may result in injuries and property loss. It is the policy of CCI to provide and maintain a safe working environment to protect our employees and the communities where we conduct business from injury and property loss. CCI considers the use of automobiles part of the working environment and is committed to promoting a heightened level of safety awareness and responsible driving behavior.

Fleet Safety Program Elements of this program include:

- Assigning responsibilities at all levels of employment
- Vehicle use and driver requirements
- Driver selection / identification of high-risk drivers
- Driving safely
- Accident reporting and investigation
- Company accident review
- Vehicle inspection
- Training standards
- Safety regulations
- Employee driver license monitoring

RESPONSIBILITIES

Management is responsible for successful implementation and on-going execution of this program. Supervisors and employees are responsible for meeting and maintaining the standards set forth in this program.

CCI shall keep and maintain a list of employees authorized to drive company vehicles.

SCOPE

This policy applies to employees who operate vehicles on company business and will be conveyed to managers and supervisors to ensure full implementation and compliance.

PURPOSE

This program covers safe operation and maintenance of all **Cirks Construction Inc.** vehicles except those company vehicles regulated by the Interstate Commerce Commission or US Department of Transportation. Examples of vehicles covered include company-owned-or-leased passenger vehicles, pickup trucks, light trucks, and vans. **Cirks Construction Inc.** is hereafter referred to as CCI.

ORGANIZATION AND RESPONSIBILITIES

Management

- Implements the Fleet Safety Program.
- Establishes measurement objectives to ensure compliance with the program.
- Provide assistance and the resources necessary to implement and maintain the program.
- Is responsible for taking appropriate action to manage high-risk drivers as defined by this program.
- Provides driver training.
- Revises and distributes changes to the Fleet Safety Program to managers, supervisors, and drivers as necessary.

Fleet & Equipment Manager

- Investigates and reports all incidents involving a motor vehicle used in performing company business.
- Issues periodic reports for review and action.
- Maintains appropriate records.

Authorized Drivers

- Drivers must notify their supervisor and the Fleet & Equipment Manager immediately if they receive any tickets or notices of violation in a company vehicle, or if their license is suspended or revoked.
- Drivers must report all incidents involving a company vehicle or incidents occurring while driving on company time to the Safety Team Immediately utilizing the Incident Reporting Procedure.

VEHICLE USE/COMPANY OWNED VEHICLES/PERSONAL VEHICLES

Authorized Use of Vehicles

Employees with valid driver licenses and explicit authorization from CCI will be permitted to operate company-owned vehicles and/or drive personal vehicles for company business.

Rental vehicles will be leased from an approved company rental agency. Collision damage waivers shall be refused.

Unauthorized Use of Vehicles

Assigned drivers and other authorized employees will not allow an unauthorized individual to operate a company-owned vehicle.

Personal Vehicles on Company Business

Employees who drive their personal vehicles on company business are subject to the requirements of this program including:

- Possess valid applicable state driver license.
- Maintain auto liability insurance compliant with the applicable state laws and requirements.
- Possess current applicable state vehicle registration.

DRIVER SELECTION

Driver Evaluation

Employees will be evaluated and selected based on their driving ability. To evaluate employees as drivers, management will:

- Review employee Motor Vehicle Record (MVR)
- Ensure employee has a valid driver license, compliant insurance, and current vehicle registration
- Enroll employee in state DMV/MVD pull program

Driver Qualification

Effective driver qualification controls are important elements of a successful Fleet Safety Program. Management developed and incorporated standards into this program which reflect the skills necessary for satisfactory job performance, while taking into consideration applicable federal and state regulations.

The following criteria is established to identify high-risk drivers. A driver may be considered unacceptable if the driver's accident/violation history includes one or more of the following violations:

- Driving under the influence of alcohol or drugs
- Hit and run
- Failure to report an accident
- Negligent homicide arising out of the use of a motor vehicle
- Operating during a period of suspension or revocation
- Using a motor vehicle for the commission of a felony
- Operating a motor vehicle without the owner's authority

- Permitting an unlicensed person to drive
- Reckless driving
- Speeding
- Preventable accident(s)
- Notice of Failure to Appear (FTA)

Drivers who are identified as high risk or in violation may be subject to several actions from management including, but not limited to:

- Drivers may be required to attend a defensive or safe driving course.
- Drivers may be required to operate their own personal vehicle on company business.
- Drivers may have their company driving privileges denied, suspended, or revoked.

Fleet Safety Program – Driving Safety

RESPONSIBILITIES

Management

- Provide defensive-driver training for all employees assigned to and/or authorized to operate company vehicles.
- Train authorized employees on vehicle inspection and accident procedures.
- Maintain company vehicles in a safe condition.
- Maintain active insurance policies and applicable state registrations on all company vehicles.

Authorized Drivers

- Follow the safe driving guidelines set forth in this policy at all times.
- Operate company vehicles in a safe, responsible manner and obey all traffic laws.
- Participate in driver-training programs.
- Ensure all vehicle occupants use seatbelts before moving the vehicle.
- Conduct daily company vehicle inspection during work shifts.
- Immediately report any safety defects or vehicle problems to appropriate Safety or Fleet management.
- Responsible for regular preventative vehicle maintenance and cleanliness.
- Report all incidents involving a company vehicle or incidents occurring while driving on company time to the Safety Team immediately using the Incident Reporting Procedure.

Training

All employees authorized to operate company-owned-or-leased vehicles will participate in initial and on-going driver-safety training that will include but not be limited to:

- Defensive driving
- Vehicle inspection
- Accident procedures
- Hazardous weather driving
- Procedure for notification of unsafe vehicle
- Backing procedures (light truck and van operators)
- Securing cargo (light truck and van operators)
- Loading and unloading (light truck and van operators)

POLICY

- Only authorized employees are permitted to drive a motor vehicle for business (in the course and scope of work).

- Only authorized employees are permitted to operate a company owned vehicle.
- Vehicles will be always maintained in a safe condition. In the event of an unsafe mechanical condition, the vehicle will be immediately placed out of service and the appropriate manager notified.
- Only qualified company vehicle mechanics or approved service facilities are permitted to perform maintenance on company vehicles.
- All vehicles will be operated, licensed, and insured in accordance with applicable local, state, and federal laws.
- All authorized employees must possess a valid state driver's license for the class vehicle authorized.
- Drivers shall be appropriately assessed and trained to operate the vehicle.
- All personal use of vehicles by employees shall be restricted. Non-employees shall not be permitted to operate company vehicles.

DRIVER QUALIFICATION

CCI will have methods in place to:

- Ensure that background checks and MVR (Motor Vehicle Record) checks are conducted when applicable. Ideally, five to seven years of driving history is obtained, however, some states will only provide three years of data on an MVR.
- Ensure when a driver receives a violation(s) in a company-owned vehicle they communicate it to CCI.

DRIVING SAFELY

- Drivers shall not operate a motor vehicle while under the influence of alcohol, illegal drugs, or prescription or over-the-counter medications that might impair their driving skills.
- Loads shall be secure and shall not exceed the manufacturer's specifications and legal limits for the vehicle.
- The vehicle shall be used for its purpose.
- Only mobile phones with hands-free features may be used by drivers.
- Drivers shall not exceed the posted speed limit and shall always maintain a safe distance between other vehicles.
- Drivers shall refrain from distracted driving.

MOBILE DEVICES

CCI shall communicate with drivers through mobile devices when necessary and shall follow the requirements for use as listed below.

The fundamentals for using mobile phones safely while driving:

- One touch
- No reach

Federal regulations forbid mobile sending text messages while driving vehicles.

According to federal regulators, the two greatest risks of using a mobile device or phone while driving are reaching to grab one and using more than one button to operate it. Drivers are allowed to use hands-free phones, provided they can operate the phone without reaching and by touching a single button.

MONITORING SYSTEMS

Using GPS tracking devices allows CCI to receive frequent updates and reports throughout the day about its drivers. The GPS system traces vehicle activity, locations, erratic driving patterns, vehicle speed, and possible collisions. If the employer provides smartphones or laptops and a company vehicle to employees, they are allowed to track equipment activity through GPS and the IP address while engaged in work activities.

CCI may also install cameras in/on company-owned vehicles to monitor exterior traffic activity and conditions as well as driver activity within the vehicle.

STARTING

- Seatbelts must be worn by all occupants, always when the vehicle is in motion.
- Adjust seat and mirrors before starting vehicle.
- Allow a 15 second warm up time.
- Check for warning lights.

DRIVING

- Do not drive if drowsy.
- Think ahead - anticipate hazards.
- Don't trust the other driver to drive properly.
- Don't speed or tailgate.
- Drive slower in hazardous conditions or hazardous areas.
- Pass only in safe areas and when excessive speed is not required.
- No loose articles on floor.
- Do not read, write, apply make-up, drink, eat or use a mobile or electronic device while driving.
- Stay behind the vehicle ahead at least one car length for every 10 miles per hour.

- Do not stop for hitchhikers or to provide roadside assistance.
- Follow all traffic laws and rules of the road.
- Employees are strictly prohibited from operating a motor vehicle while under the influence of drugs or alcohol. This includes:
 - b) illegal drugs; and
 - c) prescription and over the counter medications that cause drowsiness or other conditions that may cause impairment.

Maintaining Focus and minimizing distractions

- Keep both hands on the wheel
- Minimize distractions from passengers
- Constantly be thinking about a path of safe escape if a dangerous situation occurs suddenly in front of your vehicle – Rear-end collisions are very common for inattentive or distracted drivers
- Be especially careful near construction zones – traffic patterns can change suddenly, large equipment may merge, and the altered road surface can affect control
- Deal with Drowsiness
 - Get plenty of rest, maintain a balanced diet, do not rely on caffeine to regulate alertness
 - When practical, share driving responsibilities on long trips
 - Take breaks if you recognize the danger signs (nodding off, excessive daydreaming, etc.)

Safe Attitude

Workers must have control of their emotions and behavior, practice defensive driving techniques, ensure proper decision making and accept responsibility for all their driving decisions. There are many benefits to a safe driving attitude. CCI will not tolerate any active participation in "road rage" behaviors.

FATIGUE MANAGEMENT

When driving long distances, sufficient breaks should be taken to prevent fatigue. When driving alone and having trouble staying awake, pull off the road and get out of the vehicle for fresh air, or take a power nap. If driving late at night, consider getting a hotel room and starting fresh the next day. If two licensed drivers are in the vehicle, take turns driving. Get plenty of rest before beginning your journey.

Drowsy Driving

Your number one responsibility as a driver, is to get yourself and your passengers to your destination safely. When behind the wheel, you always need to be alert and focused. At 55 mph, a vehicle travels the length of a football field in 3.7 seconds. This is no time for a "mini" snooze.

Being an attentive driver, and looking out for the driver who isn't, is increasingly important. Drive focused. Stay safe.

Drive Focused, Stay Safe and Avoid Aggressive Driving:

- Be aware of your behavior and the behavior of others on the road during the late night, early morning, and mid-afternoon hours when drowsy driving crashes are most likely to occur. Plan a rest stop during these hours.
- Get a full night of rest before driving. If you become tired while driving, stop. A short nap (15 to 45 minutes).
- Stop at regular intervals when driving long distances. Get out of the car every two hours to stretch and walk briskly.
- Set a realistic goal for the number of miles you can safely drive each day.
- Avoid taking medications that cause drowsiness.

BACKING

- Ask an employee to assist as a spotter for backing/parking, when available.
- If you have an obstructed view from the driver's seat, safely exit the vehicle to check.
- Back slowly and be ready to stop.
- Do not back up if anyone is in path of vehicle travel.
- Check clearances.
- Don't assume people see you.

STOPPING

- Park only in proper areas; level, well-lit, and properly marked wherever possible.
- Use warning flashers and raise hood if vehicle becomes disabled.

CARGO

CCI Employees operating company vehicles will ensure any cargo on or in motor vehicles is adequately stored and secured to prevent unintentional movement of the equipment which could cause spillage, damage to the vehicle, injury to the operator, or a traffic incident.

DRIVER SAFETY REGULATIONS

Safety Belts

The driver and all occupants are required to wear safety belts when the vehicle is in operation or while riding in a vehicle. The driver is responsible for ensuring passengers wear their safety belts.

Impaired Driving

The driver must not operate a vehicle at any time when his/her ability to do so is impaired, affected, or influenced by alcohol, illegal drugs, prescribed or over-the-counter medication, illness, fatigue, or injury.

Traffic Laws

Drivers must abide by the federal, state, and local motor vehicle regulations, laws, and ordinances.

Vehicle Condition

Drivers are responsible for ensuring the vehicle is maintained in safe driving condition. Drivers of daily rentals should check for obvious defects before leaving the rental office/lot and, if necessary, request another vehicle if the employee deems the first vehicle unsafe. Drivers are encouraged to rent vehicles equipped with air bags and ABS brakes, where available.

Mobile Devices

The following procedures apply to employees driving on company business:

- All phone communication must be conducted through hands-free operation.
- CCI recommends phone communication occur when the vehicle is safely parked; whenever feasible.
- A single earpiece/speaker may be used in one ear for phone communication only. Headphones or an earpiece in the second ear is prohibited. Under no circumstances are employees allowed to send or read texts unless the vehicle is safely parked. Any violation of this policy may lead to disciplinary action up to and including termination of employment.

Motorcycles

Employees are prohibited from using motorcycles when traveling on company business.

General Safety Rules

Employees operating a company-owned vehicle are NOT permitted to:

- Pick up hitchhikers or stop to offer roadside assistance.
- Accept payment for carrying passengers or materials.
- Use any radar detector, laser detector, or similar devices.
- Push or pull another vehicle or tow a trailer without explicit management authorization.
- Transport flammable liquids or gases except legally compliant gasoline containers intended for generators. Gasoline containers must be safely secured for transport.
- Use burning road flares. The preferred method is the use of reflective triangles. Field employees may consider using delineators and/or cones when available in the

vehicle.

- Assist disabled motorists or accident victims beyond their level of medical expertise. If a driver is unable to provide the proper medical care, he/she must restrict his/her assistance to calling the proper authorities. Your safety and well-being is to be protected at all times.

Company and Personal Property in a Company-owned Vehicle

Employees are responsible for company property such as computers, work papers, tools, and equipment under their control. CCI will not reimburse the employee for stolen personal property.

GUIDE FOR PREVENTABLE OR NON-PREVENTABLE ACCIDENTS

An accident is preventable if the driver could have done something to avoid it. Drivers are expected to drive defensively. Which driver was primarily at fault, which received a traffic citation, or whether a claim was paid has absolutely no bearing on preventability. If there was anything the driver could have done to avoid the collision, then the accident was preventable.

An accident is non-preventable when the vehicle was legally and properly parked, or when properly stopped because of a law enforcement officer, a traffic signal, stop sign, or traffic condition.

If a stationary object is struck, then it is usually a preventable incident.

It should be the objective of any person discussing or judging accidents to obtain as many facts as possible and to consider all conceivable conditions. Adverse weather conditions, actions of other drivers, or other such excuses must not influence the judgement of preventability. If procedures, scheduling, dispatching or maintenance procedures out of the control of the driver were found to be factors, that should be taken into account. It is critical that drivers have the ability to refuse to operate an unsafe vehicle without reprisal from management.

Drivers traveling on company business are expected to drive in a manner which allows them to avoid conflicts when they arise.

SIDESWIPES

Sideswipes are often preventable since drivers should not get into a position where they can be forced into trouble. A driver should pass another vehicle cautiously and pull back into the lane only when he or she can see the other vehicle in the rearview mirror. A driver should also be ready to slow down and let a passing vehicle into the lane. A driver should not make a sudden move that may force another vehicle to swerve.

Unless the driver is swerving to avoid another car or a pedestrian, sideswiping a stationary object is preventable.

Drivers are expected to be able to gauge distances properly when leaving a parking place and enter traffic smoothly.

A driver is expected, whenever possible, to anticipate the actions of an oncoming vehicle. Sideswiping an oncoming vehicle is often preventable.

The doors of a vehicle should never be opened when it is in motion and should not be opened on the traffic side, unless clear of traffic, when it is parked.

A parked vehicle can be seen from a sufficient distance; therefore, the operator of an approaching vehicle should be prepared in case the doors of the parked vehicle are opened. This type of accident is nonpreventable only when the door is opened after the driver has passed it.

- Did the driver look to the front and rear for approaching and overtaking traffic immediately before starting to pull away from the curb?
- Did the driver signal before pulling away from the curb?
- Did the driver look back rather than depend only upon rearview mirrors?
- Did the driver start into traffic only when this action would not require traffic to change its speed or direction in order to avoid his or her vehicle?

If the answer to any question is "No," the driver was not driving defensively and is responsible.

SKIDDING

Many skidding conditions are caused by rain, freezing rain, fog, and snow, which all increase the hazards of travel. Oily road film, which builds up during a period of good weather, causes an especially treacherous condition during the first minutes of a rainfall.

Loss of traction on a grade can be anticipated, and these accidents usually are preventable. Chains or other suitable traction devices should be used, if they are available.

- Was the driver operating at a safe speed considering weather and road conditions?
- During inclement weather, was the driver keeping at least twice the safe following distance used for dry pavement?
- Were all actions gradual?
- Was the driver anticipating ice on bridges, gutters, ruts, and near the curb?
- Was the driver alert for water, ice, or snow in shaded areas, loose gravel, sand, ruts, etc.?
- Did the driver keep out of other vehicle tracks or cross them at wide angles?

If the answer to any question is "No," the driver was not driving defensively and is responsible.

PEDESTRIAN AND ANIMAL COLLISION

All types of pedestrian and animal accidents, including collision with pedestrians and animals coming from between parked cars are usually considered preventable. There are few instances where the action of pedestrians or animals is so unreasonable that the operator could not be expected to anticipate such an occurrence.

- Did the driver go through intersections expecting that pedestrians might step in front of the vehicle?
- Was the driver prepared to stop?
- Did the driver keep as much clearance between his or her vehicle and parked vehicles, as safety permitted?
- Did the driver stop when other vehicles had stopped to allow pedestrians to cross?
- Did the driver wait for the green light or stop for the caution light?
- Was the driver aware of children/animals and prepared to stop if one ran into the street?
- Did the driver give all pedestrians the right-of-way?
- Did the driver stop for a school bus, which was stopped, and properly signaling that passengers were loading or unloading?

If the answer to any question is "No," the driver was not driving defensively and is responsible.

PARKED OR STOPPED

Accidents occurring when vehicles are properly and legally parked are considered nonpreventable. Accidents' occurring while the vehicle was double-parked or in a "No Parking" zone are preventable.

- Was the vehicle parked on the proper side of the road?
- Was it necessary to park near the intersection?
- Did the driver have to park on the traveled part of the highway, on a curve, or on a hill?
- When required, did the driver warn traffic by emergency warning devices?
- Did the driver park parallel to the curb?
- Was it necessary to park so close to an alley or directly across from a driveway?

If the answer to any question is "No," the driver was not driving defensively and is responsible.

NON-COLLISION VEHICLE DAMAGE, MECHANICAL FAILURE, AND RELATED ISSUES

The accident should be considered preventable if the investigation shows a mechanical defect of which the driver was aware, a defect the driver should have found by inspecting the vehicle, or the driver caused by rough and abusive handling.

When a mechanical failure is sudden or unexpected, not resulting from abuse or ordinary wear, it may be considered non-preventable. Bad brakes should not be considered a mechanical failure unless the failure was sudden and the driver could have had no previous knowledge of the condition. However, this type of failure cannot excuse a driver who does not know how to properly inspect the vehicle or fails to do the inspection correctly.

It is a driver's responsibility to keep the cargo in mind and be aware of any sudden vehicle movements that may cause damage to the cargo. Driving off the highway to avoid a collision may be preventable. Drivers should try not to place themselves in such a position. Accidents that occur while performing a U-turn maneuver are considered preventable.

- Could the driver have done anything to avoid the accident?
- Was the driver's speed safe for conditions?
- Did the driver obey all traffic signals?
- Was the driver's vehicle under control?

If the answer to any question is "No," the driver was not driving defensively and is responsible.

VEHICLE INSPECTIONS

Driver Inspections

During each shift, while clocked-in at the worksite; the driver shall inspect the vehicle for proper operation of the following safety features, as applicable:

- Horn
- Backup warning
- Headlights, taillights, and turn signals
- Windshield wipers
- Tire inflation (visual check), tread wear (any flat or bald areas), punctures, or bulging.
- Mirrors
- Mechanical warning lights
- Vehicle Incident Form
- Fire extinguisher
- Cracked or chipped window

Mechanical Inspections

Every company vehicle will be inspected by qualified vehicle mechanics. Vehicles shall be maintained in safe working order. Inspection and maintenance points include:

- Road test
- Visual inspection of brake system - wheel removal required
- Fluid system levels and visual inspection
- Brake pad wear
- Belts and hoses
- Battery condition
- Filter replacement
- Lubrication
- Oil change
- Emissions systems visual inspection
- Tire tread

Maintenance records of company owned vehicles shall be managed by CCI.

ACCIDENT REPORTING AND INVESTIGATION

All accidents, regardless of severity, must be reported as dictated by the CCI incident reporting protocols as soon as feasible after the incident. All accidents shall be reviewed to determine their cause and whether the incidents were preventable.

Drivers will report any collision or traffic violation while driving on company business to the appropriate personnel.

- Do not admit responsibility.
- Notify CCI and law enforcement (when applicable) as soon as possible.
- Cooperate with law enforcement officers.
- Complete all sections of the CCI Company Vehicle Incident Form located in the vehicle.
- Do not sign any forms unless required by a law enforcement officer.

EMPLOYEE ACCIDENT REPORTING PROCEDURE

Employees will take the following actions when there are injuries to persons and/or damage to other vehicles or property:

- If possible, move the vehicle to a safe location out of the way of traffic. Call for medical attention if anyone is hurt.
- All incidents no matter how minor must be reported immediately utilizing the CCI Incident and Injury Reporting Procedure.

- Secure the names and addresses of drivers and occupants of any vehicles involved, their operator's license numbers, insurance company names and policy numbers, as well as the names and addresses of injured persons and witnesses. Record this information on the Company Vehicle Incident Form located in the vehicle.
- Do not discuss fault with, or sign any forms unless required by a law enforcement officer.
- Do not have the vehicle repaired until you receive authorization from the Fleet & Equipment Manager.

When there is theft of or damage to your vehicle:

- All incidents no matter how minor must be reported immediately utilizing the CCI Incident and Injury Reporting Procedure.
- You may be directed to notify local law enforcement following your outreach to CCI representatives. You will be contacted by the Fleet & Equipment Manager or other authorized company representative to advise you how to arrange for repairs or replacement of the vehicle. Do not have the vehicle repaired until you receive authorization from the Fleet & Equipment Manager.

Company Vehicle Incident Form

Every company vehicle has been equipped with a CCI Company Vehicle Incident Form.

ACCIDENT RECORDKEEPING, REPORTING AND ANALYSIS

All accidents must be reported as dictated by the CCI incident reporting protocols. All accidents will be investigated, documented, and reviewed by CCI management.

Motor vehicle accident recordkeeping procedures consist of the following components:

- Documentation of causation and corrective action.
- Management review to expedite corrective action.
- Analysis of accidents to determine trends, recurring problems, and the need for further control measures.

Responsibility

Implementation of these procedures remains the responsibility of both the driver and manager.

Driver

Since the driver is the first person at the accident scene, he/she shall initiate the information-gathering process as quickly and thoroughly as is feasible utilizing the Company Vehicle Incident Form. The Company Vehicle Incident Form shall be forwarded to the Safety Team along with any additional support data (e.g., witness statements, photographs, police reports, etc.).

Management

Management will obtain accident data from the driver through the Company Vehicle Incident Form and through verbal communication/investigation process. It is important for management to determine the extent of the accident, especially if it involves injury or death to the driver, passengers, or other parties.

Management will proceed with a formal investigation to determine the underlying causes and what can be done to prevent similar occurrences.

Preventable/Non-Preventable Accidents

The following definitions relate to motor vehicle accidents:

- **A motor vehicle accident** is defined as "any occurrence involving a motor vehicle which results in death, injury, or property damage, unless such vehicle is properly parked.
- **A preventable accident** is defined as "any accident involving the vehicle, unless properly parked, which results in property damage or personal injury, and in which the driver failed to do everything he/she reasonably could have done to prevent or avoid the accident."

A properly parked motor vehicle is one that is completely stopped and parked where it is legal and prudent to park such a vehicle or to stop to load/unload property. Vehicles stopped to load/unload passengers are not considered parked.

Parking on private property will be governed by the same regulations that apply on public streets and highways. A vehicle stopped in traffic in response to a sign, traffic signal, or the police are not considered parked.

The determination of preventability of an accident is at the discretion of CCI management.

COMPANY ACCIDENT REVIEW

All vehicle collisions should be analyzed, and a written report submitted to management for review. A determination of accident preventability should be made. Where the collision was preventable by CCI driver, the driver should be counseled, given additional training, given time off without pay, placed on probation, transferred to non-driving duties, disciplined in other ways, or employment (or services for independent contractors) terminated according to corporate and governmental guidelines.

RECORDKEEPING

Employees are required forward all receipts for vehicle maintenance and repairs performed to the Fleet & Equipment Manager.

DRIVER TRAINING

Drivers hired by CCI to operate a motor vehicle will have the basic skills and credentials necessary to perform this function as confirmed through the Driver Selection process.

New employees and employees newly assigned to company-owned vehicles will participate in the Fleet Safety Program. A formal orientation program is established to help assure all drivers are presented with CCI policy, understand their responsibilities, and are familiarized with their company vehicles. Areas that must be addressed with the driver include:

- Understand, review, and be given a copy of the Fleet Safety Program.
- Understand and sign the Vehicle Assignment Agreement.
- Understand incident reporting and emergency procedures.
- Vehicle inspection, operation, and controls of vehicle being assigned.
- Ongoing review of individual Motor Vehicle Report (MVR) through state DMV/MVD pull programs.

Forklifts (Powered Industrial Trucks - PIT)

PURPOSE

The purpose of this document is to outline the safety policy and procedures surrounding the use of Forklifts (Powered Industrial Trucks - PIT), hereafter referred to as PIT for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

CCI and its employees may not operate forklifts devices at every jobsite, however, all employees who work on or around Power Industrial Truck (PIT), whether as the primary contractor or as a sub-contractor on any worksite, shall adhere to the following health and safety policy and procedure. This program applies to all powered industrial tucks, hoists and lifting gear.

Each operator must be competent to operate a PIT safely, as demonstrated by the successful completion of the training and evaluation. Training shall consist of a combination of formal instruction, practical training by he trainer, practical exercises completed by the trainee, and evaluation of the operator's performance in the workplace.

RESPONSIBILITIES

Responsible Safety Person

- Provide adequate training in safe operation of all equipment used to move or access materials
- Provide equipment that is safe to operate
- Implement an "Out of Service" (red tag) program for damaged equipment
- Not allow modification to equipment except those authorized in writing by the equipment manufacturer
- Establish safe operating rules and procedures

Supervisors

- Monitor safe operations of material handling equipment
- Ensure all equipment is in safe operation order
- Tag "Out of Service" (red tag) any damaged equipment

Employees

- Operate only that equipment for which they have been specifically trained and authorized
- Conduct required daily pre-use inspections, to ensure equipment is safe
- Report any equipment damage
- Follow all safety rules and operating procedures

TRAINING

Training for Powered Industrial Truck (PIT) operators shall be conducted by an experienced trainer, selected by Management. All operational training shall be conducted under close supervision. All training and evaluation must be completed before an operator is permitted to use a Powered Industrial Truck (forklift, etc.) without continual and close supervision.

All operator training and evaluation shall be conducted by persons who have the training, and experience to train powered industrial truck operators and evaluate their competence. CCI shall certify all authorized employees regarding competency on all types of equipment.

All employees are required to be trained and authorized prior to operating each specific type of equipment pursuant to CFR 1910.178(i)(6).

Formal instruction may include lecture, discussion, interactive computer learning, videos, and written materials. Practical training involves instructor demonstrations and trainee exercises.

TRAINING CONTENT

Training consists of a combination of formal instruction, practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace.

All trainers must have the knowledge and ability to teach and evaluate operators.

Initial Training

Powered industrial truck operators shall receive initial training in all the topics that follow below.

PIT Related Training Topics (CCR 3668)

- Operating instructions, warnings, and precautions for the types of PIT the operator will be authorized to operate
- PIT controls and instrumentation: where they are located, what they do, and how they work
- Engine or motor operation
- Steering and maneuvering
- Visibility (including restrictions due to loading)
- Fork and attachment adaptation, operation, and use limitations
- PIT capacity
- PIT stability
- Any PIT inspection and maintenance that the operator will be required to perform
- Refueling and/or charging and recharging of batteries

- Operating limitations
 - Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of PIT's that the employee is being trained to operate
- Surface conditions where the PIT will be operated
- Composition of loads to be carried and load stability
- Load manipulation, stacking, and unstacking
- Pedestrian traffic in areas where the PIT will be operated
- Narrow aisles and other restricted places where the PIT will be operated
- Hazardous (classified) locations where the PIT will be operated
- Ramps and other sloped surfaces that could affect the PIT's stability
- Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust
- Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation
 - Falling loads
 - Overloading of equipment
 - Impact with equipment
 - Piercing of containers
 - Loading dock roll off
 - Chemical contact - battery acid
 - Fires during refueling
 - Control of equipment keys
 - Authorized fueling and recharge areas
 - Proper palletizing of material
 - Marked travel lanes
 - Equipment warning lights
 - Seat belts
 - Mounted fire extinguishers
 - Proper personal protective equipment

Refresher Training and Evaluation

An evaluation shall be conducted at least every three years, when unsafe operations are observed, after an accident, or if operation of a different PIT type and/or changes in conditions occur.

PRE-QUALIFICATION

All candidates for Powered Industrial Truck (PIT) operators must meet the following basic requirements prior to starting initial or annual refresher training:

- Must have no adverse vision problems that cannot be corrected by glasses or contacts
- No adverse hearing loss that cannot be corrected with hearing aids

- No physical impairments that would impair safe operation of the PIT
- No neurological disorders that affect balance or consciousness
- Not taking any medication that affects perception, vision, or physical abilities

SAFE OPERATIONS PROCEDURES AND RULES

- Only authorized and trained personnel will operate PITs.
- Operator will always keep a clear view.
- Operators will always look in the direction of travel
- Use spotters, rear view mirrors, or other aids to increase visibility.
- All PITs will be equipped with a fire extinguisher, back-up alarm, and seat belts. Seat belts will be worn at all times by the Operator.
- The operator will perform daily pre- and post-trip inspections.
- Any safety defects (such as hydraulic fluid leaks; defective brakes, steering, lights, or horn; and/or missing fire extinguisher, lights, seat belt, or back-up alarm) will be reported for immediate repair or have the PIT taken "Out of Service."
- Operators will follow the proper recharging or refueling safety procedures.
- Loads will be tilted back and carried no more than 6 inches from the ground. Loads that restrict the operator's vision will be transported backwards.
- PITs will travel no faster than 5 mph or faster than a normal walk.
- Operator will sound horn and use extreme caution when pedestrians are present, making turns and cornering.
- Passengers may not ride on any portion of a PIT. Only the operator will ride PITs.
- If PITs are used as a man lift, an appropriate man lift platform (cage with standard rails and toe-boards) will be used.
- Be especially careful on loading docks, staying away from the edge.
- Aisle will be maintained free from obstructions, marked and wide enough (six foot minimum) for PIT operation.
- PIT operators shall slow down and sound the horn at cross aisles and other locations where vision is obstructed.
- Lift capacity will be marked on all PITs. Operator will assure load does not exceed rated weight limits.
- When un-attended, PITs will be turned off, forks lowered to the ground and parking brake applied.
- All PITs (with exception of pallet jacks) will be equipped with a multi-purpose dry chemical fire extinguisher. (Minimum rating; 2A:10B:C)
- Operators are instructed to report all accidents, regardless of fault and severity, to Management via the Incident Reporting Protocol. Management will conduct an accident investigation.
- Shall add a "warning track" of yellow paint on the floor near dock openings.

- Drive slowly into and out of warehouses or other buildings. Going from bright daylight into a darkened warehouse may blind drivers just long enough to hit another worker, vehicle, or object.
- Prohibiting arms or legs from being placed between the uprights of the mast or outside the running lines of the truck.

Changing and Charging Storage Batteries

- Battery charging installations shall be located in areas designated for that purpose.
- Facilities shall be provided for flushing and neutralizing spilled electrolyte, for fire protection, for protecting charging apparatus from damage by trucks, and for adequate ventilation for dispersal of fumes from gassing batteries.
- A conveyor, overhead hoist, or equivalent material handling equipment shall be provided for handling batteries.
- Reinstalled batteries shall be properly positioned and secured in the truck.
- A carboy tilter or siphon shall be provided for handling electrolyte.
- When charging batteries, acid shall be poured into water; water shall not be poured into acid.
- Trucks shall be properly positioned, and brake applied before attempting to change or charge batteries.
- Care shall be taken to assure that vent caps are functioning. The battery (or compartment) cover(s) shall be open to dissipate heat.
- Smoking is prohibited in the charging area.
- Precautions shall be taken to prevent open flames, sparks, or electric arcs in battery charging areas.
- Remove all metallic jewelry before recharging. Tools and other metallic objects shall be kept away from the top of uncovered batteries. [[29 CFR 1910.178\(g\)\(12\)](#)]

Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body must be provided within the work area for immediate emergency use. [[29 CFR 1910.151\(c\)](#)]

TRAVELING

- The right of way shall be yielded to ambulances, fire trucks, or other vehicles in emergency situations.
- Other trucks traveling in the same direction at intersections, blind spots, or other dangerous locations shall not be passed.
- The driver shall be required to slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver shall be required to travel with the load trailing.
- The driver shall be required to look in the direction of and keep a clear view of the path of travel.
- On all grades the load and load engaging means shall be tilted back if applicable and raised only as far as necessary to clear the road surface.
- Under all travel conditions the truck shall be operated at a speed that will permit it to be brought to a stop in a safe manner.
- Stunt driving and horseplay shall not be permitted.
- The driver shall be required to slow down for wet and slippery floors.

- Running over loose objects on the roadway surface shall be avoided.
- While negotiating turns, speed shall be reduced to a safe level by means of turning the hand steering wheel in a smooth, sweeping motion. Except when maneuvering at a very low speed, the hand steering wheel shall be turned at a moderate, even rate.

LOADING

- Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads which cannot be centered.
- Only loads within the rated capacity of the truck shall be handled.
- The long or high (including multiple-tiered) loads which may affect capacity shall be adjusted.
- Trucks equipped with attachments shall be operated as partially loaded trucks when not handling a load.
- A load engaging means shall be placed under the load as far as possible; the mast shall be carefully tilted backward to stabilize the load.
- Extreme care shall be used when tilting the load forward or backward, particularly when highly tiered. Tilting forward with load engaging means elevated shall be prohibited except to pick up a load. An elevated load shall not be tilted forward except when the load is in a deposit position over a rack or stack. When stacking or tiering, only enough backward tilt to stabilize the load shall be used.

IN CASE OF A TIP OVER

For tip overs on sit-down counterbalanced trucks:

- Don't jump - Stay in the forklift.
- Hold tight to the steering wheel.
- Brace feet.
- Lean AWAY from the impact.
- Lean forward.

Note: Tip over procedures for other types of forklifts may vary. For example, operators of stand-up forklifts with rear-entry access should step backwards off the forklift if a tip over occurs.

FUELING SAFETY

- Fuel tanks shall not be filled while the engine is running. Spillage shall be avoided.
- Spillage of oil or fuel shall be carefully washed away or completely evaporated and the fuel tank cap replaced before restarting engine.
- No truck shall be operated with a leak in the fuel system until the leak has been corrected.

- Open flames shall not be used for checking electrolyte level in storage batteries or gasoline level in fuel tanks.

MAINTENANCE OF POWER INDUSTRIAL TRUCKS (PIT)

- Any PIT trucks not in safe operating condition shall be removed from service. All repairs shall be made by authorized personnel.
- Those repairs to the fuel and ignition systems of industrial trucks which involve fire hazards shall be conducted only in locations designated for such repairs.
- Trucks in need of repairs to the electrical system shall have the battery disconnected prior to such repairs.
- All parts of any such industrial truck requiring replacement shall be replaced only by parts equivalent as to safety with those used in the original design.
- Industrial trucks shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor shall they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts. Additional counterweighting of fork trucks shall not be done unless approved by the truck manufacturer.
- Equipment shall be examined before being placed in service and shall not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Such examination shall be made at least daily. Where industrial trucks are used on a round-the-clock basis, they shall be examined prior to use each shift. Defects when found shall be immediately reported and corrected.
- When the temperature of any part of any truck is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the vehicle shall be removed from service and not returned to service until the cause for such overheating has been eliminated.
- Industrial trucks shall be kept in a clean condition, free of lint, excess oil, and grease. Noncombustible agents should be used for cleaning trucks. Low flash point (below 100 deg. F.) solvents shall not be used. High flash point (at or above 100 deg. F.) solvents may be used.

SAFE OPERATION PROCEDURE FOR REFILLING LPG TANK (PROPANE)

- No Smoking.
- Move LPG PIT outside for refueling.
- Turn off PIT.
- LPG tanks will be removed in the following order:
 - Shut off service valve
 - Disconnect tank from hose
 - Unbuckle and remove tank from bracket

- LPG tanks will be replaced in to following order:
 - Place tank in bracket and re-buckle
 - Reconnect hose to tank and tighten firmly
 - Open valve slowly and assure proper seal

Note: Federal Law Prohibits dispensing an improper fuel type into any Vehicle or into a non-approved fuel container.

In Case of LPG Leaks or Tank Rupture

- DO NOT start or move the PIT.
- If fuel hose is leaking, close valve immediately and place PIT "Out of Service" until repaired.
- If tank ruptures, warn other, immediately leave the area (at least 50 feet) and notify Management. Do not re-enter the area until cleared by Management.

Powered Industrial Truck Pre-Use Checklist

A check of the following items (as applicable) is to be conducted by the operator prior to use each shift using the KDC Forklift Pre-Operation Checklist

- ✓ Lights
- ✓ Horn
- ✓ Brakes
- ✓ Leaks
- ✓ Warning Beacon
- ✓ Backup Warning Alarm
- ✓ Fire Extinguisher

If any deficiencies are noted, the unit is to be placed OUT OF SERVICE (red tag) until the problem has been corrected. Additionally, it is the operator's responsibility to notify the immediate supervisor.

Gas Hazards – Air Monitoring/Contaminant Safety

PURPOSE

The purpose of this safety policy and procedure is to establish guidelines to protect the health of employees of **Cirks Construction Inc.** from hazards due to the inhalation of airborne contaminants such as gases, fumes, mists, vapors, particulates. **Cirks Construction Inc.** is hereafter referred to as "CCI,"

An air contaminant is any substance which is accidentally or unwillingly introduced into the air, having the effect of rendering the air toxic or harmful to some degree. Through inhalation, airborne dust, fumes, vapors, mists, and gases may all be taken into the body. These contaminants can irritate the skin, eyes, nose, throat, and lungs, or they may also be absorbed into the bloodstream therefore affecting internal organs. This document establishes guidelines to protect the health of CCI employees from these air contamination hazards. It includes training provisions for affected employees and discussion on the warning signs of air contaminant overexposure. Discussion is also presented concerning when work area evaluations may be required. Additionally, this document presents a brief exposure assessment methodology and a control recommendation hierarchy.

RESPONSIBILITIES

Management

Management is responsible for identifying the employees affected by this safety policy and procedure. Managers/Unit Heads will obtain and coordinate the required training for the affected employees. Managers/Unit Heads should be generally familiar with exposures in their organization and the location of those exposures. They will also ensure compliance with this safety policy and procedure through their auditing process.

Supervisors

Supervisors are responsible for ensuring that the PPE is used when required, proper work practices are used, engineering controls are in good operating condition, and administrative controls are used when feasible. Additionally, they are responsible for recognizing possible exposures by odor, mucous membrane irritation, headaches, nausea, visible dust emissions, and vapors.

Employees

Employees shall be responsible for recognizing possible exposures by odor, mucous membrane irritation, headaches, nausea, visible dust emissions, and vapors.

Employees are to follow work practices for the process, use PPE as required, activate engineering controls when necessary, and report suspicious circumstances to their supervisors.

Employees will be aware of the provisions of site-specific contingency/emergency plans and participate in drills. Employees should participate in emergency evacuation drills and practice rescue procedures.

Qualified Safety Professional

Qualified persons shall be responsible for conducting air monitoring where there is suspicion of air contamination. They shall perform exposure assessments, workplace evaluation, and recommend exposure controls. They shall also provide air contaminants training to affected employees and their supervisors.

SIGNS OF OVEREXPOSURE

Overexposure to contaminants may not always show warning signs. Most gases and vapors provide warnings such as headaches, nausea, mucous membrane irritation, nervous system dysfunction, and rashes in a short period of time (minutes to hours). Some gases and most particulates do not have immediate warning signs and are insidious in their health effects (the signs of a disease process may take years to manifest).

Anytime an employee claims to have experienced a warning condition or has become sick while using chemicals or while engaged in a particular process, he or she is to report this condition immediately to his or her supervisor.

AIR MONITORING

The purpose of air monitoring is to identify and quantify airborne contaminants in order to determine the level of worker protection needed. Initial screening for identification is often qualitative, i.e., the contaminant, or the class to which it belongs, is demonstrated to be present but the determination of its concentration (quantification) must await subsequent testing. Two principal approaches are available for identifying and/or quantifying airborne contaminants:

- The onsite use of direct-reading instruments.
- Laboratory analysis of air samples obtained by gas sampling bag, filter, sorbent, or wet-contaminant collection methods.

Portable Air Monitoring Equipment

- Portable air monitors are hand-held instruments that measure the concentration of combustible or toxic gases and vapors as well as oxygen concentration. All

instruments used in USPL sound an audible alarm when concentrations exceed preset limits. Since air monitoring equipment is designed for various applications, each instrument may have its own operating characteristics and limitations.

- Specific initial and continuous monitoring requirements for Hot Work, Confined Space, and Excavations are specified in the respective policies. These policies should be referenced for air monitoring specifics.
- Each employee shall use a portable gas detector as required in all high gas hazard areas.
- All gas monitors shall be calibrated per manufacturer's recommendations and have a current calibration sticker on the monitor.
- Daily bump tests are performed to ensure the monitor and alarms are working correctly. Bump tests are required to be completed at the beginning of each day the monitor is in use per the requesting client and manufacturer's guidelines to ensure the monitor is functioning correctly.

The Responsible Safety Person (or qualified designee) should be consulted regarding air monitoring equipment and procedures.

ATMOSPHERIC HAZARDS

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

- Flammable gas, vapor, or mist more than 10% of its Lower Flammable Limit (LFL),
- Airborne combustible dust at a concentration that meets or exceeds its LFL,
- Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent,
- Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart D—Occupational Health and Environmental Control, or in Subpart Z—Toxic and Hazardous Substances, of this part and which could result in employee exposure more than its dose or permissible exposure limit,
- Any other atmospheric condition that is immediately dangerous to life or health.

Three Main Types of Hazardous Atmospheres

1. Unsafe Oxygen levels, either an oxygen deficient below 19.5% or oxygen enriched above 23.5%.
2. Flammable gases.
3. Toxic vapors and/or toxic dust particulates.

Atmospheric Hazard Sources

Types of atmospheric hazards:

- Flammables

- Flammable gas, vapor, or mist more than 10% of its Lower Flammable Limit (LFL)
- Combustible dust
 - Airborne combustible dust at a concentration that meets or exceeds its LFL
- Oxygen
 - Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent
- Atmospheric concentration
 - 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 this part and which could result in employee exposure in excess of its dose or permissible exposure limit
- Any other atmospheric condition that is immediately dangerous to life or health

ATMOSPHERIC TESTING

Atmospheric testing is required for two distinct purposes; evaluation of the hazards of the permit space and verification that acceptable conditions exist for entry into that space.

Evaluation Testing

The atmosphere within a confined space must be tested using equipment that is designed to detect the chemicals that may be present at levels that are well below the defined exposure limits.

Evaluation testing is done to:

- Determine what chemical hazards are or may become present in the space's atmosphere.
- Identify what steps must be followed and what conditions must be met to ensure that atmospheric conditions are safe for a worker to enter the space.

The testing results and the decisions about what steps must be followed before entry must be evaluated by, or reviewed by, a technically qualified professional. The technically qualified professional must consider all the serious hazards in his/her evaluation or review.

Verification Testing

Before a permit space that may have a hazardous atmosphere can be entered, the atmosphere must be tested using the steps identified on the permit (developed during evaluation testing). Verification testing is done to make sure that the chemical hazards that may be present are below the levels necessary for safe entry, and that they meet the conditions identified on the permit.

Test the atmosphere in the following order:

- A. Oxygen
- B. Combustible gases

C. Toxic gases and vapors

The testing results and the actual test concentrations must be recorded on the permit near the levels identified for safe entry.

Duration of Testing

For each test required on the permit, you must allow enough time for the air from the space to be drawn into the equipment and for the sensor (or other detection device) to react to the chemical if it is present. This is considered the "minimum response time" and it will be noted by the manufacturer in the operator's manual. Be aware that you will need to add time to this "minimum response time" if you have attached hosing or a probe extension to the inlet. The additional time is needed to allow the air from the different depths of the space to be pulled into the equipment inlet.

Testing Conditions in Spaces that May Have Layered Atmospheres

For permit spaces that are deep or have areas leading away from the entry point, the atmosphere may be layered or may be different in remote areas. For these spaces, testing must be done in the area surrounding the worker, which is considered four (4) feet in the direction of travel and to each side. If a sample probe is used to do the testing, then the worker must move slowly enough so that testing is completed, keeping the equipment "response time" in mind, before he/she moves into the new area.

Retesting the Space During Entry or Before Re-Entry

Test the permit space routinely to make sure that the atmospheric conditions continue to be safe for entry.

CFR 1926, Subpart AA and CFR 1926.1204

TRAINING

Training shall be provided upon initial employment and/or job reassignment. Retraining shall be provided when job conditions change. Periodic refresher training shall be provided at the discretion of the supervisor. Employees who may be exposed to air contaminants in their job duties shall receive training on air contaminants. Gas hazard awareness training must be provided before initial assignment and annually thereafter.

Their supervisors will also receive this training which will consist of:

- Contaminant name and characteristics (physical and chemical properties)
- Exposure route
- Symptoms of over exposure
- Toxic health effects (acute and chronic)
- Work practices used to reduce exposures

- Engineering controls to reduce exposures
- Administrative controls to reduce exposures
- Locations of alarm stations
- Gas monitoring equipment (i.e., portable, and fixed detection)
- Gas alarms
- Gas hazards
- Characteristics of gases such as oxygen deficiency, oxygen or nitrogen enrichment, carbon monoxide and hydrogen sulfide as well as any other potentially present harmful gas
- Gas hazard training shall also cover any site, plant, or department specific gases of concern or that could be harmful.
- Signs and symptoms of exposure
- Personal rescue procedures
- Use and care of SCBA (self-contained breathing apparatus) to include donning and emergency procedures if applicable.
- Evacuation procedures
- Staging areas
- Primary and secondary
-

Qualified persons who perform air monitoring shall receive additional training which includes:

- Air sampler air flow calibration
- Sample train set ups
- Analytical procedures
- Air monitoring protocol

OSHA Reference Methods

- Exposure calculations
- Exposure data statistical analyses

Documentation

- Gas hazard awareness training shall be documented and available for review.

General Safety

PURPOSE

The purpose of this policy is to outline General Health and Safety Requirements for all employees performing work on behalf of **Cirks Construction Inc.**; hereafter referred to as "CCI,"

RESPONSIBILITIES

Management

- Ensures each employee employment which is free from recognized hazards that are causing or are likely to cause death or serious physical harm to employees
- Ensures adequate resources and training are provided to all employees.
- Ensures all employees adhere to the established corporate safety policies.

Personnel

- Adhere to the established corporate safety policies.

POLICY

CCI is committed to providing a safe and healthy environment for all personnel and ensures effective implementation of general safety requirements through:

- Staff having access to policies and procedures relating to field of work
- Provision of tailored training to persons with specific tasks
- Record of activities, including training provided and undertaken, information provided to clients and use of PPE
- Mechanisms for monitoring compliance
- Injured employees, a person who has a valid certificate in first aid/CPR shall be available at the worksite to render first aid/CPR.

HOUSEKEEPING

Work site cleanliness, order and organization are key components to a maintaining an accident-free work environment. CCI will ensure that a work site is kept clean and free from materials or equipment that could cause workers to slip or trip.

Management and employees shall adhere to the following practices at each worksite regularly:

- Identify tools and debris that are not properly stored or secured, or that are in a place or position that may result in harm to a person
- Keep each work area free of sharp objects to prevent injury

- Sweep work area and remove debris regularly
- Maintain cords and other items to prevent tripping hazards
- Each employee must be instructed in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.

ILLUMINATION

CCI will make sure adequate illumination be provided for safe working where applicable.

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

WORKER COMPETENCY

CCI will ensure that each employee is trained in the safe work practices and health and safety topics that pertain to the job at hand.

The employer must ensure that the work is done:

- By an employee who is competent to do the work, or
- By an employee who is working under the direct supervision of an employee who is competent to do the work.

CCI trains each employee in their right and obligations to stop work that is unsafe and that each company employee may stop work without fear of retribution or retaliation.

CCI will ensure that workers are trained in the safe operation of the equipment the employee is required to operate.

CCI will designate a competent person(s), as defined by OSHA, to conduct frequent and regular inspections of all job sites, materials, and equipment.

EQUIPMENT MAINTENANCE

CCI will ensure that all equipment used at each work site:

- Is maintained in a condition that will not compromise the health or safety of employees using or transporting it,
- Will safely perform the function for which it is intended or was designed,
- Is of adequate strength for its purpose, and
- Is free from obvious defects.
- Only qualified employees by training or experience shall operate equipment and machinery.

Tools, job made tools, equipment, and materials that do not conform to program requirements or have been identified as unsafe must be tagged or locked to render them inoperable or physically removed from the place of operation.

OPERATING EQUIPMENT

Only qualified employees by training or experience shall operate equipment and machinery.

General Waste Management

PURPOSE

The purpose of this document is to outline the General Waste Management policy for **Cirks Construction Inc.**; hereafter referred to as "CCI," The goal of this policy is to ensure effective management of waste, movement, storage, and disposal of waste produced and to minimize harm to personnel while minimizing environmental impacts.

RESPONSIBILITIES

Responsible Safety Person

- Obtain and review information for each waste stream relating to the relevant legislative requirements and confirming validity with the relevant authorities
- Ensure that waste control documentation is completed and retained as per procedural/ legislative requirements.
- Planning, conducting, and reporting of waste audits.

Management

- Ensure all direct reports follow this General Waste Management policy
- Assist Site Directors in waste classification
- Inform employees as to waste management procedures specific to each job
- Inform affected employees must also be informed of any changes to waste management plan
- Inform affected employees of site-specific waste management procedures prior to initial assignment

WASTE TYPES

- **Listed Wastes:** Wastes that EPA has determined are hazardous. The lists include the F-list (wastes from common manufacturing and industrial processes), K-list (wastes from specific industries), and P- and U-lists (wastes from commercial chemical products)
- **Characteristic Wastes:** Wastes that do not meet any of the listings above but that exhibit ignitability, corrosivity, reactivity, or toxicity
- **Universal Wastes:** Batteries, pesticides, mercury-containing equipment (e.g., thermostats) and lamps (e.g., fluorescent bulbs)
- **Mixed Wastes:** Waste that contains both radioactive and hazardous waste components

- **Construction Wastes:** Building materials such as bricks, concrete, wood, insulation, nails, electrical wiring, and rebar, as well as waste originating from site preparation such as dredging materials, tree stumps, and rubble. Construction waste may contain lead, asbestos, or other hazardous substances
- **Medical and Infectious Wastes:** Waste generated by health care activities includes a broad range of materials, from used needles and syringes to soil dressings, body parts, diagnostic samples, blood, chemicals, pharmaceuticals, medical devices and radioactive materials

GENERAL

All types of wastes are to be put into designated bins after generation. Those are to be disposed to identify bins for further handling.

- Biodegradable waste like paper, cotton waste, wood will be kept in green bins which will be transferred to identify area in Scrap Yard for further disposal.
- Non-Biodegradable waste include plastic, polythene, rubber, concrete debris, fire bricks, glass and welding slugs are to be kept at blue bins and to be disposed to identified place at Scrap Yard for further disposal.
- Welding slugs are to be collected and used for land filling
- Oil Contaminated wastes are to be collected in one red bin which will be transferred to identified area in Scrap Yard for further disposal.
- Industrial hazardous wastes in liquid form (used lubricant and used coolant oils) are to be collected in empty oil drums And to be kept under shed and lock and key and the floor must be made of concrete with non-permeable membrane below ground. The content must be labeled.
- CCI will estimate the waste that will be generated prior to work being performed so that the need for containers and waste removal, if necessary, can be determined.

Biomedical wastes are to be sent to Medical Centre for disposing by deep burial method.

DISPOSAL

- Biodegradable waste includes paper waste, wood waste, cotton waste, and cardboard packets--- can be used for landfill or sold to vendor through auction.
- Non-Biodegradable wastes include plastic, polythene, rubber, concrete debris; glass cannot be used for landfill. Those are to be sold through auction for recycling.
- Contaminated waste including oil/ grease impregnated cotton waste - cannot be used for land filling and to be incinerated through authorized vendors.
- Metallic Waste include off-cuts of steel tubes, plates and turning and borings of tubes and bars, and also nonferrous metallic scrap like aluminum, copper and bronze coming out of maintenance. These wastes are to be sold through auction.

- Waste materials should be properly stored and handled to minimize the potential for a spill or impact to the environment.
- During outdoor activities, receptacles must be covered to prevent dispersion of waste materials and to control the potential for run-off.
- Disposal of waste material or debris by burning shall comply with local fire regulations.

CCI requires the proper segregation of waste materials to ensure opportunities for reuse or recycling.

Enclosed Chutes

An enclosed chute is a slide, closed in on all sides, through which material is moved from a high place to a lower one.

Whenever materials are dropped more than 20 feet to any point lying outside the exterior walls of the building, an enclosed chute of wood, or equivalent material, shall be used.

When debris is dropped through holes in the floor without the use of chutes, the area onto which the material is dropped shall be completely enclosed with barricades not less than 42 inches high and not less than 6 feet back from the projected edge of the opening above. Signs warning of the hazard of falling materials shall be posted at each level. Removal shall not be permitted in this lower area until debris handling ceases above

All scrap lumber, waste material, and rubbish shall be removed from the immediate work area as the work progresses.

Disposal of waste material or debris by burning shall comply with local fire regulations.

All solvent waste, oily rags, and flammable liquids shall be kept in fire resistant covered containers until removed from worksite. ([1926.252](#))

TRAINING

Employees shall be instructed on the proper disposal method for wastes. This will include general instruction on disposal of non-hazardous wastes, trash, or scrap materials. If wastes generated are classified as hazardous, employees shall be trained to ensure proper disposal.

Ground Fault Circuit Interruption Program – GFCI and Assured Equipment Grounding Conductor (AEGC)

PURPOSE

The purpose of this document is to outline safety requirements surrounding the use and exposure to electricity, and to eliminate all injuries resulting from possible malfunctions, improper grounding, and defective electrical tools for **Cirks Construction Inc.**; hereafter referred to as "CCI." This policy applies to all sites, personnel, and contractors; this policy must be always followed.

The employer shall use either ground fault interrupters as specified in this section or an assured equipment grounding conductor program.

RESPONSIBILITIES

Supervisors shall be responsible to implement the assured equipment grounding conductor program and shall be designated as competent persons for the program. One or more competent persons must be designated as set forth in [CFR 1926.404\(b\) \(11\) \(iii\)](#) And [Cal/OSHA T8 CCR 2405.4](#) to implement the program.

Employees are responsible for abiding by the following policy and requirements of this program. In addition, personnel and employees shall be held responsible to perform regular visual inspections and to remove defective equipment from service. All personnel shall notify a supervisor of defective equipment as soon as reasonably possible.

POLICY

It is the policy of CCI to establish and implement an assured equipment grounding conductor program on all job sites covering all cord sets, receptacles which are not a part of the permanent wiring of the building or structure, and equipment connected by cord and plug which are available for use by personnel. In fact, OSHA requires that employees shall use either ground fault circuit interrupters (GFCI) or an assured equipment grounding conductor (AEGC) program to protect personnel from electrical shock while working.

CCI shall use GFCI's in lieu of an AEGC program as afforded by [CFR 1926.400 \(h\)](#).

GROUND FAULT CIRCUIT INTERRUPTERS

Ground fault circuit interrupters (GFCI's) are required for 120 volts, single phase, or 15- and 20-ampere receptacles outlets where all the requirements of this procedure are implemented at

worksites as part of the permanent wing of the building or structure CFR 1926.404(b)(1). If these are in use by employees, shall have approved GFCI's for personal protection.

Supervisors are designated to implement the (AEGC) program or GFCI(CFR [1926.32\(f\)](#)) which defines a competent person as one who is capable of identifying existing and predictable hazards in the surrounding area or working conditions which are unsanitary, hazardous or dangerous to employees, and who is authorized to take prompt corrective measures to eliminate them.

Equipment found damaged or defective may not be used until repaired.

Supervisors shall be responsible and accountable for the following:

- Each cord set, attachment cap, plug and receptacle of cord set, and any equipment connected by cord and plug except cord sets and receptacles which are fixed and not exposed to damage, shall be visually inspected before each day's use for external defects, such as deformed or missing pins, or insulation damage, and for indication for possible internal damage.

CCI shall ensure that subcontractors are responsible and accountable for the following:

- Making sure both forms of testing are being performed when checking electrical equipment
 - One is a Continuity Test to ensure that the equipment grounding conductor is electrically continuous. It must be performed on all cord sets, receptacles which are not part of the permanent wiring of the building or structure, and on cord-and-plug-connected equipment which is required to be grounded. This test can be performed using a simple continuity tester, such as a lamp and battery, a bell and battery, an ohm meter, or a receptacle tester.
 - The other test is a GFCI Test that must be performed on receptacles and plugs to ensure that the equipment grounding conductor is connected to its proper terminal. This test can be performed with the same equipment used in the first test.
- Tests shall be documented on the log for the assured equipment grounding conductor program and shall be on all worksites for inspection by OSHA officials and/or any affected employee.

Testing

CCI shall ensure that subcontractors perform all required tests:

- Before first use
- Before equipment is returned to service following any repairs
- Before equipment is used after any incident which can be reasonably suspected to have caused damage (for example, when a cord set is run over); and

- At intervals not to exceed three months, except that cord sets and receptacles which are fixed and not exposed to damage shall be tested at intervals not exceeding six months.

Tests performed as required by this program shall be recorded as to the identity of each receptacle, cord set, and plug connected equipment that passed the test. In addition, it shall indicate the last date tested or interval for which it was tested. This record shall be kept by means of logs, color coding, or other effective means and shall be maintained until replaced by a more current record. These records shall be made available at the job site.

Equipment that does not meet the prescribed test shall not be put into service. In this case, the following shall occur:

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

Below is a recommended color code labeling system using colored tape to mark equipment. That shows how CCI tracks inspection and testing on a Quarterly, Monthly and/or Numeric tracking basis.

Assured Equipment Grounding Conductor Labeling Program			
Month/Quarter Test is Performed	Quarterly Coding Scheme	Monthly Coding Scheme	Numeric Coding Scheme
Month	Quarterly	Monthly	Monthly
January	White (Winter)	White	1
February		White/Yellow	2
March		White/Blue	3
April	Green (Spring)	Green	4
May		Green/Yellow	5
June		Green/Blue	6
July	Red (Summer)	Red	7
August		Red/Yellow	8
September		Red/Blue	9
October	Orange (Autumn)	Orange	10
November		Orange/Yellow	11
December		Orange/Blue	12
Repair or Incident	Brown	Brown	0

Hand and Power Tools

PURPOSE

The purpose of this document is to outline safety policy and procedures surrounding the use of Hand and Power Tools for **Cirks Construction Inc.**; hereafter referred to as "CCI," This program covers hand, electrical, pneumatic, powder driven, and hydraulic tool safety.

RESPONSIBILITIES

Management

- * Ensure correct tools are utilized for assigned tasks
- * Ensure PPE is appropriate and being utilized
- * Ensure tools are maintained and stored safely

Employees

- * Follow proper tool safety guidelines
- * Properly store tools when work is completed

POLICY

Employees who use hand and power tools and who are exposed to the hazards of falling, flying, abrasive and splashing objects, or exposed to harmful dusts, fumes, mists, vapors, or gases must be provided with the personal protective equipment (PPE) necessary to protect them from the hazard.

All hazards involved in the use of tools can be prevented by following five basic safety rules:

- Keep all tools in good condition with regular maintenance.
- Use the right tool for the job.
- Examine each tool for damage before use.
- Operate according to the manufacturer's instructions.
- Provide and use the proper personal protective equipment.

Whether furnished by the employer or the employee, tools shall be maintained in safe condition.

Any tool which is not in compliance shall be identified as unsafe by tagging and or locking the controls to render the piece of equipment inoperable or the tool shall be physically removed from its place of operation.

ERGONOMIC GUIDELINES

Applying these guidelines in tool design can help maximize human performance on the job by making the job easier for the worker, improving safety, and decreasing injuries.

Take-Away Tips for Tool Selection:

- Use the right tool for the job, and the right tool for the user.
- "Bend" the tool, not the wrist.
 - Use tools with angled or "bent" handles when appropriate.
- Avoid high contact forces and static loading.
- Reduce excessive gripping force or pressure.
- Avoid extreme and awkward joint positions.
- Avoid twisting hand and wrist motion by using power tools rather than hand tools.
- Avoid repetitive finger movements, or at least reduce their number.
- Minimize the amount of force needed to activate trigger devices on power tools.
- Avoid thumb triggers.
- Use two- or three-finger triggers for power tools; use four-finger triggers only when the tool is balanced.

HAND TOOLS

Hand tools are non-powered. They include anything from hammers to wrenches. The greatest hazards posed by hand tools result from misuse and improper maintenance.

Floors shall be kept as clean and dry as possible to prevent accidental slips with or around hand tools.

Around flammable substances, sparks produced by iron and steel hand tools can be an ignition source, and that work must be accompanied by a completed hot work permit.

POWER TOOL PRECAUTIONS

Power tools can be hazardous when improperly used. There are several types of power tools, based on the power source they use: electric, pneumatic, liquid fuel, hydraulic, and powder actuated.

The following general precautions should be observed by power tool users:

- Never carry a tool by the cord or hose.
- Never yank the cord or the hose to disconnect it from the receptacle.
- Keep cords and hoses away from heat, oil, and sharp edges.
- Disconnect tools when not in use, before servicing, and when changing accessories such as blades, bits, and cutters.

- All observers should be kept at a safe distance away from the work area.
- Secure work with clamps or a vise, freeing both hands to operate the tool.
- Avoid accidental starting. The worker should not hold a finger on the switch button while carrying a plugged-in tool.
- Tools should be maintained with care. They should be kept sharp and clean for the best performance. Follow instructions in the user's manual for lubricating and changing accessories.
- Be sure to keep good footing and maintain good balance.
- The proper apparel should be worn. Loose clothing, ties, or jewelry can become caught in moving parts.
- All portable electric tools that are damaged shall be removed from use and tagged "Do Not Use."

GUARDS

Hazardous moving parts of a power tool need to be safeguarded.

Guards, as necessary, should be provided to protect the operator and others from the following:

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

Guards shall be always in place and operable while the tool is in use. The guard may not be manipulated in such way that will compromise its integrity or compromise the protection in which intended. Guarding shall meet the requirements set forth in ANSI B15.1.

Safety guards must never be removed when a tool is being used.

ELECTRICAL SAFETY

Among the chief hazards of electric-powered tools are burns shocks which can lead to injuries or heart failure. Under certain conditions, even a small amount of current can result in severe injury and eventual death. A shock also can cause the user to fall off a ladder or other elevated work surface.

Electric Power Tool General Safety Practices

- Electric tools should be operated within their design limitations.
- Gloves and safety footwear are recommended during use of electric tools.
- When not in use, tools should be stored in a dry place.
- Electric tools should not be used in damp or wet locations.
- Work areas should be well lighted.

GROUND FAULT CIRCUIT INTERRUPTER (GFCI) / ASSURED EQUIPMENT GROUNDING CONDUCTOR (AEGC) PROTECTION

CCI shall use either ground fault circuit interrupters (GFCI) or an assured equipment grounding conductor (AEGC) to protect employees on construction sites. These requirements are in addition to any other requirements for equipment grounding conductors.

Ground-Fault Circuit Interrupters (GFCI)

All 120-volt, single-phase 15- and 20-ampere receptacle outlets on construction sites, which are not a part of the permanent wiring of the building or structure, and which are in use by employees, shall have approved ground-fault circuit interrupters for personnel protection. Receptacles on a two-wire, single-phase portable or vehicle-mounted generator rated not more than 5kW, where the circuit conductors of the generator are insulated from the generator frame and all other grounded surfaces, need not be protected with ground-fault circuit interrupters. [CFR 1926.404\(b\)\(1\)\(ii\)](#)

POWERED ABRASIVE WHEEL TOOLS

Powered abrasive grinding, cutting, polishing, and wire buffing wheels may create safety issues because they may throw off flying fragments.

Before an abrasive wheel is mounted, it should be inspected closely and sound- or ring-tested to be sure that it is free from cracks or defects. To test, wheels should be tapped gently with a light non-metallic instrument. If they sound cracked or dead, they could fly apart in operation and so must not be used. A sound and undamaged wheel will give a clear metallic tone or "ring."

To prevent the wheel from cracking, the user should be sure it fits freely on the spindle. The spindle nut must be tightened enough to hold the wheel in place, without distorting the flange. Follow the manufacturer's recommendations. Care must be taken to assure that the spindle wheel will not exceed the abrasive wheel specifications.

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

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

Powered Grinder Safety Precautions

- Always use eye protection and face shield.
- Turn off the power when not in use.
- Never clamp a hand-held grinder in a vise.

PNEUMATIC TOOLS

Pneumatic tools are powered by compressed air and include chippers, drills, hammers, and sanders. There are several dangers encountered in the use of pneumatic tools. The main one is the danger of getting hit by one of the tool's attachments or by fastener the worker is using with the tool. Eye protection is required, and face protection is recommended for employees working with pneumatic tools. Working with noisy tools such as jackhammers requires proper, effective use of hearing protection.

When using pneumatic tools, employees are to check to see that they are fastened securely to the hose to prevent them from becoming disconnected. A short wire or positive locking device attaching the air hose to the tool will serve as an added safeguard.

A safety clip or retainer must be installed to prevent attachments, such as chisels on a chipping hammer, from being unintentionally shot from the barrel.

Screens must be set up to protect nearby workers from being struck by flying fragments around chippers, riveting guns, staplers, or air drills.

Compressed air guns should never be pointed toward anyone. Users should never "dead-end" it against themselves or anyone else.

POWDER ACTUATED TOOLS

Powder-actuated tools operate like a loaded gun and should be treated with the same respect and precautions. In fact, they are so dangerous that they must be operated only by specially trained employees. CFR 1915.135

All employees utilizing powder-actuated tools must be licensed and trained pursuant to CFR 1926.302(e)(1)

Powder-Actuated Tool Safety

- These tools should not be used in an explosive or flammable atmosphere.
- Before using the tool, the worker should inspect it to determine that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions.
- The tool should never be pointed at anybody.
- The tool should not be loaded unless it is to be used immediately. A loaded tool should not be left unattended, especially where it would be available to unauthorized persons.
- Hands should be kept clear of the barrel end. To prevent the tool from firing accidentally, two separate motions are required for firing: one to bring the tool into position, and another to pull the trigger. The tools must not be able to operate until they are pressed against the work surface with a force of at least five pounds greater than the total weight of the tool.

If a powder-actuated tool misfires, the employee should wait at least 30 seconds, then try firing it again. If it still will not fire, the user should wait another 30 seconds so that the faulty cartridge is less likely to explode, than carefully remove the load. The bad cartridge should be put in water.

Suitable eye, face, and hearing protection are required when using a powder-actuated tool.

The muzzle end of the tool must have a protective shield or guard centered perpendicularly on the barrel to confine any flying fragments or particles that might otherwise create a hazard when the tool is fired. The tool must be designed so that it will not fire unless it has this kind of safety device.

All powder-actuated tools must be designed for varying powder charges so that the user can select a powder level necessary to do the work without excessive force.

If the tool develops a defect during use it should be tagged and taken out of service immediately until it is properly repaired.

Spent and non-spent strips/fasteners must be stored and disposed of according to local regulations. Do not leave the strips/fasteners in the gun when not in use.

POWDER ACTUATED TOOL FASTENERS

When using powder-actuated tools to apply fasteners, there are some precautions to consider. Fasteners must not be fired into material that would let them pass through to the other side. The fastener must not be driven into materials like brick or concrete any closer than three inches to an edge or corner.

In steel, the fastener must not come any closer than one-half inch from a corner or edge. Fasteners must not be driven into very hard or brittle materials which might chip or splatter or make the fastener ricochet.

An alignment guide must be used when shooting a fastener into an existing hole. A fastener must not be driven into a spalled area caused by an unsatisfactory fastening.

HYDRAULIC POWER TOOLS

The fluid used in hydraulic power tools must be an approved fire-resistant fluid and must retain its operating characteristics at the most extreme temperatures to which it will be exposed. The manufacturer's recommended safe operating pressure for hoses, valves, pipes, filters, and other fittings must not be exceeded.

JACKS

All jacks - lever and ratchet jacks, screw jacks, and hydraulic jacks - must have a device that stops them from jacking up too high. Also, the manufacturer's load limit must be permanently marked in a prominent place on the jack and should not be exceeded.

A jack should never be used to support a lifted load. Once the load has been lifted, it must immediately be blocked up. Use wooden blocking under the base, if necessary, to make the jack level and secure. If the lift surface is metal, place a 1-inch-thick hardwood block or equivalent between it and the metal jack head to reduce the danger of slippage.

To set up a jack, make certain of the following:

- The base rests on a firm level surface
- The jack is correctly centered
- The jack head bears against a level surface
- The lift force is applied evenly

Proper maintenance of jacks is essential for safety. All jacks must be inspected before each use and lubricated regularly. If a jack is subjected to an abnormal load or shock, it should be thoroughly examined to make sure it has not been damaged.

Hydraulic jacks exposed to freezing temperatures must be filled with an adequate antifreeze liquid.

INSPECTION

Employees shall make sure to inspect tools before and after use them to determine that it is clean, free from defects or misuse, that all moving parts operate freely, and that the tool is free from obstructions and has the proper shield, guard, and attachments recommended by the manufacturer.

Check form to ensure all are listed – list as bullets

Before using hand tools inspect for the following:	
	The outside of the tool is free of grease, oil and accumulated foreign matter
	The tool has no visible cracks in jaws or handle
	Blades or bits are not damaged, cracked, etc.
	Handles are not cracked, damaged or loose from heads of hammers, axes mauls and other similar tools
	Tips of screwdrivers, chisels, or other similar tools show no excessive wear
	Gripping surfaces pliers, wrenches, or other similar tools are not worn
	Tools such as chisels, and punches do not have mushroomed heads
	Cutting tools such as chisels, and axes are sharp
	Tool appears to be in generally good condition
Before using portable power tools inspect for the following:	
	The outside of the tool is free of grease, oil, and accumulated foreign matter
	Tool power-source shows no damage (cord, airline, battery, etc.)
	Tool is double insulated and tool housing is not damaged
	If so equipped, electrical cord third prong (ground) is intact
	All shields, guards, or attachments required by OSHA or manufacturer are present
	Rotating or moving parts of tool are guarded to prevent physical contact
	Tool is not leaking fluid such as gasoline, oil, etc.
	Blades or bits are not damaged, cracked, excessively worn, etc.
	Tool appears to be in generally good condition o Proper PPE is available

Hazard Analysis / Daily Risk Assessment (DRA)

PURPOSE

The purpose of this document is to outline the Hazard Analysis Program for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

The Hazard Analysis Program will provide a consistent approach throughout CCI for pre-job hazard assessment. The Program identifies, analyzes, and records existing and/or potential safety and health hazards associated with each step. The Program steps include hazard identification, assessment, and control to assist in preventing work related injuries, illnesses, property damage, environmental impact, and near misses. The Program is also in place to support an effective means of communication of hazards prior to starting a task or when the scope of a task changes. CFR 1926.21(b)(2) and CCR 1510(c)-CCR 1511(b)

POLICY

CCI and its employees have a responsibility to identify, assess, and control workplace hazards. The Daily Risk Assessment (DRA) is an essential element in the hazard assessment process. DRA are the means for conducting pre-job hazard assessment that will assist identifying, assessing, and controlling risks performed by CCI's employees or those working for CCI. CCI employees at each location or worksite will have the responsibility to perform DRAs based on their job duties and operational requirements.

A DRA must be developed and implemented for each identified operation and task at the jobsite. When the scope of the job changes, a review of the original DRA must be performed. In circumstances where the risks are not included within the original DRA, a new DRA or applicable changes to the existing DRA must occur. The completed DRA must be onsite and readily available to all personnel. The Supervisor where the work is being performed must complete all DRA's prior to work commencing. All completed DRA's must be saved/retained as dictated by CCI's procedures.

TRAINING

DRA training will be given to all field employees upon hire. by the Safety Department. Managers and Supervisors are responsible for day-to-day training. This program will be evaluated yearly and updated accordingly.

Hazardous Waste Operations/Emergency Response (HAZWOPER)

PURPOSE

The purpose of this document is to outline the Hazardous Waste Operations and Emergency Response Program (HAZWOPER) for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

POLICY

CCI will review and evaluate this standard practice instruction on an annual basis, or when changes occur to [29 CFR Subpart B 1926.5](#) that prompt revision of this document, or when facility or site operational changes occur that require a revision of this document. Effective implementation of this program requires support from all levels of management within this company.

This written program will be communicated to all employees that are assigned to a worksite where the HAZWOPER program is applicable. 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.

CCI will maintain a HAZWOPER program because it has been determined that there is a reasonable possibility for employee exposure to safety or health hazards associated with hazardous waste. This standard practice instruction will provide an operational framework for clean-up operations required by a governmental body, whether Federal, state, local or other involving hazardous substances that are conducted at uncontrolled hazardous waste sites (including, but not limited to, the EPA's National Priority Site List (NPL,) state priority site lists, sites recommended for the EPA NPL, and initial investigations of government identified sites which are conducted before the presence or absence of hazardous substances has been ascertained).

- Corrective actions involving clean-up operations at sites covered by the Resource Conservation and Recovery Act of 1976 (RCRA) as amended (42 U.S.C. 6901 et seq.)
- Voluntary clean-up operations at sites recognized by Federal, state, local or other governmental bodies as uncontrolled hazardous waste sites.
- Operations involving hazardous wastes that are conducted at treatment, storage, and disposal (TSD) facilities regulated by 40 CFR parts 264 and 265 pursuant to RCRA; or by agencies under agreement with U.S.E.P.A. to implement RCRA regulations.
- Emergency response operations for releases of, or substantial threats of releases of, hazardous substances without regard to the location of the hazard.

SITE EVACUATION

Site excavations created during initial site preparation or during hazardous waste operations shall be shored or sloped as appropriate to prevent accidental collapse in accordance with [29 CFR Subpart P 1926.5](#)

CONTRACTORS AND SUBCONTRACTORS

Should CCI retain subcontractor services for work in hazardous waste operations CCI shall inform those subcontractors, or their representatives of the site emergency response procedures and any potential fire, explosion, health, safety or other hazards of the hazardous waste operation that have been identified by this employer, including those identified in this employer's information program.

PROGRAM AVAILABILITY

CCI written safety and health program shall be made available to:

- subcontractor or their representative who will be involved with the hazardous waste operation.
- All associated employees and their designated representatives.
- OSHA personnel.
- Authorized personnel of other Federal, state, or local agencies with regulatory authority over the site.

ORGANIZATIONAL STRUCTURE PART OF SITE PROGRAM

The organizational structure part of the program shall establish the specific chain of command and specify the overall responsibilities of supervisors and employees. It shall include, at a minimum, the following elements:

- The Responsible Safety Person or other competent person will be designated to have responsibility and authority to direct all hazardous waste operations.
- The Responsible Safety Person will have the responsibility and authority to develop and implement the site safety and health plan and verify compliance.
- All other personnel needed for hazardous waste site operations and emergency response and their general functions and responsibilities.
- The organizational structure shall be reviewed and updated as necessary to reflect the current status of waste site operations.

COMPREHENSIVE WORK PLAN AS PART OF SITE PROGRAM

CCI shall ensure subcontractor will develop a comprehensive work plan that shall address the tasks and objectives of the site operations and the logistics and resources required to reach those tasks

and objectives.

The work plan shall:

- Address anticipated clean-up activities as well as normal operating procedures which need not repeat this employer's procedures available elsewhere.
- Define work tasks and objectives and identify the methods for accomplishing those tasks and objectives.
- Establish personnel requirements for implementing the plan.
- The work-plan shall provide for the implementation of the training required by worker involved in site activities.
- The work-plan shall provide for the implementation of the required informational programs required workers involved in site activities.
- The work-plan shall provide for the implementation of a medical surveillance program required workers involved in site activities.

SITE SPECIFIC SAFETY AND HEALTH PLAN

CCI shall ensure subcontractor will develop a site safety and health plan, which will be kept on site. The plan will address the safety and health hazards of each phase of site operation and include the requirements and procedures for employee protection. The site safety and health plan, as a minimum, shall address the following:

- A safety and health risk or hazard analysis for each site task and operation found in the work-plan.
- Employee training assignments to assure compliance with the training section of this instruction.
- Personal protective equipment to be used by employees for each of the site tasks and operations being conducted as required by the personal protective equipment program.
- Medical surveillance requirements.
- Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of monitoring and sampling equipment to be used.
- Site control measures.
- Decontamination procedures.
- Emergency response plan meeting the requirements for safe and effective responses to emergencies, including the necessary PPE and other equipment.
- Confined space entry procedures.
- Spill containment requirements.

DECONTAMINATION PROCEDURES

CCI shall ensure subcontractor has developed a decontamination procedure which shall be, communicated to employees, and implemented before any employees or equipment may enter areas on site where potential for exposure to hazardous substances exists. Standard operating procedures shall be developed to minimize employee contact with hazardous substances or with equipment that has contacted hazardous substances.

All employees leaving a contaminated area shall be appropriately decontaminated. All contaminated clothing and equipment leaving a contaminated area shall be appropriately disposed of or decontaminated.

Decontamination procedures shall be monitored by the site safety and health supervisor to determine their effectiveness. When such procedures are found to be ineffective, appropriate steps shall be taken to correct any deficiencies.

Location

Decontamination shall be performed in geographical areas that will minimize the exposure of uncontaminated employees or equipment to contaminated employees or equipment.

Personal Protective Clothing and Equipment

Protective clothing and equipment shall be decontaminated, cleaned, laundered, maintained or replaced as needed to maintain their effectiveness.

Employees whose non-impermeable clothing becomes wetted with hazardous substances shall immediately remove that clothing and proceed to shower. The clothing shall be disposed of or decontaminated before it is removed from the work zone. Unauthorized employees shall not remove protective clothing or equipment from change rooms.

Showers and Change Rooms

Where the decontamination procedure indicates a need for regular showers and change rooms outside of a contaminated area, they shall be provided and meet the requirements of [29 CFR 1910.141](#). If temperature conditions prevent the effective use of water, then other effective means for cleansing shall be provided and used.

PRE-ENTRY BRIEFING

CCI will ensure subcontractor provides a site-specific safety and health plan for pre-entry briefings to be held prior to initiating any site activity, and at such other times as necessary to ensure that employees are apprised of the site safety and health plan and that this plan is being followed. The information and data obtained from site characterization and analysis will be used to prepare and update the site safety and health plan.

EFFECTIVENESS OF SITE SPECIFIC HEALTH AND SAFETY

Inspections shall be conducted by the supervisor to determine the effectiveness of the site safety and health plan.

Any deficiencies in the effectiveness of the site safety and health plan shall be corrected by this employer.

SITE CHARACTERIZATION AND ANALYSIS

The site shall be evaluated in accordance with the DRA/ to identify specific site hazards and to determine the appropriate safety and health control procedures needed to protect employees from the identified hazards.

RISK IDENTIFICATION

Once the presence and concentrations of specific hazardous substances and health hazards have been established, the risks associated with these substances shall be identified. Employees who will be working on the site shall be informed of any risks that have been identified. In situations covered by the Hazard Communication Standard, 29 CFR 1910.1200, training required by that standard will not be duplicated. Risks to be considered include, but are not limited to:

- Exposures exceeding the permissible exposure limits and published exposure levels
- IDLH concentrations
- Potential skin absorption and irritation sources
- Potential eye irritation sources
- Explosion sensitivity and flammability ranges
- Oxygen deficiency

EMPLOYEE NOTIFICATION

Any information concerning the chemical, physical, and toxicological properties of each substance known or expected to be present on site that is available to this employer and relevant to the duties an employee is expected to perform shall be made available to the affected employees prior to the commencement of their work activities. This employer may elect to utilize information developed for the hazard communication standard for this purpose.

SITE CONTROL

Appropriate site control procedures will be implemented to control employee exposure to hazardous substances before clean-up work begins.

A site control program for protecting employees which is part of this employer's site safety and health program will be developed during the planning stages of a hazardous waste clean-up

operation and modified as necessary as new information becomes available.

Elements of the Site Control Program

- A site maps
- Site work zones
- The use of a "buddy system"
- Site communications including alerting means for emergencies
- The standard practice instructions or safe work practices
- Identification of the nearest medical assistance

TRAINING

All training for subcontractors shall be based upon duties and functions. See Training requirements charts within this program for a breakdown of training requirement(s) by role. Employees must be trained before they are allowed to participate in emergency operations.

All employees working on site exposed to hazardous substances, health hazards, or safety hazards and their supervisors and management responsible for the site shall receive training before they are permitted to engage in hazardous waste operations.

Staff	Requirement
Routine site employees	40 hours initial
	24 hours field
	8 hours annual refresher
Routine site employees (minimal exposure)	24 hours initial
	8 hours field
	8 hours annual refresher
Non-Routine site employees	24 hours initial
	8 hours field
	8 hours annual refresher
Supervisors/Manager of Routine site employees	40 hours initial
	24 hours field
	8 hours HAZWASTE Mgmt.
	8 hours annual refresher

EMERGENCY RESPONSE

An emergency response plan shall be developed and implemented to handle anticipated emergencies prior to the commencement of emergency response operations. The plan shall be in writing and available for inspection by employees, their representatives and OSHA.

Items that must be addressed in each emergency response plan are as follows:

- Pre-emergency planning and coordination with outside parties.
- Personnel roles, lines of authority, training, and communications.
- Emergency recognition and prevention.
- Safe distances and places of refuge.

Employees who are engaged in responding to hazardous emergency situations at hazardous waste clean-up sites that may expose them to hazardous substances shall be trained in how to respond to such expected emergencies.

Hazard Communication (HAZCOM)

PURPOSE

The purpose of this document is to outline the Hazard Communication Program for **Cirks Construction Inc.**; hereafter referred to as "CCI,"It provides detailed safety guidelines and instructions for receipt, use and storage of chemicals at our facility by employees and contractors. Reference: OSHA Standard [29 CFR 1910.1200](#) and [CFR 1926.59](#).

RESPONSIBILITIES

Management

- Ensure compliance with this program
- Conduct immediate corrective action for deficiencies found in the program
- Maintain an effective Hazard Communication training program
- Make this plan available to employees or their designated representative
- Supply all necessary PPE for employees

Warehouse and Procurement

- Ensure all received containers are properly labeled and that labels are not removed or defaced
- Ensure all shipped containers are properly labeled
- Ensure shipping department employees are professionally trained in spill response
- Obtain, from the manufacturer, Safety Data Sheets (SDS) for chemicals purchased from retail sources

Responsible Safety Person

- Maintain a list of hazardous chemicals using the identity that is referenced on the SDS and ensure the SDS are properly distributed
- Monitor the effectiveness of the program
- Conduct annual audit of the program
- Monitor employee training to ensure effectiveness
- Keep management informed of necessary changes
- Ensure SDS are available as required
- Monitor facility for proper use, storage, and labeling of chemicals
- Ensure SDS are available for emergency medical personnel when treating exposed employees
- Provide information, as requested, concerning health effects and exposure symptoms listed on SDS

Supervisors

- Comply with all specific requirements of the program
- Ensure proper PPE is worn pursuant to SDS
- Provide specific chemical safety training for assigned employees
- Ensure chemicals are safely used stored and labeled
- Ensure only the minimum amount necessary is kept at workstations
- Ensure up to date SDS are readily accessible to all employees on all shifts

Employees

- Comply with chemical safety requirements of this program
- Ensure proper PPE is worn pursuant to SDS
- Report any problems with storage or use of chemicals
- Immediately report spills of suspected spills of chemicals
- Use only those chemicals for which they have been trained
- Use chemicals only for specific assigned tasks in the proper manner

Subcontractors

- Comply will all aspects of this program
- Ensure proper PPE is worn pursuant to SDS
- Coordinate information with the Responsible Safety Person
- Ensure employees are professionally trained
- Notify the supervisor before bringing any chemicals into company property of facilities
- Monitor and ensure proper storage and use of chemicals by employees

POLICY

This written Hazard Communication Program (HAZCOM) has been developed based on OSHA Hazard Communication Standard and consists of the following elements:

- Materials Inventory
- Identification of Hazardous Materials
- Product Warning Labels
- Safety Data Sheets (SDS)
- Written Hazard Communication Program
- Effective Employee Training

A copy of CCI's Health, Safety, & Environmental Manual (including the HAZCOM policy) shall be readily available.

Some chemicals are explosive, corrosive, flammable, or toxic. Other chemicals are safe to use and store but may become dangerous when they interact with other substances. To avoid injury and/or property damage, persons who manage chemicals in any area of operation must

understand the hazardous properties of the chemicals. Before using a specific chemical, safe handling methods and health hazards must always be reviewed.

Supervisors and subcontractors are responsible for ensuring that the equipment needed to work safely with chemicals is accessible and maintained for their respective employees on all shifts. SDS shall be maintained and readily accessible in each work area. SDS shall be made available, upon request, to employees, their designated representatives.

All aspects of CCI's HAZCOM policy are subject to annual review by the Responsible Safety Person to ensure the effectiveness of the policy, to further guarantee a safe work environment for employees, and to reflect any regulatory changes to which the policy must adhere to.

EMPLOYEE TRAINING

Initial Orientation Training

All new employees shall receive safety orientation training covering the elements of the HAZCOM and Right to Know Program. This training will consist of general training covering:

- Location and availability of the written HAZCOM policy
- The specific physical and health hazard of all chemicals in the workplace
- Specific control measures for protection from physical or health hazards
- Explanation of the chemical labeling system
- The requirements of regulatory bodies, industry standards and best safety practices regarding specific chemicals
- Location and use of SDS
- Measures employees can take to protect themselves from hazards, including specific procedures CCI has implemented for employee protection

Employees shall be provided with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new physical or health hazard the employees have not previously been trained about is introduced into their work area. Information and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and safety data sheets.

Job Specific Training

Employees will receive on the job training from their supervisor. This training will cover the proper use, inspection and storage of necessary personal protective equipment and chemical safety training for the specific chemicals they will be using or will be working around.

Annual Refresher Training

Annual Hazard Communication refresher training will be conducted as part of CCI's continuing safety training program.

Immediate On-the-Spot Training

This training will be conducted by supervisors for any employee that requests additional information or exhibits a lack of understanding of the safety requirements.

CCI will maintain employee training records for 3 years from the date the training occurred.

NON-ROUTINE TASKS

Non-routine tasks are defined as working on, near, or with unlabeled piping, unlabeled containers of an unknown substance.

Once a hazard is identified, the supervisor will determine the necessary precautions needed to either remove the hazard, change to a non-hazard, or protect from the hazard to safeguard the employees present.

OFF SITE USE OR TRANSPORTATION OF CHEMICALS

An SDS will be provided to employees for each chemical and each occurrence of use or transport away from CCI facilities. All State and Federal DOT Regulations will be followed including use of certified containers, labeling, and marking, securing of containers and employee training.

GENERAL CHEMICAL SAFETY

Assume all chemicals are hazardous. The number of hazardous chemicals and the number of reactions between them is so large that prior knowledge of all potential hazards cannot be assumed. Use chemicals in as small quantities as possible to minimize exposure and reduce possible harmful effects.

The following general safety rules shall be observed when working with chemicals:

- Read and understand the Safety Data Sheets.
- Keep the work area clean and orderly.
- Use the necessary safety equipment.
- Carefully label every container with the identity of its contents and appropriate hazard warnings.
- Store incompatible chemicals in separate areas.
- Substitute fewer toxic materials whenever possible.
- Limit the volume of volatile or flammable material to the minimum needed for short operation periods.
- Provide means of containing the material if equipment or containers should break or spill their contents.

In the event engineering and administrative controls cannot maintain hazardous material exposure to safe levels CCI will provide the necessary personal protective equipment (PPE) to perform the task.

TASK EVALUATION

Each task that requires the use of chemicals should be evaluated to determine the potential hazards associated with the work. This hazard evaluation must include the chemical or combination of chemicals that will be used in the work, as well as other materials that will be used near the work.

CHEMICAL STORAGE

The separation of chemicals (solids or liquids) during storage is necessary to reduce the possibility of unwanted chemical reactions caused by accidental mixing. Explosives should be stored separately outdoors. Use either distance or barriers (e.g., trays) to isolate chemicals into the following groups:

- Flammable Liquids: store in approved flammable storage lockers.
- Acids - Treat as flammable liquids.
- Bases - Do not store bases with acids or any other material.
- Other liquids - Ensure other liquids are compatible with any other chemical in the same storage location.
- Lips, strips, or bars are to be installed across the width of storage shelves to restrain the chemicals in case of earthquake.

Chemicals will not be stored in the same refrigerator used for food storage. Refrigerators used for storing chemicals must be appropriately identified by a label on the door.

STORAGE CABINETS

Any flammable and/or combustible liquid must be stored separately from any ignition source. Any source of ignition is prohibited in areas where flammable and combustible sources are stored. This includes cigarette smoking, sparks from welding or grinding, open flames, etc.

Not more than 60 gallons of Category 1,2 or 3 flammable liquids, nor more than 120 gallons of Category 4 flammable liquids may be stored in a storage cabinet.

Cabinets shall be labeled in conspicuous lettering, "**Flammable – Keep Fire Away,**"

In addition to ignition source storage rules, flammable and combustible liquids must be stored in areas away from substances that may cause a reaction, such as an oxygen tank.

The storage, handling, and use of flammable or combustible liquids in a glass or plastic container, with a capacity greater than those listed in subsection 6.2, is permitted only if the required liquid purity would be affected by storage in a metal container, or if the liquid would cause excessive corrosion of the metal container.

Properly stoppered or closed containers may be stored outside of a storage cabinet if they are of a capacity of 1 liter or less for flammable liquids and of a capacity of 5 liters or less for combustible liquids. However, it is preferable to store all flammable or combustible liquid, regardless of container type, in a storage cabinet when not in use.

Where individual containers with a capacity greater than those listed in subsection 6.2 are required for storage of flammable and combustible liquids in a building, safety containers conforming to the CSA-B376 "Portable Containers for Gasoline and Other Petroleum Fuels" or the ULC/ORD-C30 "Safety Container" guidelines, shall be used. Furthermore, these containers must not have a capacity greater than 25 liters.

All containers for flammable or combustible liquid shall be labeled in accordance with WHMIS regulations. Labelling must be with easily legible type, which contrasts any other printed matter on the container.

Up to 5 liters of flammable liquids may be stored in basement areas, provided it is stored in a safety container conforming to the guidelines listed in subsection 6.3.

The maximum volume of flammable and combustible liquid that can be stored outside of a cabinet in a room with no fire separation rating is 10 L, of which not more than 5 L can be flammable liquid.

CONTAINER LABELS

It is extremely important that all containers of chemicals are properly labeled. This includes every type of container from a 5000-gallon storage tank to a spray bottle of degreaser. 29 CFR [1910.1200\(f\)](#) and [1926.59](#).

The following requirements apply:

- All containers will have the appropriate label, tag or marking prominently displayed that indicates the identity, safety, and health hazards.
- Portable containers which contain a small amount of chemical need not be labeled if they are used immediately that shift but must be under the strict control of the employee using the product.
- All warning labels, tags, etc., must be maintained in a legible condition and not be defaced. Facility weekly supervisor inspections will check for compliance of this rule.
- Incoming chemicals are to be checked for proper labeling.

Each container label should contain the following information:

- Product Identifier
- Pictograms
- Signal Word
- Precautionary Statements
- Supplier Identification (name, address, and telephone number of the chemical manufacture)

CCI shall ensure that workplace labels or other forms of warning are legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift. Employers having employees who speak other languages may add the information in their language to the material presented, if the information is presented in English as well.

If you find a container without a label or with a torn or illegible label, report it to your supervisor immediately. Don't attempt to handle a chemical without a label until you know what it is. If you're carrying hazardous chemicals in a portable container that someone else might use, the container must be labeled to ensure the safety of other workers.

Secondary Container

When you transfer a chemical from its original container to another container, the container you transfer it into is called a secondary container such as a beaker, flask, or bottle.

Secondary Container Labeling

These containers usually hold chemicals that are transferred from a primary container. Secondary containers must comply with GHS labeling requirements except when the following criteria are met: The material is used within the work shift of the individual who makes the transfer.

EMERGENCIES AND SPILLS

In case of an emergency, implement the proper Emergency Action Plan

- Evacuate people from the area.
- Isolate the area.
- If the material is flammable, turn off ignition and heat sources.
- Only personnel specifically trained in emergency response are permitted to participate in chemical emergency procedures beyond those required to evacuate the area.
- Call for Emergency Response Team assistance if required.

HOUSEKEEPING

- Maintain the smallest possible inventory of chemicals to meet immediate needs.

- Periodically review stock of chemicals on hand.
- Ensure that storage areas, or equipment containing large quantities of chemicals, are secure from accidental spills.
- Rinse emptied bottles that contain acids or inflammable solvents before disposal.
- Recycle unused laboratory chemicals wherever possible.
- **DO NOT** Place hazardous chemicals in salvage or garbage receptacles.
- **DO NOT** Pour chemicals onto the ground.
- **DO NOT** Dispose of chemicals through the storm drain system.
- **DO NOT** Dispose of highly toxic, malodorous chemicals down sinks or sewer drains.

MULTI-EMPLOYERS WORKSITE

CCI shall maintain in the workplace copies of the required safety data sheets for each hazardous chemical and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s). Where employees must travel between workplaces during a work shift, i.e., their work is conducted at more than one geographical location, the safety data sheets may be kept at the primary workplace facility. The written HAZCOM Program will also be available to employees or their designated representatives in accordance with the requirements of [29 CFR 1910.1020 \(e\)](#).

All outside contractors are required to follow the requirements of this program. CCI will provide Contractor's information concerning:

- Pre-job/kick-off briefing shall be conducted with the contractor prior to the initiation of work on the site.
- Location of SDS.
- Precautions to be taken to protect contractor employees.
- Potential exposure to hazardous substances.
- Chemicals used in or stored in areas where they will be working.
- Location and availability of Safety Data Sheets.
- Recommended Personal Protective Equipment.
- Labeling system for chemicals.

A written hazard communication program shall be developed, implemented, and maintained at each workplace that describes how labels and other forms of warning, safety data sheets, and employee information will be met.

INFORMATION CHEMICAL USERS MUST KNOW

Fire and/or Explosion Information

- Material Flash Point, auto-ignition temperature, and upper/lower flammability limits
- Proper fire extinguishing agents to be used
- Firefighting techniques

- Any unusual fire or explosive hazards

Chemical Reaction Information

- Stability of chemical
- Conditions and other materials which can cause reactions with the chemical
- Dangerous substances that can be produced when the chemical reacts

Control Measures

- Engineering Controls required for safe product use
- Personal protective equipment required for use of product
- Safe storage requirements and guidelines
- Safe handling procedures

Health Hazards

- Permissible Exposure Limit (PEL) and Threshold Limit Value (TLV)
- Acute or Chronic symptoms of exposure
- Main routes of entry into the body
- Medical conditions that can be made worse by exposure
- Cancer causing properties if any
- Emergency and First Aid treatments

Spill and Leak Procedures

- Clean up techniques
- Personal Protective Equipment to be used during cleanup
- Disposal of waste and cleanup material

EMPLOYEE USE OF SDS

For SDS use to be effective, employees must:

- Know the location of the SDS
- Understand the major points for each chemical
- Check SDS when more information is needed, or questions arise
- Be able to quickly locate the emergency information on the SDS
- Follow the safety practices provided on the SDS

GHS (GLOBAL HARMONIZATION SYSTEM)

Introduction to the GHS

The Globally Harmonized System (GHS) is an international approach to hazard communication, providing agreed criteria for classification of chemical hazards, and a standardized approach to label elements and safety data sheets. The GHS was negotiated in a multi-year process by hazard communication experts from many different countries, international organizations, and stakeholder groups. It is based on major existing systems around the world, including OSHA's Hazard Communication Standard and the chemical classification and labeling systems of other US agencies.



The result of this negotiation process is the United Nations' document entitled "Globally Harmonized System of Classification and Labeling of Chemicals," commonly referred to as The Purple Book. This document provides harmonized classification criteria for health, physical, and environmental hazards of chemicals. It also includes standardized label elements that are assigned to these hazard classes and categories, and provide the appropriate signal words, pictograms, and hazard and precautionary statements to convey the hazards to users. A standardized order of information for safety data sheets is also provided. These recommendations can be used by regulatory authorities such as OSHA to establish mandatory requirements for hazard communication, but do not constitute a model regulation.

Overview

The revised Hazard Communication Standard (HCS) is a modification to the existing standard. The parts of the standard that did not relate to the GHS (such as the basic framework, scope, and exemptions) remained unchanged. There have been some modifications to terminology to align the revised HCS with language used in the GHS.

For example, the term "hazard determination" has been changed to "hazard classification" and "material safety data sheet" was changed to "safety data sheet." OSHA stakeholders commented on this approach and found it to be appropriate.

Under both the current Hazard Communication Standard (HCS) and the revised HCS, an evaluation of chemical hazards must be performed considering the available scientific evidence concerning such hazards. Under the current HCS, the hazard determination provisions have definitions of hazard, and the evaluator determines whether or not the data on a chemical meet those definitions.

It is a performance-oriented approach that provides parameters for the evaluation, but not specific, detailed criteria. The hazard classification approach in the revised HCS is quite different. The revised HCS has specific criteria for each health and physical hazard, along with detailed instructions for hazard evaluation and determinations as to whether mixtures or substances are covered. It also establishes both hazard classes and hazard categories—for most of the effects; the classes are divided into categories that reflect the relative severity of the effect. The current HCS does not include categories for most of the health hazards covered, so this new approach provides additional information that can be related to the appropriate response to address the hazard. OSHA has included the general provisions for hazard classification in paragraph (d) of the revised rule and added extensive appendixes (Appendixes [A](#) and [B](#)) that address the criteria for each health or physical effect.

Major changes to the Hazard Communication Standard?

A. The three major areas of change are in hazard classification, labels, and safety data sheets.

Hazard Classification

The definitions of hazard have been changed to provide specific criteria for classification of health and physical hazards, as well as classification of mixtures. These specific criteria will help to ensure that evaluations of hazardous effects are consistent across manufacturers, and that labels and safety data sheets are more accurate as a result.

Labels

Chemical manufacturers and importers will be required to provide a label that includes a harmonized signal word, pictogram, and hazard statement for each hazard class and category. Precautionary statements must also be provided.

Safety Data Sheets - Will now have a specified 16-section format.

HAZARD COMMUNICATION STANDARD: SAFETY DATA SHEETS

The information required on the safety data sheet (SDS) requires that the information on the SDS be presented using specific headings in a specified sequence.

Paragraph (g) of the final rule provides the headings of information to be included on the SDS and the order in which they are to be provided. In addition, Appendix [D](#) provides the information to be included under each heading. The SDS format is the same as the ANSI standard format, which is widely used in the U.S. and is already familiar to many employees.

The format of the 16-section SDS should include the following sections:

- Section 1. Identification
- Section 2. Hazard(s) identification
- Section 3. Composition/information on ingredients
- Section 4. First-Aid measures
- Section 5. Fire-fighting measures
- Section 6. Accidental release measures
- Section 7. Handling and storage
- Section 8. Exposure controls/personal protection
- Section 9. Physical and chemical properties
- Section 10. Stability and reactivity
- Section 11. Toxicological information
- Section 12. Ecological information
- Section 13. Disposal considerations
- Section 14. Transport information
- Section 15. Regulatory information
- Section 16. Other information, including date of preparation or last revision.

The SDS must also contain Sections 12-15, to be consistent with the United Nations' Globally Harmonized System of Classification and Labeling of Chemicals (GHS). Although the headings for Sections 12-15 are mandatory, OSHA will not enforce the content of these four sections because these sections are within other agencies' jurisdictions.

The Hazard Communication Standard (HCS) ([29 CFR 1910.1200\(g\)](#)), revised in 2012, requires that the chemical manufacturer, distributor, or importer provide Safety Data Sheets (SDSs) (formerly MSDSs or Material Safety Data Sheets) for each hazardous chemical to downstream users to communicate information on these hazards. The information contained in the SDS is the same as the former MSDS, except now the SDSs are required to be presented in a consistent user-friendly, 16-section format. This brief provides guidance to help workers who manage hazardous chemicals to become familiar with the format and understand the contents of the SDSs.

The SDS includes information such as the properties of each chemical; the physical, health, and environmental health hazards; protective measures; and safety precautions for handling, storing, and transporting the chemical. The information contained in the SDS must be in English (although it may be in other languages as well). In addition, OSHA requires that SDS preparers provide specific minimum information as detailed in Appendix [D](#) of 29 CFR 1910.1200. The SDS preparers may also include additional information in various section(s).

Sections 1 through 8 contain general information about the chemical, identification, hazards, composition, safe handling practices, and emergency control measures (e.g., firefighting).

This information should be helpful to those that need to get the information quickly. Sections 9 through 11 and 16 contain other technical and scientific information, such as physical and chemical properties, stability and reactivity information, toxicological information, exposure control information, and other information including the date of preparation or last revision. The SDS must also state that no applicable information was found when the preparer does not find relevant information for any required element.

A description of all 16 sections of the SDS, along with their contents, is presented here:

Section 1: Identification

This section identifies the chemical on the SDS as well as the recommended uses. It also provides the essential contact information of the supplier. The required information consists of:

- Product identifier used on the label and any other common names or synonyms by which the substance is known.
- Name, address, phone number of the manufacturer, importer, or other responsible party, and emergency phone number.
- Recommended use of the chemical (e.g., a brief description of what it actually does, such as flame retardant) and any restrictions on use (including recommendations given by the supplier).

Section 2: Hazard(s) Identification

This section identifies the hazards of the chemical presented on the SDS and the appropriate warning information associated with those hazards. The required information consists of:

- The hazard classification of the chemical (e.g., flammable liquid, category¹).
- Signal word.
- Hazard statement(s).
- Pictograms (the pictograms or hazard symbols may be presented as graphical reproductions of the symbols in black and white or be a description of the name of the symbol (e.g., skull and crossbones, flame).
- Precautionary statement(s).
- Description of any hazards not otherwise classified.
- For a mixture that contains an ingredient(s) with unknown toxicity, a statement describing how much (percentage) of the mixture consists of ingredient(s) with unknown acute toxicity. Please note that this is a total percentage of the mixture and not tied to the individual ingredient(s).

Section 3: Composition/Information on Ingredients

This section identifies the ingredient(s) contained in the product indicated on the SDS, including impurities and stabilizing additives. This section includes information on substances, mixtures, and all chemicals where a trade secret is claimed. The required information consists of:

Substances:

- Chemical name.
- Common name and synonyms.
- Chemical Abstracts Service (CAS) number and other unique identifiers.
- Impurities and stabilizing additives, which are themselves classified and which contribute to the classification of the chemical.

Mixtures:

- Same information required for substances.
- The chemical name and concentration (i.e., exact percentage) of all ingredients which are classified as health hazards and are:
 - Present above their cut-off/concentration limits or
 - Present a health risk below the cut-off/concentration limits.
- The concentration (exact percentages) of each ingredient must be specified except concentration ranges may be used in the following situations:
 - A trade secret claim is made,
 - There is batch-to-batch variation, or
 - The SDS is used for a group of substantially similar mixtures.

Chemicals where a trade secret is claimed

- A statement that the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret is required.

Section 4: First-Aid Measures

This section describes the initial care that should be given by untrained responders to an individual who has been exposed to the chemical. The required information consists of:

- Necessary first-aid instructions by relevant routes of exposure (inhalation, skin and eye contact, and ingestion).
- Description of the most important symptoms or effects, and any symptoms that are acute or delayed.
- Recommendations for immediate medical care and special treatment needed, when necessary.

Section 5: Fire-Fighting Measures

This section provides recommendations for fighting a fire caused by the chemical. The required information consists of:

- Recommendations of suitable extinguishing equipment, and information about extinguishing equipment that is not appropriate for a particular situation.
- Advice on specific hazards that develop from the chemical during the fire, such as any hazardous combustion products created when the chemical burns.
- Recommendations on special protective equipment or precautions for firefighters.

Section 6: Accidental Release Measures

This section provides recommendations on the appropriate response to spills, leaks, or releases, including containment and cleanup practices to prevent or minimize exposure to people, properties, or the environment. It may also include recommendations distinguishing between responses for large and small spills where the spill volume has a significant impact on the hazard. The required information may consist of recommendations for:

- Use of personal precautions (such as removal of ignition sources or providing sufficient ventilation) and protective equipment to prevent the contamination of skin, eyes, and clothing.
- Emergency procedures, including instructions for evacuations, consulting experts when needed, and appropriate protective clothing.
- Methods and materials used for containment (e.g., covering the drains and capping procedures).
- Cleanup procedures (e.g., appropriate techniques for neutralization, decontamination, cleaning or vacuuming; adsorbent materials; and/or equipment required for containment/clean up.)

Section 7: Handling and Storage

This section provides guidance on the safe handling practices and conditions for safe storage of chemicals. The required information consists of:

- Precautions for safe handling, including recommendations for handling incompatible chemicals, minimizing the release of the chemical into the environment, and providing advice on general hygiene practices (e.g., eating, drinking, and smoking in work areas is prohibited).
- Recommendations on the conditions for safe storage, including any incompatibilities. Provide advice on specific storage requirements (e.g., ventilation requirements.)

Section 8: Exposure Controls/Personal Protection

This section indicates the exposure limits, engineering controls, and personal protective measures that can be used to minimize worker exposure. The required information consists of:

- OSHA Permissible Exposure Limits (PELs), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available.
- Appropriate engineering controls (e.g., use local exhaust ventilation, or use only in an enclosed system).
- Recommendations for personal protective measures to prevent illness or injury from exposure to chemicals, such as personal protective equipment (PPE) (e.g., appropriate types of eyes, face, skin or respiratory protection needed based on hazards and potential exposure).
- Any special requirements for PPE, protective clothing, or respirators (e.g., type of glove material, such as PVC or nitrile rubber gloves; and breakthrough time of the glove material).

Section 9: Physical and Chemical Properties

This section identifies physical and chemical properties associated with the substance or mixture. The minimum required information consists of:

- Appearance (physical state, color, etc.)
- Upper/lower flammability or explosive limits
- Odor
- Vapor pressure
- Odor threshold
- Vapor density
- pH
- Relative density
- Melting point/freezing point
- Solubility(ies)
- Initial boiling point and boiling range
- Flash point
- Evaporation rate
- Flammability (solid, gas)
- Upper/lower flammability or explosive limits
- Vapor pressure
- Vapor density
- Relative density
- Solubility(ies)
- Partition coefficient: n-octanol/water
- Auto-ignition temperature
- Decomposition temperature; and
- Viscosity.

The SDS may not contain every item on the above list because information may not be relevant or is not available. When this occurs, a notation to that effect must be made for that chemical property. Manufacturers may also add other relevant properties, such as the dust deflagration index (Kst) for combustible dust, used to evaluate a dust's explosive potential.

Section 10: Stability and Reactivity

This section describes the reactivity hazards of the chemical and the chemical stability information. This section is broken into three parts: reactivity, chemical stability, and other. The required information consists of:

Reactivity

- Description of the specific test data for the chemical(s). This data can be for a class or family of the chemical if such data adequately represent the anticipated hazard of the chemical(s), where available.

Chemical stability

- Indication of whether the chemical is stable or unstable under normal ambient temperature and conditions while in storage and being handled.
- Description of any stabilizers that may be needed to maintain chemical stability.
- Indication of any safety issues that may arise should the product change in physical appearance.

Other

- Indication of the possibility of hazardous reactions, including a statement whether the chemical will react or polymerize, which could release excess pressure or heat, or create other hazardous conditions. Also, a description of the conditions under which hazardous reactions may occur.
- List of all conditions that should be avoided (e.g., static discharge, shock, vibrations, or environmental conditions that may lead to hazardous conditions).
- List of all classes of incompatible materials (e.g., classes of chemicals or specific substances) with which the chemical could react to produce a hazardous situation.
- List of any known or anticipated hazardous decomposition products that could be produced because of use, storage, or heating. (Hazardous combustion products should also be included in Section 5 (Fire-Fighting Measures) of the SDS.)

Section 11: Toxicological Information

This section identifies toxicological and health effects information or indicates that such data are not available. The required information consists of:

- Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact). The SDS should indicate if the information is unknown.
- Description of the delayed, immediate, or chronic effects from short- and long-term exposure.
- The numerical measures of toxicity (e.g., acute toxicity estimates such as the LD50 (median lethal dose)) - the estimated amount [of a substance] expected to kill 50% of test animals in a single dose.
- Description of the symptoms. This description includes the symptoms associated with exposure to the chemical including symptoms from the lowest to the most severe exposure.
- Indication of whether the chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions) or found to be a potential carcinogen by OSHA

Section 12: Ecological Information (non-mandatory)

This section provides information to evaluate the environmental impact of the chemical(s) if it were released to the environment. The information may include:

- Data from toxicity tests performed on aquatic and/or terrestrial organisms, where available (e.g., acute or chronic aquatic toxicity data for fish, algae, crustaceans, and other plants; toxicity data on birds, bees, plants).
- Whether there is a potential for the chemical to persist and degrade in the environment either through biodegradation or other processes, such as oxidation or hydrolysis.
- Results of tests of bioaccumulation potential, referring to the octanol-water partition coefficient (Kow) and the bioconcentration factor (BCF), where available.
- The potential for a substance to move from the soil to the groundwater (indicate results from adsorption studies or leaching studies).
- Other adverse effects (e.g., environmental fate, ozone layer depletion potential, photochemical ozone creation potential, endocrine disrupting potential, and/or global warming potential).

Section 13: Disposal Considerations (non-mandatory)

This section provides guidance on proper disposal practices, recycling or reclamation of the chemical(s) or its container, and safe handling practices. To minimize exposure, this section should also refer the reader to Section 8 (Exposure Controls/Personal Protection) of the SDS. The information may include:

- Description of appropriate disposal containers to use.
- Recommendations of appropriate disposal methods to employ.
- Description of the physical and chemical properties that may affect disposal activities.
- Language discouraging sewage disposal.
- Any special precautions for landfills or incineration activities

Section 14: Transport Information (non-mandatory)

This section provides guidance on classification information for shipping and transporting of hazardous chemical(s) by road, air, rail, or sea. The information may include:

- UN number (i.e., four-figure identification number of the substance)¹.
- UN proper shipping name¹.
- Transport hazard class(es)¹.
- Packing group number, if applicable, based on the degree of hazard².
- Environmental hazards (e.g., identify if it is a marine pollutant according to the International Maritime Dangerous Goods Code (IMDG Code)).
- Guidance on transport in bulk (according to Annex II of MARPOL 73/78³ and the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code (IBC Code))).
- Any special precautions which an employee should be aware of or needs to comply with, in connection with transport or conveyance either within or outside their premises (indicate when information is not available).



Section 15: Regulatory Information (non-mandatory)

This section identifies the safety, health, and environmental regulations specific for the product that is not indicated anywhere else on the SDS. The information may include:










- Any national and/or regional regulatory information of the chemical or mixtures (including any OSHA, Department of Transportation, Environmental Protection Agency, or Consumer Product Safety Commission regulations)

Section 16: Other Information

This section indicates when the SDS was prepared or when the last known revision was made. The SDS may also state where the changes have been made to the previous version. You may wish to contact the supplier for an explanation of the changes. Other useful information also may be included here.

NEW HCS PICTOGRAMS AND HAZARDS




There are nine pictograms under the GHS to convey the health, physical and environmental hazards. The final Hazard Communication Standard (HCS) requires eight of these pictograms, the exception being the environmental pictogram, as environmental hazards are not within OSHA's jurisdiction. The hazard pictograms and their corresponding hazards are shown below.

Health Hazard	Flame	Exclamation Mark
		
<ul style="list-style-type: none"> • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity 	<ul style="list-style-type: none"> • Flammables • Pyrophoric • Self-Heating • Emits Flammable Gas • Self-Reactive • Organic Peroxides 	<ul style="list-style-type: none"> • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (non-Mandatory)
Gas Cylinder	Corrosion	Exploding Bomb
		
<ul style="list-style-type: none"> • Gases under Pressure 	<ul style="list-style-type: none"> • Skin Corrosion/ burns • Eye Damage • Corrosive to Metals 	<ul style="list-style-type: none"> • Explosives • Self-Reactive • Organic Peroxides
Flame Over Circle	Environment (Non-Mandatory)	Skull and Crossbones
		
<ul style="list-style-type: none"> • Oxidizers 	<ul style="list-style-type: none"> • Aquatic Toxicity 	<ul style="list-style-type: none"> • Acute Toxicity (fatal or toxic)

ALLOCATION OF LABEL ELEMENTS (EXAMPLES)

In the revised Hazard Communication Standard (HCS), OSHA has provided classifiers with the option of relying on the classification listings of IARC and NTP to make classification decisions regarding carcinogenicity, rather than applying the criteria themselves. OSHA believes that this will make classification easier for classifiers, as well as lead to greater consistency. In addition, OSHA has provided in non-mandatory Appendix F of the revised rule, guidance on hazard classification for carcinogenicity. Part A of Appendix F includes background guidance provided by GHS based on the Preamble of the IARC "Monographs on the Evaluation of Carcinogenic Risks to Humans" (2006). Part B provides IARC classification information. Part C provides background guidance from the National NTP "Report on Carcinogens" (RoC), and Part D is a table that

compares GHS carcinogen hazard categories to carcinogen classifications under IARC and NTP, allowing classifiers to be able to use information from IARC and NTP RoC carcinogen classifications to complete their classifications under the GHS, and thus the HCS.

CARCINOGENICITY		
Category 1A	Category 1B	Category 2
Danger	Danger	Warning
		
May cause cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	May cause cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	Suspected of causing cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
Not required under the UN Recommendations on the Transport of Dangerous Goods, Model Regulations.		

OSHA is retaining the requirement to include the American Conference of Government Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) on the safety data sheet (SDS) in the revised Standard. OSHA finds that requiring TLVs on the SDS will provide employers and employees with useful information to help them assess the hazards presented by their workplaces. In addition to TLVs, OSHA permissible exposure limits (PELs), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet are also required.

CCI strictly adheres to these guidelines.

DEFINITIONS

Chemical - any element, chemical compound, or mixture of elements and/or compounds.

Combustible Liquid - means any liquid having a flash point at or above 100 deg. F (37.8 deg. C), but below 200 deg. F (93.3 deg. C), except any mixture having components with flash points of 200 deg. F (93.3 deg. C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

Compressed Gas - any compound that exhibits:

- A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70 deg. F.

- A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130 deg. F. regardless of the pressure at 70 deg. F.
- A liquid having a vapor pressure exceeding 40 psi at 100 deg. F.

Container - any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers.

Employee - a worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies. Workers such as office workers or bank tellers who encounter hazardous chemicals only in non-routine, isolated instances are not covered.

Employer - a person engaged in a business where chemicals are either used, distributed, or are produced for use or distribution, including a contractor or subcontractor.

Explosive - a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

Exposure or Exposed - an employee is subjected in the course of employment to a chemical that is a physical or health hazard and includes potential (e.g., accidental, or possible) exposure. Subjected in terms of health hazards includes any route of entry (e.g., inhalation, ingestion, skin contact or absorption.)

Flammable - a chemical that falls into one of the following categories:

- "Aerosol, flammable" means an aerosol that yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening.
- "Gas, flammable" means:
 - A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen (13) percent by volume or less; or,
 - A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve (12) percent by volume, regardless of the lower limit.
- "Liquid, flammable" means any liquid having a flash point below 100 deg. F., except any mixture having components with flash points of 100 deg. F. or higher, the total of which make up 99 percent or more of the total volume of the mixture.
- "Solid, flammable" means a solid, other than a blasting agent or explosive as defined in [29 CFR 1910.109\(a\)](#), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and

persistently as to create a serious hazard. A chemical shall be a flammable solid if it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

Flash Point - the minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite.

Hazardous Chemical - any chemical which is a physical hazard or a health hazard.

Hazard Warning - any words, pictures, symbols, or combination appearing on a label or other appropriate form of warning which convey the specific physical and health hazard(s), including target organ effects, of the chemical(s) in the container(s). (See the definitions for "physical hazard" and "health hazard" to determine the hazards which must be covered.)

Health Hazard - a chemical for which there is evidence that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes.

Identity - any chemical or common name which is indicated on the safety data sheet (SDS) for the chemical. The identity used shall permit cross-references to be made among the required list of hazardous chemicals, the label and the SDS.

Immediate Use - the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

Label - any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.

Safety data sheet (SDS) - written or printed material concerning a hazardous chemical which is prepared in accordance with OSHA Standard [29 CFR 1910.1200](#) requirements.

Mixture - any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.

Oxidizer - means a chemical other than a blasting agent or explosive as defined in 1910.109(a), that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

Physical hazard - a chemical that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

Pyrophoric - a chemical that will ignite spontaneously in air at a temperature of 130 deg. F. or below.

Specific Chemical Identity - the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

Unstable (Reactive) - a chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure, or temperature.

Use - to package, handle, react, emit, extract, generate as a byproduct, or transfer.

Water-Reactive - a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

Work Area - a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

Workplace - an establishment, job site, or project, at one geographical location containing one or more work areas.

Heat Illness Prevention – Federal / CA

PURPOSE

The purpose of this document is to provide employees with the necessary training and equipment to protect against heat related injury and illness while working for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

RESPONSIBILITIES

Management

Ensure that all employees are provided with this policy, the proper training and any equipment necessary to avoid heat related injury and illness prior to initial assignment where heat may be a factor.

Supervisor

Maintain awareness for signs and symptoms of heat illness in themselves and fellow employees.

TRAINING AND ANY EQUIPMENT TRAINING

All employees who are or may be exposed to potential heat related illnesses will receive training on the following:

- The environmental and personal risk factors that cause heat related illnesses
- The employer's procedures for identifying, evaluating and controlling exposures to the environmental and personal risk factors for heat illness
- The importance of frequent consumption of small quantities of water, up to 4 cups per hour under extreme conditions of work and heat
- The importance of acclimatization
- The different types of heat illness and the common signs and symptoms of heat illness
- The importance of immediately reporting to the employer, directly or through the employee's supervisor, symptoms or signs of heat illness in themselves, or in co-workers
- The employer's procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary
- Procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider
- How to provide clear and precise directions to the work site

- Supervisors must receive training in the prevention of heat related illnesses prior to supervising employees working in heat
- Supervisors should be trained in the employer's heat illness procedures to prevent heat illness and procedures to follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures

HEAT RASH (PRICKLY HEAT)

Symptoms of heat rash include:

- Looks like a red cluster of pimples or small blisters that can cover large parts of the body, often on the neck, chest, groin, under the breasts, or in elbow creases.
- Feels uncomfortable, can disrupt work performance
- Complicated by infections

HEAT CRAMPS

Symptoms of heat cramps include:

- Loss of salt through excessive sweating
- Cramping in back, legs and arms

If someone shows signs and symptoms of heat cramps, they should:

- Stretch and massage muscles
- Replace salt by drinking commercially available carbohydrate/electrolyte replacement fluids

HEAT EXHAUSTION

Heat exhaustion occurs when the body can no longer keep blood flowing to supply vital organs and at the same time send blood to the skin to reduce body temperature.

Heat exhaustion symptoms include:

- Weakness
- Difficulty continuing work
- Headache
- Breathlessness
- Nausea or vomiting
- Feeling faint or actually fainting

Heat Exhaustion Treatment

Call for emergency help if you suspect a worker to have heat exhaustion. While awaiting emergency assistance, help the worker cool off by:

- Resting in a cool place
- Drinking cool water
- Removing unnecessary clothing
- Loosening clothing
- Showering or sponging with cool water

It takes 30 minutes to cool the body down once a worker becomes overheated and suffers heat exhaustion.

HEAT STROKE

Heat stroke occurs when the body can no longer cool itself and body temperature rises to critical levels.

Heat stroke symptoms include:

- Confusion
- Irrational behavior
- Loss of consciousness
- Convulsions
- Lack of sweating
- Hot, dry skin
- Abnormally high body temperature

Heat Stroke Treatment

- Provide immediate, aggressive, general cooling:
 - Immerse victim in tub of cool water or
 - Place in cool shower or
 - Spray with cool water from a hose or
 - Wrap victim in cool, wet sheets and fan rapidly
- Transport victim to hospital

FAINTING

General Symptoms:

- Sudden dizziness, light-headedness
- Unconsciousness

Fainting Treatment

- Provide first aid immediately
- Never give liquids to an unconscious person

SAFE WORK PROCEDURES

Supervisors are responsible for performing the following:

- Give workers frequent breaks in a cool area away from heat.
- Adjust work practices as necessary when workers complain of heat stress.
- Oversee heat stress training and acclimatization for new workers and for workers who have been off the job for a period.
- Monitor the workplace to determine when hot conditions arise.
- Increase air movement by using fans where possible.
- Provide provision for water.
- Provide access to shade.
- Make allowances for workers who must wear personal protective clothing (welders, etc.) and equipment that retains heat and restricts the evaporation of sweat.
- Schedule hot jobs for the cooler part of the day; schedule routine maintenance and repair work in hot areas for the cooler times of the day.
- Supervisor to observe and monitor employees for alertness and signs or symptoms of heat illness.
- Have a suitable number of trained persons to render aid.

EMPLOYEES

Employees are responsible for performing the following:

- Follow instructions and training for controlling heat stress.
- Be alert to symptoms in yourself and others.
- Determine if any prescription medications you are required to take can increase heat stress.
- Wear light, loose fitting clothing that permits the evaporation of sweat.
- Wear light-colored garments that absorb less heat from the sun.
- Drink 1 quart of water per hour per employee, suitably cool and refreshing.
- Avoid beverages such as tea coffee, or energy drinks.
- Avoid eating hot, heavy meals.
- Do not take salt tablets unless prescribed by a physician.

PROVISIONS OF WATER

Procedures for providing sufficient water:

- Sufficient amounts of fresh, pure, and suitably cool potable water shall be provided at all times.
- Provide at least one quart per employee per hour for the entire shift.
- If individual water containers are provided, the containers must be clean, and a source of potable water must be readily available.
- Water from unpermitted/unlicensed or non-tested water sources must not be used.

- During hot weather, the water must be cooler than the ambient temperature.
- Water must be placed as close as practicable to where employees are working.
- Remind employees to drink water often and not to wait until they are thirsty to drink
- Provide water at no cost to employees.

ACCESS TO SHADE

Procedures for providing access to shade:

- Provide shade to employees during breaks and preventative cool down rest periods by taking the following measures:
 - When outdoor temperature is 80 degrees F or less:
 - Have shade available and provide shade or timely access to shade upon request
 - Have shade erected if the weather is hot enough that the shade can help employees to cool off
 - When outdoor temperature exceeds 80 degrees F:
 - Have one or more areas with shade at all times while employees are present. If no other shade is readily available, erect shade structures immediately.
 - Set up shade in advance if at 5:00pm the night before, the temperature is predicted to exceed 80 degrees F.
- Perform frequent checks (hourly) of the temperature at the worksite in order to be able to set up shade immediately if the temperature exceeds 80 degrees F.
- Place the shade structure as close as practicable to the areas where employees are working.
- Shade must be either open to the air or provided with ventilation or cooling, and must be easy for employees to reach.
- Permit employees to access shade at all times
- Provide enough shade to accommodate all employees
 - Who are on recovery and rest period breaks, and
 - Who choose to remain in areas designated for recovery and rest periods during their meal periods
- Erect additional structures on an as-needed basis.
- Encourage employees to take a cool-down rest in the shade when they feel the need to do so to protect themselves from overheating.
- Have water available in the rest area so that employees are encouraged to drink more.
- When it is not possible to erect a shade structure, you may provide alternative cooling measures that over equivalent protection
- Monitor the employee on cool-down rest and ask if experiencing any symptoms of heat illness, including fatigue.
- If an employee exhibits or complains of any sign or symptom of heat illness, initiate first-aid procedures without delay.

- Encourage the employee on cool-down rest to remain in the shade for 5 or more minutes as needed.

HIGH-HEAT PROCEDURES

High-heat procedures must be implemented when the temperature equals or exceeds 95 degrees F.

- Train all employees to recognize the signs and symptoms of heat illness and allow them to call for emergency medical services when necessary.
- Train all employees to stay in contact, observe each other, and immediately report any signs or symptoms of heat illness.
- Observe and monitor employees for alertness and signs or symptoms of heat illness by implementing one or more of the following:
 - Supervisor or designee observation of 20 or fewer employees
 - Mandatory buddy system
 - Regular communication with sole employee using radio or mobile phone
 - Other effective means of observations
 - Contact employees regularly
 - Designate one or more employees on each jobsite as authorized to call for emergency medical aid.
- Remind employees throughout the work shift to drink plenty of water
- Provide close supervision to new employees as they may have less or no acclimatization
- Conduct pre-shift meetings to review the high-heat procedures and to remind employees to drink plenty of water and take a cool-down rest when necessary.

EMERGENCY RESPONSE PROCEDURES

Employers are required to implement effective emergency response procedures in the workplace.

- Maintain effective communication by voice, observation, or electronic means.
- Take immediate action if any signs or symptoms of heat illness in any employee is observed or reported.
- Implement emergency response procedures if the signs or symptoms indicate severe heat illness.
- Do not leave the employee exhibiting signs or symptoms of heat illness alone or send them home without offering onsite first aid and/or providing emergency medical services.
- Contact emergency medical services and, if necessary, transport employees to a place where they can be reached by an emergency medical provider.

- In the event of any emergency, make sure that clear and precise directions to the worksite are provided to emergency responders.

ACCLIMATIZATION

Acclimatization methods and procedures:

- Make sure that all employees are observed by a supervisor or designee during a heat wave.
 - A heat wave means any day in which the predicted high temperature for the day will be at least 80 degrees F and at least 10 degrees F higher than the average daily high temperature in the preceding 5 days.
- Have a supervisor or designee closely observe any employee who has been newly assigned to a high heat area for the first 14 days of the employment.
- Be extra-vigilant in employee monitoring during heat waves and when new employees are on the job.

COLD STRESS/COLD WEATHER SAFETY

PURPOSE

The purpose of this document is to outline the minimum safety requirements for protecting employees from potential injuries and illnesses associated with cold work environments for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

RESPONSIBILITIES

Management

Ensure that all employees are provided with this policy, the proper training and any equipment necessary to avoid cold weather injury and illness prior to initial assignment where cold weather may be a factor.

Supervisor

Maintain awareness for signs and symptoms of cold weather injuries and illnesses in themselves and fellow employees.

TRAINING AND ANY EQUIPMENT TRAINING

All employees who are or may be exposed to potential cold related illnesses will receive training on the following:

- The environmental and personal risk factors that cause cold related illnesses
- The employer's procedures for identifying, evaluating and controlling exposures to the environmental and personal risk factors for cold illness

- The importance of acclimatization
- The common signs and symptoms of cold illness
- The importance of immediately reporting to the employer, directly or through the employee's supervisor, symptoms or signs of cold illness in themselves, or in co-workers
- The employer's procedures for responding to symptoms of possible cold illness, including how emergency medical services will be provided should they become necessary
- Procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider
- How to provide clear and precise directions to the work site
- Supervisors must receive training in the prevention of cold related illnesses prior to supervising employees working in the cold
- Supervisors should be trained in the employer's cold illness procedures to prevent cold illness and procedures to follow when an employee exhibits symptoms consistent with possible cold illness, including emergency response procedures

WORK CONSIDERATIONS PRE-PLANNING

One aspect of the work environment that must be taken into consideration when planning and conducting projects in winter months (e.g. November through March) is the occurrence of adverse and harsh weather conditions. Cold weather can cause physical discomfort, loss of efficiency, and possibly injury or death. The supervisor will be responsible for the daily monitoring of temperature and wind speed, which may result in cold stress to all personnel.

In addition, employees will be kept aware of the effects of cold stress. When outdoor temperatures are expected to be below (50° F), near freezing (30° F) or below, personnel should pace themselves, especially if wearing heavy clothing, and take frequent rest breaks if directly involved with strenuous activities (e.g., lifting, pushing, etc.). Proper intake of non-caffeinated beverages (e.g., water, commercial electrolyte balanced drinks) is encouraged periodically throughout the workday in order to maintain proper fluid level retention and avoiding dehydration.

SIGNS AND SYMPTOMS

If an employee experience one or more of the following:

- Pale, cool moist skin
- Heavy or no sweating
- Muscle spasms
- Pain in hands, feet, or abdomen
- Strong, rapid, pulse rate

- Dizziness or nausea
- Confusion
- Fainting
- Red, hot, or drier than normal skin

It is strongly advised that they should immediately sit down and attempt to alert a coworker to notify the site supervisor, who will take appropriate measures.

If a worker experiences the following disorders, especially during exhaustive, high physical activity periods outdoors in winter months:

- Uncontrollable shivering
- Vague or slowed speech
- Memory lapses
- Incoherence
- Drowsiness
- Changing color of skin
- Decreasing blood pressure, pulse rate, or respiration

That person may be exhibiting early warning signs of cold stress. It is imperative to get this person acclimatized to a warmer (preferably indoors, at ambient temperatures) location as soon as possible and re-hydrated with non-caffeinated, sweetened beverages.

SAFE WORK PRACTICES

The following practices can help prevent cold stress and related injuries:

- Ensure employees have suitable clothing for working in cold conditions.
- Conduct outdoor operations during the middle of the day to take advantage of solar heat load.
- Provide a heated space for employees to take breaks.
- Ensure employees stay adequately hydrated.
- Employees and Supervisors should know the signs and symptoms of cold-related illness.
- Supervisors should remind employees of the dangers, and signs and symptoms of cold related illness during daily and weekly safety briefings during periods of low temperatures.
- Use of the "Buddy System" to ensure that no employee is working alone in cold work environments is encouraged.
- Employees should notify the supervisor if the employee has a medical condition that would pre-dispose him or her to cold stress. These conditions may include heart disease, high blood pressure, pulmonary diseases, obesity, lack of acclimatization, etc.

PREVENTATIVE MEASURES

Some preventive measures include drinking plenty of liquids, avoiding caffeine and alcohol. It is easy to become dehydrated in cold weather. If possible, heavy work should be scheduled during the warmer parts of the day. Take breaks out of the cold. Try to work in pairs to keep an eye on each other and watch for signs of cold stress. Avoid fatigue since energy is needed to keep muscles warm. Take frequent breaks and consume warm, high calorie food such as pasta to maintain energy reserves.

In addition, regularly used walkways and travel ways shall be sanded, salted, or cleared of snow and ice as soon as practicable.

TRAINING REQUIREMENT

Employees exposed to cold should receive training regarding the health effects of cold exposure, proper rewarming procedures, recognition and first aid for frostbite and hypothermia, required protective clothing, proper use of warming shelters, the buddy system, vehicle breakdown procedures, and proper eating and drinking habits for working in the cold.

All employees should be informed of the dangers and destructive potential caused by unstable snow buildup, sharp icicles, and ice dams and know how to prevent accidents caused by them.

PERSONAL PROTECTIVE EQUIPMENT

Protective Clothing is the most important way to avoid cold stress. The type of fabric also makes a difference. Cotton loses its insulation value when it becomes wet. Wool, silk, and most synthetics, on the other hand, retain their insulation even when wet. The following are recommendations for working in cold environments:

- Wear at least three layers of clothing. An inner layer of wool, silk or synthetic to wick moisture away from the body. A middle layer of wool or synthetic to provide insulation even when wet. An outer wind and rain protection layer that allows some ventilation to prevent overheating.
- Wear a hard hat and a manufacturer approved liner. Up to 40% of body heat can be lost when the head is left exposed.
- Wear insulated boots or another footwear.
- Keep a change of dry clothing available in case work clothes become wet.
- Except for the wicking layer do not wear tight clothing. Loose clothing allows better ventilation of heat away from the body.
- Do not underestimate the wetting effects of perspiration. Oftentimes wicking and venting of the body's sweat and heat are more important than protecting from rain or snow.

FIRST AID

All employees who are required to perform work in cold conditions should be knowledgeable on how to administer first aid treatment on cold induced injuries or illnesses.

The Cold Stress Equation
Low Temperature + Wind Speed + Wetness = Injuries and Illnesses

Temperatures	Wind Speed (MPH)					Danger Level
	0	10	20	30	40	
30° F/-1.1° C						Little Danger (Caution)
20° F/-6.7° C						Freezing to Exposed Flesh within 1 Hour
10° F/-12.2° C						
0° F/-17.8° C						Danger Freezing to Exposed Flesh within 1 Minute
-10° F/-23.3° C						
-20° F/-28.9° C						Extreme Danger Freezing to Exposed Flesh within 30 Seconds
-30° F/-34.4° C						
-40° F/-40° C						
-50° F/-45.6° C						

DEFINITIONS

Hypothermia - Hypothermia occurs when body heat is lost faster than it can be replaced. When the core body temperature drops below the normal 98.6 F to around 95 F, the onset of symptoms normally begins. The person may begin to shiver and stomp their feet to generate heat. Workers may lose coordination, have slurred speech, and fumble with items in the hand. The skin will likely be pale and cold.

Frostbite - Frostbite occurs when the skin freezes and loses water. In severe cases, amputation of the frostbitten area may be required. While frostbite usually occurs when the temperatures are 30 F or lower, wind chill factors can allow frostbite to occur in above freezing temperatures. Frostbite typically affects the extremities, particularly the feet and hands. The affected body part will be cold, tingling, stinging, or aching followed by numbness. Skin color turns red, then purple, then white, and is cold to the touch. There may be blisters in severe cases.

Trench Foot - Trench Foot or immersion foot is caused by having feet immersed in cold water at temperatures.

Wind Chill - A measure of the rate of heat loss from exposed skin caused by the combined effects of high winds and low temperatures. The wind chill temperature is what the temperature "feels like" during cold weather because of the wind. As the wind increases, it draws heat from the body, driving down skin temperature and eventually the internal body temperature. Once temperatures drop below 10 °F and the wind is gusting, conditions are ripe for cold-related illnesses.

Hexavalent Chromium – Chromium VI (Awareness)

PURPOSE

The purpose of this document is to outline safety policy and procedures surrounding employee exposure to Hexavalent chromium for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

RESPONSIBILITIES

Site Manager

- Ensure their work groups comply with the requirements of this policy

Responsible Safety Person

- Ensure that team members, vendors and contractors comply with the requirements of this safe work practice
- Ensure that current documentation of hexavalent chromium training is maintained
- Ensure that all affected employees are properly fit tested
- Ensure employees are enrolled in the Hexavalent Chromium Medical Surveillance Program if the employees are required to wear a respirator for the job or are exposed above the PEL of 5 µg/m³ (8-hour TWA).

SCOPE

[29 CFR 1926.1126](#) Construction applies to occupational exposures to chromium (VI) in all forms and compounds in construction with the exception of:

- The application of pesticides regulated by the EPA or another Federal government agency (e.g., the treatment of wood with preservatives)
- Exposures to Portland cement; or
- Where the employer has objective data demonstrating that a material containing chromium or a specific process, operation, or activity involving chromium (VI) in concentrations at or above .5 micrograms as an 8-hour time – weighted average (TWA) under any expected conditions of use.

COMMUNICATION OF HAZARDS

Cancer – Hexavalent chromium is considered a potential lung carcinogen. Studies of workers in the chromate production, plating, and pigment industries consistently show increased rates of lung cancer. It also causes irritation of the lungs.

Eyes – Direct eye contact with chromic acid or chromate dusts can cause irritation and/or permanent eye damage.

Respiratory Tract – Hexavalent chromium can irritate the nose, throat, and lungs. Repeated or prolonged exposure can damage the mucous membranes of the nasal passages and result in ulcers. In severe cases, exposures may cause perforation of the septum (the wall separating the nasal passages).

Skin – Prolonged skin contact can result in dermatitis and skin ulcers. Some workers can develop an allergic sensitization to chromium.

EXPOSURE MONITORING AND ENGINEERING CONTROLS

Permissible Exposure Limit

No employee shall be exposed to an airborne concentration of hexavalent chromium in excess of five micrograms per cubic meter of air ($5 \mu\text{g}/\text{m}^3$) as an 8 – hour time-weighted average (TWA).

This determination must be made without regard to the use of personal protective equipment, such as respiratory protection. This means that employers cannot apply the level of protection that the respirator can provide to determine whether an employee is overexposed to hexavalent chromium present in the air. The hexavalent chromium standards also set an action level, which is equal to one-half the permissible exposure limit (PEL), or $2.5 \mu\text{g}/\text{m}^3$ as an 8-hour TWA.

Exposure of employees at or above the action level triggers certain other requirements of the hexavalent chromium standard even though employees are not exposed above the PEL.

Engineering and work practice controls should be provided to reduce exposure to the lowest feasible level. If employees can demonstrate that such controls are not feasible, employer shall use engineering/work controls to reduce employee exposure to the lowest levels achievable and shall supplement them by the use of respiratory protection.

Respirators must be used when engineering controls and work practices cannot reduce employee exposure, during work operations where engineering controls and work practices are not feasible, and emergencies.

EXPOSURE ASSESSMENT AND MONITORING

All work operations will be assessed daily for their potential to generate airborne hexavalent chromium particulates, including welding fumes and mists from chrome plating operations.

CCI will implement one of the two following methods to ensure effective monitoring in the determination and assessment of likely exposure:

1. Initial Monitoring

CCI will conduct initial monitoring prior to work assignment to determine the 8-hour TWA exposure for each employee using a sufficient number of samples collected in the employee breathing zone of each employee that fully characterizes their full shift exposure to chromium VI. Initial monitoring will be completed for each job classification on every shift where employees may be exposed. Monitoring will not occur for every employee, but for selected employees that is representative of other employees in the same job classification working in the same area as the employees monitored.

Exposure Scenario	Required Monitoring Activity
Below the action level (< 2.5 µg/m ³)	No periodic monitoring is required for workers represented by this monitoring
At or above the action level but at or below the PEL (2.5 µg/m ³ to 5 µg/m ³)	Monitor every six months
Above the PEL (> 5 µg/m ³)	Monitor every three months

REGULATED AREAS

Regulated areas must be established when an employee's exposure is or is expected to be in excess of the PEL. Regulated areas shall be marked with warning signs to alert employees. Access is restricted to "authorized persons".

TRAINING AND COMMUNICATION

If applicable, CCI will provide training on chromium hazards, control methods and medical surveillance. All affected employees, or employees who have the likelihood of exposure to Chromium VI levels at or above the PEL, and or at the action level shall be trained prior to initial assignment, and annually thereafter.

- Training shall be documented and witnessed by CCI Responsible Safety Person.

Training will cover:

- Proper use of personal protective equipment including respirators.
- Areas of operation where Cr VI is typically encountered at CCI worksites.
- Regulatory and customer specific requirements, exposure limits, potential hazards including toxicity and physical characteristics, and medical monitoring
- Engineering controls and best practices associated with the employee's work assignment

MEDICAL SURVEILLANCE

If applicable, workers who have the potential of airborne Cr VI exposure above the action level for at least 30 days per year without regard to respirator use, will participate in the Cr VI medical surveillance program.

Continued participation in periodic Cr. VI medical surveillance will be based on exposure conditions (such as an emergency or when a worker shows signs or symptoms of exposure), annually, or within a specified frequency determined by CCI consulting physician (or equivalent), and at termination of employment.

Medical surveillance will be provided to all employees, and at no cost to the employee for the following:

- Employees who are, or who may be exposed to Cr VI at concentrations at or above the action level as an 8-hour TWA) for 30 or more days per year; or
- Experiencing signs and symptoms of adverse health effects associated with Cr VI exposures, or
- Exposed in an emergency situation (i.e., any occurrence results in in a uncontrolled release of Cr VI that is not an incidental release that can be controlled by workers in the immediate area or by maintenance personnel).
- Signs and Symptoms of adverse health effects associated with exposure to Cr VI include:
 - Blistering lesions, redness or itchiness of exposed skin, shortness of breath or wheezing that worsens at work, nosebleeds, and a whistling sound while inhaling or exhaling.

FREQUENCY OF MEDICAL EXAMINATIONS

If applicable, CCI will make medical examinations and consultations available to employees:

- Prior to employee assignment to an area where negative-pressure respirators are worn
- Within 30 working days after assignment to a job involving exposure to Cr (VI) at any level
- At least annually thereafter
- Within 30 days after a physician or licensed healthcare professional (PLHCP) issues a written medical opinion that recommends additional examination(s)
- Whenever a worker shows signs or symptoms of adverse health effects associated with exposure to Cr (VI)
- Within 30 days following exposure during an emergency involving an uncontrolled release of Cr (VI)
- At the termination of employment unless the last examination provided was less than six months prior to the date of termination. If the employee was examined

within the past 12 months and that examination meets the criteria of the standard, another medical examination is not required.

CONTENT OF MEDICAL EXAMINATIONS

Medical examinations must include the following:

- A medical and work history that focuses on:
 - Past, present and anticipated future exposure to Cr(VI)
 - History of respiratory system dysfunction
 - Any history of asthma, dermatitis, skin ulceration or nasal septum perforation and
 - Smoking status and history.
- A physical examination focusing on the skin and respiratory tract; and
- Any other examinations or tests suggested by the examining physician.

Employers must provide the following information to the examining physician:

- A copy of the applicable Cr (VI) standard and its appendixes
- A description of the affected employee's former, current and anticipated duties relating to Cr (VI) exposure
- The employee's representative current exposure level and anticipated Cr(VI) exposure levels
- A description of any personal protective equipment and respiratory equipment used, including when and for how long this equipment has been worn and
- Information from previous medical examinations not otherwise available, currently within control of the employer.

It is the employer's responsibility to obtain the physician's written opinion within 30 days of the examination.

The employer must provide a copy of the physician's written opinion to the affected employee within two weeks after receiving it.

Note: Examinations will be performed by or under the supervision of a physician or other licensed health care professional.

COMMUNICATION OF HAZARDS

CCI will ensure effective HAZCOM standard communication with employees by implementing a relevant HAZCOM program in accordance with [29 CFR 1910.1200](#). This plan will include information about SDS (Safety Data Sheets) outlining Chromium VI specific hazards.

CCI will also ensure that all affected employees are provided with sufficient information and training to ensure that employees can demonstrate knowledge of:

- The requirements of Cr VI standard and
- The medical surveillance program required by the standard, including recognition of the signs and symptoms of adverse health effects that may result from Cr VI exposure.

A copy of the Cr VI standard will be made available to affected employees at no cost.

HOUSEKEEPING

Housekeeping applies to the general industry rule as housekeeping measures may be difficult to comply with in the construction and shipyard sector(s). Housekeeping measures are designed to minimize exposure where engineering controls may not be effective.

Surfaces shall be maintained as free as practicable of accumulation of chromium. All spills and releases of chromium shall be cleaned promptly. Methods of cleaning include HEPA filtered vacuums, dry or wet sweeping, shoveling or other methods to minimize exposure.

HYGIENE AND DOCUMENTATION

Washing Facilities

Washing facilities will be provided and must be readily accessible and capable of removing Cr VI from affected employees' skin. Affected employees must use these washing facilities when necessary to ensure safe removal of Cr VI to include:

- Employees who have skin contact with Cr VI must wash their hands and faces:
 - At the end of each work shift
 - Prior to Eating, drinking, smoking, chewing gum, applying cosmetics, or using the toilet.

Eating surfaces as well as eating and drinking utensils must be maintained as free as practicable of Cr VI whenever workers are allowed to consume food or beverages at a worksite where Cr VI is present. CCI will also ensure that workers do not enter eating and drinking areas wearing PPE or other protective clothing unless the protective clothing or equipment is properly cleaned beforehand. CCI reserves the right to utilize any method for removing surface Cr VI contamination from clothing and equipment that does not disperse the dust into the air or onto the worker's body.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE must be provided when there is a hazard from skin or eye contact. Gloves, aprons, coveralls, goggles, foot covers etc. Contaminated PPE will be removed at the end of the work shift. CCI will clean, launder, repair and replace protective clothing as needed.

RECORD KEEPING

Where applicable, CCI will maintain and make available an accurate record of all employee exposure monitoring, medical surveillance, and training records.

DEFINITIONS

Action Level (AL)

A concentration for a specific substance, calculated as an 8-hour time-weighted average, which triggers certain required activities such as exposure monitoring and medical surveillance. Typically, the AL is one-half that of the PEL for that substance. The AL for Cr (VI) is 2.5 micrograms per cubic meter (2.5 µg/m³).

Assigned Protection Factor (APF)

The workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by the respiratory protection standard.

Exposure or Occupational Exposure

Exposure to airborne chromium (VI) that would occur if the employee were not using a respirator.

Historical Monitoring Data

Data from chromium (VI) monitoring conducted prior to May 30, 2006, obtained during work operations conducted under workplace conditions closely resembling the processes, types of material, control methods, work practices and environmental conditions in the employer's current operations.

Objective Data

Information that demonstrates the expected worker exposure to Cr (VI) associated with a particular product or material or a specific process, operation, or activity. Information that can serve as objective data includes, but is not limited to, air monitoring data from an industry-wide survey; data collected by a trade association from its members; or calculations based on the composition or chemical and physical properties of a material. The data must reflect workplace conditions closely resembling the processes, types of material, control methods, work practices and environmental conditions in the employer's current operations.

Oxidation

Any reaction in which electrons are transferred.

Permissible Exposure Limit (PEL)

An exposure limit that is published and enforced by OSHA as a legal standard. The hexavalent chromium standard has an 8-hour time-weighted average (TWA) permissible exposure limit of 5 micrograms per cubic meter of air (5 $\mu\text{g}/\text{m}^3$).

Respirator

Any device designed to provide the wearer with respiratory protection against inhalation of a hazardous atmosphere. Respirators used in addition to engineering and work practice controls to protect employees from overexposure to Cr (VI) must be NIOSH certified.

Time Weighted Average (TWA)

The average exposure level determined from samples, taken for different time periods, throughout a workday. The TWA is determined by multiplying each sample by the time the sample was taken, adding these results, and dividing this sum by the total sampling time. Where the TWA is compared to an 8-hour PEL (or AL), the sum is divided by eight hours or 480 minutes, depending on the units of time used.

Hot Work: Welding, Cutting, and Brazing - Federal

PURPOSE

The purpose of this document is to outline the Welding, Cutting, and Brazing safety policy for **Cirks Construction Inc.**; hereafter referred to as "CCI." Welding and hot work, such as brazing or grinding, present a significant opportunity for fire and injury. All precautions of this program must be applied prior to commencing any welding or hot work by company employees or contractors.

The Welding, Cutting, and Brazing policy only applies if within 35' of a hydrocarbon source.

RESPONSIBILITIES

Management

- Provide training for all employees whose task include heat, spark or flame producing operations such as welding, hot work, or grinding
- Develop and monitor effective hot work procedures
- Provide safe equipment for hot work
- Provide proper and effective PPE for all hot work

Supervisors

- Monitor all hot work operations
- Ensure all hot work equipment and PPE are in safe working order
- Allow only trained and authorized employees to conduct hot work
- Ensure permits are used for all hot work outside authorized areas

Employees

- Follow all hot work procedures
- Properly use appropriate hot work PPE
- Inspect all hot work equipment before use
- Report any equipment problems
- Never use damaged hot work equipment

HAZARDS

- Fires and Explosions
- Skin burns
- Welding "blindness"
- Respiratory hazards from fumes and smoke

TRAINING

Individuals performing welding/cutting must be suitably trained in the safe operations of their equipment and the safe use of the process.

Training shall include:

- Review of requirements listed in [OSHA 1910.252](#)
- Use of Hot Work Permit System
- Supervisor Responsibilities

FIRE WATCH

A fire watch is required when welding, cutting, hot work and/or soldering is performed near combustible materials and/or in locations where fire may develop.

Fire watchers shall have fire extinguishers readily available and will be trained their use..

Fire watchers shall watch for fires in all exposed areas, attempt to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound an alarm.

A fire watch shall be maintained at least a half an hour after the welding or cutting operation was completed.

Fire Watch Responsibilities

The fire watch must know:

- That their ONLY duty is Fire Watch
- When they can terminate the watch
- How to use the provided fire extinguisher
- Facilities for sounding an alarm in the event of a fire
- How to initiate a fire alarm if fire is beyond the incipient stage
- Operator Responsibilities
- Contractors Responsibilities
- Documentation requirements
- Respirator Usage requirements
- Fire Extinguisher training principals and processes
- A fire watch shall be maintained at least a half an hour after the welding or cutting operation was completed

Locations where other than a minor fire might develop:

- Combustible materials closer than 35 feet to point of operation
- Combustibles that are 35 feet or more away but are easily ignited

- Wall or floor openings within 35-foot radius expose combustible materials in adjacent areas Combustible materials are adjacent to the opposite side of metal partitions, ceilings or roofs and are likely to be ignited by conduction or radiation ([29 CFR 1915.504](#))
- Where cutting or welding is done near walls, partitions, ceilings, or a roof of combustible construction, fire-resistant shields or guards shall be provided to prevent ignition

If welding is to be done on a metal wall, partition, ceiling, or roof, precautions shall be taken to prevent ignition of combustibles on the other side, due to conduction or radiation of heat. Where combustibles cannot be relocated on the opposite side of the work, a fire watch person shall be provided on the opposite side of the work.

Where practicable, all combustibles shall be relocated at least 35 feet from the work site. Where relocation is impracticable, combustibles shall be protected with flameproof covers or otherwise shielded with metal or asbestos guards or curtains.

Welding shall not be attempted on a metal partition, wall, ceiling, or roof having a covering nor on walls having combustible sandwich panel construction.

Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings, or roofs shall not be undertaken if the work is close enough to cause ignition by combustion.

If the object to be welded or cut cannot readily be moved, all moveable fire hazards should be removed.

If the object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards, shields, fire blankets, etc. shall be used to confine the heat, sparks and slag and to protect the immovable fire hazards.

Cutting or welding shall not be permitted in the following situations:

- In areas not authorized by management
- In sprinkled buildings while such protection is impaired
- In the presence of potentially explosive atmospheres, e.g., a flammable
- In areas near the storage of large quantities of exposed, readily ignitable materials
- In areas where there is dust accumulation of greater than 1/16 inch within 35 feet of the area where welding/hot work will be conducted. All dust accumulation should be cleaned up following the housekeeping program of the facility before welding/hot work are permitted
- Suitable extinguishers shall be provided and maintained ready for instant use

Employees shall cease hot work operations if welding and cutting cannot be performed in a safe manner.

A fire watch person shall be provided during, and for, 30 mins past the completion of the welding project.

- A cutting/welding permit will be issued on all welding or cutting outside of the designated welding area.
- If fire hazards cannot be taken to a safe place or guards cannot be used to confine heat, sparks, slag and protect the immovable fire hazards, the welding/cutting shall not be performed.
- Operators of equipment should report any equipment defect or safety hazards and discontinue use of equipment until its safety has been assured. Repairs shall be made only by qualified personnel.

WELDING AND HOT WORK FIRE PREVENTION MEASURES

A designated welding area should be established to meet the following requirements:

- Floors swept and clean of combustibles within 35 ft. of work area.
- Flammable and combustible liquids and material will be kept 35 ft. from work area.
- Adequate ventilation providing 20 air changes per hour, such as a suction hood system should be provided to the work area.
- At least one 10 lb. dry chemical fire extinguisher should be within access of the 35 ft. of work area.
- Protective dividers such as welding curtains or non-combustible walls will be provided to contain sparks and slag to the combustible free area.
- Requirements for welding conducted outside the designated welding area.
- Portable welding curtains or shields must be used to protect other workers in the welding area.
- A Hot Work Permit must be completed and complied with prior to welding operation.
- Before cutting or welding is permitted the area shall be inspected by position responsible for authorizing welding and cutting operations. He/she shall designate precautions to be followed in granting authorization to proceed preferably in the form of a written permit.
- Respiratory protection is mandatory unless an adequate monitored air flow away from the welder and others present can be established and maintained.
- Plastic materials be covered with welding tarps during welding procedures.
- Fire Watch must be provided for all hot work operations.

Prohibited Areas

Cutting or welding shall not be permitted in the following situations:

- In areas not authorized by management
- In sprinklered buildings while such protection is impaired

- In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dusts with air), or explosive atmospheres that may develop inside uncleaned or improperly prepared tanks or equipment which have previously contained such materials, or that may develop in areas with an accumulation of combustible dusts
- In areas near the storage of large quantities of exposed, readily ignitable materials such as bulk sulfur, baled paper, or cotton

Relocation of Combustibles

Where practicable, all combustibles shall be relocated at least 35 feet (10.7 m) from the work site. Where relocation is impracticable, combustibles shall be protected with flameproofed covers or otherwise shielded with metal or asbestos guards or curtains.

Ducts

Ducts and conveyor systems that might carry sparks to distant combustibles shall be suitably protected or shut down.

Combustible Walls

Where cutting or welding is done near walls, partitions, ceiling or roof of combustible construction, fire-resistant shields or guards shall be provided to prevent ignition.

Noncombustible Walls

If welding is to be done on a metal wall, partition, ceiling or roof, precautions shall be taken to prevent ignition of combustibles on the other side, due to conduction or radiation, preferably by relocating combustibles. Where combustibles are not relocated, a fire watch on the opposite side from the work shall be provided.

Combustible Cover

Welding shall not be attempted on a metal partition, wall, ceiling, or roof having a combustible covering nor on walls or partitions of combustible sandwich-type panel construction.

Pipes

Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings, or roofs shall not be undertaken if the work is close enough to cause ignition by conduction.

Supervisor

Responsible for the safe usage of cutting and welding equipment on projects. Supervisor shall:

- Based on fire potentials of site, establish areas for cutting and welding, and establish procedures for cutting and welding in other areas
- Determine that fire protection and extinguishing equipment are properly located at the site

- Be responsible for the safe handling of the cutting or welding equipment and the safe use of the cutting or welding process
- Determine that cutters or welders and their supervisors are suitably trained in the safe operation of their equipment
- Determine that the cutter or welder secures his approval that conditions are safe before going ahead
-
- Determine the combustible materials and hazardous areas present or likely to be present in the work locationProtect combustibles from ignition
 - Have the work moved to a location free from dangerous combustibles.
 - If the work cannot be moved, have the combustibles moved to a safe distance from the work or have the combustibles properly shielded against ignition.
 - See that cutting and welding are so scheduled that operations that might expose combustibles to ignition are not started during cutting or welding.
- Advise all workers about flammable materials or hazardous conditions of which they may not be aware

Where fire watches are required, the supervisor shall see that they are available at the site.

WELDING OR CUTTING CONTAINERS

Used Containers

No welding, cutting, or other hot work shall be performed on used drums, barrels, tanks, or other containers until they have been cleaned so thoroughly as to make certain that there are no flammable materials present or any substances such as greases, tars, acids, or other materials which when subjected to heat, might produce flammable or toxic vapors. Any pipelines or connections to the drum or vessel shall be disconnected or blanked.

Venting and Purging

All hollow spaces, cavities or containers shall be vented to permit the escape of air or gases before preheating, cutting, or welding. Purging with inert gas is recommended.

CONFINED SPACES

Accidental Contact

When arc welding is to be suspended for any substantial period of time, such as during meal break or overnight, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur, and the machine be disconnected from the power source.

Torch Valve

To eliminate the possibility of gas escaping through leaks or improperly closed valves, when gas welding or cutting, the torch valves shall be closed and the gas supply to the torch positively shut off at some point outside the confined area whenever the torch is not to be used for a substantial period, such as during meal break or overnight. Where practicable, the torch and hose shall also be removed from the confined space.

PROTECTING PERSONNEL

Railing

A welder or helper working on platforms, scaffolds, or runways shall be protected against falling. This may be accomplished by the use of railings, safety belts, life lines, or some other equally effective safeguards.

Welding Cable

Welders shall place welding cable and other equipment so that it is clear of passageways, ladders, and stairways.

Eye Protection

Helmets or hand shields shall be used during all arc welding or arc cutting operations, excluding submerged arc welding. Helpers or attendants shall be provided with proper eye protection.

Goggles or other suitable eye protection shall be used during all gas welding or oxygen cutting operations. Spectacles without side shields, with suitable filter lenses are permitted for use during gas welding operations on light work, for torch hot work or for inspection.

All operators and attendants of resistance welding or resistance hot work equipment shall use transparent face shields or goggles, depending on the particular job, to protect their faces or eyes, as required.

Eye protection in the form of suitable goggles shall be provided where needed for hot work operations.

COMPETENT PERSON

Before any employees are put in charge of the oxygen or fuel-gas supply equipment, including generators, and oxygen or fuel-gas distribution piping systems, they shall be trained and deemed competent by CCI .

Special Precautions

Wherever there are floor openings or cracks in the flooring that cannot be closed, precautions shall be taken so that no readily combustible materials on the floor below will be exposed to sparks which might drop through the floor. The same precautions shall be observed regarding cracks or holes in walls, open doorways and open or broken windows. [[1910.252\(a\)\(2\)\(i\)](#)]

HAZARD ASSESSMENT/PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment devices alone should not be relied on to provide protection against hazards, but should be used in conjunction with guards, engineering controls, and sound manufacturing practices.

Hazard analysis procedures shall be used to assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). Employees exposed to the hazards created by welding, cutting, or hot work operations shall be protected by personal protective equipment. CCI shall ensure PPE (welding hood, gloves, rubber boots/soled shoes, aprons) are available and have no defects.

Goggles or other suitable eye protection shall be used during all gas and/or electric welding or oxygen cutting operations. Spectacles without side shields, with suitable filter lenses are permitted for use during gas welding operations on light work, for torch hot work, or for inspection.

A Hot Work Permit must be completed and complied with prior to welding operation. The competent person's name, signature, and date(s) shall be present on the Hot Work Permit.

If such hazards are present, or likely to be present, the following actions will be taken:

- Identify and communicate the proper PPE, and ensure use by each affected employee

Fitting

Careful consideration must be given to comfort and fit. PPE that fits poorly will not afford the necessary protection. Continued wearing of the device is more likely if it fits the wearer comfortably. Protective devices are generally available in a variety of sizes. Care should be taken to ensure that the right size is selected.

Reassessment of Hazards

The Responsible Safety Person shall reassess the workplace hazard situation as necessary, by identifying and evaluating new equipment and processes, reviewing accident records, and reevaluating the suitability of previously selected PPE.

Cleaning and Maintenance

It is important that all PPE be kept clean and properly maintained. Cleaning is particularly important for eye and face protection where dirty or fogged lenses could impair vision.

PPE should be inspected, cleaned, and maintained at regular intervals so that the PPE provides the requisite protection. It is also important to ensure that contaminated PPE which cannot be decontaminated is disposed of in a manner that protects employees from exposure to hazards. [\[1910 Subpart I App B\]](#)

ELECTRIC WELDING

- Ensure fire extinguisher is charged and available.
- Ensure electrical cord, electrode holder and cables are free from defects (no cable splices are allowed within 10 feet of the electrode holder).
- Ensure PPE (welding hood and/or goggles, gloves, rubber boots/soled shoes, aprons) are available and have no defects.
- Ensure the frame or case of the welding unit is properly grounded.
- All defective equipment must be repaired or replaced before use.

Note: Welders designated to operate arc welding equipment shall have been properly trained, instructed and qualified to operate such equipment as specified in [\[29 CFR 1910.254\(a\)\(3\)\]](#) and [\[1910.252\(a-c\)\]](#).

Machine Hook Up

Before starting operations all connections to the machine shall be checked to make certain they are properly made. The work lead shall be firmly attached to the work; magnetic work clamps shall be freed from adherent metal particles of spatter on contact surfaces. Coiled welding cable shall be spread out before use to avoid serious overheating and damage to insulation. [\[1910.254\(d\)\(2\)\]](#)

Remove Flammables and Combustibles

- No welding is permitted on or near containers of flammable material, combustible material or unprotected flammable structures.
- Place welding screen or suitable barricade around work area to provide a fire safety zone and prevent injuries to passersby (Do not block emergency exits or restrict ventilation).
- Ensure adequate ventilation and lighting.
- Execute Hot Work Permit procedures.

Set Voltage Regulator no higher than the following for:

- Manual Alternating Current Welders - 80 volts
- Automatic Alternating Current Welders - 100 volts

- Manual or Automatic Direct Current Welders -100 volts

Uncoil and spread-out welding cable.

To avoid overheating, ensure proper contact of work leads and connections, remove any metal fragments from magnetic work clamps (to avoid electric shock do not wrap welding cables around a body part and avoid welding in wet conditions).

Fire watch for 30 mins after welding and until all welds have cooled.

Perform final fire watch and terminate permit.

GAS WELDING

- Ensure tanks have gas and fittings are tight.
- Ensure fire extinguisher is charged and available.
- Ensure hoses have no defects.
- Ensure PPE (welding hood, gloves, rubber boots/soled shoes, aprons) are available and have no defects.
- All defective equipment must be repaired or replace before use.

Remove Flammables and Combustibles

- No welding is permitted on or near containers of flammable material, combustible material, or unprotected flammable structures.
- Place welding screen or suitable barricade around work area to provide a fire safety zone and prevent injuries to passersby (do not block emergency exits or restrict ventilation).
- Any welding, cutting, or burning of lead base metals, zinc, cadmium, mercury, beryllium or exotic metals or paints not listed here shall have proper ventilation or respiratory protection.

EXOTHERMIC WELDING

In order to obtain a weld considered as acceptable and safe, a series of minimum conditions must be fulfilled to guarantee that the aluminothermic welding process will be carried out correctly. For this purpose, the graphite mold must be in the best conditions, clean and with the cavities and the chamber well defined, so that the conductors and the powder or tablets fit properly. For that reason, the inspection for any defect is imperative.

Once the first steps have been considered, and to confirm the validity of a weld, the following aspects will be considered:

- The weld must completely cover the chamber or at least cover the conductor section, to maintain its properties.
- The result does not have surface porosities deeper than 1 mm.
- The weld must be free of slag on the conductors, also complying with the above conditions.
- The color of the weld varies from gold to copper once it has been properly cleaned.

Important safety precautions include:

- Proper PPE: safety glasses, face shield, gloves, appropriate foot wear and attire
- Clearing the area of flammable materials; keep fire extinguisher in immediate proximity
- Inspect Molds: clean, dry, proper size, in good condition (replace when worn)
- Protecting the materials from moisture (a drop of rain can cause a violent and dangerous reaction)
- Keep unused shots separated from the one being ignited (particularly important for railroad shots)
- Storing all welds in cool, dry locations and in properly labeled boxes
- Keeping a copy of the SDS sheet on file and on site

COMPRESSED GAS CYLINDER SAFE HANDLING GUIDELINES

- Accept only cylinders approved for use in interstate commerce for transportation of compressed gases.
- Do not remove or change the marks and numbers stamped on the cylinders.
- Cylinders must never be dragged, pushed, or pulled across the floor.
- Transport cylinders weighing more than a total of 40 pounds (18.2 kg) on a hand or motorized truck, securing them from falling.
- Keep the cylinders clean and protect them from piercings and abrasions.
- Do not lift compressed gas cylinders with an electromagnet. Where cylinders must be handled by a crane or derrick, as on construction jobs, carry them in a cradle or suitable platform and take extreme care that they are not dropped or bumped. Do not use slings.
- Do not drop cylinders or allow them to strike each other violently.
- Do not use cylinders for rollers, supports, or any purpose other than to contain gas.
- Do not tamper with safety devices in valves or on cylinders.
- Consult the supplier of the gas when in doubt about the proper handling of a compressed gas cylinder or its contents.
- Clearly write EMPTY on tape strips adhered to on empty cylinders that are to be returned to the vendor.
- Close cylinder valves and replace valve protection caps, if the cylinder is designed to accept a cap.

- Load cylinders to be transported to allow as little movement as possible. Secure them to prevent violent contact or upsetting.
- Always consider cylinders to be full and handle them with corresponding care.
- Always secure compressed gas cylinders. Cylinders must not be left "free-standing" at any time, e.g., cylinders unloaded from truck to loading dock must be secured until placed on a hand truck for delivery within the building.
- Compressed gas cylinders should never be subjected to a temperature above 125 degrees F.
- Never place cylinders where they might become part of an electrical circuit.
- Do not re-paint cylinders.
- Never use a flame to detect flammable gas leaks - Always use soapy water.
- CCI shall ensure no damaged or defective cylinder will be used.

MOVING AND STORING CYLINDERS

All gas cylinders will be kept inside buildings away from heaters, radiators, and other source of heat. Cylinders shall be stored in a well-protected, well-ventilated, dry location, at least 20 feet (6.1 m) from highly combustible materials such as oil or excelsior. Cylinders should be stored in assigned places away from elevators, stairs, or gangways.

When cylinders are transported by powered vehicles, they shall be secured in a vertical position. Unless cylinders are firmly secured on a special carrier intended for this purpose, regulators shall be removed, and valve protection caps put in place before cylinders are moved. A suitable cylinder truck, chain, or other steadying device shall be used to keep cylinders from being knocked over while in use.

Oxygen Cylinders in Storage

Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease), a minimum distance of 20 feet (6.1 m) or by a noncombustible barrier at least 5 feet (1.5 m) high having a fire-resistance rating of at least one-half hour.

All cylinders shall be kept far enough away from the actual welding or cutting operation so that sparks, hot slag, or flame will not reach them. When this is impractical, fire-resistant shields shall be provided. Cylinders containing oxygen or acetylene, or other fuel gas shall not be taken into confined spaces.

Treatment of Cylinders

Cylinders, whether full or empty, shall not be used as rollers or supports. No person other than the gas supplier shall attempt to mix gases in a cylinder. No one except the owner of the cylinder or person authorized by the owner of the cylinder shall refill a cylinder. No one shall use a cylinder's contents for purposes other than those intended by the supplier. All cylinders used shall meet the Department of Transportation requirements.

FUEL GAS AND OXYGEN MANIFOLDS

Fuel gas and oxygen manifolds shall bear the name of the substance they contain in letters at least 1-inch high which shall be either painted on the manifold or on a sign permanently attached to it.

Hoses

Fuel gas hose and oxygen hose shall be easily distinguishable from each other. The contrast may be made by different colors or by surface characteristics readily distinguishable by the sense of touch. Oxygen and fuel gas hoses shall not be interchangeable. A single hose having more than one gas passage shall not be used. All hoses in use, carrying acetylene, oxygen, natural or manufactured fuel gas, or any gas or substance which may ignite or enter combustion, or be in any way harmful to employees, shall be inspected at the beginning of each working shift. Defective hoses shall be removed from service.

Note: Hoses, cables, and other equipment shall be kept clear of passageways, ladders, and stairs.

Oil and Grease Hazards

Oxygen cylinders and fittings shall be kept away from oil or grease. Cylinders, cylinder caps and valves, couplings, regulators, hoses, and apparatus shall be kept free from oil or greasy substances and shall not be handled with oily hands or gloves. Oxygen shall not be directed at oily surfaces, greasy clothes, or within a fuel oil or other storage tank or vessel.

Assigned storage spaces shall be located where cylinders will not be knocked over or damaged by passing or falling objects, or subject to tampering by unauthorized persons. Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards.

Empty cylinders shall have their valves closed. Valve protection caps, where cylinder is designed to accept a cap, shall always be in place except when cylinders are in use or connected for use. [\[1910.253\(b\)\(2\)\(ii\)\]](#)

Valve Protection Caps

Valve protection caps shall be in place and secured for cylinder storage, moving, and transporting. When cylinders are hoisted, they shall be secured on a cradle, sling board, or pallet. They shall not be hoisted or transported by means of magnets or choker slings. [\[1926.350\(a\)\(1\)\]](#)

Labeling and Identification of Compressed Gas Cylinders

All gas cylinders shall be legibly marked, for the purpose of identifying the gas content, with either the chemical or the trade name of the gas. Such marking shall be by means of stenciling, stamping, or labeling, and shall not be readily removable. Whenever practical, the marking shall be located on the shoulder of the cylinder.

WORKING IN CONFINED SPACES

Ventilation

Local exhaust or general ventilating systems shall be provided and arranged to keep the number of toxic fumes, gases, or dusts below the maximum allowable concentration.

Securing Cylinders and Machinery

When welding or cutting is being performed in any confined spaces the gas cylinders and welding machines shall be left on the outside. Before operations are started, heavy portable equipment mounted on wheels shall be securely blocked to prevent accidental movement. [[1910.252\(b\)\(4\)\(iv\)](#)]

Lifelines

Where a welder must enter a confined space through a manhole or other small opening, means shall be provided for quickly removing the worker in case of emergency. When safety belts and lifelines are used for this purpose, they shall be so attached to the welder's body that the worker's body cannot be jammed in a small exit opening. An attendant with a preplanned rescue procedure shall be stationed outside to always observe the welder and be capable of putting rescue operations into effect. [[1910.252\(b\)\(4\)\(v\)](#)]

Electrode Removal

When arc welding is to be suspended for any substantial period, such as during meal break or overnight, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur, and the machine disconnected from the power source. [[1910.252\(b\)\(4\)\(vi\)](#)]

Gas Cylinder Shutoff

In order to eliminate the possibility of gas escaping through leaks of improperly closed valves, when gas welding or cutting, the torch valves shall be closed and the fuel-gas and oxygen supply to the torch positively shut off at some point outside the confined area whenever the torch is not to be used for a substantial period of time, such as during meal break or overnight. Where practicable the torch and hose shall also be removed from the confined space. [[1910.252\(b\)\(4\)\(vii\)](#)]

Warning Sign

After welding operations are completed, the welder shall mark the hot metal or provide some other means of warning other workers.

VEHICLE ENTRY

Vehicle entry during the Hot Work process shall be kept to a minimum.

Vehicles with an internal combustion engine entering a hazardous classified location or a permitted road shall be included in a Hot Work Permit.

Permitted roadways are all roads that are designated as hazardous classified locations, such as Class 1, Division 2. Other roads may be identified as permitted roadways to help with traffic control.

Shift Trucks

Shift Truck Pass Vehicles that are used as a tool for part of a task, such as cranes or forklifts in hazardous classified areas or permitted roadways should be included in the Permit to Work for that task.

A Shift Truck Pass shall:

- Be granted at the discretion of the Issuing Authority, even if a truck is listed as a tool on the permit. This means the Issuing Authority may deny entry of the truck
- Be completely filled out by the Issuing Authority
- Be valid only for the date listed on the pass
- Be always displayed. Shift Truck Passes have been designed to be hung from the rearview mirror
- Be returned to the Issuing Authority by the end of the shift
 - Once returned, the Issuing Authority should discard the pass.

A Shift Truck Pass is not needed if a 2-hour Vehicle Entry Permit is issued.

Vehicle Entry Permit

Before the Vehicle Entry Permit or Permit to Work is issued, a risk assessment shall be completed.

The risk assessment shall include job site hazards and controls, such as:

- Duration of vehicle on site
- The area where the vehicle is to be sited
- Locations of vents, drains, sewers, sample points, etc.
- All other relevant hazards in the area
- Any simultaneous operations (SIMOPs) that may conflict, such as hydrocarbon breaking containment work

The Vehicle Entry Permit shall be valid for a maximum of two hours.

The vehicle entry/exit path and location shall be specified on the Vehicle Entry Permit or discussed while issuing the Permit to Work.

For vehicles with a Vehicle Entry Permit, the permit shall be always displayed in the vehicle when on a permitted roadway or in a hazardous classified location.

If the Vehicle Entry Permit or Permit to Work for vehicles are to be revoked due to operational upsets or emergencies, any other affected areas that permission has been granted to issue permits must be notified. The Emergency Operations Center (EOC) can be called and requested to issue an "ALL CALL" on the radio and a Public Address Announcement that states that permits have been revoked for that certain area.

Gas Monitoring

Before the Vehicle Entry Permit or HWSP permit is issued, an Authorized Gas Tester (AGT) Level 1 or Level 2 shall test the area with an active gas monitor. The LEL must be zero for a permit to be issued.

Continuous gas monitoring shall be performed on permitted roadways or in hazardous classified locations once the vehicle reaches its set down point. It is encouraged to have an escort walk at a safe distance in front of internal combustion engine equipment and vehicles with a gas tester to ensure the atmosphere is safe to drive in. If the vehicle is parked and turned off, continuous monitoring must be conducted in the area before the vehicle is turned back on.

If the LEL exceeds zero, the AGT shall order the vehicle to be shut off.

Traveling

For vehicles passing through one area to get to another area, the Issuing Authority for the Vehicle Entry Permit or Permit to Work shall be the Issuing Authority at the destination point.

The Issuing Authority shall receive permission from all Affected Issuing Authorities that the vehicle can pass through the identified areas via radio. The Affected Issuing Authorities shall test their areas and verify that their portion of the route has been tested and results are 0% LEL and that SIMOPS have been identified and controls identified

MAINTENANCE OF EQUIPMENT

Any equipment defect or safety hazard to the welder's equipment should be reported to the Supervisor and will be discontinued until its safety has been assured. Repairs shall be made only by qualified technicians.

FIRST AID

- First aid supplies shall be easily accessible when required.
- First aid equipment shall be always available.
- First aid equipment supplies, and facilities must be kept clean, dry, and ready for

use, and be readily accessible at any time a worker works in the workplace.

- Workplace activities influence potential harmful consequences for staff, clients, and others. Each worksite is likely to have different first aid requirements.
- **Responsible Safety Person** will determine the type of First Aid kit required and CCI's approach to first aid response.
- All personnel are encouraged to disclose health information which may assist in prompt and appropriate first aid responses to foreseeable medical emergencies.
- In the absence of an infirmary, clinic, hospital, or physician, that is reasonably accessible in terms of time and distance to the worksite, which is available for the treatment of injured employees, a person who has a valid certificate in first aid shall be available at the worksite to render first aid.

Hot Work: Welding, Cutting, Hot Work - WA

PURPOSE

The purpose of this document is to outline the Welding, Cutting, Hot Work safety for **Cirks Construction Inc.**; hereafter referred to as "CCI." All precautions of this program must be applied prior to commencing any welding or hot work by employees or contractors.

Welding/Hot Works Procedures - Any activity that results in sparks, fire, molten slag, or hot material, that has the potential to cause fires or explosions.

Hot Works - Cutting, Brazing, Soldering, Thawing Pipes, Torch Applied Roofing, Grinding and Welding.

RESPONSIBILITIES

Management

- Provide training for all employees whose tasks include heat, spark or flame producing operations such as welding, brazing, or grinding
- Develop and monitor effective hot work procedures
- Provide safe equipment for hot work
- Provide proper and effective PPE for all hot work

Supervisors

- Monitor all hot work operations
- Ensure all hot work equipment and PPE are in safe working order
- Allow only trained and authorized employees to conduct hot work
- Ensure permits are used for all hot work outside authorized areas

Employees

- Follow all hot work procedures
- Properly use appropriate hot work PPE
- Inspect all hot work equipment before use
- Report any equipment problems
- Never use damaged hot work equipment
-

POLICY

This policy will ensure all personnel have a basic understanding associated with the Welding, Cutting, Hot Work program. CCI shall provide a work environment free from recognized hazards

that are likely to cause death or serious physical harm. Only through such cooperative effort can an effective program be established.

WELDING, CUTTING, HOT WORK

Hot work shall not be performed in confined space until all requirements of chapter 296-809 WAC are met. Fire protection shall be provided for employees performing hot work as follows:

- To the extent possible, hot work must be performed in designated locations that are free of fire hazards
- When hot work must be performed in a location that is not free of fire hazards, all necessary precautions must be taken to confine heat, sparks, and slag so that they cannot contact flammable or combustible material
- Fire extinguishing equipment suitable for the location must be immediately available and must be maintained in readiness for use at all times
- When the hot work operation is such that normal fire prevention precautions are not sufficient, additional personnel must be assigned to guard against fire during hot work and for a sufficient time after completion of the work to ensure that no fire hazard remains. The employer must instruct all employees involved in hot work operations as to potential fire hazards and the use of firefighting equipment
- Drums and containers which contain or have contained flammable liquids must be kept closed. Empty containers must be removed from the hot work area
- When openings or cracks in flooring cannot be closed, precautions must be taken to ensure that no employees or flammable or combustible materials are exposed to sparks dropping through the floor
- Hot work shall not be performed:
 - In flammable or potentially flammable atmospheres
 - On or in equipment or tanks that have contained flammable gas or liquid or combustible liquid or dust-producing material, until a designated person has tested the atmosphere inside the equipment or tanks and determined that it is not hazardous
 - Near any area in which exposed readily ignitable materials such as bulk sulfur, baled paper or cotton are stored. Bulk sulfur is excluded from this prohibition if suitable precautions are followed, the person in charge is knowledgeable and the person performing the work has been instructed in preventing and extinguishing sulfur fires

CONFINED SPACE

When hot work is performed in a confined space, in addition to the requirements of chapter 296-809 WAC the following requirements for ventilation are met:

- General mechanical or local exhaust ventilations must be provided

- Employees in the space must wear respirators in accordance with chapter 296-842 WAC

In confined or enclosed spaces, hot work involving the following metals must only be performed with general mechanical or local exhaust ventilation that ensures employees are not exposed to hazardous levels of fumes:

- Lead base metals
- Cadmium-bearing filler materials
- Chromium-bearing metals or metals coated with chromium-bearing materials

In confined or enclosed spaces, hot work involving the following metals must only be performed with local exhaust ventilation meeting the requirements of this subsection or by employees wearing supplied air respirators in accordance with chapter 296-842 WAC.

FIRE WATCH

A fire watch is required when welding, cutting, brazing and/or soldering is performed near combustible materials and/or in locations where fire may develop. Fire watchers shall have fire extinguishers readily available.

Fire Watch Responsibilities

The fire watch must know:

- That their ONLY duty is Fire Watch
- When they can terminate the watch
- How to use the provided fire extinguisher
- Facilities for sounding an alarm in the event of a fire
- How to initiate a fire alarm if fire is beyond the incipient stage
- Operator Responsibilities
- Contractors Responsibilities
- Documentation requirements
- Respirator Usage requirements
- A fire watch shall be maintained at least a half an hour after the welding or cutting operation was completed

Assigned fire watchers must be trained in the use of fire extinguishing equipment and familiar with the facilities for sounding an alarm in the event of a fire.

WELDING AREAS

Areas shall meet the following criteria:

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- Floors swept and clean of combustibles within 35 feet of work area
- Flammable and combustible liquids and material will be kept 35 feet from work area
- Provide adequate ventilation
- At least one 10-lb. dry chemical fire extinguisher should be within 35 feet of the work area
- Protective dividers such as welding curtains or non-combustible walls will be provided to contain sparks and slag to the combustible free area

COMPRESSED GAS CYLINDERS

Follow these procedures when handling gas cylinders:

- Valve protection caps must be in place and secured
- Cylinders will be moved by tilting and rolling them on their bottom edges. They must not be intentionally dropped, struck, or permitted to strike each other violently
- Cylinders must be either firmly secured on a special carrier intended for this purpose or regulators must be removed, and valve protection caps put in place before cylinders are moved
- A suitable cylinder truck, chain, or other steadying device must be used to keep cylinders from being knocked over while in use or in storage
- Oxygen cylinders must be stored separated from fuel gas cylinders or combustible materials by a minimum distance of 20 feet or by a five-foot high non-combustible barrier with a fire resistive rating of one-half hour. Cylinders must not be stored near elevators, stairs, or gangways. Assigned storage must prevent cylinders from being knocked over or damaged

HOT WORK PERMITS

CCI shall issue a hot work permit for hot work operations conducted on or near a covered process. The permit shall document that the fire prevention and protection requirements in WAC 296-24-695 have been implemented prior to beginning the hot work operations; it shall indicate the date(s) authorized for hot work; and identify the object on which hot work is to be performed. The permit shall be kept on file until completion of the hot work operations.

PLACING CYLINDERS

Cylinders must be kept far enough away from the actual welding or cutting operation so that sparks, hot slag, or flame will not reach them. When this is impractical, fire-resistant shields must be used. Cylinders must be placed where they cannot become part of an electrical circuit. Electrodes must not be struck against a cylinder to strike an arc.

Fuel gas cylinders must be placed with valve end up whenever they are in use. They must not be placed in a location where they would be subject to open flame, hot metal, or other sources of artificial heat.

USING FUEL GAS

Employees should understand and follow the safety procedures developed by the State of Washington and specified in WAC 296-307-48021.

Before a regulator to a cylinder valve is connected, the valve must be opened slightly and closed immediately. (This action is generally termed "cracking" and is intended to clear the valve of dust or dirt that might otherwise enter the regulator.) The person cracking the valve must stand to one side of the outlet not in front of it. The valve of a fuel gas cylinder must not be cracked where the gas would reach welding work, sparks, flame, or other possible sources of ignition. The cylinder valve must always be opened slowly to prevent damage to the regulator. For quick closing, valves on fuel gas cylinders must not be opened more than 1 ½ turns.

Fuel gas must not be used without reducing the pressure through a regulator attached to the cylinder valve. Before a regulator is removed from a cylinder valve, the cylinder valve must always be closed, and the gas released from the regulator. If, when the valve on a fuel gas cylinder is opened, there is found to be a leak around the valve stem, the valve must be closed, and the gland nut tightened. If this action does not stop the leak, the use of the cylinder must be discontinued, and it must be properly tagged and removed from the work area.

If a leak develops at a fuse plug or other safety device, the cylinder must be removed from the hot work area. Cylinders not having fixed hand wheels must have keys, handles, or non-adjustable wrenches on valve stems while in service. Torches must be inspected before use for leaking shutoff valves, hose couplings, and tip connections. Defective torches may not be used.

HOSES

Fuel gas hose and oxygen hose must be easily distinguishable from each other. The contrast may be made by different colors or by surface characteristics readily distinguishable by the sense of touch. Oxygen and fuel gas hoses must not be interchangeable. A single hose having more than one gas passage must not be used.

When parallel sections of oxygen and fuel gas hose are taped together, not more than 4 inches out of 12 inches may be covered by tape. All hoses carrying acetylene, oxygen, natural or manufactured fuel gas, or any gas or substance that may ignite or enter combustion, or be in any way harmful to employees, must be inspected at the beginning of each working shift. Defective hoses must be removed from service.

Hoses which have been subject to flashback, or which show evidence of severe wear or damage, must be tested to twice the normal pressure to which it is subject, but in no case less than 300 p.s.i. Defective hose, or hose in doubtful condition, must not be used. Hose couplings must be of the type that cannot be unlocked or disconnected by means of a straight pull without rotary motion. Boxes used for the storage of gas hoses must be ventilated. Hoses, cables, and other equipment must be kept clear of passageways, ladders, and stairs.

TORCHES

The operator must clean clogged torch tip openings with suitable cleaning wires, drills, or other devices designed for such purpose. Torches must be inspected by the operator at the beginning of each working shift for leaking shutoff valves, hose couplings, and tip connections. Do not use defective torches. Light torches with friction lighters or other approved devices, and not by matches or from hot work.

ARC WELDING AND CUTTING

Manual Electrode Holders

Only manual electrode holders which are specifically designed for arc welding and cutting and are of a capacity capable of safely handling the maximum rated current required by the electrodes, may be used. Any current-carrying parts passing through the portion of the holder that the operator grips in his hand, and the outer surfaces of the jaws of the holder, must be fully insulated against the maximum voltage encountered to ground.

Welding Cables and Connectors

Cables in need of repair may not be used. When a cable, other than the cable lead becomes worn to the extent of exposing bare conductors, the portion thus exposed must be protected by means of rubber and friction tape or other equivalent insulation.

Operating Instructions

Employees must follow these safe means of arc welding and cutting:

- When electrode holders are to be left unattended, the electrodes must be removed, and the holders placed or protected so that they cannot make electrical contact with employees or conducting objects
- Hot electrode holders may not be dipped in water; to do so may expose the arc welder or cutter to electric shock
- The power supply switch to the equipment must be turned off whenever the welder must leave his work or stop for any appreciable length of time, or whenever the arc welding or cutting equipment needs to be moved
- Any faulty or defective equipment must be reported to the shop maintenance manager, instructor, or equipment technician

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Employees exposed to the hazards created by welding, cutting, or brazing operations will use proper personal protective equipment. Appropriate protective clothing required for any welding operation will vary with the size, nature and location of the work to be performed. The following protective clothing may be employed based on the job hazard assessment:

- Except when engaged in light work, all welders should wear flameproof gauntlet gloves
- Flameproof aprons made of leather, or other suitable material may also be desirable as protection against radiated heat and sparks
- Woolen clothing is preferable to cotton because it is not so readily ignited and helps protect the welder from changes in temperature. Cotton clothing, if used, should be chemically treated to reduce its combustibility. All outer clothing such as jumpers or overalls must be reasonably free from oil or grease
- Sparks may lodge in rolled-up sleeves or pockets of clothing, or cuffs of overalls or trousers. It is therefore recommended that sleeves and collars be kept buttoned and pockets be eliminated from the front of overalls and aprons. Trousers or overalls should not be turned up on the outside
- Jackets or shoulder covers made of leather or other suitable materials must be worn during overhead welding or cutting operations. Leather skull caps should be worn under helmets to prevent head burns

Eye and Face

Eye protection sufficient to protect the worker from harmful radiation must be used. Employees in the area not protected from the arc by screening must be protected by filter lenses meeting the standard requirements. When two or more welders are exposed to each other's arc, filter lens goggles must be worn under welding helmets. Hand shields to protect the welder against flashes and radiant energy should be used when either the helmet is lifted, or the shield is removed.

Employees whose vision requires the use of corrective lenses must be protected by goggles or eyeglasses of one of the following types:

- Eyeglasses whose protective lenses provide optical correction must be worn in conjunction with...
- Goggles that can be worn over corrective lenses without disturbing the adjustment of the glasses
- Goggles that incorporate corrective lenses mounted behind the protective lenses

Face and eye protection equipment must be kept clean and in good repair. The use of this type of equipment with structural or optical defects is prohibited.

FIRE PREVENTION

When practical, objects to be welded, cut, or heated must be moved to a designated safe location or, if the objects to be welded, cut, or heated cannot be readily moved, all movable fire hazards in the vicinity must be taken to a safe place, or otherwise protected. If the object to be welded, cut, or heated cannot be moved and if all the fire hazards cannot be removed, combustibles must be shielded using flameproof covers, shielded with metal, guards, curtains, or wet down to help prevent ignition of material. No welding, cutting, or heating is permitted where the application of flammable paints, or the presence of other flammable compounds, or heavy dust concentrations creates a hazard.

Fire extinguishing equipment must be immediately available in the work area and must be maintained in a state of readiness for instant use. When the welding, cutting, or heating operation is such that normal fire prevention precautions are not sufficient, additional personnel must be assigned to guard against fire while the actual welding, cutting, or heating operation is being performed, and for a sufficient period after completion of the work to ensure that no possibility of fire exists.

Such personnel will be instructed by the supervisor or delegate as to the specific anticipated fire hazards and how the firefighting equipment provided is to be used. When welding, cutting, or heating is performed on equipment bodies, cowlings, or casings, since direct penetration of sparks or heat transfer may introduce a fire hazard to an adjacent area, the same precautions must be taken on the opposite side as are taken on the side on which the welding is being performed.

VENTILATION

General welding, cutting, and heating not involving toxic conditions or materials described in the following sections, may normally be done without mechanical ventilation or respiratory protective equipment. Mechanical ventilation or respiratory protective equipment must be used when physical or atmospheric conditions create an unsafe accumulation of contaminants.

WELDING/CUTTING CONTAINERS

No welding, cutting, or other hot work may be performed on used drums, barrels, tanks, or other containers until they have been cleaned so thoroughly as to make certain that there are no flammable materials present or any substances such as greases, tars, acids, or other materials that when subjected to heat, might produce flammable or toxic vapors. Any pipelines or connections to the drum or vessel must be disconnected or blanked.

TRAINING

Each employee presently involved in operating a process, and each employee before being involved in operating a newly assigned process, shall be trained in an overview of the process

and in the operating procedures as specified in WAC 296-67-021. The training shall include emphasis on the specific safety and health hazards, emergency operations including shutdown, and safe work practices applicable to the employee's job tasks.

In lieu of initial training for those employees already involved in operating a process on May 26, 1992, an employer may certify in writing that the employee has the required knowledge, skills, and abilities to safely carry out the duties and responsibilities as specified in the operating procedures.

Refresher Training

Refresher training shall be provided at least every three years, and more often, if necessary, to each employee involved in operating a process to assure that the employee understands and adheres to the current operating procedures of the process. The employer, shall determine the appropriate frequency of the refresher training. The employer shall document that each employee involved in operating a process has received and understood the training required by this section. The employer shall prepare a record which contains the identity of the employee, the date of training, and the means used to verify that the employee understood the training.

Hydro Blasting

PURPOSE

This program outlines the minimum requirements that will be met by **Cirks Construction Inc.'s** subcontractors when performing high-pressure water cleaning (HPWC).

RESPONSIBILITIES

Management

- Provide proper equipment and procedures
- Provide safety training for all operators of high-pressure water systems
- Perform periodic inspections and audits

Supervisors

- Oversee all operations involving use of high-pressure water
- Ensure equipment is safe prior to use
- Allow only qualified employees to operate equipment
- Ensure areas are safe for passers by

Employees

- Follow all safety rules and equipment procedures
- Do not engage in horseplay
- Follow supervisor's instructions

Contractors

- Ensure all equipment meets the requirements of this program
- Provide contractor employees with certification training
- Maintain records of maintenance and training
- Provide safety controls at all work sites

POLICY

High-pressure water cleaning is normally performed using jet streams that can have a velocity greater than that of a 45-caliber bullet and do as much damage. Therefore, extreme caution and strict compliance with procedures must be used to prevent the jet stream from striking the operator, other employees or delicate equipment. No portion of the body must ever be placed in front of the water jet. These jets of water can easily puncture and tear the skin or penetrate deeper causing infection or serious internal damage. Horseplay with such equipment is strictly forbidden. Violators will be disciplined and subject to immediate termination.

All hydro-blasting must be completed from a stable work surface.**PPE**

Employees performing hydro-blasting work should, at a minimum, wear waterproof body protection, eye protection, head protection including a full-face shield, waterproof foot protection with steel toe caps, appropriate hand protection, and hearing protection.

Personnel performing high-pressure water cleaning that are exposed to water spray or reflected material will wear a raincoat, rubber pants, safety glasses, hardhat with face shield, rubber boots and gloves. Hearing protection will also be worn. These do NOT provide protection from the jet but do protect against hazards encountered while performing the work.

The following identifies at a minimum the personal protective equipment that will be issued to employees performing high-pressure water cleaning outside of the required hardhat and safety glasses with side shields:

- Face shields – Clear shield nine inches deep by fifteen and one-half inches wide by 0.60 thick (ANSI Z87.1-1979 or equivalent).
- Rain Suit – Made of nylon fabric coated with Neoprene on both sides.
- Gloves – Made of Neoprene, rubber and PVC with rough wet grip finish.
- Rubber steel-toed boots – Knee length with ribbed steel shanks and heavy tread soles for nonslip traction (ANSI Z41.1-1967 or equivalent).
- Metatarsal Guards – Designed to be worn with lace-type steel toe boots.

When cleaning equipment which could possibly be contaminated with hazardous chemicals, appropriate additional protection specified by the project management/safety will be worn by the operator as well as other employees who may be affected.

When tube lancing or "shot gunning", boots provided with steel toecaps and metatarsal protection will be worn.

Note: At operating pressures over 5,000 psi and above, employees are required to wear protective suits made of Kevlar.

PROCEDURE

The High-Pressure Water Cleaning Job Qualification form must be completed prior to performing any high-pressure water cleaning to determine if there are alternate methods for performing the task that are less hazardous.

Adequate barricades and signs should be in place to protect personnel when approaching all ends of the equipment being cleaned.

The HPWC system will be depressurized when:

- Not in use.
- Unauthorized or inadequately protected personnel enter the barricaded area.
- Replacement or repairs are made to the system.
- Recommended practices are violated.

Any incident, near miss or abnormal occurrence will be immediately reported to the responsible supervisor and an investigation conducted.

A cleaning crew will be composed of at least two operators. Each crewmember will be always in view of another crewmember.

Operators will not operate equipment for more than eight (8) consecutive hours in any sixteen (16) hour period. The team members should rotate their duties during the job to minimize fatigue to the operator holding the tools.

At minimum, the hydro-blasting team will consist of a pump operator and a nozzle operator. The equipment operator nearest the high-pressure nozzle must always have a means of immediately reducing pressure or interrupting the flow to the nozzle.

When the hose drop exceeds ten (10) feet, the hose will be securely tied off to a rigid support with a fiber rope to limit the pull due to the hose's weight. Bend radius limits (as identified by the manufacturer) must be maintained.

At least one control valve or switch will control each high-pressure tool. An employee will operate only one high-pressure lance, mole or shotgun at one time.

The area around the job, pump and hoses will be barricaded a minimum of fifteen (15) feet and signs stating: "**DANGER – HIGH-PRESSURE WATER CLEANING**" must be placed at the perimeters. Barricades may be of rope, tape, barrels, etc. if they give an effective warning and are highly visible.

If the job is above ground level, barricades may be required below. Warning signs should be placed along those portions of the high-pressure water hose, which are outside the barricades. When line moling, all pipe openings will be properly barricaded.

High-pressure cleaning hose will be positioned and handled to minimize bends and turns. Sharp bends and turns can result in hose failure.

High-pressure hose connections will have safety cables, chains or the equivalent bridging at each joint.

High-pressure water cleaning equipment must be designed and maintained to achieve a minimum safety factor of three to one (3:1) against maximum allowable working pressure.

Hose data, i.e., manufacturer's symbol, serial number, working and test pressure and certified rating, which will provide a safety factor of 3 to 1 against burst will be recorded and retained in the project's central files.

The supervisor responsible for the job will fill out the High-Pressure Water Cleaning Equipment Checklist form before starting each job.

The pressure must be removed from the system before tightening or loosening fittings.

When the hose is pressurized, personnel must not handle the hose within one foot of the hose-to-hose connections.

BACK THRUST

Reactive back thrust forces from the high-pressure water jets physically stress the operator and affects operator control. Sound footing conditions must be established and maintained during cleaning.

Back thrust forces results from water leaving the nozzle at a high velocity. During manual shotgun cleaning operations, back thrust can be calculated from the equation below.

Back Thrust (lb.) – 0.052 Q t P
Where: Q-Flow Rate in U.S. gallons/minute
P – Jet Pressure Measured in PSI

For determining GPM, use the equation:
 $Q = \{29.9(K) D^2\} (tP)$
Where K – 0.09 constant

Operators of the shotgun-type equipment will not be required to withstand a back thrust or more than one-third (1/3) of their body weight.

If the area to be blasted is in a confined space or the operator must climb to an elevated position such as on a ladder or scaffolding, it is required that a safety harness be used. Railings or other protection should be provided.

No ladders, step stools, benches, etc. are to be used. Use only approved scaffolding or platforms that are job specific.

DO	DON'T
DO wear protective clothing.	DON'T tie gun lever or trigger down.
DO stop unit to change nozzle, hose assemblies and other parts.	DON'T start the unit with the gun engaged.
DO stop unit in case of a leak.	DON'T aim the gun at people, light unsecured objects or other potential hazards.
DO wear a safety harness when in an elevated position.	DON'T engage gun unless it is properly connected and held.
DO use only the manufacturer's recommended chemicals.	DON'T lay the gun in mud, dirt or sand.
DO use sediment –free water.	

Equipment: Setup, Inspections and Testing

The operator shall inspect the high-pressure unit and hoses for defects, proper fluid levels and filters, and properly sized/rated end fittings.

The blast cleaning nozzles shall be equipped with an operating valve (on the gun or foot pedal) which must be held open manually and always under the control of the operator. Objects to be cleaned may never be held manually.

An automatic relief device will be installed on the high-pressure side of the pump set to relieve at not higher than the maximum allowable working pressure of the lowest rated component in the high-pressure system and will be tested annually. Documentation will be maintained on the test results.

Prior to starting the job, a visual inspection of the high-pressure components (including rupture disk pressure rating) should be performed and documented. Hose with exposed or damaged wire braid will be removed from high-pressure service. The assembled high-pressure water cleaning components will be SLOWLY pressurized to the maximum operating pressure to verify integrity of the system.

A hose inspection and testing program (per manufacturer's guidelines) will be conducted at least quarterly. The inspection test will be conducted at 1 ½ times the maximum operating pressure and will be observed and documented by personnel responsible for the site procedure.

Hose failures usually occur near fittings due to bending stresses during use and handling.

Pressurized hoses will NOT be handled within one foot of hose-to-hose connections. Hose-to-tool connections, which are in frequent contact with the operator, must be shielded by a shroud to protect the operator. These shrouds must have sufficient rigidity to resist bending to radius smaller than those recommended by the hose manufacturers.

MAINTENANCE

Competent (designated in writing) employees will conduct servicing in accordance with manufacturer's servicing requirements.

The following items will be overhauled and inspected for proper functioning at the manufacturer's recommended intervals:

- Pressure relief valve
- Bursting discs (if used) Pressure control valves
- Hand or foot operated dump control valve or dry shut-off valve
- Dry shut-off valve or dump systems
- Changeover valve

TOOLS

The minimum total length of a hydro-blasting gun (hand-operated control valve, lance and nozzle resembling a gun layout) shall be 66 inches from the shoulder pad to the nozzle.

Properly sized anti-reversal device (stinger assembly attached to a nozzle to prevent it from turning around inside a pipe or large tube) shall be used throughout the task. The combined length of the hose connection, stinger, and nozzle shall be a minimum of 1.5 times the diameter of the pipe being cleaned unless the pipe being cleaned has a "T" then the combined length shall be 3 times the diameter of the largest pipe.

When maintaining or assembling high-pressure water cleaning systems, the correct size tool MUST be used. The use of adjustable tools having serrated gripping jaws (i.e. pipe wrenches), which can damage equipment, will NOT be used.

NOTE: Only manufacturer's parts may be used for repairs to equipment. Manufacturer's equipment will not be altered or modified under any circumstances.

HIGH PRESSURE MAINTENANCE

Lancing, line moling and shotgunning are the basic high-pressure water cleaning methods. Different variations of each method are available and increasing with new technology. Rotating nozzle assemblies, rotating lances and orbital nozzles are some variations available at this time.

Rotating equipment such as lances and nozzle tips must be guarded to prevent contact and injury to operating personnel. Loose clothing, which can be caught in rotating equipment, is NOT permitted.

PERMITS

A pre-operational, operational, and post-operational hydro-blasting permit must be developed by the site or contractor performing the work. At minimum, the permit shall include job description and equipment being cleaned, precautions taken to protect electrical equipment, maximum operating pressure, and list of qualified personnel.

TUBE LANCING

Tube lancing is a repetitive operation using a rigid or flexible lance to clean the inside of tube bundles.

High-pressure water flow to the lance will be actuated through a fail-safe, contact-type switch or foot-operated dump valve which, when released by the lance operator, interrupts pressure at the lance. The valve or switch must have a guard to prevent inadvertent actuation. Use of foot-operated dump valve is required.

A hand-held deflector or guard will be installed on the lance to prevent the high-pressure stream from contacting the operator's hand if the lance is accidentally withdrawn from a tube while activated. The inside diameter of the deflector or guard will be less than the outside diameter of the jet nozzle so that the nozzle cannot inadvertently slip through the guard and contact the operator.

An easily visible marker will be affixed two feet from the nozzle end of the lance to indicate nozzle location, as the lance is being inserted or withdrawn from the tube.

Note: Pressure will be applied to the nozzle only when the lance is two feet inside the tube.

The back end of the tube or shell will be shrouded to guard personnel from the jet stream, discharged contaminants and ejected nozzles.

LINE MOLEING

Moling device or lance shall require a minimum 2 feet end identification when a pipe flange is available. If no flange or other means to secure anti-reversal device is used, the hose/lance shall require a 2 feet end identification marking and a 4 feet end identification marking of a different color or different pattern.

Line moling is an operation using a self-propelled nozzle (mole) and a high-pressure hose to clean the inside of piping systems.

High-pressure water to the mole will be controlled by a fail-safe, contact-type switch or foot-operated dump valve switch, when released by the operator nearest the mole, interrupts flow to the mole. The valve or switch will have a guard to prevent inadvertent actuation. Use of a foot-operated dump valve is required.

To prevent mole reversal within the line, the length of the hose end coupling, mole tip and any rigid pipe extensions will equal or exceed the inside diameter of the pipe being cleaned.

The mole hose will be marked two feet from the mole to indicate mole location when the hole location is inserted or withdrawn from the pipe. The first two feet of pipe can be cleaned with a shotgun.

Note: Pressure will be applied to the nozzle only when the hose is in the pipe.

SHOTGUN SINGLE BLASTING

Shotgun single jet blasting is a hand-held unit used to clean surfaces.

All "shotguns" will have a shoulder butt and at least one integral fail-safe valve or contact-type control switch on the shotgun. When released by the operator, the valve control switch will immediately interrupt flow to the nozzle. The valve/switch will be guarded to prevent accidental activation and will be positioned so that the operator's hands are required to initiate and sustain water flow to the nozzle.

Minimum length of the "shotgun" from butt to nozzle is sixty-six inches to prevent the jet from striking the body. Exceptions to the sixty-six-inch rule will be made by the Project Manager and the Safety Manager.

Note: Exceptions must not be approved if a shorter length "shotgun" will not provide a safer operation.

Operators will NOT shotgun for more than eight consecutive hours in any sixteen-hour period.

The rotating head surface cleaning tool design does not lend itself to the sixty-six-inch minimum length required for the shotgun tool. Potential for the tool jet to accidentally strike the operator is significantly less than with a shotgun tool due to the low back thrust forces (better operator control). As protection against potential injury, an eight-inch minimum diameter steering wheel shaped bumper guard will be attached to the discharge end of the tool.

TRAINING

Employees should be trained on the hazards (including penetration of the skin by high pressure water), operating procedures, and maintenance of hydro-blasters prior to performing hydro-blasting work.

All employees involved in high-pressure water cleaning will satisfactorily complete the training course as identified in the High-Pressure Water Cleaning Certification Program. Personnel will retrain at least annually.

High-pressure water cleaning operators (handling the cleaning tool) will have at least six months' on-the-job experience in high-pressure cleaning.

Training Course Requirements for High-Pressure Water Cleaning

The training must address the potential hazard to the human body by cutting through a piece of lumber, concrete block or rubber boot. If an accident should occur and high-pressure water penetrates skin, medical attention must be given immediately.

A training course will be completed by each employee before his first high-pressure water-cleaning job. The training course will include, but is not limited to, the following:

- The cutting action of a high-pressure water stream and the potential hazard it poses to the human body will be demonstrated using audio-visual aids or the actual use of equipment (i.e., by cutting through a piece of lumber, concrete block, etc.).
- The need and limitations of personal protective equipment will be explained. Instruction will be given as to when and how specific clothing and protective devices must be worn.
- Operation of the high-pressure system and auxiliaries will be explained. Training will include start-up and shutdown procedures, potential equipment problems and appropriate corrective actions.
- The system shall be shut down and depressurized any time: the barricade is violated, the equipment malfunctions (special attention should be given to the dump control valve), repairs need to be made or the system is left unattended.
- The system shall be shut down and depressurized any time: the barricade is violated, the equipment malfunctions (special attention should be given to the dump control valve), repairs need to be made or the system is left unattended.
- Operation, identification and purpose of all safety devices will be explained. The importance of not tampering with any safety device as well as the importance and requirements of keeping them functional will be stressed.
- The identification of high-pressure fittings, hoses and accessories and how to distinguish between them will be demonstrated.

- The proper method of connecting hoses (layout without kinks), protection from excessive wear and using the proper tools for hookups will be explained and demonstrated.
- The proper stance for sound footing and how to identify and use the various devices for lancing, shotgunning and moling will be demonstrated. The trainee, under close supervision, will use the various devices while the unit is slowly pressurized.
- Employee(s) will demonstrate knowledge and skill in the proper application of equipment through practical application.
- Operation retraining will be on an annual basis or more frequent, if needed.

It is the responsibility of project management to ensure the following skill certifications and requirements are met.

All employees that work with high-pressure water cleaning equipment either as an operator or assistant will be required to show their knowledge and skills in the field of high-pressure water cleaning through the High-Pressure Water Cleaning Certification Program.

There are three levels that employees will be required to successfully complete before becoming a certified operator.

- **At Level I**, employees with at least six months on-the-job high-pressure water cleaning experience will be required to show their knowledge of high-pressure water cleaning.
- **At Level II**, employees with at least six months on-the-job high-pressure water cleaning experience at Level I will be required to show their knowledge and skill demonstration of high-pressure water cleaning.
- **At Level III**, employees with at least one-year on-the-job high-pressure water cleaning operator will be required to show their knowledge and skill of high-pressure water cleaning.

An employee that is not successful in the knowledge and skills demonstration at their level will be dropped to a lower level. The employee will then have to successfully show their knowledge and skills demonstration at that level. If the employee is still unsuccessful, he/she will be dropped another level and go through the same process.

Employees that are dropped from one level to another will not be eligible to recertify to the next level for six months. Employees will be retrained and certified annually.

Documentation will be maintained on each employee trained. This will include tests (both knowledge and skills) regardless of outcome, the employee's name, social security number, date trained, employee's signature and instructor's name. A file will be set up in the main office and the Safety Manager's office.

Hydrogen Sulfide (H₂S)

PURPOSE

When applicable, the purpose of this document is to outline safety policy and procedures surrounding the exposure to Hydrogen Sulfide Gas (H₂S) **Cirks Construction Inc.**; hereafter referred to as "CCI,"

RESPONSIBILITIES

Management shall ensure that all employees follow this program and are trained annually or as needed in Hydrogen Sulfide Awareness.

Employees shall always adhere to this policy.

CHARACTERISTICS OF H₂S

Hydrogen Sulfide or sour gas (H₂S) is a flammable, colorless gas that is toxic at extremely low concentrations. It is heavier than air and may accumulate in low-lying areas. It smells like 'rotten eggs' at low concentrations and causes you to quickly lose your sense of smell and a significant property of the gas is its density and temporary paralytic effect on the olfactory nerve. Hydrogen Sulfide is toxic, colorless, with the odor of rotten eggs at low concentrations, is soluble in water and it is flammable.

Potential Exposure

Hydrogen Sulfide is a nearly ubiquitous, acute acting toxic substance. **It is one of the leading causes of death in the workplace.** Occupational exposures to hydrogen sulfide may be found in all places of employment. Employees with the potential to be exposed to hydrogen sulfide (H₂S) above the stated occupational exposure limit (OEL) or permissible exposure limit (PEL) must be trained in H₂S awareness.

Some of the area/activities in which CCI employees might be potentially exposure to hydrogen sulfide are as follows:

- Drilling Operations
 - Recycled drilling mud
 - Water portion from the sour crude wells
 - Blow outs (infrequent)
- Tank Gauging (the opening of the tank hatch to measure the liquid level in the tank can result in the release of build-up hydrogen sulfide)
 - Run-down tanks
 - Storage tanks at pipeline stations

- Crude oil storage tanks in refineries
- Storage tanks for intermediate and finished products
- Field maintenance of wells
- Tank batteries and wells
- Entry into closed spaces including trenches, Pits, Process vessels, and tanks
- Leaks in pumps or lines
- Stripping of hydrogen sulfide and carbon dioxide from crude oil at the oil field and at the refinery
- Injection of sour gas back into formation to stimulate oil production
- Asphalt storage and associated operations

Byproducts

Iron sulfide is a byproduct of many production operations and may spontaneously combust with air. Flaring operations associated with H₂S production will generate Sulfur Dioxide (SO₂), another toxic gas.

Health Effects of H₂S

Hydrogen sulfide is an extremely toxic and irritating gas. Symptoms of acute exposure include nausea, headaches, delirium, disturbed equilibrium, tremors, convulsions, blistering, and eye irritation. Inhalation of high concentrations of hydrogen sulfide can produce extremely rapid unconsciousness and instant death by blocking the oxidative processes of tissue cells and by reducing the oxygen-carrying capacity of the blood. Free hydrogen sulfide in the blood depresses the nervous system and larger amounts can paralyze the nervous system so that in acute poisoning death is due to respiratory failure and asphyxiation.

Hydrogen sulfide is irritating to the eyes and respiratory tract. The eye irritations--conjunctivitis, pain, lacrimation, and photophobia--may persist for several days.

Respiratory tract symptoms include coughing, pain in breathing, and pain in the nose and throat. Repeated exposures to hydrogen sulfide can result in chronic poisoning that can include:

- Eye irritation
- Respiratory tract irritation
- Slow pulse rate
- Lassitude, digestive disturbances, and
- Cold sweats occur

The temporary paralytic effect on the olfactory nerve is probably its most significant property because high concentrations can cause collapse and death before the odor is detected.

DETECTION AND EXPOSURE/AIR MONITORING

In areas where H₂S may be present monitors should be used. Monitors must be bump tested at a minimum as required by manufacturer, if monitor fails a bump test a full calibration is required. Monitors must be calibrated according to manufacturer's recommendations.

Personal alarm monitors must be set to alarm initially at 10ppm H₂S, and each contractor should wear an H₂S personal alarm monitor when working in all potential H₂S areas. CCI will make sure employees are trained annually or as needed in exposure detection/air monitoring.

Before entering areas where hydrogen sulfide may be present air must be tested for the presence and concentration of hydrogen sulfide by a qualified person using air monitoring equipment, such as hydrogen sulfide detector tubes or a multi-gas meter that detects the gas. Testing should also determine if fire/explosion precautions are necessary.

- If the gas is present, the space/area must be ventilated continually to remove the gas.
- If the gas cannot be removed, the person entering the space/area must use appropriate respiratory protection and any other necessary personal protective equipment, rescue, and communication equipment.

Entering Dangerous H₂S Atmosphere

A level of H₂S gas at or above 10 ppm is Immediately Dangerous to Life and Health (IDLH). Entry into IDLH atmospheres can only be made using:

- A full facepiece pressure demand self-contained breathing apparatus (SCBA) with a minimum service life of thirty minutes, or
- A combination full facepiece pressure demand supplied-air respirator with an auxiliary self-contained air supply

If H₂S levels are above 10 ppm, an air-purifying respirator may be used, assuming the filter cartridge/canister is appropriate for hydrogen sulfide. A full facepiece respirator will prevent eye irritation. If air concentrations are elevated, eye irritation may become a serious issue. If a half mask respirator is used, tight fitting goggles must also be used. Workers in areas containing hydrogen sulfide must be monitored for signs of overexposure.

NEVER attempt a rescue in an area that may contain hydrogen sulfide without using appropriate respiratory protection and without being trained to perform such a rescue.

OSHA's Confined Spaces standard contains specific requirements for identifying, monitoring and entering confined spaces [29 CFR 1910.146](#)

Detectors

Commercially available devices can be used for quantitative estimation of low concentrations of hydrogen sulfide by 'spot-sampling.' These instruments indicate the amount of the gas present by a color change in chemically coated granules in a narrow glass tube.

A strip filter paper sampler has been developed for the measurement of hydrogen sulfide. Air is drawn through a lead acetate impregnated tape where the hydrogen sulfide reacts to form lead sulfide. Concentrations are determined by comparing the optical density of the black spot with standards. Each worker will always have on their person, personal or area monitors that alarm when PEL exceeds the preset level of 20 PPM for 1910 or 10 PPM for 1926.

Alarms

Continuous Fixed and/or Portable direct-reading monitor devices shall be installed to assure that complete coverage of the area(s) is achieved. An Industrial Hygiene survey may be required by CCI to accurately determine proper locations of monitors.

When the concentration of 10 ppm or higher a different alarm will signal a spark-proof audible or visual alarm, one in which employees have been trained to recognize and distinguish. This device must have a response time of 20 seconds or less. **When monitor alarms sound vacate the area and do not re-enter. Notify or contact necessary personnel, and do not return to work area until clearance is given for re-entry. Workers in the contaminated area shall be evacuated immediately to safe areas.**

The monitors and alarm systems will be inspected monthly.

Exposure Limits

CCI will ensure that a worker's exposure to H₂S is kept as low as reasonably achievable. An employer must ensure that a worker's exposure to H₂S does not exceed its occupational exposure limits (OEL) (10 ppm ANSI, API, NIOSH), and the permissible exposure limits (PEL) (OSHA) for hydrogen sulfide (H₂S) gas over an 8-hour time.

The occupational exposure limit (OEL) or the permissible exposure limit (PEL) that CCI limits employee exposure to H₂S, as stated as an eight-hour time weighted average (TWA). The OSHA PEL for Construction is 10 parts per million (ppm) as an eight-hour TWA and the OEL followed by ANSI, API, and NIOSH is 10 ppm as an eight-hour TWA. OSHA General industry standards do not offer a PEL for industry, instead an accepted ceiling concentration (ACC) of 20 ppm is used.

A worker may not be exposed to H₂S at a concentration exceeding its ceiling limit of 15 ppm at any time. If a worker must enter a work area with 15 ppm H₂S or greater, the worker must wear supplied air respiratory protective equipment, unless other controls provide better protection.

Safety Precautions

Hydrogen sulfide has an unpleasant odor, characteristic of rotten eggs, and is detectable at low concentrations, however, due to rapid onset of olfactory fatigue and paralysis (inability to smell). Alarms will sound on personal and area monitors if the exposure limit exceeds 10 parts per million (ppm) or 20 ppm. Companies subject to the 29 CFR 1926 Construction industry standards may not exceed 10 ppm.

❖ ODOR SHALL NOT BE USED AS A WARNING MEASURE!

CCI has developed a set specific safety rules and actions which include:

- Legible Hydrogen Sulfide warning sign with yellow flag warning device present
- Keep a safe distance from dangerous locations if not working to decrease danger
- Pay attention to audible and visual alarm systems
- Follow the guidance of the operator representative
- Keep all safety equipment in adequate working order
- Store the equipment in accessible locations:
 - An oxygen resuscitator
 - A properly calibrated, metered hydrogen sulfide detection instrument

RESPIRATOR SPECIFICATIONS

CCI provides respirators for concentrations exceeding 10ppm. Supplied air respirators of a self-contained breathing apparatus must be used. when such equipment is required to protect the health of any employee. CCI only provides respirators which are sanctioned and approved for the purpose intended. Listed below are the specifications that all respirators used by CCI employees and/or subcontractors will meet:

- **Daily Operations**
 - Powered, air-purifying respirator with cartridge(s) providing protection against the H₂S/(APF = 50)
 - Constant supplied-air respirator*/ (APF = 50)
 - Any self-contained breathing apparatus with a full facepiece. (SCBA)
- **Emergency or Planned Entry into Unknown Concentrations**
 - Self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/ (APF = 10,000)
 - Constant supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus/ (APF = 10,000)
- **Escape**
 - Air-purifying, full-facepiece respirator with a chin-style, front or back mounted canister providing protection against the H₂S/ (APF = 50)
 - Appropriate escape-type, self-contained breathing apparatus/ (APF = 50)

SAFETY PROCEDURES

All employees must be aware of CCI's contingency plan as well as the client's contingency plan. Implementation of CCI's contingency plan will include but not limited to:

- Appropriate instruction in the use of hydrogen sulfide safety equipment to all personnel present at all hydrogen sulfide hazard areas
- Gas detection where hydrogen sulfide may exist
- Appropriate respiratory protection for normal and emergency use
- The characteristics, sources, and hazards of Hydrogen Sulfide
- Proper use of the Hydrogen Sulfide detection methods used on the site
- Recognition of, and proper response to, Hydrogen Sulfide warnings at the workplace
- Symptoms of Hydrogen Sulfide exposure
- Proper rescue techniques and first-aid procedures to be used in a Hydrogen Sulfide exposure
- Proper use and maintenance of personal protective equipment (Demonstrated proficiency in using PPE should be required.)
- Worker awareness and understanding of workplace practices and maintenance procedures to protect personnel from exposure to hydrogen sulfide
- Wind direction awareness and routes of egress
- Confined space and enclosed facility entry procedures
- Locations and use of safety equipment
- Locations of safe briefing areas
- Use and operation of all Hydrogen Sulfide monitoring systems
- Emergency response procedures, corrective action, and shutdown procedures
- Effects of Hydrogen Sulfide on the components of the Hydrogen Sulfide handling system
- The importance of drilling fluid treating plans prior to encountering Hydrogen Sulfide

CCI provides training so that all employees whose work is regulated by this section acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned.

Training received by each affected employee occurs:

- Before the employee is first assigned duties under this section
- Before there is a change in assigned duties
- Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained

SPECIAL PRECAUTIONS FOR WORKING ON TANKS OR VESSELS

Do not weld or cut tanks or vessels which may have contained petrol, oil, spirits, paint or any flammable or explosive substance without making sure that the vessel has been treated to make it safe and that it no longer contains any vapors or trace of the substance.

TRAINING

CCI will ensure that a worker who may be exposed to H₂S:

- Is informed of the health hazards associated with exposure to that substance
- Is informed of measurements made of airborne concentrations of harmful substances at the work site
- Is trained in procedures developed by CCI to minimize the worker's exposure which will include but not be limited to proper use of H₂S detectors (bump testing and calibration), monitors, respiratory protection (medical evaluation, fit testing and selected respirator training) and personal protection equipment
- Is aware of the emergency action plan to include evacuation procedures

Employees that have potential to be exposed above the OEL or PEL shall be trained to recognize and distinguish the alarms that will signal a spark-proof audible or visual alarm that notifies them to vacate the area and do not re-enter. Necessary personnel would need to be contacted and clearance would need to be given for reentry. Employees shall be trained to evacuate contaminated areas immediately to safe areas. CCI will train affected company employees on site specific emergency action plans to include evacuation procedures.

Training programs shall adhere to the ANSI/ASSE Z390.1-2017 (Accepted Practices for Hydrogen Sulfide (H₂S) Training Programs.) Training will be conducted in a classroom setting and will be required initially prior to commencing work and be given annually thereafter. Instructor led classroom training will be concluded upon demonstration of competency but not be less than 4 hours. CCI requires instructor led, classroom training for a minimum of 3.5 hours and that the training be refreshed on an annual basis.

CCI shall train employees who have the potential to be exposed to hydrogen sulfide (H₂S) above the occupational exposure limit (OEL) or the permissible exposure limit (PEL) in:

- The operation and maintenance of the portable and personal gas detection equipment they are expected to use
- How to bump test the portable and personal gas detection equipment they are expected to use
- How to accurately calibrate the portable and personal gas detection equipment they are expected to use
- The required elements of OSHA's Respiratory Protection standard, 29 CFR 1910.134, to include medical evaluations, fit testing, and selected respirator training.

STEPS TO TAKE DURING H₂S EMERGENCY

Step One: Evacuate immediately. An H₂S alarm indicates that there may be hazardous concentrations in the building or area. Get to a safe new area immediately by moving upwind or

crosswind from the release. Move to higher ground in possible.

Step Two: Sound the alarm. Immediately notify someone that there is an H₂S release, relay any information you may have and that you may require assistance.

Step Three: Assess the situation. Do a head count and consider other hazards.

Step Four: Protect rescue personnel. Put on SCBA/SABA to protect rescue personnel. **If necessary, shut down the plant.**

Step Five: Rescue victim. Start by ventilating the building with fans or by opening all doors. If safe, you may perform the rescue by yourself with backup or with assistance. Enter the area and remove the victim to fresh air (upwind if possible).

Step Six: Revive victim. Apply artificial respiration or CPR on the victim until the victim revives or until help arrives. Only qualified personnel may use mechanical resuscitators or oxygen.

Step Seven: Get medical aid. All H₂S victims require medical attention. Even if they revive quickly, there is still a possibility that the lungs may collect fluid some hours after exposure. Arrange a transport of the victim to medical aid and provide the necessary information to Emergency Medical Services.

Incident Investigation and Reporting (Including Near Miss)

PURPOSE

The purpose of this document is to outline and set forth effective procedures for reporting, evaluating, and investigating incidents and non-conformances to prevent further occurrences for **Cirks Construction Inc.** personnel. Hereafter, **Cirks Construction Inc.** shall be referred to as "CCI,"

The purpose of workplace incident investigations is to find facts to guide future actions, not find fault or assign blame, and investigate all incidents in which a worker was hurt, as well as close calls (sometimes called "near misses"), in which a worker might have been hurt if the circumstances had been slightly different.

RESPONSIBILITIES

Responsibilities for incident investigation and reporting/evaluation shall be assigned prior to the occurrence of an incident. Individual responsibilities for reporting and investigation must be pre-determined and assigned prior to incidents.

CCI – shall ensure investigations are conducted and shall assist in the identification and implementation of corrective actions.

Responsible Safety Person and Supervisors – shall investigate, or assist in, incident investigations and complete formal root cause analysis report to address/correct any non-conformances. of the Responsible Safety Person CCI, will send injured employees to an insurance company approved medical provider for initial treatment.

Employees – shall immediately report any injury, incident or job-related illness, spill or damage to any property according to the KDC Incident Reporting Procedure. Employees who could be first responders shall be trained and qualified in first aid techniques to control the degree of loss during the immediate post-incident phase.

Employees shall actively cooperate with investigators during incident investigations. They shall also participate in recommending changes to processes, systems, and the workplace and in helping to implement changes as necessary to prevent future incidents.

POLICY

All incidents will be investigated by the Responsible Safety Person of CCI. The extent of such investigation shall reflect the seriousness of the incident utilizing a root cause analysis or other similar method.

CCI shall report to OSHA any work-related incidents as required by CFR 1904.39.

All personnel shall be trained in their roles and responsibilities for incident response and incident investigation techniques. In addition, training requirements relative to incident investigation/reporting (awareness, first responder, investigation, and training frequency) will be identified.

Employees who could be first responders will be trained and qualified in first aid techniques to control the degree of loss during the immediate post-incident phase.

The identification/investigation of evidence immediately following the incident shall include a listing of people, equipment and material involved and a recording of environmental factor such as weather, illumination, temperature, noise, ventilation, etc.

Before investigation, all emergency response needs must be completed, and the incident site must be safe and secure for entry and investigation.

The scene must be preserved to prevent material evidence from being removed or altered.

Items that can be used by investigators include:

- Cones
- Tapes
- Guards

Incident investigations will result in corrective actions, individuals will be assigned responsibilities relative to the corrective actions, and these actions will be tracked to closure. A written incident report will be prepared and include an incident report form and a detailed narrative statement concerning the event. The format of the narrative report will include an introduction, methodology, summary of the incident, investigation board member names, narrative of the event, findings, and recommendations. Photographs, witness statements, drawings will be included. Lessons learned will be documented and communicated to all affected employees. Changes to processes will be in place to affect the prevention reoccurrence or similar events. Incident investigations must be documented.

A FOUR STEP SYSTEM APPROACH TO CONDUCTING INCIDENT INVESTIGATIONS

- 1. Preserve/Document the Scene Preserve the Scene**
Preserve the scene to prevent material evidence from being removed or altered; investigators can use cones, tape, and/or guards. Document the Scene: Document the incident facts such as the date of the investigation and who is investigating. Essential to documenting the scene is capturing the injured employee's name, injury description, whether they are temporary or permanent, and the date and location of the incident. Investigators can also document the scene by video recording, photographing, and sketching
- 2. Collect Information**
Incident information is collected through interviews, document reviews and other means
- 3. Determine Root Causes**
The root causes of an incident are exactly what the term implies: The underlying reasons why the incident occurred in a workplace. Root causes generally reflect management, design, planning, organizational and/or operational failings (e.g., employees were not trained adequately; a damaged guard had not been repaired).
- 4. Implement Corrective Actions**
The investigation is not complete until corrective actions are implemented that address the root causes of the incident. Implementation should entail program level improvements and should be supported by senior management.

INVESTIGATION RESULTS

After identifying the direct cause of the incident, identify risk-reducing measures to prevent future comparable incidents. It is important to keep the safety-related aspect of the investigation separate from any possible disciplinary action. Incident investigations will always focus on identifying safety failures and remedying them promptly.

MEDICAL TREATMENT AND RESUMPTION OF WORK

- **Minor injury** - If the injury can be treated through application of first aid techniques either at the work location or through the designated panel providers or pre-designated healthcare professional, the employee returns immediately to his normal duties.
- **More serious injury** - Employees, who experience an injury/illness which requires care beyond first aid, must be seen by the designated panel providers, unless they have pre-designated another provider. In case of serious or life-threatening injury, emergency medical services (EMS) may opt to arrange transport to an Emergency Room.

- **In all cases**, the "Work Status Report" serves as authorization to receive said treatment. The healthcare provider completes the "Work Status Report" with directions to the employee and his supervisor on required follow up including directions to:
 - Return to work with no restrictions
 - Return to work with modifications
 - Remain off work for a specified duration.
- The employee must return the "Work Status Report" to their supervisor. If the healthcare provider has directed the employee to remain off work; the employee must notify their supervisor immediately by telephone and return the report as soon as possible

NEAR MISS

PURPOSE

"Near misses" or "close calls" can also happen; these are incidents that could have caused serious injury or illness but did not, often by sheer luck. Practically all of these harmful incidents and close calls are preventable.

The purpose of this policy is to ensure that all near-miss incidents (including minor incidents) are reported, recorded, and investigated. Reporting and sharing information with relevant parties creates an opportunity to answer the questions of what happened and why and then to use this insight to determine how to prevent a reoccurrence. Following the steps outlined in this policy will:

- Promote an open, learning culture regarding workplace safety
- Pursuant to KDC's Safety Appreciation Program, should report all near miss incidents.
- Encourage an opportunity to gain understanding and insight from an incident's analysis and utilize that knowledge to prevent or reduce future risk of reoccurrence
- Support management's goal of establishing a reporting culture with an aim to identify and control hazards, reduce risk, and prevent harmful incidents.

This policy applies to all employees of Cirks Construction Inc., who, regardless of level, location, or job description, all have a role in creating and maintaining an injury-free workplace.

SCOPE

While the Management of **Cirks Construction Inc.** acknowledges responsibility for implementing and managing health and safety for the workplace, employees must also recognize

and accept responsibility for their decisions and actions which can, and will, affect their own personal safety as well as the personal safety of others.

All incidents – regardless of size or impact – need to be investigated. The process helps employers look beyond what happened to discover why it happened. This allows CCI to identify and correct shortcomings in their safety and health management programs

RELEVANCE

Many safety activities are reactive and not proactive, and some organizations wait for losses to occur before taking steps to prevent a recurrence. Near miss incidents precede major events and are often overlooked as there was no harm (no injury, damage, or loss). An opportunity to prevent the incident is lost if these events are not reported. Recognizing, reporting and investigating near miss incidents can significantly improve worker safety and enhance an organization's safety culture.

PROCEDURE FOR REPORTING A "NEAR MISS" INCIDENT

- An employee who witnesses a near miss incident must report the near miss directly to the Responsible Safety Person. The reporting system is non-punitive and, if desired by the person reporting, anonymous.
- All near miss incidents will be reviewed by the Responsible Safety Person to identify the root cause and the weaknesses in the system contributing to the incident. The reporting employee may be asked to participate in the incident investigation.
- Investigation results will be used to improve safety systems, hazard control, risk reduction, and to educate employees. All of these represent opportunities for training, feedback on performance, and a commitment to continuous improvement.

COMMUNICATION

The steps taken (training, new policies and procedures, etc.) to improve workplace safety because of the near miss investigation will be reported to Management by the Responsible Safety Person as applicable.

ROLES AND RESPONSIBILITIES

It is the responsibility of **Management** to:

- Support the development and implementation of safe working practices through provision of proper resources
- Review health and safety procedures annually or as necessary and

- Encourages near miss reporting and enhances the culture through KDC's Safety Appreciation Program.

It is the responsibility of the **Responsible Safety Person** to:

- Acknowledge and document potential hazards reported by **CCI** employees
- Monitor health and safety performance, re-designing health and safety practices and procedures when prudent to do so
- Include training for new employees to identify hazards and work safely as part of their orientation and
- Celebrate the success and value of the near miss reporting process with all employees!

It is the responsibility of the Responsible Safety Person to:

- Perform thorough investigations based on facts and provide recommendations for corrective action to ensure that the potential for any future occupational injury, disease and accidents is eliminated.

It is the responsibility of **CCI** Employees to:

- Ensure action has been taken to maintain safety and ensure safety of the area
- Promptly report (immediately) all incidents and submit to Responsible Safety Person
- Provide statements and participate in the near miss investigation.

It is the responsibility of subcontractors to:

- Follow the same reporting procedure as employees directly employed by CCI
- Provide statements and participate in the near miss investigation.

RISK CONTROL ANALYSIS

PURPOSE

During an incident investigation, CCI must determine which factors contributed to the incident, and OSHA encourages CCI to go beyond the minimum investigation required and conduct a root cause analysis.

A root cause analysis allows an employer to discover the underlying or systemic, rather than the generalized or immediate, causes of an incident. Correcting only an immediate cause may eliminate a symptom of a problem, but not the problem itself.

How to Conduct a Root Cause Analysis

A successful root cause analysis identifies all root causes—there are often more than one.

It is important to consider all possible "what," "why," and "how" questions to discover the root cause(s) of an incident.

Benefits of Root Cause Analysis for Employers

Conducting a thorough investigation that identifies root causes will help to prevent similar events from happening again. In this way, employers will reduce the risk of death and/or injury to workers or the community or environmental damage.

Root Cause Analysis Tools

Below is a list of tools that may be used by CCI to conduct a root cause analysis. The tools are not meant to be used exclusively. Ideally, a combination of tools will be used.

- Brainstorming
- Checklists
- Logic/Event Trees
- Timelines
- Sequence Diagrams
- Causal Factor Determination

Regardless of the combination of tools chosen, employers should use these tools to answer four important questions:

1. **What** happened?
2. **How** did it happen?
3. **Why** did it happen?
4. **What** needs to be corrected?

ROLES AND RESPONSIBILITIES

It is the responsibility of **Responsible Safety Person** to:

- Conduct an investigation and complete the KDC Root Cause Analysis Report.

Ladder and Stairway Safety

PURPOSE

The purpose of this document is to outline the Ladder and Stairway Safety Program for **Cirks Construction Inc.** hereafter referred to as "CCI," This program will establish guidelines for the safe use of ladders throughout worksites by employees, personnel, and subcontractors.

This safety policy and procedure is established in accordance with Occupational Safety and Health Standards for the Construction Industry ([29 CFR 1926.1053](#)).

RESPONSIBILITIES

Responsible Safety Person

- Coordinate the required training for employees
- Ensure compliance with this policy and procedure through the auditing process
- Provide prompt assistance to managers, supervisors, or others as applicable on any matter concerning this policy
- Develop required training
- Audit to ensure effective implementation of this policy
- Work with procurement manager to ensure that all ladders comply with this policy

Supervisors

- Ensure that all ladders (fixed and portable) are regularly inspected and properly maintained
- Remove defective ladders from service for destruction

Employees

- Comply with all applicable guidelines contained in this policy
- Immediately report suspected unsafe conditions or ladders to their supervisor
- inspect ladders before using and keep ladders clean and in good condition

TRAINING

CCI shall train all employees to recognize hazards related to ladders and stairways and instruct them to minimize these hazards.

For example, CCI shall ensure that each employee is trained by a competent person in the following areas, as applicable:

- The proper use of the ladders

- What type of ladder to use
- How to set up ladders
- Ladder inspection
- Proper maintenance
- Fall hazards in the work area
- Correct procedures for erecting, maintaining, and disassembling the fall protection systems to be used
- Proper construction, use, placement, and care in handling of all stairways and ladders; and
- Maximum intended load-carrying capacities of ladders used.

This training shall be done during employee orientation and/or job assignment. Refresher training shall be provided to employees when necessary.

SAFE LADDER USE

Employees should follow certain rules when placing, which include:

- Hold on with both hands when going up or down. If material must be handled, raise, or lower it with a rope either before going down or after climbing to the desired level.
- Ladders are used only on stable and level surfaces unless they are secured or stabilized to prevent accidental movement.
- Always face the ladder when climbing up or down.
- Be sure shoes are not greasy, muddy, or slippery before climbing or descending.
- Do not climb higher than the third rung from the top on straight or extension ladder, or the second tread from the top on stepladders. (Never stand on the top rung or cap of a step ladder.
- Carry tools on a tool belt not in the hand and never carry objects that could cause injury in the event of a fall.
- Never lean too far to the sides. Keep your belt buckle within the side rails.
- Use a 4 to 1 ratio when leaning a single or extension ladder. (Feet to feet, palms on rung, so that the bottom is 3 feet away from the object the ladder is leaning against.)
- Portable extension ladders shall have clear access at top and bottom. If used for access to an upper landing surface must extend a minimum of 3 feet above the landing surface, or where not practical, be provided with grab rails and be secured against movement while in use.
- Never use a defective ladder. Tag or mark it so that it will be destroyed.
- Never splice or lash together.
- Never use makeshift ladders, such as cleats fastened across a single rail.
- Be sure that a stepladder is fully open, and the metal spreader locked before starting to climb.

- Keep ladders clean and free from dirt and grease.
- Never attempt to adjust a ladder while a user is standing on the ladder.
- Never jump from a ladder. Always dismount from the bottom rung.
- Ladders shall not be loaded beyond the maximum intended load for which they were built, nor beyond the manufacturer's rated capacity.
- Ladders shall be used only for the purpose for which they were designed. Never use ladder in a horizontal position or as scaffolding, do not place ladders on top of boxes, barrels, crates, etc.
- Ladders must have non-conductive siderails if they are used where the worker or the ladder could contact energized electrical conductors or equipment.

Ladder Load Limits

There are five categories of ladder Duty Ratings:

1.	Type IAA (Extra Heavy Duty)	375 pounds
2.	Type IA (Extra Heavy Duty)	300 pounds
3.	Type I (Heavy Duty)	250 pounds
4.	Type II (Medium Duty)	225 pounds
5.	Type III (Light Duty)	200 pounds

LADDER INSPECTION

All ladders shall be maintained in a safe condition. OSHA General Industry Standard [1910.23\(b\)\(9\)](#) Ladders are inspected before initial use in each work shift, and more frequently as necessary, to identify any visible defects that could cause employee injury. Ladders shall be inspected by a competent person for visible defects on a periodic basis and after any occurrence that could affect their safe use.

Portable or fixed ladders with structural defects such as broken or missing rungs, cleats, or steps, broken split rails or corroded components shall be removed from service by immediately tagging "DO NOT USE" or marking in a manner that identifies them as defective.

STAIRWAYS

The rules covering stairways and their components depend on how and when stairs are used. Specifically, there are rules for stairs used during construction and stairs used temporarily during construction, as well as rules governing stair rails and handrails.

A stairway or ladder must be provided at all worker points of access where there is a break in elevation of 19 inches or more and no ramp, runway, slope embankment, or personal hoist is provided.

Stairways Used During Construction

The following requirements are applicable to all stairways used during construction:

- Stairways that will not be a permanent part of the building under construction must have landings at least 30 inches deep and 22 inches wide (76 x 56 cm) at every 12 feet (3.7 m) or less of vertical rise. Stairways must be installed at least 30 degrees—and no more than 50 degrees—from the horizontal.
- Variations in riser height or stair tread depth must not exceed 1/4 inch in any stairway system, including any foundation structure used as one or more treads of the stairs.
- Doors and gates opening directly onto a stairway must have a platform that extends at least 20 inches (51 cm) beyond the swing of the door or gate.
- Metal pan landings and metal pan treads must be secured in place before filling.
- Stairway parts must be free of dangerous projections such as protruding nails.
- Slippery conditions on stairways must be corrected.
- Workers must not use temporary spiral stairways that will not be a permanent part of the structure.

Stair Rails

The following general requirements apply to all stair rails:

- Stairways with four or more risers or rising more than 30 inches (76 cm) in height—whichever is less—must be installed along each unprotected side or edge. When the top edge of a stair rail system also serves as a handrail, the height of the top edge must be no more than 37 inches (94 cm) nor less than 36 inches (91.5 cm) from the upper surface of the stair rail to the surface of the tread.
- Stair rails installed after March 15, 1991, must be not less than 36 inches (91.5 cm) in height.
- Top edges of stair rail systems used as handrails must not be more than 37 inches (94 cm) high nor less than 36 inches (91.5 cm) from the upper surface of the stair rail system to the surface of the tread. (If installed before March 15, 1991, not less than 30 inches [76 cm]).
- Stair rail systems and handrails must be surfaced to prevent injuries such as punctures or lacerations and to keep clothing from snagging.
- Ends of stair rail systems and handrails must be built to prevent dangerous projections, such as rails protruding beyond the end posts of the system.
- Unprotected sides and edges of stairway landings must have standard 42-inch (1.1 m) guardrail systems.

- Intermediate vertical members, such as balusters used as guardrails, must not be more than 19 inches (48 cm) apart.
- Other intermediate structural members, when used, must be installed so that no openings are more than 19 inches (48 cm) wide. Screens or mesh, when used, must extend from the top rail to the stairway step and along the opening between top rail supports.
- Handrails Requirements for handrails are as follows:
 - Handrails and top rails of the stair rail systems must be able to withstand, without failure, at least 250 pounds of weight applied within two inches (5 cm) of the top edge in any downward or outward direction, at any point along the top edge.
 - Handrails must not be more than 37 inches (94 cm) high nor less than 30 inches (76 cm) from the upper surface of the handrail to the surface of the tread. ■ Handrails must provide an adequate handhold for employees to grasp to prevent falls.
 - Temporary handrails must have a minimum clearance of three inches (8 cm) between the handrail and walls, stair rail systems and other objects.
 - Stairways with four or more risers, or that rise more than thirty inches (76 cm) in height— whichever is less—must have at least one handrail.
 - Winding or spiral stairways must have a handrail to prevent use of areas where the tread width is less than 6 inches (15 cm).

Midrails

Midrails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members must be provided between the top rail and stairway steps to the stair rail system. When midrails are used, they must be located midway between the top of the stair rail system and the stairway steps.

DEFINITIONS

Cage - A guard that may be referred to as a cage or basket guard which is an enclosure that is fastened to the side rails of the fixed ladder or to the structure to encircle the climbing space of the ladder for the safety of the person who must climb the ladder.

Extension Ladder - Non-self-supporting portable ladder adjustable in length. It consists of two or more sections traveling in guides or brackets so arranged as to permit length adjustment. Its size is designated by the sum of the lengths of the sections measured along the side rails.

Fixed Ladder - Ladder permanently attached to a structure, building, or equipment.

Individual-Rung Ladder - Fixed ladder each rung of which is individually attached to a structure, building, or equipment.

Ladder - An appliance usually consisting of two side rails joined at regular intervals by cross-pieces called steps, rungs, or cleats, on which a person may step in ascending or descending.

Pitch - The included angle between the horizontal and the ladder, measured on the opposite side of the ladder from the climbing side.

Platform Ladder - A self-supporting ladder of fixed size with a platform provided at the working level. The size is determined by the distance along the front rail from the platform to the base of the ladder.

Rail Ladder - Fixed ladder consisting of side rails joined at regular intervals by rungs or cleats and fastened in full length or in sections to a building, structure, or equipment.

Railings - A railing is any one or a combination of those railings constructed in accordance with OSHA Standard 29 CFR [1910.23](#). A standard railing is a vertical barrier erected along exposed edges of floor openings, wall openings, ramps, platforms, and runways to prevent falls of persons.

Rungs - Ladder cross-pieces of circular or oval cross-section on which a person may step in ascending or descending.

Section Ladder - Non-self-supporting portable ladder, nonadjustable in length, consisting of two or more sections of ladder so constructed that the sections may be combined to function as a single ladder. Its size is designated by the overall length of the assembled sections.

Side-Step Ladder - A ladder in which an individual getting off at the top must step sideways to reach the landing.

Single Ladder - Non-self-supporting portable ladder, nonadjustable in length, consisting of but one section. Its size is designated by the overall length of the side rail.

Special-Purpose Ladder - Portable ladder which represents either a modification or a combination of design or construction features in one of the general-purpose types of ladders previously defined, to adapt the ladder to special or specific uses.

Stepladder - Self-supporting portable ladder, nonadjustable in length, having flat steps and a hinged back. Its size is designated by the overall length of the ladder measured along the front edge of the side rails.

Steps - Flat cross-pieces of a ladder on which a person may step in ascending or descending.

Through Ladder - A ladder in which an individual getting off at the top must step through to reach the landing.

Well - A permanent complete enclosure around a fixed ladder, which is attached to the walls of the well. Proper clearances for a well will give the person who must climb the ladder the same protection as a cage.

Lead (Awareness and Abatement)

PURPOSE

To outline safety procedures, exposure limits and general awareness surrounding potential Lead exposure for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

RESPONSIBILITIES

CCI

It is the responsibility of CCI to designate qualified subcontractors that meet at a minimum the OSHA Standards 29 CFR 1910.1025 and 29 CFR 1926.62 for the process of lead abatement.

POLICY

When the presence of lead is detected, prior to or during the execution of construction work, CCI will designate qualified subcontractors that meet at a minimum the OSHA Standards 29 CFR 1910.1025 and 29 CFR 1926.62 for the process of lead abatement.

SCOPE

Construction projects vary in their scope and potential for exposing workers to lead and other hazards. Projects such as removing paint from a few interior residential doors may involve limited exposure. Others projects, however, may involve removing or stripping substantial quantities of lead-based paints on large bridges and other structures.

This section applies to all construction work where an employee may be occupationally exposed to lead. All construction work excluded from coverage in the general industry standard for lead by CFR 1910.1025 is covered by this standard CFR 1926.62. Construction work is defined as work for construction, alteration and/or repair, including painting and decorating. It includes but is not limited to the following:

- Demolition or salvage of structures where lead or materials containing lead are present
- Removal or encapsulation of materials containing lead
- New construction, alteration, repair, or renovation of structures, substrates, or portions thereof, that contain lead, or materials containing lead
- Installation of products containing lead
- Lead contamination/emergency cleanup
- Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed

- Maintenance operations associated with the construction activities

Employees who are not past awareness level training for lead exposures must abide by any signs/labels/assessment reports indicating the presence of lead containing materials. Appropriate work practices must be followed to ensure the lead containing materials are not disturbed by those not trained to handle it.

HAZARDS

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

The Permissible Exposure Limit (PEL) set by OSHA is 50 micrograms of lead per cubic meter of air (50 ug/m³), averaged over an 8-hour workday. No employee shall be exposed to more than 50 µg/m³ of air as a permissible exposure limit.

Lead can be absorbed by inhalation (breathing) and ingestion (eating). Lead is not absorbed through your skin. When lead is scattered in the air as a dust, fume or mist it can be inhaled and absorbed through the lungs and upper respiratory tract. Lead can also be absorbed through the digestive system if swallowed.

Handling food, cigarettes, chewing tobacco, or make-up which have lead contamination or handling them with hands contaminated with lead, will contribute to ingestion.

Some possible locations of lead containing materials are leaded paints, leaded solders, pipes, batteries, circuit boards, cathode ray tubes, leaded glass, and demolition/salvage materials.

A significant portion of inhaled or ingested lead goes into the blood stream. Once in the blood stream, lead is circulated throughout the body and stored in various organs and body tissues. Some of this lead is quickly filtered out of the body and excreted, but some remains in the blood and other tissues. As exposure to lead continues, the amount stored in the body will increase. Lead stored in body tissues can cause irreversible damage, first to individual cells, then to organs and whole-body systems.

Short Term Effects of Overexposure to Lead

Lead is a potent, systemic poison. Taken in large enough doses, lead can kill in a matter of days. A condition affecting the brain called acute encephalopathy may arise which develops quickly to seizures, coma, and death from cardiorespiratory arrest. There is no sharp dividing line between rapidly developing acute effects of lead, and chronic effects which take longer to acquire. Lead adversely affects numerous body systems and causes forms of health impairment and disease which arise after periods of exposure as short as days or if several years.

Common symptoms of acute lead poisoning are loss of appetite, nausea, vomiting, stomach cramps, constipation, difficulty in sleeping, fatigue, moodiness, headache, joint or muscle aches, and anemia. Long term (chronic) overexposure to lead may result in severe damage to the blood-forming, nervous, urinary, and reproductive systems.

Long term Effects of Overexposure to Lead

Chronic overexposure to lead may result in severe damage to blood-forming, nervous, urinary, and reproductive systems.

Some common symptoms of chronic overexposure include loss of appetite, metallic taste in the mouth, anxiety, constipation, nausea, pallor, excessive tiredness, weakness, insomnia, headache, nervous irritability, muscle and joint pain or soreness, fine tremors, numbness, dizziness, hyperactivity, and colic. In lead colic there may be severe abdominal pain.

Reproductive Risks

Lead is toxic to both male and female reproductive systems. Lead can alter the structure of sperm cells and there is evidence of miscarriage and stillbirth in women exposed to lead or whose partners have been exposed. Children born to parents who were exposed to excess lead levels are more likely to have birth defects, mental retardation, or behavioral disorders or to die during the first year of childhood.

Workers who desire medical advice about reproductive issues related to lead should contact qualified medical personnel to arrange for a job evaluation and medical follow up particularly if they are pregnant or actively seeking to have a child. Employees who may be exposed to lead and who have been contacted by employees with concerns about reproductive issues must make medical examinations and consultations available.

Lightning Safety Plan

PURPOSE

The purpose of this document is to provide procedures to minimize the risk of injury during times of high lightning activity for **Cirks Construction Inc.**; hereafter referred to as "CCI".

RESPONSIBILITIES

Management

- Ensure lightning fact sheets where applicable are available at every outdoor worksite
- Ensure all field employees are aware of lightning hazards and which precautions should be taken if a storm hits

POLICY

Thoroughly assess the risk through the DRA. This procedure DOES NOT include risks from other types of severe weather that may accompany thunderstorms.

Procedure

- Develop an emergency action plan specific to the activity (this document) and consisting of a defined chain of command that identifies who is to make the decision.
 - This decision authority is final.
- Assign a designated weather watcher who looks for the signs of severe weather and a lightning threat.
- Develop a method of monitoring local weather forecasts (hazardous weather outlook) and warnings.
- Compile a list of specific locations that are probably safe from the lightning threat.
- Establish a set of specific criteria that will determine suspension and resumption of activities on the course (30-30 rule).
- Use recommended lightning safety procedures.

Use of a NOAA Weather Radio (also called NOAA All Hazards Radio) is the best way to keep informed while on the worksite. It provides the most up-to-date warning information. Many handheld scanners and amateur radio units can receive these stations. Unfortunately, the NWS does not issue lightning alerts. Lightning is present with every thunderstorm. Thunderstorms are a common occurrence in many areas and while they may produce lots of lightning, a warning may never be issued. There are specific criteria for issuing a warning and lightning is NOT one of those criteria.

The work-site supervisor will be responsible for making the decision to suspend competition and directs the people involved in the event to a safe location. The person (one person, NOT a committee) is recognized to have the authority to halt competition for weather-related safety reasons at any time.

- No person shall be standing on the worksite, in, or on machinery during a thunderstorm.
- No person shall be standing near fuel containers, since lightning is static electricity (i.e., a spark), the risk of vapors igniting may a very real and potential hazard.
- The 30-30 rule is best to use for determining the suspension and resumption of work.
- The 30-30 rule is based on scientific observations and principles related to lightning activity in and around thunderstorms.

30-30 Rule Explained

- Count the number of seconds between the observation of a lightning flash and hearing the thunder. If this is less than 30, the lightning is within 6 miles of the construction site. **The lightning safety plan should be activated.**
- After the lightning threat has passed, wait 30 minutes after the last observation of lightning within 6 miles (30-seconds) of the work site. This may seem like a long time but based on the speed of the storm and the distance it travels in 30 minutes, it is the bare minimum for safety reasons. Lightning has been observed to travel 10 miles outside the core of the storm and seemingly strike 'from the blue'.
- **Lightning MUST be observed for this rule to work.**
- **If the first stroke of a storm strikes your area, the 30-30 rule will not work.**
- In this situation, the weather observer must be aware of the signs of an impending thunderstorm (dark clouds, thunder with no visible lightning, high winds, etc.) (this list is not all-inclusive).

There is often an indication of charge building up from someone's hair standing up, feeling your skin tingle, hearing nearby crackling noises, or synthetic fabrics rising away from the wearer's body, just to mention a few. In these cases, implement the lightning safety plan IMMEDIATELY.

Basic Lightning Safety

- Postpone or cancel work.
- Avoid the highest point in the area.
- Avoiding being the tallest object in the area.
- Do not take shelter under trees or light poles.
- Do not stand out on the work area during a thunderstorm.

- If caught outside, do not lie flat on the ground, but crouch on your toes with your feet together, head lowered, and ears covered with your hands.
- Observe basic first-aid procedures if lightning does strike.
 - Observe the scene briefly – dashing out to help the injured may result in additional injuries.
 - Call 911.
 - Move the victim(s) to a safer area if required.
 - Treat the “dead” first. Victims may appear dead but can often be revived with CPR. (Only trained persons shall perform CPR).
 - Evaluate and treat for additional injuries (breathing difficulties, shock, fractures, burns, etc.) This is not an exhaustive list.

Vehicles as Shelter

If safe building structures are not accessible, CCI will guide workers to hard-topped metal vehicles with rolled up windows.

Remain in the vehicle for at least 30 minutes after hearing the last sound of thunder.

Phone Safety

After hearing thunder, do not use corded phones, except in an emergency. Cell phones and cordless phones may be used safely.

LIGHTNING EMERGENCY ACTION PLAN

In accordance with 29 CFR 1910.38 or 29 FCR 1926.35, CCI has implemented this Lightning Safety Plan as an amendment to CCI Emergency Action Plan.

In the event of a thunderstorm, the presence of lightning or when presented with the potential for lightning strike, CCI (Site Supervisor) shall:

- Inform supervisors and workers to act after hearing thunder, seeing lightning, or perceiving any other warning signs of approaching thunderstorms.
- Indicate how workers are notified about lightning safety warnings.
- Identify locations and requirements for safe shelters.
- Indicate response times necessary for all workers to reach safe shelters.
- Specify approaches for determining when to suspend outdoor work activities, and when to resume outdoor work activities.
- Account for the time required to evacuate customers and members of the public, and the time needed for workers to reach safety.

CCI will post information about lightning safety at outdoor worksites. All employees should be trained on how to follow the EAP, including the lightning safety procedures.

Seek Shelter in Buildings

CCI and supervisors should know and tell workers which buildings to go to after hearing thunder or seeing lightning. NOAA recommends seeking out fully enclosed buildings with electrical wiring and plumbing. Remain in shelter for at least 30 minutes after hearing the last sound of thunder.

Lightning Warning System

CCI will use a storm detection system, which can provide advance warning of lightning hazards. While no system can detect the "first strike", detect all lightning or predict lightning strikes, the NOAA recommends that employers first rely on NOAA weather reports, including NOAA Weather Radio.

Commercial lightning detection and notification services are available to monitor for lightning activity. These notification services can send alerts when lightning activity develops or moves to within a certain range of a work site. In addition, these commercial systems can provide mapped locations of lightning strikes from an approaching storm. However, these systems cannot predict the first lightning strike. Consequently, it is important to watch the sky for storms developing overhead or nearby and get to a safe place prior to the first lightning strike. Portable and hand-held lightning detectors function by detecting the electromagnetic signal from a nearby lightning strike and then processing the signal to estimate the distance to the lightning strike.

These devices typically do not detect all strikes, cannot predict the first strike, cannot provide the location of a strike, and are less accurate than the commercial detection and notification systems. In some cases, simply listening for thunder or watching the sky may be a better indication of a developing or nearby storm. For situations which require advance notice of thunderstorms, NOAA recommends monitoring forecasts and radar observations from either commercial weather services or NOAA to stay informed of changing weather conditions.

If Caught Outside in a Thunderstorm If you find yourself caught outside during a thunderstorm, there may be nothing you can do to prevent being struck by lightning. There simply is no safe place outside in a thunderstorm. Therefore, it is very important to get to a safe place at the first signs of a thunderstorm.

If you are caught outside, follow NOAA's recommendations to decrease the risk of being struck.

- Lightning is likely to strike the tallest objects in each area—you should not be the tallest object.
- Avoid isolated tall trees, hilltops, utility poles, cell phone towers, cranes, large equipment, ladders, scaffolding, or rooftops.
- Avoid open areas, such as fields. Never lie flat on the ground.
- Retreat to dense areas of smaller trees that are surrounded by larger trees, or retreat to low lying areas (e.g., valleys, ditches) but watch for flooding.

- Avoid water, and immediately get out of and away from bodies of water (e.g., pools, lakes).

CCI is required to provide their employees with a place of employment that "is free from recognizable hazards that are causing or likely to cause death or serious harm to employees," The courts have interpreted OSHA's general duty clause to mean that an employer has a legal obligation to provide a workplace free of conditions or activities that either CCI or industry recognizes as hazardous and that cause, or are likely to cause, death or serious physical harm to employees when there is a feasible method to abate the hazard. This includes lightning hazards that can cause death or serious bodily harm.

During storms or high winds, OSHA prohibits:

- Work on or from scaffolds
- Crane hoists
- Work on top of walls

LIGHTNING SAFETY TRAINING

CCI will train all workers on lightning safety to all personnel working at outdoor worksites.

Workers shall be trained in advance where a worksite's safe shelter is located on each worksite and the amount of time it takes to reach a worksite's safe shelters.

Affected employees will be trained annually and per worksite.

Line Clearance – Tree Trimming

PURPOSE

This program is to identify and prevent hazards associated with tree trimming operations performed near energized power lines for **Cirks Construction Inc.**; hereafter referred to as "CCI," to ensure that all exposed workers are trained in the proper procedures and safety processes associated with these operations.

Management:

- Shall ensure that all personnel are trained in the tree trimming safety guidelines
- Shall ensure employees can demonstrate the ability to safely perform their duties
- Shall make sure all standards and regulations are met by all employees

Personnel

- Follow all aspects of this safety policy
- Shall be fully trained in accordance with standards and regulations of this policies
- Shall be able to demonstrate skills necessary to preform job duties safely before beginning work.

POLICY

CCI shall ensure all employees are properly trained in accordance with:

- [ANSI Z133](#)
- [OSHA 1910.269](#)
- [Cal/OSHA 3421](#) – (if applicable)

PREWORK INSPECTION/SAFETY BRIEFING

A safety briefing shall be conducted before the start of the first job of each day or shift. The briefing shall cover at least the following subjects:

- Hazards associated with the job,
- Work procedures involved,
- Special precautions,
- Energy source controls, and
- Personal protective equipment requirements.

A qualified tree worker shall conduct an initial job site inspection and perform daily hazard assessments before the start of each workday to identify all existing hazards and other potentially dangerous conditions.

The specific hazards associated with the job before starting work on the job may include but are not limited to:

- New hazards observed while working on the job.
- The appropriate work procedures to follow, e.g., safest method of entry into the tree.
- Appropriate personal protective equipment needed to accomplish the work safely.

Note: Before an employee climbs, enters, or works around any tree, the nominal voltage of electric power lines posing a hazard to employees shall be determined.

CLIMBING/WORKING SAFELY AT HEIGHTS

The climber is required to have a hand saw available while working aloft. The same applies to aerial lift operators when pruning. The purpose of requiring a handsaw while aloft is to reduce the incidents of one-handed chainsaw use.

The arborist shall be always secured when repositioning, the arborist shall preload the new tie-in point with his/her full weight before releasing the current means of being secured. Additionally, the climber shall select a tie-in point/primary suspension point that prevents lateral movement of the climbing line.

Control Measures

Falls can be the result of climbing rope failure, climbing safety gear malfunction, unexpected tree limb breakage, or accidentally cutting through the climbing rope, as a few examples.

Implementation of the following controls can help reduce these risks:

- Perform a hazard assessment of the work area before starting work.
- Inspect the root collar, tree trunk, and limbs for strength and stability before climbing.
- Consider using equipment such as aerial devices for trees that are unsafe to climb.
- Postpone tree work under unfavorable weather conditions, such as high winds, rain or ice.
- Based on the hazard assessment, determine the safest method of entry into the tree.

Adverse Weather Conditions

Line-clearance tree-trimming work may not be performed when adverse weather conditions make the work hazardous. Thunderstorms in the immediate vicinity, high winds, snowstorms, and ice storms are examples of adverse weather conditions that are presumed to make line-clearance tree trimming work too hazardous to perform safely.

Line tree trimmers make commence work on storm restoration efforts in the aftermath if they have been trained in special hazards. Employees may perform work in any type of weather once lines and have been deenergized.

General Safety

For field crews involving two or more workers at a work location, at least two workers trained in first aid/CPR shall be available, according to the 2017 revision.

- **Two-person rule.** Crews of at least two people are required in several circumstances so that one person can provide first aid or CPR to the other person if needed. Two people are required for work:
 - In most situations where a worker is exposed to contact with lines or equipment energized at more than 600 volts. (See 1910.269(l)(1)(i).)
 - In manholes and some vaults that are underground: a second person trained in CPR and first aid must be immediately available aboveground when a worker is working underground. (See 1910.269(e)(7) and 1910.269(t)(3))
 - Involving certain tasks performed by tree crews, including trimming trees or roping branches near energized lines. (See 1910.269(r)(1)(ii))

4-minute rescue. At fixed work locations, such as power plants and staffed substations, a sufficient number of workers must be trained so that an electric shock victim is not more than 4 minutes from a first aid and CPR-trained worker (see 4-Minute Rescue Requirement).

Radio communications between the qualified arborist and qualified crane operator shall be used during blind picks. Radio communications shall be hands free.

When more than one worker is involved in limbing, bucking, and moving debris from a tree, each shall be positioned, and their duties organized so that the actions of one worker will not create a hazard for any other worker. The 2017 expansion on this requirement clarifies that only one worker shall be cutting a single tree or single tree part during the limbing and bucking process.

Safety Guidelines

- No "free-style" climbing is permitted.
- Once you are off the ground, tie your lanyard and climbing rope to the tree.
- Do not use any ropes or saddles that are frayed or cut, have bent or broken clamps or are otherwise visibly damaged.
- Do not tie your lanyard or climbing rope to broken or weak branches. Store ropes, lanyards, and saddles in dry and clean areas.
- Do not use ropes that are less than 1/2 inch in diameter.
- "Double crotch" (tie in to a second lanyard) before operating the chain saw to prevent falls due to the kick of the saw.

- "Crotch" around the main trunk of the tree.
- Do not use a climbing rope as a lowering rope.
- Ropes shall be inspected before each use and, if unsafe because of damage or defect, may not be used.

Working Alone

Tree trimmers may work alone, but it is recommended a second person be in voice range of the first under these conditions:

- If a trimmer's approach is in 10 feet of any conductor with an energy at more than 750 volts.
- Branches, parts, or limbs that are being removed from minimum approach distance.
- Roping for removing branches or limbs from conductors and equipment.

FALL PROTECTION

CCI shall ensure all tree workers shall have and wear the appropriate personal fall protection systems and instruct employees to follow manufacturer's recommendations on the use and limitations, inspection, and maintenance procedures. Qualified Person must inspect fall protection equipment prior to each use. [OSHA requirements CFR 1926.501](#)

Body belts and positioning straps for work-positioning equipment shall meet the following requirements:

- Hardware shall be made of drop-forged steel, pressed steel, formed steel, or equivalent material.
- Hardware shall have a corrosion-resistant finish.
- Hardware surfaces shall be smooth and free of sharp edges.
- Buckles shall be capable of withstanding an 2,000-pound-force tension test with a maximum permanent deformation no greater than 0.4 millimeters (0.0156 inches).
- D rings shall be capable of withstanding a 3,500-pound-force tensile test without cracking or breaking.
- Snap hooks shall be capable of withstanding a 3,500-pound-force tension test without failure. Distortion of the snap hook sufficient to release the keeper is tensile failure of a snap hook.
- Top grain leather or leather substitute may be used in the manufacture of body belts and positioning straps; however, leather and leather substitutes may not be used alone as a load-bearing component of the assembly.
- Plied fabric used in positioning straps and in load-bearing parts of body belts shall be constructed in such a way that no raw edges are exposed, and the plies do not separate.

TRAFFIC CONTROL

- Wear class II apparel when directing traffic around trimming work.
- Place orange warning cones and "detour" signs at the roadside under the work area before beginning tree trimming over streets.
- Do not walk into traffic lanes outside of the "coned off" work area.

CHAINSAWS

CCI shall provide effective training before an employee is assigned to work with a chainsaw. All employees must read and understand the manufacturer's instruction manual, observe all safety rules, precautions, and follow operating instructions.

- When transporting a chainsaw in a vehicle, keep the chain and the bar covered with a guard and secure the saw to prevent fuel spillage and damage.
- When transporting a chainsaw by hand, stop the engine, grip the saw handle, place the muffler at the side away from your body and position the guide bar to the rear.
- Do not use a chainsaw with parts that are loose, worn, cracked or otherwise visibly damaged.
- Do not remove the chain brake or alter handles, chain brake, chain or covers.
- Tag damaged chainsaws "Out of Service" to prevent accidental start up or use.
- Only use grip locations as specified by the manufacturer as handholds when operating the chainsaw.
- Do not pour fuel into the tank of a running engine.
- Do not smoke while servicing, using, or refueling a chainsaw.
- Keep body parts and clothing away from the running engine and the cutting blade.
- Allow the engine to cool before performing maintenance or refueling.
- Stop the engine and disconnect the spark plug wire before cleaning, inspecting, adjusting, or repairing cutting blades or other rotating parts.
- Always start a chainsaw with a 10 inch or larger bar on the ground.
- Engage the chain brake, place one foot through the bottom handle, hold the top handle and pull the starter rope.
- A power saw may not be running when the saw is being carried up into a tree by an employee.
- Do not place a chainsaw on your knee when starting it.
- Always use both hands to maintain control of the chain saw.
- When moving from tree to tree or cut to cut, activate the chain brake, remove your finger from the trigger and keep the bar away from your body.
- Do not operate a chainsaw above your shoulder height.
- Keep the nose of the bar clear of other nearby objects during cutting to prevent kickback.
- Do not set a saw down while the blade is engaged.

- Stop the engine and turn the switch to "OFF" when the chainsaw is to be left unattended.

Hand Saws

- Keep control of saws by releasing downward pressure at the end of the stroke.
- Do not use a saw that has dull saw blades.
- Oil saw blades after each use.
- Keep your hands and fingers away from the saw blade while using the saw.
- Do not carry a saw by the blade.

CHIPPERS

If maintenance is needed, all moving parts shall come to a complete stop and keys shall be removed from the ignition and pocketed by the authorized person before proceeding. When working with chipper winches, a winch line should not be wrapped around a load. During winching operations of loads that do not have a manufactured attachment point, the load should be secured using a sling. Winch lines must also be compatible with the winch design and shall meet manufacturer's specifications. Additionally, when using a winch in chipper operations, the operator shall ensure that the winch line is properly stored before initiating chipper operations.

Operations may include:

- Use wheel blocks to chock the wheels of chippers before beginning any processing.
- Stand to the side of the hopper opening when feeding the hopper.
- Use your chain saw to cut long limbs to 6 foot or smaller lengths before putting them in the chipper.
- Brush chippers not equipped with a mechanical infeed system shall be equipped with an infeed hopper. The infeed hopper must be long enough to prevent employees from contacting the blades or knives of the machine during operation.
- Stop the chipper if you hear any uncommon sounds such as clanks or rattles which may indicate loose blades, nuts, or other parts.

Equipment must be inspected before use. If an inspection reveals a defect that could affect the safe operation of the equipment, the equipment shall be removed from service.

EXPOSED LIVE PARTS

Employees shall be trained and competent in:

- The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment
- The skills and techniques necessary to determine the voltage of exposed live parts
- The minimum approach distances that correspond to the voltages to which the employee will be exposed

- The proper use of personal protective equipment, insulation and shielding materials and insulated tools
- Recognizing electrical hazards and how to control or avoid them
- Determine the voltage of lines that may pose a hazard or risk
- Making sure their body parts, platforms, aerial devices are being used outside minimum approach
- Using insulated tools and equipment to remove branches that are in contact or near minimum approach distance around energized parts

Employees engaged in pruning, trimming, removing, or clearing trees from lines shall consider all overhead and underground electrical power conductors to be energized with potentially fatal voltages. These lines should never be contacted either directly or indirectly.

Always assume that powerlines are energized. When work is near overhead or downed power lines, always assume that all power lines and any attached equipment, such as transformers, are energized. Before work begins, contact the utility company for immediate assistance.

TRAINING

The degree of training shall be determined by the risk to the employee for the hazard involved. The training shall establish employee proficiency in the work practices required by OSHA standard 1910.269 and CCR 3421 and shall introduce the procedures necessary for compliance. The training includes a requirement that the employees can demonstrate safe work practices.

CCI shall ensure safety training is provided to employees to improve their knowledge and awareness of workplace hazards to help them perform their work more efficiently and safely. Safety training shall be provided to employees that addresses the hazards associated with tree work they perform.

Safety training must be:

- Completed prior to a job assignment
- Provided in the language(s) workers understand
- Documented and additional refresher training must be given whenever necessary

Line-clearance tree trimming refers to the pruning, trimming, repairing, maintaining, removing, or clearing of trees or the cutting of brush that is near (within 10 feet of) energized power lines. The OSHA standard [1910.269\(r\)](#) addresses both personnel and equipment requirements. The line-clearance tree trimming equipment requirements in [1910.269\(r\)\(2\)](#) through (8) apply to [1910.269](#) qualified employees and line-clearance tree trimmers who are clearing lines with brush clippers, sprayers, stump cutters, chain saws, backpack power cutters, climbing ropes, or safety saddles.

OSHA recognizes three different qualification levels for line-clearance tree trimmers:

1. **Unqualified employees** must maintain the minimum approach distances of at least 10 feet from overhead power lines. (Work practices for these employees are covered by Subpart S, particularly OSHA [1910.333\(c\)\(3\)](#). Section 1910.269 does not apply to tree trimming operations performed by unqualified employees.)
2. **269-qualified employees** must use their 269 specific skills and any other tree cutting procedures and training to safely trim trees. All of 1910.269 except paragraph (r)(1), which applies specifically to line-clearance tree trimmers, apply to work performed by these specialized workers.
3. **Line-clearance tree trimmers** are workers that have received specialized training so they can work within 10 feet of energized power lines and equipment. Line-clearance tree trimmers shall:
 - Be trained and certified in, and observed (at least annually) to be complying with, safety-related work practices and procedures (including emergency procedures)
 - Follow the medical and first aid provisions of 1910.269(b)
 - Be provided a job briefing before starting a job or if expected conditions change
 - Properly wear approved PPE, including fall protection equipment, when needed
 - Comply with material handling and mechanical equipment (for example, aerial lift) requirements outlined in 1910.269

CAL/OSHA TRAINING REQUIREMENTS PURSUANT TO CCR 3421 – (IF APPLICABLE)

Safety training must cover the following topics at a minimum:

- The job-specific hazards associated with tree work including electrical hazards
- Safe work procedures and techniques for performing tree pruning, trimming, and felling
- Fall prevention equipment and practice
- Methods of communication
- First aid and CPR
- Roadway safety
- Rescue procedures (see additional information)
- Hazards associated with pesticide and fertilizer application

Below are selected applicable regulations. Refer to Title 8 California Code of Regulations ([T8CCR](#)) for complete set of requirements.

T8CCR Sections on Tree Work, Maintenance or Removal			
3420	Scope and definition	2940.2	Clearances from high-voltage lines
3421	General requirements	3203	Injury and Illness Prevention Program
3422	Tree workers' saddles	3328	Machinery and equipment
3423	General electrical hazards	3308	Personal Protective Devices
3424	Mobile equipment	3395	Heat Illness Prevention
3425	Portable power hand tools	3648	Fall protection while with aerial devices
3426	Hand tools		
3427	Safe work procedures		
3458	Fall Protection Date Palm Operations		

Additional training, on-the-job experience and special skills are required for the following employees:

- Qualified tree workers are permitted to perform tree work within 10 feet of an energized low-voltage (600 V or less) power line but cannot work less than 1 foot from the low-voltage power line.
- Qualified line-clearance tree workers are work when high-voltage electrical lines and conductors exceed 600 V.

PERSONAL PROTECTIVE EQUIPMENT

The use of personal protective equipment (PPE) helps to reduce the extent of the injury and includes:

- Protective eye wear, including adequate top and side protection to shield from debris, such as wood chips, snapping branches, and other flying objects (If a ventilated face shield is worn, be sure to wear safety glasses underneath.)
- Earmuffs/earplugs
- Safety hardhat to protect against branches or other objects that can fall on the worker
- Heavy duty gloves to protect against abrasion, cold temperatures, and vibration
- Steel-toed shoes or boots with nonslip soles
- Cut-resistant pants or protective leg chaps
- Reflective safety vest for high visibility

Noise Exposure/Hearing Protection

PURPOSE

The purpose of this document is to outline the Noise Exposure and Hearing Conservation Program for **Cirks Construction Inc.**; hereafter referred to as "CCI," Conservation of hearing is achieved through preventative measures. To reduce occupational hearing loss, all employees, who work in potentially noisy areas, are provided hearing protection and training.

RESPONSIBILITIES

Management

- Use Engineering and Administrative controls to limit employee exposure
- Provide adequate hearing protection for employees
- Conduct hearing protection training for all new employees

Employees

- Use company provided, approved hearing protection in designated high noise areas
- Request new hearing protection when needed

TRAINING

A training program shall be provided for all employees who are exposed to action level noise. Training shall be updated consistent to changes in PPE and work processes.

All field employees shall be instructed in hearing protection. The initial training is conducted as part of the New Hire Orientation Program and consists of:

- Rules and procedures
- Where hearing protection is required
- How to use and care for hearing protectors
- How noise affects hearing and hearing loss

CCI will train each affected employee who is exposed to noise at or above the action level of the Occupational Safety and Health Administration (OSHA) of 90 dB as calculated as an eight-hour time weighted average (TWA) in CCI's hearing conservation training program.

ENGINEERING CONTROLS

After it is determined that noise exposure above 90 dB are present, engineering controls should be evaluated and implemented to reduce the noise exposure before administrative controls are initiated. Some examples of engineering controls include:

- Noise reducing baffles
- Compartmentalization

A continuing effective hearing protection program shall be administered when employees are exposed to sound levels greater than 90 db (A) on an 8-hour time-weighted average basis.

ADMINISTRATIVE CONTROLS

After engineering controls are evaluated for effectiveness or feasibility, administrative controls should be considered to reduce noise exposure. Administrative controls include restricting exposure time or using personal protective equipment (PPE).

Personal Protective Equipment, such as ear plugs or muffs, may be used to reduce the amount of noise exposure. Each plug or muff has a noise reductions factor (NR) as evaluated by ANSI Standards (S3.19 - 1974 or Z24.22 - 1957).

NOISE EXPOSURE MONITORING

CCI shall monitor when information indicates that any company employee's exposure may equal or exceed an 8-hour time-weighted average (TWA) of 90 dBA. Factors which suggest that noise exposures in the workplace may be at this level include employee complaints about the loudness of noise, indications that employees are losing their hearing, or noisy conditions which make normal conversation difficult. CCI shall utilize a decibel meter for monitoring noise exposure.

Exposure to impulsive or impact noise should not exceed 104 dB peak sound pressure level.

HEARING PROTECTION

CCI shall make hearing protection available to all field employees exposed to an 8-hour time-weighted average of 90 dB or greater at no cost to the employees and replace as necessary.

State of Washington

For all work conducted in the state of Washington, the following standards are applicable:

CCI must provide employees with an appropriate selection of hearing protectors. The selection must include at least two distinct types (such as molded earplugs, foam earplugs, custom-

molded earplugs, ear caps, or earmuffs) for every exposed employee and must be sufficient to cover the following:

- Different levels of hearing protection needed to reduce all employee exposures to level below 85 dBA TWA8
- Different sizes
- Different working conditions

Consider requests of the employees regarding:

- Physical comfort
- Environmental conditions
- Medical needs
- Communication requirements

Warning Signs

CCI shall make sure warning signs are posted at the entrances or boundaries of all well-defined work areas where employees may be exposed to noise that equals or exceeds 115 dBA (measured using a sound level meter with slow response.) Warning signs must clearly indicate that the area is a high-noise area and that hearing protectors are required.

DEFINITIONS

Decibel (dB) - A unit of measurement of sound pressure level. The sound pressure level, in dB, is equal to 20 times the common logarithm of the ratio of the existing sound pressure to a reference sound pressure of 20 micro pascals.

Hazardous Noise - Exposure to steady state noise equivalent to 90 dB for 8 hours. Components may define time intensity trading rates as appropriate for their rest cycle conditions using subsection A.1. of enclosure 3. Exposure to impulse noise levels greater than 140 dB.

TWA8 - Equivalent eight-hour time-weighted average sound level - That sound level, which if constant over an 8-hour period, would result in the same noise dose measured in an environment where the noise level varies.

Pandemic Preparedness

PURPOSE

The purpose of this document is to outline the Pandemic Preparedness Plan for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

The purpose of this plan is to minimize the impact of a contagious illness pandemic on employees by describing the specific actions to be taken by CCI based on the following objectives and assumptions.

Assumptions

- In the event of a pandemic, CCI will have minimal resources available for local assistance and local authorities will be responsible for company response plans.
- A pandemic flu or virus will easily and rapidly spread from person to person resulting in substantial absenteeism.
- Vaccines and antiviral medications will be in short supply during the initial months after the onset of a pandemic.

RESPONSIBILITIES

The Responsible Safety Person will be responsible for the administration, enforcement and necessary revisions of this Pandemic Preparedness Plan. The plan coordinator will also be responsible for dealing with disease issues and their impact at the workplace. This includes contacting local health departments and health care providers to assist in the development and implementation of protocols responsible to ill individuals.

POLICY

Objectives

- To protect the lives, safety, and health of all workers at every company location
- To effectively communicate with all involved parties throughout the duration of a pandemic.
- To provide for the continuation of as many services as possible as long as it is safe to do so.
- To prevent the spread of infection through health and hygiene education.
- Workers are encouraged to obtain appropriate immunizations to help avoid disease.
- Granting time off work to obtain the vaccine. Employees will be granted time off to obtain immunizations and vaccines as the medicine becomes available in the community.

If a pandemic impacts the normal operations at CCI, CCI will implement the existing emergency management structure in the Emergency Action Plan to manage the response and recovery activities prior to, during and after a pandemic.

Flexible work policies have been developed so that workers are encouraged to stay at home when ill, when having to care for ill family members, or when caring for children when schools close, without fear of reprisal. Tele-commuting or other work-at-home strategies should be developed.

The Pandemic Preparedness Plan will be the first annex to CCI Emergency Response Plan. The Pandemic Preparedness Plan will incorporate CCI Crisis Communication Plan and Emergency Management Structure, two components of the Emergency Action Plan. Information on the Pandemic Preparedness Plan and the Emergency Action Plan can be found in CCI EHS policy manual.

ADMINISTRATIVE CONTROLS

Social distancing including increasing the space between employee work areas and decreasing the possibility of contact by limiting large or close contact gatherings will be considered in the event of an outbreak.

CLEANING

Clean all areas that are likely to have frequent hand contact (like doorknobs, faucets, handrails) routinely and when visibly soiled. Work surfaces should also be cleaned frequently using normal cleaning products.

HANDWASHING

Hand washing and use of hand sanitizers is encouraged by CCI and its supervisors. Hand washing facilities, hand sanitizers, tissues, no touch trash cans, hand soap and disposable towels will be provided by CCI.

TRAINING

Employees will be trained on health issues of the pertinent disease to include prevention of illness, initial disease symptoms, preventing the spread of the disease, and when it is appropriate to return to work after illness. Disease containment plans and expectations will be shared with employees. Communicating information with non-English speaking employees or those with disabilities must be considered.

BUSINESS CONTINUITY

A business continuity plan will be prepared so that if significant absenteeism or changes in business practices are required business operations can be effectively maintained.

COMMUNICATION

Key contacts, a chain of communications and contact numbers for employees, and processes for tracking business and employee's status have been established and will be posted in a common area in the main office at each location.

A procedure must be developed to notify key contacts including both customers and suppliers in the event an outbreak has impacted your company's ability to perform services. This procedure must also include notification to customers and suppliers when operations resume.

Key contact personnel at CCI such as management and team lead, customers and suppliers will be contacted as soon as possible in the event an outbreak may impact CCI's ability to perform services. Customers and suppliers will be notified when operations resume.

The plan and emergency communication strategies should be periodically tested (for example annually) to ensure it is effective and workable.

CCI shall have a workplace hazard assessment specific to the pandemic purpose and review it.

CCI shall have a method for managing local regulatory reporting requirements and how to inform employees of these requirements.

FOLLOWING A PANDEMIC EVENT

Following a pandemic event, the person responsible for implementation of the plan should identify learning opportunities and take action to implement any corrective actions. Recognition of the factors that influence compliance with infection control practices is important in order to enable employers to prioritize and customize strategies for future pandemic events.

These strategies may include staff education, reminders in the workplace and routine observation and feedback. CCI and employees should work together to develop and implement safe procedures that encourage compliance with recommended infection control practices.

Personal Protective Equipment (PPE)

PURPOSE

The purpose of this document is to outline the Personal Protective Equipment (PPE) Program for **Cirks Construction Inc.**; hereafter referred to as "CCI," CCI provides all Employees with required PPE to suit the task and known hazards. This program covers the requirements for Personal Protective Equipment except for PPE used for hearing conservation and respiratory protection or PPE required for hazardous material response to spills or releases, which are covered under separate programs.

RESPONSIBILITIES

Supervisor

- Conduct hazard assessments to identify specific PPE for specific tasks, in accordance with the DRA
- Train employees in the selection, use, inspection, storage, cleaning, and limitations of specific PPE

Responsible Safety Person

- Provide replacement PPE when needed
- Identify any new hazards that would require the use of PPE

Employees

- Ensure proper use of PPE
- Properly use and care for assigned PPE
- Immediately inform supervisor if PPE is damaged or not effective

POLICY

General Rules

Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, must be provided, used, and maintained in a sanitary and reliable condition.

DEFECTIVE AND DAMAGED EQUIPMENT

Defective or damaged personal protective equipment shall not be used. PPE that is in disrepair must be discarded or removed from service until repaired. Employees who find PPE defective or in disrepair, they must inform their direct supervisor immediately.

Monitoring PPE

PPE is monitored regularly to ensure its effectiveness and that it is being used in accordance with the DRA and/or manufacturer's guidance.

EMPLOYEE-OWNED EQUIPMENT

PPE and replacement PPE shall be provided by CCI at no cost to employees. CCI is not required to pay or replace PPE for the following circumstances.

- Everyday clothing, such as long-sleeve shirts, long pants and work boots
- Ordinary clothing, skin creams, or other items, used solely for protection from weather, such as winter coats, jackets, gloves, parkas, rubber boots, hats, raincoats, ordinary sunglasses, sunscreen, etc.; or
- When the employee has intentionally damaged the PPE.

PPE SELECTION

Controlling Hazards

PPE devices alone should not be relied on to provide protection against hazards, but should be used in conjunction with guards, engineering controls, and sound manufacturing practices.

Selection Guidelines

The general procedure for selection of protective equipment is to:

- Become familiar with the potential hazards and the type of protective equipment that is available, and what it can do, i.e., splash protection, impact protection, etc.
- Compare the hazards associated with the environment, i.e., impact velocities, masses, projectile shape, radiation intensities, with the capabilities of the available protective equipment.
- Select the protective equipment which ensures a level of protection greater than the minimum required to protect employees from the hazards.
- Fit the user with the protective device and give instructions on care and use of the PPE. It is very important that end users be made aware of all warning labels for and limitations of their PPE.

FITTING DEVICE

Careful consideration must be given to comfort and fit. PPE that fits poorly will not afford the necessary protection. Continued wearing of the device is more likely if it fits the wearer comfortably. Protective devices are generally available in a variety of sizes. Care should be taken to ensure that the right size is selected.

DEVICES WITH ADJUSTABLE FEATURES

Adjustments should be made on an individual basis for a comfortable fit that will maintain the protective device in the proper position. Care should be taken in fitting devices for eye protection against dust and chemical splash to ensure that the devices are sealed to the face. In addition, proper fitting of helmets is important to ensure that it will not fall off during work operations. In some cases, a chin strap may be necessary to keep the helmet on an employee's head. (Chin straps should break at a reasonably low force, however, to prevent a strangulation hazard). Where manufacturer's instructions are available, they should be followed carefully.

EYE AND FACE PROTECTION

Most occupational eye injuries can be prevented using suitable/approved safety spectacles, goggles, or shields. Approved eye and face protection shall be worn when there is a reasonable possibility of personal injury. Also covered under this regulation:

- Each employee shall use appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.
- Each employee shall use eye protection that provides side protection when there is a hazard from flying objects. Detachable side protectors are acceptable.
- Each employee who wears prescription lenses while engaged in operations that involve eye hazards shall wear eye protection that incorporates the prescription in its design or shall wear eye protection that can be worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses.
- Eye and face PPE shall be distinctly marked to facilitate identification of the manufacturer.
- Each employee shall use equipment with filter lenses that have a shade number appropriate for the work being performed for protection from injurious light radiation.

Typical hazards that can cause eye and face injury are:

- Splashes of toxic or corrosive chemicals, hot liquids, and molten metals
- Flying objects, such as chips of wood, metal, and stone dust
- Fumes, gases, and mists of toxic or corrosive chemicals; and
- Aerosols of biological substances.

Prevention of eye accidents requires that all persons who may be in eye hazard areas wear protective eyewear. This includes employees, visitors, contractors, or others passing through an identified eye hazardous area. To provide protection for these personnel, activities shall procure enough heavy-duty goggles and/or plastic eye protectors which afford the maximum amount of

protection possible. If these personnel wear personal glasses, they shall be provided with a suitable eye protector to wear over them.

EYE AND FACE SELECTION

Safety Glasses

Protective eyeglasses are made with safety frames, tempered glass or plastic lenses, temples and side shields which provide eye protection from moderate impact and particles encountered in job tasks such as carpentry, woodworking.

Single Lens Goggles

Vinyl framed goggles of soft pliable body design provide adequate eye protection from splash hazards. These goggles are available with clear lenses, perforated, port vented, or non-vented frames.

Welders/Chippers Goggles

These goggles are available in rigid and soft frames to accommodate single or two eye piece lenses.

- Welders' goggles provide protection from sparking, scaling, or splashing metals and harmful light rays. Lenses are impact resistant and are available in graduated shades of filtration.
- Chippers/grinders goggles provide eye protection from flying particles. The dual protective eye cups house impact resistant clear lenses with individual cover plates.

Face Shields

These normally consist of an adjustable headgear and face shield of tinted/transparent acetate or polycarbonate materials, or wire screen. Face shields are available in various sizes, tensile strength, impact/heat resistance and light ray filtering capacity.

Face shields will be used in operations when the entire face needs protection and should be worn to protect eyes and face against flying particles, metal sparks, and chemical/ biological splash.

Welding Shields

These shield assemblies consist of vulcanized fiber or glass fiber body, a ratchet/button type adjustable headgear or cap attachment and a filter and cover plate holder. These shields will be provided to protect workers' eyes and face from infrared or radiant light burns, flying sparks, metal spatter and slag chips encountered during welding, brazing, soldering, resistance welding, bare or shielded electric arc welding and oxyacetylene welding and cutting operations.

Filter Lenses for Protection Against Radiant Energy			
Operations	Electrode Size 1/32 in	Arc Current	Protective Shade
Shielded metal arc welding	Less than 3	Less than 60	7
	3-5	60-160	8
	5-8	160-250	10
	More than 8	250-550	11
Torch brazing			3
Torch soldering			2

Note: as a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxyfuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the (spectrum) operation.

Selection Chart Guidelines for Eye and Face Protection		
The following chart provides general guidance for the proper selection of eye and face protection to protect against hazards associated with the listed hazard "source" operations.		
Source	Hazard	Protection
IMPACT - Chipping, grinding machining, masonry work, woodworking, sawing, drilling, chiseling, powered fastening, riveting, and sanding	Flying fragments, objects, large chips, particles, sand, dirt, etc.	Spectacles with side protection, goggles, face shield For severe exposure, use face shield
HEAT -Furnace operation and arc welding	Hot sparks	Face shields, spectacles with side. For severe exposure use face shield.
CHEMICALS -Acid and chemical handling, degreasing, plating	Splash	Goggles, eyecup and cover types. For severe exposure, use face shield.
DUST - Woodworking, buffing, general, buffing, general dusty conditions.	Nuisance dust	Goggles, eye cup and cover type

HEAD PROTECTION

Head protection will be furnished to, CCI employees and used by, all employees and subcontractors engaged in construction and other miscellaneous work. Head protection will also be required to be worn by employees, subcontractors, inspectors, and visitors at the job site.

Selection Guidelines for Head Protection

All head protection is designed to provide protection from impact and penetration hazards caused by falling objects. Head protection is also available which provides protection from electric shock

and burn. When selecting head protection, knowledge of potential electrical hazards is important. Class A hardhats, in addition to impact and penetration resistance, provide electrical protection from low-voltage conductors (they are proof tested to 2,200 volts). Class B hardhats, in addition to impact and penetration resistance, provide electrical protection from high-voltage conductors (they are proof tested to 20,000 volts). Class C hardhats provide impact and penetration resistance (they are usually made of aluminum which conducts electricity) and should not be used around electrical hazards.

Where falling object hazards are present, hardhats must be worn at all times. Some examples include working below other workers who are using tools and materials which could fall; working around or under conveyor belts which are carrying parts or materials; working below machinery or processes which might cause material or objects to fall; and working on exposed energized conductors.

FOOT PROTECTION

General Requirements

Safety shoes and boots provide both impact and compression protection. Each affected employee shall wear construction rated work shoes that have complete upper leathers and skid resistant soles when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and where employee's feet are exposed to electrical hazards. Toe caps shall be provided where there is exposure to impact tools, i.e. tamper, etc.

HAND PROTECTION

General Requirements

Hand protection is required when employees' hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns; and harmful temperature extremes.

Skin contact is a potential source of exposure to toxic materials; it is important that the proper steps be taken to prevent such contact. Gloves should be selected based on the material being handled, the hazard involved, and their suitability for the operation being conducted. One type of glove will not work in all situations.

Most accidents involving hands and arms can be classified under four main hazard categories: chemicals, abrasions, cutting, and heat. There are gloves available that can protect workers from any of these individual hazards or combination of hazards.

Gloves should be replaced periodically, depending on frequency of use and permeability to the substance(s) handled. Gloves overtly contaminated should be rinsed and then carefully removed after use.

Gloves should also be worn whenever it is necessary to handle rough or sharp-edged objects, and very hot or very cold materials. The type of glove materials to be used in these situations include leather, welder's gloves, aluminum-backed gloves, and other types of insulated glove materials.

Careful attention must be given to protecting your hands when working with tools and machinery. Power tools and machinery must have guards installed or incorporated into their design that prevent the hands from contacting the point of operation, power train, or other moving parts. To protect the hands from injury due to contact with moving parts, it is important to:

- Ensure that guards are always in place and used.
- Always lock out machines or tools and disconnect the power before making repairs.
- Treat a machine without a guard as inoperative; and
- Do not wear gloves around moving machinery, such as drill presses, mills, lathes, etc., where the glove could get caught-in-between.

Selection Guidelines for Hand Protection

Selection of hand PPE shall be based relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified. Gloves are often relied upon to prevent cuts, abrasions, burns, and skin contact with chemicals that can cause local or systemic effects following dermal exposure. There is no glove that provides protection against all potential hand hazards, and commonly available glove materials provide only limited protection against many chemicals.

Therefore, it is important to select the most appropriate glove for a particular application and to determine how long it can be worn, and whether it can be reused. It is also important to know the performance characteristics of gloves relative to the specific hazard anticipated, e.g., chemical hazards, cut hazards, flame hazards, etc. Before purchasing gloves, request documentation from the manufacturer that the gloves meet the appropriate test standard(s) for the hazard(s) anticipated. Other factors to be considered for glove selection in general include:

- If the performance characteristics are acceptable, in certain circumstances, it may be more cost effective to regularly change cheaper gloves than to reuse more expensive types.
- The work activities of the employee should be studied to determine the degree of dexterity required, the duration, frequency, and degree of exposure of the hazard, and the physical stresses that will be applied.

SELECTION OF GLOVES FOR CHEMICAL HAZARDS

The first consideration in the selection of gloves for use against chemicals is to determine, if possible, the exact nature of the substances to be encountered. Read instructions and warnings

on chemical container labels and SDSs before working with any chemical. Recommended glove types are often listed in the section for personal protective equipment.

All glove materials are eventually permeated by chemicals. However, they can be used safely for limited time periods if specific use and glove characteristics (i.e., thickness and permeation rate and time) are known. The safety office can assist in determining the specific type of glove material that should be worn for a particular chemical.

- The toxic properties of the chemical(s) must be determined; in, the ability of the chemical to cause local effects on the skin and/or to pass through the skin and cause systemic effects.
- Generally, any "chemical resistant" glove can be used for dry powders.
- For mixtures and formulated products (unless specific test data are available), a glove should be selected based on the chemical component with the shortest breakthrough time, since it is possible for solvents to carry active ingredients through polymeric materials.
- Employees must be able to remove the gloves in such a manner as to prevent skin contamination.

ELECTRICAL (PPE)

Per CFR 1910.137(a), employees working in areas where there are potential electrical hazards shall be provided with, and shall use, electrical protective equipment that is appropriate for the specific parts of the body to be protected and for the work to be performed. Protective equipment shall be maintained in a safe, reliable condition and shall be periodically inspected or tested.

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.)

Employees shall wear nonconductive head protection wherever there is a danger of head injury from electric shock or burns due to contact with exposed energized parts.

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.

General Protective Equipment and Tools

When working near exposed energized conductors or circuit parts, each employee shall use insulated tools or handling equipment if the tools or handling equipment might contact such conductors or parts. If the insulating capability of insulated tools or handling equipment is subject to damage, the insulating material shall be protected.

Fuse handling equipment, insulated for the circuit voltage, shall be used to remove, or install fuses when the fuse terminals are energized.

Ropes and handlines used near exposed energized parts shall be nonconductive. 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 exposed energized parts which might be accidentally contacted or where dangerous electric heating or arcing might occur.

When normally enclosed live parts are exposed for maintenance or repair, they shall be guarded to protect unqualified persons from contact with the live parts.

ALERTING TECHNIQUES

The following alerting techniques shall be used to warn and protect employees from hazards which could cause injury due to electric shock, burns, or failure of electric equipment parts:

- **Safety signs, safety symbols, or accident prevention tags** shall be used where necessary to warn employees about electrical hazards.
- **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 uninsulated energized conductors or circuit parts. Conductive barricades may not be used where they might cause an electrical contact hazard.
- **Attendants** - If signs and barricades do not provide sufficient warning and protection from electrical hazards, an attendant shall be stationed to warn and protect employees.

TRAINING

All Employees who are required to use PPE shall be trained to know at least the following:

- When PPE is necessary
- What PPE is necessary
- How to properly don, remove, adjust, and wear PPE
- The limitations of the PPE and
- The proper care, maintenance, useful life, and disposal of the PPE.

Each affected Employee shall demonstrate an understanding of the training and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE. When there is a reason to believe that any employee who has been trained does not have the required understanding and skill or there are changes in the workplace, the employee must be retrained.

Verification of training for PPE is required by OSHA and shall be accomplished through the new hire orientation process. PPE training will be documented.



Note: Retraining of the employee is required when the workplace changes, making the earlier training obsolete, the type of PPE changes, or when the employee demonstrates lack of use, improper use, or insufficient skill or understanding.

Respiratory Protection

PURPOSE

The purpose of this document is to outline the Respiratory Protection Program for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

RESPONSIBILITIES

All Employees shall follow the requirements of the Respiratory Protection Program.

Management

- Provide a selection of respirators as required
- Enforce all provisions of this program
- Appoint a specific designated individual to conduct the respiratory protection program

Responsible Safety Person

- Review sanitation/storage procedures.
- Ensure respirators are properly, stored, inspected, and maintained
- Monitor compliance for this program
- Provide training for affected Employees
- Provide respirator fit testing if required
- Must be able to conduct evaluations and have the proper training

Employees

- Wear respiratory protection per manufacturer's instructions
- Inspect respirator daily before use
- Be knowledgeable in the use and care of respiratory protection
- Follow all company procedures regarding respiratory protection

POLICY

In the Respiratory Protection program, hazard assessment and selection of proper respiratory protective equipment (RPE) is conducted in the same manner as for other types of personal protective equipment (PPE). In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective shall be to prevent atmospheric contamination.

This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials).

When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators shall be used. References: OSHA Standards *Respiratory Protection* ([29 CFR 1910.134](#))

CCI shall provide respiratory protection to employees from airborne contaminants in concentrations above the permissible exposure limit (PEL). Respiratory equipment will be provided to all affected employees. Respirators shall be provided which are applicable and suitable for purpose intended.

Respirators will be provided to affected employees at no cost to the employee.

VOLUNTARY USE OF RESPIRATORS

If your employer permits you to wear a respirator where it is not required, it is considered voluntary respirator use. Before you can voluntarily use a respirator, your employer must ensure that its use does not present a health hazard to you. In this situation, employers are not required to have a written respiratory protection program or medically evaluate and fit test workers. CFR 1910.134(c)(2)(ii).

PROGRAM EVALUATION

Evaluations of project sites where exposures have been identified are necessary to ensure that the written respiratory protection program is being properly implemented, this includes consulting with employees to ensure that they are using the respirators properly. Evaluations shall be conducted as necessary to ensure that the provisions of the current written program are being effectively implemented and that it continues to be effective program evaluation will include discussions with employees required to use respirators to assess the employees' views on program effectiveness and to identify any problems. Any problems that are identified during this assessment will be evaluated. Factors to be assessed include, but are not limited to:

- Respirator fit (including the ability to use the respirator without interfering with effective workplace performance)
- Appropriate respirator selection for the hazards to which the employee is exposed
- Proper respirator use under the workplace conditions the employee encounters
- Proper respirator maintenance

RECORD KEEPING

CCI will retain written information regarding medical evaluations, fit testing, and the respiratory program.

TRAINING AND INFORMATION

Effective training for employees who are required to use respirators is essential. The training must be comprehensive, understandable, and recur annually, and more often if necessary. Training will be provided prior to requiring the employee to use a respirator in the workplace. CFR 1910.134 (c)(1)(vii)

The training shall ensure that each employee can demonstrate knowledge of at least the following:

- Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator
- Fit, use, limitations, emergency situations, wearing, fit checks, maintenance and storage, medical signs and symptoms of effective use, and other general requirements of the OSHA standard
- Limitations and capabilities of the respirator
- How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions
- How to inspect, put on and remove, use, and check the seals of the respirator
- What the procedures are for maintenance and storage of the respirator
- How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators
- The general requirements of this program

Retraining shall be conducted when:

- Changes in the workplace or the type of respirator render previous training obsolete
- Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill
- Any other situation arises in which retraining appears necessary to ensure safe respirator use

Training will be conducted by qualified instructors and is divided into the following sections.

CLASSROOM INSTRUCTION

- Overview of CCI Respiratory Protection Program and OSHA Standard
- Respiratory Protection Safety Procedures
- Respirator selection

- Respirator operation and use
- Why the respirator is necessary
- How improper fit, usage, or maintenance can compromise the protective effect
- Limitations and capabilities of the respirator
- How to use the respirator effectively in emergency situations, including respirator malfunctions
- How to inspect, put on and remove, use, and check the seals of the respirator
- What the procedures are for maintenance and storage of the respirator
- How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators
- Change out schedule and procedure for air purifying respirators

FIT TESTING

Hands-On Respirator Training Topics

- Respirator Inspection
- Respirator Cleaning and Sanitizing
- Record Keeping
- Respirator Storage
- Respirator Fit Check
- Emergencies

Basic Respiratory Protection Safety Procedures

- Only authorized and trained employees may use Respirators. Those employees may use only the respirator that they have been trained on and properly fitted to use.
- Only Physically Qualified Employees may be trained and authorized to use Respirators. A pre-authorization and annual certification by a qualified physician will be required and maintained. Any changes in an employee's health or physical characteristics will be reported to the Occupational Health Department and will be evaluated by a qualified physician.
- Only the proper prescribed respirator or self-contained breathing apparatus (SCBA) may be used for the job or work environment. Air cleansing respirators may be worn in work environments when oxygen levels are between 19.5 percent to 23.5 percent and when the appropriate air cleansing canister, as determined by the Manufacturer and approved by the National Institute for Occupational Safety And Health (NIOSH) for the known hazardous substance is used. SCBAs will be worn in oxygen deficient and oxygen rich environments (below 19.5 percent or above 23.5 percent oxygen).
- Employees working in environments where a sudden release of a hazardous substance is likely will wear an appropriate respirator for that hazardous substance (example: Employees working in an ammonia compressor room will have an ammonia APR respirator on their person.).

- Only SCBAs will be used in oxygen deficient environments, environments with an unknown hazardous substance or unknown quantity of a known hazardous substance or any environment that is determined "Immediately Dangerous to Life or Health" (IDLH).
- All respirators will be in a clean, convenient, and sanitary location.
- If employees must enter a confined space refer to section Confined Spaces - US.
- The Responsible Safety Person conducts inspections of jobsites and workplace conditions to determine employee exposure and maintain the proper procedures to provide the necessary RP.
- Responsible Safety Person has established safe operation procedures for the safe use of RP with enforcement and disciplinary action for failure to follow all general and specific safety rules.

Respirator User Policies

Adherence to the following guidelines will help ensure the proper and safe use of respiratory equipment:

- Wear only the respirator you have been instructed to use. For example, do not wear a self-containing breathing apparatus if you have been assigned and fitted for a half-mask respirator.
- Wear the correct respirator for the hazard. For example, some situations, such as chemical spills or other emergencies, may require a higher level of protection than your respirator can handle. Also, the proper cartridge must be matched to the hazard (a cartridge designed for dusts and mists will not provide protection for chemical vapors).
- Check the respirator for a good fit before each use. Positive and negative fit checks should be conducted.
- Check the respirator for deterioration before and after use. Do not use a defective respirator.
- Recognize indications that cartridges and canisters are at their end of service. If in doubt, change the cartridges or canisters before using the respirator.
- Practice moving and working while wearing the respirator so that you can get used to it.
- Clean the respirator after each use, thoroughly dry it and place the cleaned respirator in a sealable plastic bag.
- Store respirators carefully in a protected location away from excessive heat, light, and chemicals.

SELECTION OF RESPIRATOR

Responsible Safety Person with the affected employee has evaluated the respiratory hazard(s) in each workplace, identified relevant workplace and user factors and has based respirator selection on these factors. Also included are estimates of employee exposures to respiratory hazard(s) and

an identification of the contaminant's chemical state and physical form. This selection has included appropriate protective respirators for use in IDLH atmospheres and has limited the selection and use of air-purifying respirators. All selected respirators are NIOSH-certified. NIOSH certified respirators are selected and provided based on those hazards and factors affecting performance.

Filter Classifications

These classifications are marked on the filter or filter package:

N-Series - Not Oil Resistant

- Approved for non-oil particulate contaminants
- Examples: dust, fumes, mists not containing oil

R-Series - Oil Resistant

- Approved for all particulate contaminants, including those containing oil
- Examples: dusts, mists, fumes
- Time restriction of 8 hours when oils are present

P-Series - Oil Proof

- Approved for all particulate contaminants including those containing oil
- Examples: dust, fumes, mists
- See Manufacturer's time use restrictions on packaging

Respirators for IDLH Atmospheres

The following respirators will be used in IDLH atmospheres:

- A full-face piece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or
- A combination full face piece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.
- Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

Respirators for Atmospheres That Are Not IDLH

The respirators selected shall be adequate to protect the health of the employee and ensure compliance with all other OSHA statutory and regulatory requirements, under routine and reasonably foreseeable emergency situations. The respirator selected shall be appropriate for the chemical state and physical form of the contaminant.

Identification of Filters and Cartridges

All filters and cartridges shall be labeled, and color coded with the NIOSH approval label and that the label is not removed and remains legible. A change out schedule for filters and canisters has been developed to ensure these elements of the respirators remain effective.

Respirator Filter and Canister Replacement

An important part of the Respiratory Protection Program includes identifying the useful life of canisters and filters used on air-purifying respirators. Each filter and canister shall be equipped with an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant; or if there is no ESLI appropriate for conditions a change schedule for canisters and cartridges that is based on objective information or data that will ensure that canisters and cartridges are changed before the end of their service life.

Filter and Cartridge Change Schedule

Stock of spare filters and cartridges shall be maintained to allow immediate change when required or desired by the employee.

Cartridges shall be changed based on the most limiting factor below:

- Prior to expiration date
- Manufacturer's recommendations for use and environment
- After each use
- When requested by employee
- When contaminate odor is detected
- When restriction to air flow has occurred as evidenced by increase effort by user to breathe normally
- Cartridges shall remain in their original sealed packages until needed for immediate use

Filters shall be changed based on the most limiting factor below:

- Prior to expiration date
- Manufactures recommendations for the specific use and environment
- When requested by employee
- When contaminate odor is detected
- When restriction to air flow has occurred as evidenced by increase effort by user to breathe normally
- When discoloring of the filter media is evident
- Filters shall remain in their original sealed package until needed for immediate use

Respiratory Protection Schedule by Job and Working Condition

CCI maintains a Respiratory Protection Schedule by Job and Working Condition. This schedule is provided to each authorized and trained Employee. The Schedule provides the following information:

- Job/working conditions
- Work location
- Hazards present

- Type of respirator or SCBA required
- Type of filter/canister required
- Location of respirator or SCBA
- Filter/cartridge change out schedule

The schedule will be reviewed and updated at least annually and whenever any changes are made in the work environments, machinery, equipment, or processes or if respirator different respirator models are introduced or existing models are removed.

Permanent Respirator Schedule Assignments

Each person who engages in welding will have their own company provided dust-mist-fume filter APR. This respirator will be worn during all welding operations.

HANDS-ON RESPIRATOR TRAINING

If a respiratory protective device is provided to a worker, the employer shall ensure that the worker has been trained by a competent person in the proper testing, maintenance, use, and cleaning of the respiratory protective device and in its limitations.

- Respirator Inspection
- Respirator cleaning and sanitizing
- Record Keeping
- Respirator Storage
- Respirator Fit Check
- Emergencies

BASIC RESPIRATOR PROTECTION SAFETY PROCEDURES

- Only authorized and trained employees may use respirators. Those employees may use only the Respirator that they have been trained on and properly fitted to use.
- Only physically qualified employees may be trained and authorized to use respirators. A pre-authorization by a qualified physician will be required every three years. Any changes in an employee's health or physical characteristics will be reported to the Responsible Safety Person and will be evaluated by a qualified physician.
- Only the proper prescribed respirator or self-contained breathing apparatus (SCBA) may be used for the job or work environment. Air cleansing respirators may be worn in work environments when oxygen levels are between 19.5 percent to 23.5 percent and when the appropriate air cleansing canister, as determined by the Manufacturer and approved by the National Institute for Occupational Health (NIOSH), for the known hazardous substance is used. SCBAs will be worn in oxygen deficient and oxygen rich environments (below 19.5 percent or above 23.5 percent oxygen).

- Employees working in environments where a sudden release of a hazardous substance is likely will wear an appropriate respirator for that hazardous substance (example: employees working in an ammonia compressor room will have an ammonia APR respirator on their person.).
- Only SCBAs will be used in oxygen deficient environments, environments with an unknown hazardous substance or unknown quantity of a known hazardous substance or any environment that is determined "Immediately Dangerous to Life or Health" (IDLH).
- Employees with respirators loaned on "permanent check out" will be responsible for the sanitation, proper storage, and security. Respirators damaged by normal wear will be repaired or replaced by CCI when returned.
- All respirators will be in a clean, convenient, and sanitary location.
- If employees must enter a confined space, refer to section Confined Spaces - US.
- Management will conduct inspections of jobs and workplace conditions and degree of employee exposure or stress to maintain the proper procedures and to provide the necessary RPE.
- Management will establish and maintain safe operation procedures for the safe use of RPE with strict enforcement and disciplinary action for failure to follow all general and specific safety rules. Standard Operation Procedures for General RPE use will be maintained as an attachment to the Respiratory Protection Program and Standard Operation Procedures for RPE use under emergency response situations will be maintained as an attachment to the Emergency Response Program.

ASSIGNED PROTECTION FACTORS

No respirator can provide 100% effectiveness. OSHA has implemented Assigned Protection Factors (APFs) for various types of respirators. The purpose of APFs is to ensure use of respirators does not cause over-exposure to specific contaminants. Maximum permissible exposure levels (PEL) are generally based on specific concentrations over an 8-hour daily period without using a respirator. As an example, if a respirator has a 90% effectiveness, then a respirator wearer would reach the maximum permissible exposure level in 10 hours if the atmospheric conditions were 10 times the PEL.

Our company selects respirators by comparing the exposure level and the maximum concentration of the contaminant in which a particular type of respirator can be used. Known as the Maximum Use Concentration or MUC, this is generally determined by multiplying the respirator's APF by the contaminant's exposure limit. If the level of contaminant is expected to exceed the MUC, CCI will select a respirator with a higher APF.

PHYSICAL AND MEDICAL EVALUATIONS

Records of medical evaluations must be retained and made available in accordance with [29 CFR 1910.1020](#). Physicals and medical examinations must be confidential, during normal working hours, convenient, understandable, employee given chance to discuss results with PLHCP.

MEDICAL EVALUATION REQUIRED

Using a respirator may place a physiological burden on employees that varies with the type of respirator worn, the job and workplace conditions in which the respirator is used, and the medical status of the employee. CCI provides a medical evaluation to determine the employee's ability to use a respirator before the employee is fit tested or required to use the respirator in the workplace.

Medical Evaluation Procedures

The employee will be provided a medical questionnaire by the designated Occupational Health Care Provider.

Follow-Up Medical Examination

CCI shall ensure that a follow-up medical examination is provided for an employee who gives a positive response to any question among questions in Part B of the questionnaire or whose initial medical examination demonstrates the need for a follow-up medical examination. The follow-up medical examination shall include any medical tests, consultations, or diagnostic procedures that the Physician deems necessary to make a final determination.

Administration of the Medical Questionnaire and Examinations

The medical questionnaire and examinations shall be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee. The medical questionnaire shall be administered in a manner that ensures that the employee understands its content. CCI shall provide the employee with an opportunity to discuss the questionnaire and examination results with the Physician.

Supplemental Information for the Physician

The following information must be provided to the physician before the physician makes a recommendation concerning an employee's ability to use a respirator:

- The type and weight of the respirator to be used by the employee
- The duration and frequency of respirator use (including use for rescue and escape)
- The expected physical work effort
- Additional protective clothing and equipment to be worn
- Temperature and humidity extremes that may be encountered

Any supplemental information provided previously to the physician regarding an employee need not be provided for a subsequent medical evaluation if the information and the Physician remain the same. CCI has provided the physician with a copy of the written respiratory protection program and a copy of the OSHA Standard [29 CFR 1910.134 and 1926.103](#)

Medical Determination

In determining the employee's ability to use a respirator, CCI shall:

- Obtain a written recommendation regarding the employee's ability to use the respirator from the physician. The recommendation shall provide only the following information.
- Any limitations on respirator use related to the medical condition of the employee or relating to the workplace conditions in which the respirator will be used, including whether the employee is medically able to use the respirator.
- The need, if any, for follow-up medical evaluations.
- A statement that the physician has provided the employee with a copy of the physician's written recommendation.
- If the respirator is a negative pressure respirator and the physician finds a medical condition that may place the employee's health at increased risk if the respirator is used, CCI shall provide a APR if the physician's medical evaluation finds that the employee can use such a respirator; if a subsequent medical evaluation finds that the employee is medically able to use a negative pressure respirator, then CCI is no longer required to provide a APR.

Additional Medical Evaluations

At a minimum, CCI shall provide additional medical evaluations that comply with the requirements of this section if:

- An employee reports medical signs or symptoms that are related to ability to use a respirator.
- A physician, supervisor, or the Responsible Safety Person informs CCI that an employee needs to be reevaluated.
- Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee re-evaluation.
- A change occurs in workplace conditions (e.g., physical work effort, protective clothing, and temperature) that may result in a substantial increase in the physiological burden placed on an employee.

RESPIRATOR FIT TESTING

Before an employee is required to use any respirator with a negative or positive pressure tight-fitting face piece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used. CCI shall ensure that an employee using a tight-fitting face piece

respirator is fit tested prior to initial use of the respirator, whenever a different respirator face piece (size, style, model or make) is used, and at least annually thereafter.

Employees are required to pass qualitative fit test (QLFT) or quantitative fit test (QNFT) before initial use, if a different respirator is used, and annually.

Anything that can affect the seal is prohibited and include facial hair, glasses, etc. Respirators with tight-fitting face pieces shall not be worn by employees who have facial hair that comes between the sealing surface of the face piece and the face or that interferes with valve function.

CCI has established a record of the qualitative and quantitative fit tests administered to employees including:

- The name or identification of the employee tested
- Type of fit test performed
- Specific make, model, style, and size of respirator tested
- Date of test
- The pass/fail results for Qualitative Fit Test (QLFT) or the fit factor and strip chart recording or other recording of the test results for Quantitative Fit Test (QNFT)

Additional fit tests will be conducted whenever the employee reports, or CCI, Physician, supervisor, or program administrator makes visual observations of, changes in the employee's physical condition that could affect respirator fit. Such conditions include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight.

If after passing a QLFT or QNFT, the employee notifies CCI, program administrator, supervisor, or Physician that the fit of the respirator is unacceptable, the employee shall be given a reasonable opportunity to select a different respirator face piece and to be retested.

Types of Fit Tests

The fit test shall be administered using an OSHA-accepted QLFT or QNFT protocol. The OSHA-accepted QLFT and QNFT protocols and procedures are contained in [Appendix A of OSHA Standard 1910.134](#).

- QLFT may only be used to fit test negative pressure air-purifying respirators that must achieve a fit factor of 100 or less.
- If the fit factor, as determined through an OSHA-accepted QNFT protocol, is equal to or greater than 100 for tight-fitting half face pieces, or equal to or greater than 500 for tight-fitting full-face pieces, the QNFT has been passed with that respirator.
- Fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators shall be accomplished by performing quantitative or qualitative fit testing in the negative pressure mode, regardless of the mode of operation (negative or positive pressure) that is used for respiratory protection.

- Qualitative fit testing of these respirators shall be accomplished by temporarily converting the respirator user's actual face piece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure air-purifying respirator face piece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator face piece.
- Quantitative fit testing of these respirators shall be accomplished by modifying the face piece to allow sampling inside the face piece in the breathing zone of the user, midway between the nose and mouth. This requirement shall be accomplished by installing a permanent sampling probe onto a surrogate face piece, or by using a sampling adapter designed to temporarily provide a means of sampling air from inside the face piece.
- Any modifications to the respirator face piece for fit testing shall be completely removed, and the face piece restored to NIOSH approved configuration before that face piece can be used in the workplace.

Fit test records shall be retained for respirator users until the next fit test is administered. Written materials required to be retained shall be made available upon request to affected employees.

RESPIRATOR OPERATION AND USE

Respirators will only be used following the respiratory protection safety procedures established in this program. The Operations and Use Manuals for each type of respirator will be maintained by the Responsible Safety Person and be available to all qualified users.

Jobsite inspections will be conducted by the Responsible Safety Person of work area conditions and degree of employee exposure or stress. When there is a change in work area conditions or degree of employee exposure or stress that may affect respirator effectiveness, CCI shall reevaluate the continued effectiveness of the respirator.

For continued protection of respirator users, the following general use rules apply:

- Users shall not remove respirators while in a hazardous environment
- Respirators are to be stored in sealed containers out of harmful atmospheres
- Store respirators away from heat and moisture
- Store respirators such that the sealing area does not become distorted or warped
- Store respirator such that the face piece is protected

CONTINUING EFFECTIVENESS OF RESPIRATORS

CCI shall ensure that employees leave the respirator use area:

- To wash their faces and respirator face pieces as necessary to prevent eye or skin irritation associated with respirator use

- If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece
- To replace the respirator or the filter, cartridge, or canister elements

If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece, CCI will replace or repair the respirator before allowing the employee to return to the work area.

The Responsible Safety Person will conduct jobsite inspections, and ensure employees leave the area to wash, change cartridges, or if they detect break-through or resistance.

PROCEDURES FOR IDLH ATMOSPHERES

For all IDLH atmospheres, CCI shall ensure that:

- One employee or, when needed, more than one employee is located outside the IDLH atmosphere.
- Visual, voice, or signal line communication is maintained between the employee(s) in the IDLH atmosphere, and the employee(s) located outside the IDLH atmosphere.
- The employee(s) located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue.
- CCI or designee is notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue.
- CCI or designee authorized to do so by CCI, once notified, provides necessary assistance appropriate to the situation.

Employee(s) located outside the IDLH atmospheres will be equipped with:

- Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either:
 - Appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry
 - Equivalent means for rescue where retrieval equipment is not required

Outside standby persons must maintain communication, have proper training and equipment, be knowledgeable in notification procedures, and necessary action.

Mandatory equipment includes:

- SCBA or SAR with auxiliary air supply and appropriate retrieval equipment or equivalent rescue means.

CLEANING AND DISINFECTING

CCI shall provide each respirator user with a respirator that is clean, sanitary, and in good working order. CCI shall ensure that respirators are cleaned and disinfected using the Standard Operating Procedure SOP: Cleaning and Disinfecting.

The respirators shall be cleaned and disinfected when:

- Respirators issued for the exclusive use of an employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition
- Respirators maintained for emergency use shall be cleaned and disinfected after each use
- Cartridge respirators used in fit testing and training shall be cleaned and disinfected after each use

Cleaning and Storage of respirators assigned to specific employees is the responsibility of that Employee.

Procedures for Cleaning Respirators

- Remove filters, cartridges, or canisters. Disassemble face pieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
- Wash components in warm (43°C [110°F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
- Rinse components thoroughly in clean, warm (43°C [110°F] maximum), preferably running water. Drain.
- When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
 - Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43°C (110°F); or,
 - Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43°C (110°F); or,
 - Other commercially available cleansers of equivalent disinfectant quality when used as directed if their use is recommended or approved by the respirator manufacturer.
- Rinse components thoroughly in clean, warm (43°C [110°F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on face pieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.

- Components should be hand-dried with a clean lint-free cloth or air-dried.
- Reassemble face piece, replacing filters, cartridges, and canisters where necessary.
- Test the respirator to ensure that all components work properly.

RESPIRATOR INSPECTIONS

All respirators/SCBAs, will be inspected after each use and at least monthly. Should any defects be noted, the respirator/SCBA will be taken to the Responsible Safety Person. Damaged Respirators will be either repaired or replaced.

Respirators shall be inspected as follows:

- All respirators used in routine situations shall be inspected before each use and during cleaning.
- All respirators maintained for use in emergency situations shall be inspected at least monthly and in accordance with the manufacturer's recommendations and shall be checked for proper function before and after each use.
- Emergency escape-only respirators shall be inspected before being carried into the workplace for use.
- **Routine Use** – before use and during cleaning.

Respirator inspections include the following:

- A check of respirator function, tightness of connections, and the condition of the various parts including, but not limited to, the face piece, head straps, valves, connecting tube, and cartridges, canisters, or filters.
- Check elastic bands for pliability and signs of deterioration.
- Self-contained breathing apparatus shall be inspected monthly. Air and oxygen cylinders shall be maintained in a fully charged state and shall be recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. CCI shall determine that the regulator and warning devices function properly.
- Protection from damage and contamination.

RESPIRATOR STORAGE

Respirators are to be stored as follows:

- To protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the face piece and exhalation valve.

Emergency Respirators shall be:

- Kept accessible to the work area
- Stored in compartments or in covers that are clearly marked as containing emergency respirators

- Stored in accordance with any applicable manufacturer instructions

BREATHING AIR QUALITY AND USE

CCI shall ensure that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration accords with the following specifications:

- Compressed and liquid oxygen shall meet the United States Pharmacopoeia requirements for medical or breathing oxygen
- Compressed breathing air shall meet at least the requirements for Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:
 - Oxygen content (v/v) of 19.5-23.5%
 - Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less
 - Carbon monoxide (CO) content of 10 ppm or less
 - Carbon dioxide content of 1,000 ppm or less
 - Lack of noticeable odor
- Compressed oxygen will not be used in atmosphere-supplying respirators that have previously used compressed air
- Oxygen concentrations greater than 23.5% are used only in equipment designed for oxygen service or distribution
- Cylinders used to supply breathing air to respirators meet the following requirements:
 - Cylinders are tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR part 173 and part 178)
 - Cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air
 - Moisture content in breathing air cylinders does not exceed a dew point of -50 deg. F (-45.6 deg. C) at 1 atmosphere pressure
 - Breathing air couplings are incompatible with outlets for non-respirable worksite air or other gas systems (No asphyxiating substance shall be introduced into breathing air lines.)
- The CSA Standard for breathing air is Z180.1-13 - Compressed breathing air and systems if your company uses SAR's or SCBA's, if applicable.
- Breathing gas containers shall be marked in accordance with the NIOSH respirator certification standard, [42 CFR part 84](#).

Rigging

PURPOSE

The purpose of this document is to outline the Rigging Program CFR 1926.251(a-e) and CFR 1910.184(a-f) for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

RESPONSIBILITIES

Management

- Implement the requirements of this program
- Determine appropriate implementation (legislative applicability) and enforcement of this program
- Train employees on this program or select an outside training facility

Employees

- Follow the provisions set forth in this program

POLICY

General

Only persons who are deemed competent or qualified (by experience and training) shall attach any loads to a lifting device and only competent or qualified operators shall operate a crane while engaged in lifting operations.

TRAINING

All affected employees shall demonstrate competency and qualifications through training based upon the following objectives:

- Proper hardware selections such as hooks, bolts, eye bolts, ropes, chains, slings etc. that is appropriate for the task at hand
- Inspection of rigging equipment prior to use
- Safe methods of load connection/hook-up
- How to safely secure each load (attaching, lifting, guiding the load while elevated, load lowering and placement)

COMPETENT/QUALIFIED RIGGERS

CCI shall use qualified riggers during hoisting activities for assembly and disassembly work. 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.

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
- Has extensive knowledge, training, and experience
- 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.

RIGGING MATERIAL HANDLING

- Defective equipment shall not be used and must be removed from service immediately
- Rigging equipment shall not be loaded beyond its recommended safe working load. Identification markings, indicating rated capacity for the type(s) of hitch(es) used, the angle upon which it is based, and the number of legs if more than one, shall be permanently affixed to the rigging.
- Rigging equipment not in use shall be removed from the immediate work area so as not to present a hazard to employees.
- Tag lines shall be used unless their use creates an unsafe condition.
- Hooks on overhaul ball assemblies, lower load blocks, or other attachment assemblies shall be of a type that can be closed and locked, eliminating the hook throat opening. Alternatively, an alloy anchor type shackle with a bolt, nut and retaining pin may be used.
- All employees shall be kept clear of loads about to be lifted and of suspended loads.

INSPECTION AND MAINTENANCE OF RIGGING EQUIPMENT

OSHA and ASME require a documented Periodic inspection of your lifting and rigging equipment every 12 months (at a minimum) and monthly to quarterly inspections in more severe service conditions, based on frequency of use and severity of service conditions.

CCI shall ensure that rigging equipment:

- Is inspected by a competent person or the Responsible Safety Person prior to use and as necessary during its use to ensure that it is safe. Defective rigging equipment shall be removed from service. Has permanently affixed and legible identification markings as prescribed by the manufacturer that indicate the recommended safe working load.
- Not be loaded in excess of its recommended safe working load as prescribed on the identification markings by the manufacturer.
- Not be used without affixed, legible identification markings
- Rigging equipment, when not in use, shall be removed from the immediate work area so as not to present a hazard to employees.
- Special custom design grabs, hooks, clamps, or other lifting accessories, for such units as modular panels, prefabricated structures, and similar materials, shall be marked to indicate the safe working loads and shall be proof tested.

Alloy Steel Chains

- Welded alloy steel chain slings shall have permanently affixed durable identification stating size, grade, rated capacity, and sling manufacturer.
- Hooks, rings, oblong links, pear-shaped links, welded or mechanical coupling links, or other attachments, when used with alloy steel chains, shall have a rated capacity at least equal to that of the chain.
- Job or shop hooks and links, or makeshift fasteners, formed from bolts, rods, etc., or other such attachments, shall not be used.

CCI will not use alloy steel-chain slings with loads more than the rated capacities (i.e., working load limits) indicated on the sling by permanently affixed and legible identification markings prescribed by the manufacturer.

Whenever wear at any point of any chain link exceeds that shown in [Table H1](#), the assembly shall be removed from service.

In addition to the inspection required by other paragraphs of this section, a thorough periodic inspection of alloy steel chain slings in use shall be made on a regular basis, to be determined based on:

- Frequency of sling use
- Severity of service conditions
- Nature of lifts being made

- Experience gained on the service life of slings used in similar circumstances

Such inspections shall in no event be at intervals greater than once every 12-months.

The employer shall make and maintain a record of the most recent month in which each alloy steel chain sling was thoroughly inspected and shall make such record available for examination.

Wire Rope

CCI will not use improved plow-steel wire rope and wire-rope slings with loads more than the rated capacities (i.e., working load limits) indicated on the sling by permanently affixed and legible identification markings prescribed by the manufacturer.

- Protruding ends of strands in splices on slings and bridles shall be covered or blunted.
- Wire rope shall not be secured by knots, except on haul back lines on scrapers.

The following limitations shall apply to the use of wire rope:

- An eye splice made in any wire rope shall have not less than three full tucks. However, this requirement shall not operate to preclude the use of another form of splice or connection which can be shown to be as efficient, and which is not otherwise prohibited.
- Except for eye splices in the ends of wires and for endless rope slings, each wire rope used in hoisting or lowering, or in pulling loads, shall consist of one continuous piece without knot or splice.
- Eyes in wire rope bridles, slings, or bull wires shall not be formed by wire rope clips or knots.
- Wire rope shall not be used if, in any length of eight diameters, the total number of visible broken wires exceeds 10 percent of the total number of wires, or if the rope shows other signs of excessive wear, corrosion, or defect.
- When U-bolt wire rope clips are used to form eyes, [Table H2](#) shall be used to determine the number and spacing of clips.
- When used for eye splices, the U-bolt shall be applied so that the "U" section is in contact with the dead end of the rope.
- Slings shall not be shortened with knots or bolts or other makeshift devices.
- Sling legs shall not be kinked.
- Slings used in a basket hitch shall have the loads balanced to prevent slippage.
- Slings shall be padded or protected from the sharp edges of their loads.
- Hands or fingers shall not be placed between the sling and its load while the sling is being tightened around the load.
- Shock loading is prohibited.
- A sling shall not be pulled from under a load when the load is resting on the sling.

Rigging equipment for material handling shall be inspected prior to use on each shift, and as necessary during its use to ensure that it is safe.

- Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to ensure that it is safe. Defective rigging equipment shall be removed from service.

CCI will ensure that rigging equipment:

- Has permanently affixed and legible identification markings as prescribed by the manufacturer that indicate the recommended safe working load
- Not be loaded more than its recommended safe working load as prescribed on the identification markings by the manufacturer
- Not be used without affixed, legible identification markings

Rigging equipment, when not in use, shall be removed from the immediate work area so as not to present a hazard to employees.

Special custom design grabs, hooks, clamps, or other lifting accessories, for such units as modular panels, prefabricated structures, and similar materials, shall be marked to indicate the safe working loads and shall be proof tested prior to use.

SLINGS

Minimum Sling Lengths

- Cable laid and 6 X 19 and 6 X 37 slings shall have minimum clear length of wire rope 10 times the component rope diameter between splices, sleeves, or end fittings.
- Braided slings shall have a minimum clear length of wire rope 40 times the component rope diameter between the loops or end fittings.
- Cable laid grommets, strand laid grommets and endless slings shall have a minimum circumferential length of 96 times their body diameter.

Safe Operating Temperatures

Fiber core wire rope slings of all grades shall be permanently removed from service if they are exposed to temperatures more than 200 deg. F (93.33 deg. C).

When non-fiber core wire rope slings of any grade are used at temperatures above 400 deg. F (204.44 deg. C) or below minus 60 deg. F (15.55 deg. C), recommendations of the sling manufacturer regarding use at that temperature shall be followed.

End Attachments

Welding of end attachments, except covers to thimbles, shall be performed prior to the assembly of the sling.

All welded end attachments shall not be used unless proof tested by the manufacturer or equivalent entity at twice their rated capacity prior to initial use. The employer shall retain a certificate of proof test and make it available for examination.

Wire rope slings shall have permanently affixed, legible identification markings stating size, rated capacity for the type(s) of hitch(es) used, the angle upon which it is based, and the number of legs (if more than one).

Wire rope slings shall not present a hazard to employees.

NATURAL ROPE AND SYNTHETIC FIBER

Employers must not use natural and synthetic fiber rope slings with loads more than the rated capacities (i.e., working load limits) indicated on the sling by permanently affixed and legible identification markings prescribed by the manufacturer.

All splices in rope slings provided by the employer shall be made in accordance with fiber rope manufacturers recommendations.

In manila rope, eye splices shall contain at least three full tucks, and short splices shall contain at least six full tucks (three on each side of the center line of the splice).

In layered synthetic fiber rope, eye splices shall contain at least four full tucks, and short splices shall contain at least eight full tucks (four on each side of the center line of the splice).

Strand end tails shall not be trimmed short (flush with the surface of the rope) immediately adjacent to the full tucks. This precaution applies to both eye and short splices and all types of fiber rope. For fiber ropes under 1-inch diameter, the tails shall project at least six rope diameters beyond the last full tuck. For fiber ropes 1-inch diameter and larger, the tails shall project at least 6 inches beyond the last full tuck. In applications where the projecting tails may be objectionable, the tails shall be tapered and spliced into the body of the rope using at least two additional tucks (which will require a tail length of approximately six rope diameters beyond the last full tuck).

For all eye splices, the eye shall be sufficiently large to provide an included angle of not greater than 60 deg. at the splice when the eye is placed over the load or support.

Knots shall not be used in lieu of splices.

Safe Operating Temperatures

Natural and synthetic fiber rope slings, except for wet frozen slings, may be used in a temperature range from minus 20 deg. F (-28.88 deg. C) to plus 180 deg. F (82.2 deg. C) without decreasing

the working load limit. For operations outside this temperature range and for wet frozen slings, the sling manufacturer's recommendations shall be followed.

Splicing

Spliced fiber rope slings shall not be used unless they have been spliced in accordance with the following minimum requirements and in accordance with any additional recommendations of the manufacturer:

In manila rope, eye splices shall consist of at least three full tucks, and short splices shall consist of at least six full tucks, three on each side of the splice center line.

In synthetic fiber rope, eye splices shall consist of at least four full tucks, and short splices shall consist of at least eight full tucks, four on each side of the center line.

Strand end tails shall not be trimmed flush with the surface of the rope immediately adjacent to the full tucks. This applies to all types of fiber rope and both eye and short splices. For fiber rope under 1 inch (2.54 cm) in diameter, the tail shall project at least six rope diameters beyond the last full tuck. For fiber rope 1 inch (2.54 cm) in diameter and larger, the tail shall project at least 6 inches (15.24 cm) beyond the last full tuck. Where a projecting tail interferes with the use of the sling, the tail shall be tapered and spliced into the body of the rope using at least two additional tucks (which will require a tail length of approximately six rope diameters beyond the last full tuck).

Fiber rope slings shall have a minimum clear length of rope between eye splices equal to 10 times the rope diameter.

Knots shall not be used in lieu of splices.

Clamps not designed specifically for fiber ropes shall not be used for splicing.

For all eye splices, the eye shall be of such size to provide an included angle of not greater than 60 degrees at the splice when the eye is placed over the load or support.

End Attachments

Fiber rope slings shall not be used if end attachments in contact with the rope have sharp edges or projections.

Removal from Service

Natural and synthetic fiber rope slings shall be immediately removed from service if any of the following conditions are present:

- Abnormal wear

- Powdered fiber between strands
- Broken or cut fibers
- Variations in the size or roundness of strands
- Discoloration or rotting
- Distortion of hardware in the sling

Employers must use natural- and synthetic-fiber rope slings that have permanently affixed and legible identification markings that state the rated capacity for the type(s) of hitch(es) used and the angle upon which it is based, type of fiber material, and the number of legs if more than one.

Synthetic Webbing (Nylon, Polyester, and Polypropylene)

The employer shall have each synthetic web sling marked or coded to show:

- Name or trademark of manufacturer
- Rated capacities for the type of hitch
- Type of material
- Rated capacity shall not be exceeded

WEBBING

Synthetic webbing shall be of uniform thickness and width and selvage edges shall not be split from the webbing's width.

FITTINGS

Fittings shall be of a minimum breaking strength equal to that of the sling; and, free of all sharp edges that could in any way damage the webbing.

Attachment of end fittings to webbing and formation of eyes Stitching shall be the only method used to attach end fittings to webbing and to form eyes. The thread shall be in an even pattern and contain enough stitches to develop the full breaking strength of the sling.

Environmental Conditions

When synthetic web slings are used, the following precautions shall be taken:

- Nylon web slings shall not be used where fumes, vapors, sprays, mists, or liquids of acids or phenolics are present.
- Polyester and polypropylene web slings shall not be used where fumes, vapors, sprays, mists, or liquids of caustics are present.
- Web slings with aluminum fittings shall not be used where fumes, vapors, sprays, mists, or liquids of caustics are present.

Safe Operating Temperatures

Synthetic web slings of polyester and nylon shall not be used at temperatures in excess of 180 deg. F (82.2 deg. C). Polypropylene web slings shall not be used at temperatures in excess of 200 deg. F (93.33 deg. C).

Removal From Service

Synthetic web slings shall be immediately removed from service if any of the following conditions are present:

- Acid or caustic burns
- Melting or charring of any part of the sling surface
- Snags, punctures, tears or cut
- Broken or worn stitches
- Distortion of fittings
- Shackles and hooks

CCI will not use rigging equipment with loads more than the rated capacities (i.e., working load limits) indicated on the shackle by permanently affixed and legible identification markings prescribed by the manufacturer.

The manufacturer's recommendations shall be followed in determining the safe working loads of the various sizes and types of specific and identifiable hooks. All hooks for which no applicable manufacturer's recommendations are available shall be tested to twice the intended safe working load before they are initially put into use. CCI will maintain a record of the dates and results of such tests.

TABLE H - 1. – MAXIMUM ALLOWABLE WEAR AT ANY POINT OF LINK

Chain size, (inches)	Maximum Allowable Wear (inch)
1/4	3/64
3/8	5/64
1/2	7/64
5/8	9/64
3/4	5/32
7/8	11/64
1	3/16
1 1/8	7/32
1 1/4	1/4
1 3/8	9/32
1 1/2	5/16

1 3/4

11/32

TABLE H - 2. – NUMBER AND SPACING OF U-BOLD WIRE ROPE CLIPS

Improved plow steel, rope diameter (inches)	Number of Clips		Minimum spacing (inches)
	Drop forged	Other material	
1/2	3	4	3
5/8	3	4	3 3/4
3/4	4	5	4 1/2
7/8	4	5	5 1/2
1	5	6	6
1 1/8	6	6	6 3/4
1 1/4	6	7	7 1/2
1 3/8	7	7	8 1/4
1 1/2	7	8	9

Safety Audits

PURPOSE

The purpose of this document is to outline the Safety Audit procedures for **Cirks Construction Inc.**; hereafter referred to as "CCI," Inspection of work areas and audits of safety programs are tools that can be used to identify problems and hazards before these conditions result in accidents or injuries. Audits also help to identify the effectiveness of safety program management and can be used as a guide to assure regulatory compliance and a safe workplace.

RESPONSIBILITIES

Responsible Safety Person

- Schedule audits for all work areas, processes, and procedures
- Conduct routine audits
- Ensure audits are conducted by employees who understand the various safety programs and policies

Supervisors

- Conduct daily safety inspections and ensure all unsafe conditions are corrected

POLICY

Corrections

All safety deficiencies found during audits and inspections should be corrected as soon as possible. Documentation of corrections should be made on the audit form. Conditions that present hazards are to be corrected immediately.

TYPES OF INSPECTIONS

Supervisor Daily Walk Through - This documented inspection, (Daily Risk Assessment DRA) is made daily prior to commence of work and shift change to ensure the jobsite and equipment are in safe conditions for employees. All noted unsafe areas are placed in a safe condition prior to employees working in the area.

Periodic Safety Audits – These documented formal inspections are conducted by trained safety personnel and include compliance with but not limited to the following:

- Completion of DRA
- Signage
- Personal Protection Equipment
- Public Safety
- Heat Illness Prevention
- General Safety
- Supervisor Workspace
- Jobsite Interior/Exterior
- First Aid / Fire Extinguisher
- Sanitation
- Scaffold
- Crane
- Fall Protection
- Trenching & Excavation
- Ladder Safety
- Tool Safety
- Heavy Equipment Safety
- Scissor Lift / Boom Lift / Forklift
- Electrical Safety
- Stormwater Pollution

RECORDS

Records of audits will be maintained in accordance with the requirements of the program.

Scaffolds - Federal

PURPOSE

The purpose of this document is to outline the Scaffolds Safety Program for **Cirks Construction Inc.**; hereafter referred to as "CCI," This safety policy and procedure is written in accordance with Occupational Safety and Health Standards for General Industry 29 CFR 1910.28 and 29 CFR 1926.451 for Construction.

RESPONSIBILITIES

Supervisors

- Supervisors will not allow any employee who has not received the required training to perform any of the tasks or activities related to scaffold erection and/or dismantling
- Communicate appropriate needs to managers/unit heads and/or supervisors
- Ensure that employees are provided with PPE as necessary for their job
- Ensure that a competent person oversees scaffold erection according to the manufacturer's specifications

Competent person

- Oversee the scaffold selection, erection, use, movement, alteration, dismantling, maintenance, and inspection.
- Be knowledgeable about proper selection, care, and use of the fall protection equipment. Additionally, the competent person shall assess hazards.
- Ensure scaffolds are safe prior to use

Employees

- Employees shall comply with all applicable guidelines contained in this safety policy and procedure
- Report damaged scaffolds, accessories, and missing or lost components
- Assist with inspections as requested

POLICY

Scaffolds shall be erected, moved, dismantled, or altered only under the supervision of a competent person and will have guardrails and toe-boards installed. When scaffolding hazards exist that cannot be eliminated, then engineering practices, administrative practices, safe work practices, Personal Protective Equipment (PPE), and proper training regarding Scaffolds will be implemented. These measures will be implemented to minimize those hazards to ensure the safety of employees and the public.

TYPES OF SCAFFOLDS

There are many different types of scaffolds; three major categories are:

- Self-supporting scaffolds
- Suspension scaffolds
- Special use scaffolds

Self-supporting scaffolds are one or more working platforms supported from below by outriggers, brackets, poles, legs, uprights, posts, frames, or similar supports. The types of self-supporting scaffolds include:

- Fabricated Frame
- Tube and Coupler
- Mobile
- Pole

Suspension scaffolds are one or more working platforms suspended by ropes or other means from an overhead structure(s). The types of suspension scaffolds include:

- Single-Point Adjustable (Boatswain's Chairs)
- Two-Point Adjustable (Swing Stage)
- Multiple-Point Adjustable
- Multi-Lend
- Category
- Float (Ship)
- Interior Hung
- Needle Beam

Special use scaffolds and assemblies can support their own weight and at least 4-times the maximum intended load. The types of special use scaffolds include:

- Form and Carpenter Bracket
- Roof Bracket
- Outrigger
- Pump Jack
- Ladder Jack
- Window Jack
- Horse
- Crawling Boards
- Step, Platforms, and Trestle Ladder

Inspecting Scaffolds

Before CCI assigns a worker to do the inspections, the worker must have sufficient knowledge to recognize unsafe scaffold conditions and to determine if the scaffold continues to meet the applicable scaffold standard requirements.

CCI may assign the periodic inspection task to one of its employees using the scaffold only if that employee has this level of knowledge. That employee must understand that a cursory look at the scaffold prior to use would not constitute an inspection. An inspection requires a careful and critical examination.

Inspection Frequency

How often a scaffold must be inspected to meet the "periodic" requirement depends on the frequency of use, type of scaffold, site and weather conditions, intensity of use, age of the equipment, and how often sections or components are added, removed, or changed. These kinds of factors will determine how quickly or slowly safety related faults, loose connections, degradation, and other defects can be expected to develop.

Scaffolds and scaffold components shall be inspected for visible defects by a competent person before each work shift, and after any occurrence which could affect a scaffold's structural integrity and authorize prompt action.

Unsafe equipment or conditions must be tagged out by competent person and must be complied with.

ERECTING AND DISMANTLING

Employees erecting and dismantling supported scaffolding must have a safe means of access provided when a competent person has determined the feasibility and analyzed the site conditions. A competent person must determine the feasibility and safety of providing fall protection for employees erecting or dismantling supported scaffolds.

A competent person must train all employees who erect, disassemble, move, operate, repair, maintain, or inspect scaffolds. Training must cover the nature of the hazards, the correct procedures for erecting, disassembling, moving, operating, repairing, inspecting, and maintaining the type of scaffold in use.

SAFE WORK PRACTICES

The footing or anchorage for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks shall not be used to support scaffolds or planks.

There shall be no modifications by non-qualified employees at any point.

No scaffold shall be erected, moved, dismantled, or altered except under the supervision of a competent person(s).

Guardrails and toe boards shall be installed on all open sides and ends of platforms more than 10 feet above the ground or floor, except needle beam scaffolds and floats. Scaffolds 4 feet to 10 feet in height having a minimum horizontal dimension in either direction of less than 45 inches shall have standard guardrails installed on all open sides and ends of the platform.

Guardrails must be 2 X 4 inches, or the equivalent, not less than 36 inches or more than approximately 42 inches high, with a mid-rail, when required, of 1 X 4-inch lumber, or the equivalent. Supports must be at intervals not to exceed 8 feet. Toe board and the guardrail shall extend along the entire opening.

Guardrail systems shall be installed along all open sides and ends of platforms. Guardrail systems shall be installed before the scaffold is released for use by employees other than erection/dismantling crew.

Scaffolds and their components must be capable of supporting without failure at least 4 times the maximum intended load.

Each scaffold platform and walkway must be at least 18 inches (46 cm) wide, guardrails and/or personal fall arrest systems must be used.

A competent person must inspect scaffolding and the components of scaffolding prior to each work shift and after any event which could affect the scaffold's structural integrity.

Any scaffold, including accessories such as braces, brackets, trusses, screw legs, ladders, couplers, etc., damaged or weakened from any cause must be repaired or replaced immediately, and shall not be used until repairs have been completed.

Any part of the scaffold that is found to be damaged or weakened must be immediately repaired, replaced, braced, or removed from service until repaired.

All load-carrying timber members of scaffold framing shall be a minimum of 1,500 fiber (Stress Grade) construction grade lumber.

An access ladder or equivalent safe access must be provided.

The poles, legs, or uprights of scaffolds must be plumb and securely and rigidly braced to prevent swaying and displacement.

Supported scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means.

Outrigger beams (thrust outs) are the structural members of a suspension or outrigger scaffolds that provide support. They must be placed perpendicular to their bearing support.

Overhead protection must be provided for men on a scaffold exposed to overhead hazards. Slippery conditions on scaffolds shall be eliminated immediately after they occur.

No welding, burning, riveting, or open flame work shall be performed on any staging suspended by means or fiber of synthetic rope. Only treated or protected fiber or synthetic ropes shall be used for or near any work involving the use of corrosive substances or chemicals.

Scaffolds and scaffold components shall not be loaded more than their maximum intended loads or rated capacities, whichever is less.

Wire, synthetic, or fiber rope used for scaffold suspension shall be capable of supporting at least 6 times the intended load.

Scaffolds shall be provided with a screen between the toe board and guardrail, extending along the entire opening, consisting of No. 18-gauge U.S. Standard wire one-half inch mesh or the equivalent, when personnel are required to work or pass underneath the scaffolds.

Scaffolds shall not be erected, used, dismantled, altered, or moved such that they or any conductive material handled on them might come closer to exposed and energized power lines than as follows:

- Less than 50 kv- 10 feet
- More than 50 kv- 10 feet plus 0.4 inches for each 1 kv over 50 kv.

Tag lines shall be used to hoist materials to prevent contact. Suspension ropes shall be protected from contact with heat sources (welding, cutting, etc.) and from acids or other corrosive substances.

Scaffolds shall not be used during high wind and storms.

Ladders and other devices shall not be used to increase working heights on scaffold platforms. Scaffolds shall not be moved while employees are on them.

Loose materials, debris, and/or tools shall not be accumulated to cause a hazard.

Employees working on suspended scaffolds shall employ a fall-arrest system. Each employee on a scaffold more than 10 feet above a lower level shall be protected from falling to that lower level. Each employee shall be protected using personal fall arrest systems or guardrail systems.

Scaffold components shall not be mixed or forced to fit which may reduce design strength.

Scaffolds and components shall be inspected at the erection location by a competent person.

Scaffolds shall be inspected by a competent person before each work shift, after changing weather conditions, or after prolonged work interruptions.

Casters and wheel stems shall be pinned or otherwise secured in scaffold legs. Casters and wheels must be positively locked if in a stationary position.

Tube and coupler scaffolds shall be tied to and securely braced against the building at intervals not to exceed 30 feet horizontally and 26 feet vertically.

When scaffold platforms are more than 2 feet above or below a point of access, portable ladders, hook-on ladders, attachable ladders, stair towers (scaffold stairways/towers), stairway-type ladders (such as ladder stands), ramps, walkways, integral prefabricated scaffold access, or direct access from another scaffold, structure, personnel hoist, or similar surface shall be used. Cross braces shall not be used as a means of access.

The scaffold platform must not deflect more than 1/60 of the span when loaded.

No materials or devices may be used to increase the working height on a suspension scaffold. This includes ladders, boxes, and barrels.

Forklifts can support platforms only when the entire platform is attached to the fork and the forklift does not move horizontally when workers are on the platform.

Front-end loaders and similar equipment can support scaffold platforms only when they have been specifically designed by the manufacturer for such use.

Stilts may be used on a large area scaffold. When a guardrail system is used, the guardrail height must be increased in height equal to the height of the stilts. The manufacturer must approve any alterations to the stilts.

SUSPENDED SCAFFOLDS TWO-POINT (SWING STAGE)

Two-point adjustable suspension scaffolds, also known as swing-stage scaffolds, are perhaps the most common type of suspended scaffold.

Hung by ropes or cables connected to stirrups at each end of the platform, they are typically used by window washers on skyscrapers, but play a prominent role in high-rise construction as well.

Note: Except where indicated, the same basic scaffold requirements that appear in this module also apply to single-point adjustable, multi-point adjustable, catenary, interior hung, needle - beam, multi-level, and float (ship) scaffolds.

Anchorage

The safe use of a suspended scaffold begins with secure anchorage. The weight of the scaffold and its occupants must be supported by both the structure to which it is attached and by each of the scaffold components that make up the anchorage system.

Tiebacks

Tiebacks must be secured to a structurally sound anchorage on the building or structure, which may include structural members, but not vents, electrical conduit, or standpipes and other piping systems.

Tiebacks must be installed perpendicular to the face of the building or structure or opposing angle tiebacks must be installed. Single tiebacks installed at an angle are prohibited. Tiebacks must be equivalent in strength to the suspension ropes and hoisting rope.

Counterweights

Counterweights used to balance adjustable suspension scaffolds must be able to resist at least four times the tipping moment imposed by the scaffold operating at either the rated load of the hoist, or one-and-a-half (minimum) times the tipping moment imposed by the scaffold operating at the stall load of the hoist, whichever is greater.

Only those items specifically designed as counterweights must be used.

Counterweights used for suspended scaffolds must be made of materials that cannot be easily dislocated. Flowable material, such as sand or water, cannot be used.

Counterweights must be secured by mechanical means to the outrigger beams.

Vertical lifelines must not be fastened to counterweights.

Such materials like sand, masonry units or rolls of roofing felt cannot be used as counterweights.

Suspension Ropes

The suspension ropes must be long enough to allow the scaffold to be lowered to the level below without the rope passing through the hoist, or the end of the rope configured to prevent the end from passing through the hoist. The use of repaired wire rope as suspension rope is prohibited.

Wire suspension ropes must not be joined together except using eye splice thimbles connected with shackles or cover plates and bolts.

The load end of wire suspension ropes must be equipped with proper-size thimbles and secured by eye splicing or equivalent means.

Ropes must be inspected for defects by a competent person prior to each work-shift, and after every occurrence which could affect a rope's integrity.

Ropes are to be replaced when any of the following conditions exist:

- Any physical damage which impairs the function and strength of the rope
- Kinks that might impair the tracking or wrapping of the rope around the drum or sheave of the hoist
- Six randomly distributed wires are broken in one rope lay, or three broken wires in one strand in one rope lay
- Loss of more than one-third of the original diameter of the outside wires due to abrasion, corrosion, scrubbing, flattening, or peening
- Heat damage caused by a torch, or any damage caused by contact with electrical wires
- Evidence that the secondary brake has been activated during an overspeed condition and has engaged the suspension rope

Swaged attachments or spliced eyes on wire suspension ropes may not be used unless they are made by the manufacturer or a qualified person.

When wire rope clips are used on suspension scaffolds:

- There must be a minimum of 3 clips installed, with the clips a minimum of 6 rope diameters apart
- Clips must be installed according to the manufacturer's recommendations
- Clips must be retightened to the manufacturer's recommendations after the initial loading
- Clips are to be inspected and retightened to the manufacturer's recommendations at the start of each subsequent work-shift
- U-bolt clips may not be used at the point of suspension for any scaffold hoist
- When U-bolt clips are used, the U-bolt must be placed over the dead end of the rope, and the saddle must be placed over the live end of the rope

Suspension ropes are to be shielded from heat-producing processes. When acids or other corrosive substances are used on a scaffold, the ropes shall be shielded, treated to protect against the corrosive substances, or shall be of a material that will not be damaged by the substances.

Power Operated Suspension Scaffold Hoists Requirements

Power-operated hoists used to raise or lower a suspended scaffold must be tested by a qualified testing laboratory:

- The stall load of any scaffold hoist must not exceed three times its rated load
- The stall load is the load at which the prime-mover (motor or engine) of a power-operated hoist stalls or the power to the prime-mover is automatically disconnected
- Gasoline power-operated hoists or equipment are not permitted
- Drum hoists must contain no less than four wraps of suspension rope at the lowest point of scaffold travel
- Gears and brakes must be enclosed
- An automatic braking and locking device, in addition to the operating brake, must engage when a hoist makes instantaneous change in momentum or an accelerated overspeed

Manually Operated Suspension Scaffolds

Manually operated hoists used to raise or lower a suspended scaffold must be tested a listed by a qualified testing laboratory. These hoists require a positive crank force to descend.

WEATHER CONDITIONS

Employees shall be prohibited from working on scaffolds covered with snow, ice, or other slippery material except as necessary for removal of such materials. Work on or from scaffolds is prohibited during storms or high winds unless a competent person has determined that it is safe for employees to be on the scaffold and those employees are protected by a personal fall arrest system or wind screens.

FALLING OBJECTS

In addition to wearing hardhats, each employee on a scaffold shall be provided with additional protection from falling hand tools, debris, and other small objects through the installation of toe boards, screens, or guardrail systems, or through the erection of debris nets, catch platforms, or canopy structures that contain or deflect the falling objects. When the falling objects are too large, heavy, or massive to be contained or deflected by any of the above-listed measures, the employer shall place such potential falling objects away from the edge of the surface from which they could fall and shall secure those materials as necessary to prevent their falling.

FALL PROTECTION

Fall protection includes guardrail systems and personal fall arrest systems. A personal fall-arrest system is a system used to arrest an employee in a fall from a working level. Personal fall-arrest systems include harnesses, components of the harness/belt such as D-rings, and snap hooks, lifelines, and anchorage points.

CCI shall provide fall protection for each employee on a scaffold more than 10 feet (3.1 m) above a lower level.

A competent person must determine the feasibility and safety of providing fall protection for employees erecting or dismantling supported scaffolds.

As of January 1, 1998, subpart M of this part provides that body belts are not acceptable as part of a personal fall arrest system. The use of a body belt in a tethering system or in a restraint system is acceptable and is regulated under.

Vertical or horizontal lifelines may be used.

When working from an aerial lift, attach the fall-arrest system to the boom or basket.

Types of Fall Protection for Types of Scaffolds

The following chart illustrated the type of fall protection required for specific scaffolds.

Type of Scaffold	Fall Protection Required
Aerial lifts	Personal fall-arrest system
Boatswains' chair	Personal fall-arrest system
Catenary scaffold	Personal fall-arrest system
Crawling board (chicken ladder)	Personal fall-arrest system, or a guardrail system, or a ¾ inch (1.9 cm) diameter grabline or equivalent handhold securely fastened beside each crawling board
Float scaffold	Personal fall-arrest system
Ladder jack scaffold	Personal fall-arrest system
Needle beam scaffold	Personal fall-arrest system
Self-contained scaffold	Both a personal fall-arrest system and a guardrail system
Single-point and two-point suspension scaffolds	Both a personal fall-arrest system and a guardrail system
Supported scaffold	Personal fall-arrest system or guardrail system
All other scaffolds not specified above	Personal fall-arrest system or guardrail systems that meet the required criteria

Personal Fall Arrest Systems When Working on Scaffolds and Aerial Lifts

Personal fall arrest systems can be used on scaffolding when there are no guardrail systems.

Use fall-arrest systems when working from the following types of scaffolding: boatswain's chair, catenary, float, needle beam, ladder, and pump jack.

Use fall-arrest systems also when working from the boom/basket of an aerial lift.

Fall Arrest and Guardrail Systems Required

Fall-arrest and guardrail systems must be used when working on single- and two-point adjustable suspension scaffolds and self-contained adjustable scaffolds that are supported by ropes.

PROHIBITED SCAFFOLDS

Shore and lean-to scaffolds are strictly prohibited. Also, employees are prohibited from working on scaffolds covered with snow, ice, or other slippery materials - except to remove these substances.

TRAINING

Training shall be provided to all employees regarding hazards by a qualified person(s) in the subject matter prior to initial assignment.

Training will address:

- Fall protection
- Electrical safety
- Falling object protection
- Scaffold use
- Load capacity

In addition, employees involved in erection, disassembling, moving, operating, repairing, maintaining, or inspecting a scaffold must be trained by a qualified person to recognize any hazards associated with the work in question. They shall be trained in the correct procedures for erecting, disassembling, moving, operating, repairing, inspecting, and maintaining the type of scaffold in question.

Retraining

Retraining is required when any of the following situations occur:

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

- Where changes in the types of scaffolds, fall protection, falling object protection, or other equipment present a hazard about which an employee has not been previously trained

DEFINITIONS

Brace - A tie that holds one scaffold member in a fixed position with respect to another member. Brace also means a rigid type of connection holding a scaffold to a building or structure.

Competent Person - One who can identify existing and predictable hazards in the surroundings or working conditions, which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Coupler - A device for locking together the component tubes of a tube and coupler scaffold.

Harness - A design of straps which is secured about the employee in a manner to distribute the arresting forces over at least the thighs, shoulders, and pelvis, with provisions for attaching a lanyard, lifeline, or deceleration device.

Hoist - A mechanical device to raise or lower a suspended scaffold. It can be mechanically powered or manually operated.

Maximum Intended Load - The total load of all employees, equipment, tool, materials, transmitted, wind, and other loads reasonably anticipated to be applied to a scaffold or scaffold component at any one time.

Mechanically Powered Hoist - A hoist which is powered by other than human energy.

Outriggers - The structural member of a supported scaffold used to increase the base width of a scaffold to provide greater stability for the scaffold.

Platform - The horizontal working surface of a scaffold.

Qualified Person - The OSHA Definition of a Qualified Person - "One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project,"

Safety Belt - A strap with means for securing about the waist or body and for attaching to a lanyard, lifeline, or deceleration device.

Scaffold - Any temporary elevated or suspended platform and its supporting structure used for supporting employees or materials or both, except this term does not include crane or derrick suspended personnel platforms.

Scaffolds - CA

PURPOSE

The purpose of this document is to outline the Scaffolds Safety Program for **Cirks Construction Inc.**; hereafter referred to as "CCI," This program covers employees who work on scaffold work surfaces.

RESPONSIBILITIES

Management

- Managers will ensure adequate funds are available and budgeted for the purchase of scaffolds in their areas.
- Identify the employees affected by this policy.
- Obtain and coordinate the required training for the affected employees.
- Ensure compliance with this policy through the auditing process.

Supervisors

- Supervisors will ensure employees involved in scaffold erection, dismantling or use have received the required training for their tasks.
- Communicate appropriate needs to management and/or other supervisors.
- Ensure Employees are provided appropriate PPE for their tasks.
- Ensure that a competent person or persons oversee scaffold erection.

Competent Person

- Oversee the scaffold selection, erection, use, movement, alteration, dismantling, maintenance, and inspection.
- Be knowledgeable about proper selection, care and use of fall protection equipment. Additionally, the competent person should assess hazards.
- Ensure scaffolds are safe prior to use.

Employees

- Comply with applicable guidelines contained in this safety policy.
- Report damaged scaffolds, accessories, and missing or lost components.
- Assist with inspections as requested.

Responsible Safety Person

- Provide prompt assistance to management, supervisors, or other workers as necessary on matters regarding safety policy.
- Assist in developing and securing training.
- Work with all parties to ensure scaffolds comply with current safety regulations.

- Provide consultative and audit assistance to ensure effective implementation.

GENERAL REQUIREMENTS

Scaffolds should be provided for all work that cannot be done safely by employees standing on permanent or solid construction at least 20 inches wide, except where such work can be safely done from ladders.

There 2 exceptions to this:

1. The first is for work of a limited nature and of short duration when the permanent or solid construction is less than 20 inches in width and the fall distance does not exceed 15 feet in height and provided adequate risk control is recognized and maintained under competent supervision.
2. The 2nd exception is for work of a short duration from joists or similar members at 2 feet or closer centers, planks resting on these members forming a plank platform 12 inches wide or equivalent protection.

Scaffold Design and Construction

Scaffolds should be constructed of wood or other sufficient materials such as steel or aluminum members of known strength characteristics. Where materials other than wood are used, or where scaffold designs differ from those specified in these Orders, the scaffold and its parts must provide a degree of strength, rigidity, and safety equivalent to that provided by the described scaffold it replaces.

Each scaffold should be designed and constructed using a dead load safety factor that will ensure the scaffold supports, without failure, its own weight and 4 times the maximum intended working (live) load applied or transmitted to it. Maximum intended working loads should be as follows:

- Light-duty scaffolds: 25 pounds per square foot of work platform, with exception to Light-duty interior scaffolds. Light-duty interior scaffolds should not exceed 15 pounds per square foot.
- Medium-duty scaffolds: 50 pounds per square foot of work platform.
- Heavy-duty scaffolds: 75 pounds per square foot of work platform.
- Special-duty scaffolds: exceeding 75 pounds per square foot of work platform as determined by a qualified person or a Civil Engineer currently registered in the State of California and experienced in scaffold design.
- Engineered scaffolds: as determined by a Civil Engineer currently registered in the State of California and experienced in scaffold design.

The maximum work level height shall not exceed three times the least base dimension below the platform. Where basic mobile unit do not meet this requirement, outrigger frames shall be applied to achieve this least base dimension, or provisions shall be made to guy or brace the unit against tipping.

A scaffold should not be subjected to loads greater than its maximum intended working load.

Manufactured scaffolds should be used in accordance with the manufacturer's recommendations.

Exception: Where specific requirements that address riding on a rolling scaffold in CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Section 1646(i) and (j) may conflict with the manufacturer's recommendations, the provisions in CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Section 1646(i) and (j) take precedence.

A qualified person should determine the maximum intended working loads for scaffolds that are neither manufactured nor engineered. The maximum intended working load for each scaffold should be posted at a conspicuous location at each jobsite or be provided to each supervisory employee who should have it readily available at the jobsite.

Anchorage and bracing should be such that scaffolds and falsework will be prevented from swaying, tipping, or collapsing.

Scaffold lumber, except for planks, used on suspended or ladder-jack scaffolds, should be the equivalent of "selected lumber," free from damage that affects its strength.

Extension Planking

Extension planking of the finger type should be made with at least 5 fingers on each side. These fingers should be at least 1-inch by 2 1/8-inch selected straight-grained Douglas fir or material of equal strength. All metal fittings should be adequate to maintain the structural qualities of the device. The length of the extended planking should not exceed 12 feet 6 inches, and the actual mechanical overlap between the 2 halves should be not less than 1/8 of the length of the extended planking. A substantial stop should be provided to maintain this overlap.

Not more than one employee should be permitted at one time on any extension planking that is more than 3 feet in height. Extension planking should not be used as a platform on ladder-jack, suspended, or other unstable scaffolds.

Scaffold Planking

This subsection provides minimum labeling, design, and construction requirements for scaffold planking, such as solid sawn planks, manufactured platforms of wood (including laminated planks), metal planking, and planking manufactured from other materials.

Except as specified in other sections of this policy, all solid sawn planking should be at least equivalent to 2-inch x 10-inch (nominal) lumber selected for scaffold grade plank as defined in

CAL/OSHA Title 8 regulations, Subchapter 4 Construction Safety Orders, Section 1504, Lumber - "Structural Plank,"

The maximum permissible spans for Douglas Fir and Southern Pine planking for 2 x 10-inch (nominal) or 2 x 9-inch (rough) planks should be as shown in the following Table:

Working (Live) Load (psf)	25	50	75
Permissible Span (ft.)	10	8	7

The maximum permissible spans allowed for other wood species of scaffold planking should not exceed 10 feet and should be determined by a licensed professional engineer.

- All manufactured scaffold planking including, but not limited to, engineered wood products, laminated veneer lumber, metal, composite, plastic, or any other manufactured planks should be capable of supporting, without failure, its own weight and 4 times the maximum intended working (live) load.
- Manufactured planks with spans more than 10 feet should be labeled to indicate the maximum intended working (live) load.
- Manufactured scaffold planks should be used in accordance with the manufacturer's specifications.

Prior to being placed in service, all laminated veneer lumber scaffold planks, manufactured after December 2, 2010, should be labeled with the seal of an independent, nationally recognized, inspection agency approved by the International Accreditation Services (IAS) certifying compliance with ASTM D 5456-09a and ANSI/ASSE A10.8-2001, Section 5.2.10.

Note: ASTM D 5456-09a is the standard for the evaluation of structural composite lumber products. ANSI/ASSE A10.8-2001, Section 5.2.10. requires the inspection agency to certify that laminated veneer lumber scaffold planks are compliant with the design criteria in the ANSI/ASSE A10.8 standard.

Prior to being placed into service, all solid sawn wood scaffold planks should be certified by, or bear the grade stamp of, a grading agency approved by the American Lumber Standards Committee. All scaffold planks should be visually inspected for defects before use each day. Defective or damaged scaffold planks should not be used and should be removed from service.

Unless specified in other sections of this policy, a scaffold plank should not overhang its support by more than 18 inches, unless access to this overhanging portion is prevented by a guardrail, or other barrier, or unless the other plank end is securely anchored.

Inspection of Lumber

All scaffold lumber should be visually inspected for defects before and during use. Defective lumber should not be used.

Nailing

- All nailed joints in scaffolds and wooden falsework must contain enough properly placed nails of ample size to carry the loads they are intended to support.
- Nailed joints or connections should not be used to support concrete hoppers with a capacity more than 1/2 cubic yard.
- Double-headed nails should not be used for attaching railings or in other service where the projections might catch on the clothing of workers or create similar hazards.
- Nails smaller than 8-penny should not be used in the construction of scaffolding.
- All nails should be driven full length or to the first head when double-headed nails are used.

The minimum number of nails per connection should be in accordance with the following table:

	<i>1" x 6" Material</i>	<i>1" x 8" Material</i>	<i>2" Material</i>
Ledgers	4-8d	5-8d	2-16d
Ribbons	3-8d	3-8d	
Braces	3-8d	3-8d	2-16d
Guardrails	2-8d	2-8d	2-16d

Lubricated or wax-coated nails should not be used in the construction of scaffolds, falsework, or other temporary installations.

Prohibited Types of Scaffolds

Lean-to or jack scaffolds, shore scaffolds, nailed brackets, loose tile, loose brick, loose blocks, stilts, or other similar unstable objects should not be used as working platforms, or for the support of such platforms.

Bricklayer's "jump boards" no higher than 20 inches above the regular scaffold platform are acceptable for service when supported by piers of carefully piled bricks or concrete blocks.

Erection and Dismantling

The erection and dismantling of scaffolds or falsework should be performed under the supervision and direction of a qualified person.

Note: In addition to persons meeting the requirements of "qualified persons" as defined in CAL/OSHA Title 8 regulations, Subchapter 4 Construction Safety Orders, Section 1504, person(s) possessing a certification of competence in scaffold erection, dismantling and use issued by trade associations, State-approved apprenticeship or training programs or other similar training programs should be considered a "qualified person(s),"

Erection and dismantling of scaffolds should be performed in accordance with good engineering practice. Where engineering design is required, the engineering drawings should be made available at the job site during erection or upon request.

All required ties to the structure should be installed as soon as the scaffold has been completed to the tie-in area during erection. Ties should only be removed during dismantling as the work progresses downward unless other methods are used to prevent the scaffold from falling over. Structural members should not be removed from scaffolds during dismantling operations below the level being dismantled.

Where work platforms are proposed, guardrails should be installed before other work not directly related to scaffold erection is permitted to begin.

Removal of Braces

Scaffolds or falsework installations should not be altered by removing uprights, braces, or supports unless other members providing equivalent strength are substituted.

Loading

Scaffolds should not be overloaded. Material should not be allowed to accumulate to the extent that a scaffold is subjected to loading it is not designed to support.

Access

A safe and unobstructed means of access, such as a walkway, stair, or ladder should be provided to all scaffold platforms.

Climbing ladders or stairways on scaffolds used for access and egress should be affixed or built into the scaffold by proper design and engineering and should be so located that their use will not disturb the stability of the scaffold.

Manufactured hook-on and attachable ladders should be securely attached to the scaffold and:

- Should be specifically designed for the type of scaffold used.

- Should have a minimum rung length of 11-1/2 inches (29 cm)
- Should have uniform spaced rungs with a maximum spacing between rungs of 16-3/4 inches.
- Should be positioned so that their bottom rung is not more than 24 inches (61 cm) above the scaffold supporting level; and
- When hook-on and attachable ladders are used on a supported scaffold more than 35 feet (10.7 m) high, they should have rest platforms at 35-foot (10.7 m) maximum vertical intervals.

If a ladder is used as a means of access to the scaffold, it should be securely attached and should comply with Article 25 of the CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders.

Permanent stairways should comply with the applicable provisions of the CAL/OSHA Title 8, Subchapter 7 General Industry Safety Orders. Prefabricated scaffold steps or stairs, manufactured on or before May 28, 2005, should comply with the design, manufacture, and installation requirements of either the American National Standard ANSI A10.8-1988, Scaffolding-Safety Requirements, or the ANSI/ASSE A10.8-2001, Safety Requirements for Scaffolding, which are hereby incorporated by reference. Prefabricated scaffold steps or stairs, manufactured after May 28, 2005, should comply with the design, manufacture, and installation requirements of ANSI/ASSE A10.8-2001, Safety Requirements for Scaffolding.

Horizontal members of end frames may be designed and used as a climbing device provided that the steps are:

- 1) Reasonably parallel and level.
- 2) Arranged to form a continuous ladder as required in CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Section 1644(a)(8).
- 3) Provided with sufficient clearance to provide a good handhold and foot space.

Sloped Platforms

Platforms should not be sloped more than two feet vertically to 10 feet horizontally and should be positively secured against slipping from supports.

Slippery Conditions

No worker should be permitted to work on a scaffold platform where slippery conditions exist unless such conditions are a necessary part of the work.

Overhead Protection

Workers on scaffolds who are exposed to overhead hazards should be provided with overhead protection or other means that will effectively eliminate the hazard.

Bolted Connections

Bolts used in the construction of scaffolds should be of a size and in sufficient numbers at each connection to develop the designed strength of the scaffold.

Hoisting of Materials

Where materials are line-hoisted onto a scaffold, a tag line should be used where necessary to control the load.

Platform Planks at Corners

When a scaffold materially changes its direction, the platform planks should be laid to prevent tipping. The planks that meet the corner ledger at an angle should be laid first, extending over the diagonally placed ledger far enough to have a good safe bearing, but not far enough to involve any danger from tipping. The planking running in the opposite direction at an angle should be laid to extend over and rest on the first layer of planking.

Wind Conditions

Work on or from scaffolds is prohibited during storms or high winds unless a qualified person has determined that it is safe for employees to be on the scaffold and those employees are protected by a personal fall arrest system, or wind screens. Wind screens should not be used unless the scaffold is secured against the anticipated wind forces imposed.

Wood Platforms

Wood platforms should not be covered with opaque finishes, except that platform edges may be covered or marked for identification. Platforms may be coated periodically with wood preservatives, fire-retardant finishes, and slip-resistant finishes; however, the coating may not obscure the top or bottom wood surfaces.

Note: Platforms, including, but not limited to, those consisting of solid sawn wood planks, engineered wood products, laminated veneer lumber, metal, composite, plastic, or any other manufactured planks, should not deflect more than 1/60 of the span when loaded to the manufacturer's recommended maximum load.

Guardrails, Toe-Boards and/or Secured Planks General Requirements

All scaffold work levels six feet or higher above the ground or floor must have a toe board at locations where persons are required to work or pass under the scaffold. All scaffold work levels thirty inches or higher above the ground or floor must have guardrail protection. And also, all planking or platforms must overlap a minimum of twelve inches or be secured from movement.

LIGHT-DUTY WOODEN POLE SCAFFOLDS**Pole Scaffolds**

Pole scaffolds to be used by carpenters, lathers, shinglers, painters, plasterers, sheet metal workers, or other trades not using heavy tools or storing heavy materials on the scaffolds, should be constructed as shown in CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Appendix B, Plate B-18

Light-Duty Exterior Scaffolds

Uprights - For heights not to exceed 20 feet, the uprights should be two-inch by four-inch lumber or heavier, spaced not more than three feet between uprights at right angles to the wall and not more than 10 feet center to center, parallel to the wall. The inside uprights may be omitted, and ledgers attached to the permanent structure, provided that the method of attaching the ledgers to the permanent structure will make the connection as secure as though the ledger were nailed to the upright with five 8-penny nails. The splices of uprights should be made with square butt joints, and scabs of one-inch by four-inch or heavier material at least 48 inches long should be nailed on two sides of each upright with six nails in each 1/2 of each scab. If the uprights of the scaffold rest on a surface that might cause slipping, a continuous sill or other means should be provided to hold the uprights in place. When the scaffold is resting on earth or other such material, the uprights should rest on and be secured to the equivalent of a two-inch by 10-inch by 10-inch wooden base. Note: 1 1/8-inch by 10-inch by 10-inch piece of exterior grade plywood may be used in lieu of the wooden base mentioned above.

Ledgers and Ribbons - The platforms of the scaffold should be supported by ledgers. For ledgers spanning not more than three feet between uprights, use two pieces of one inch by six-inch board, one being on each side of the uprights and fastened securely at each point of support. Single two-inch by four-inch ledgers are not permitted. Vertical spacing of ribbons and ledgers should not exceed seven feet. The ribbons should be one inch by six-inch or heavier material, placed on the outer uprights, directly under, and in contact with, the ledgers. The ribbons should be long enough to extend from upright to upright without splices.

2 exceptions apply:

1. The first is when metal ledgers are used or when ledgers are bolted or when a 45-degree angle brace is nailed to the uprights between double ledgers, and ledgers also nailed to this brace, the ribbon may be placed at other elevations such as guardrail height, but they cannot be eliminated from the scaffold.
2. The second is exception is when metal ledgers and ribbons that are part of a patented scaffold system may be used when installed in accordance with the manufacturer's instructions.

Ties and Braces - The scaffold should be securely tied to the building or structure by means of a double looped No. 12 iron wire, or single looped No. 10 iron wire or one-inch by four-inch boards with at least two nails at each connection or equivalent means. Ties should connect to the inside uprights and should not be more than 20 feet apart horizontally and vertically. The outside

line of uprights should contain sufficient diagonal bracing of one inch by six-inch material in a vertical plane across the entire face of the scaffold in both directions to prevent swaying, tipping, or collapsing. (See CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Appendix B, Plate B-18).

The following exception applies. Bracing of two-inch by four-inch material may be used provided that the bracing extends from ledger to next higher or lower ledger or from ledger to sill in the form of an "X" in the end bays and in every third bay in between so that the "X" bracing also extends from the upper-most ledger to the sill, vertically, in each of these bays.

Railing - Open sides and ends of intermediate working levels 7 1/2 feet or more above grade should be guarded by a two-inch by four-inch top rail nailed to the uprights so that the top edge is between 42 inches and 45 inches above the platform. Mid-rails of at least two-inch by four-inch material are required at all work levels. The uppermost platform should be protected by a top rail consisting of double two-inch by four-inch members. One member should be fastened in a flat position on top of the uprights and the other member should be fastened in an edge-up position to the inside of the uprights and at the side of the top member. A single two-inch by four-inch member having an allowable bending stress of at least 1,900 psi may be used as a top rail.

Platforms -Platform planks should be of two-inch by 10-inch or larger material and of such length that they overlap the ledgers at each end by at least six inches. A plank should not overlap an unsupported end of another plank. The working platform should cover the entire space between scaffold uprights, except for the open area under the back-railing, which should not be more than 8 inches wide. Platforms should be at least 20 inches wide and within 14 inches of the structure wall. When moving platforms to the next level, the old platform should be left undisturbed until the new ledgers have been set in place ready to receive the platform planks.

Note: A single two-inch by 10-inch plank may be used for light trades work up to a height of four feet.

Working platforms for light-trades work may be made of 3/4-inch Douglas fir plywood instead of two-inch plank if the platform is at least two feet wide, nailed in place and supported on cross members at four-foot or closer intervals along its length.

Light-Duty Interior Scaffolds

Loading - For scaffolds of the following design, the imposed load on the platform area should not apply more than 1,500 pounds to any one ledger or a single upright, and the total load on the whole platform area should not average more than 15 pounds per square foot.

Uprights - For heights not to exceed 20 feet the uprights should be two-inch by four-inch lumber, or heavier. For heights between 20 feet and 60 feet, the uprights should be three-inch by four-inch lumber, or heavier, except for the top 20 feet which may be two-inch by four-inch material. The horizontal distance between uprights should not exceed 10 feet measured either parallel or at right angles to the direction of the platform planks. If uprights are spliced, the joints must conform to that described previously in this section and they should be located near a point where ribbons are attached or where equivalent lateral support is provided. Pairs of horizontal ribbons at right angles to one another are required at vertical intervals of seven feet, or less.

Ledgers and Ribbons - The platform of the scaffold should be supported by ledgers made of one piece of two-inch by 10-inch or heavier material, placed with the edge upward. The ribbons should be one inch by six-inch or heavier material, placed on all uprights directly under and in contact with the ledgers. Additional horizontal ribbons, in pairs at right angles to one another, should be provided at lower levels to provide lateral support for all uprights at vertical intervals not greater than seven feet.

Diagonal Braces - Each line of uprights should contain sufficient diagonal bracing of 1-inch by 6-inch material in vertical planes, lengthwise and crosswise, to prevent swaying, tipping, or collapsing. If the scaffold extends to and bears against the walls of the building, the horizontal ribbons and ledgers may provide adequate support without diagonal braces, but provision must always be made for adequate lateral stability.

Platforms - The platform should consist of two-inch by 10-inch, or larger planks laid closely together. There should be no other openings in the platform except those necessary for the passage of employees and material. Unless nailed in place, planks should be of such length that they overlap the ledgers at each end by at least six inches. A plank should not overlap an unsupported end of another plank. Working platforms should cover the entire space between scaffold uprights, except for the open area under the back railing which should not be more than 8 inches.

Platforms should extend within 14 inches of the finished face of the building. Douglas fir plywood that is 3/4 inch thick, or thicker, may be used for platforms if the panels are four feet wide, or wider, and are supported on ledgers or crossmembers at four-foot or closer intervals.

Railings - Open sides of working levels 7 1/2 feet or more above grade should be provided with top rails and mid-rails as specified in this section. When scaffold platforms are erected in sections it is necessary for workers to travel between these sections, such sections should be provided with connecting runways equipped with railings as described in CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Section 1620.

HEAVY-TRADE WOODEN POLE SCAFFOLDS

Pole scaffolds to be used by bricklayers, stonemasons, concrete workers, or other trades using heavy tools or storing heavy material on the scaffold should be constructed as shown in CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Appendix B, Plate B-19.

When buggies are used on scaffolds to transport concrete, a strong scaffold should be designed that can support a concentrated load equal to the weight of a loaded buggy at any point on girders, beams, or planking.

Uprights

For heights not to exceed 20 feet, the uprights should be of four-inch by four-inch lumber or heavier material, with a space of 4 feet between uprights at right angle to the wall and not more than seven feet, center to center, parallel to the wall. The splices of four-inch by four-inch uprights should be made with square butt joints, and scabs of two-inch by four-inch material at least 48 inches long should be nailed in place on two sides with six nails in each 1/2 of each scab. Uprights laminated from two-inch by four-inch material are acceptable if the joints of each lamination are staggered, and either reinforced by scabs or so arranged that they occur at or near ribbon attachment points. If the uprights rest on a surface that might cause slipping, a continuous sill or other means should be provided to hold the uprights in place. When the scaffold is resting on earth or other such material, the uprights should rest on and be secured to the equivalent of a two-inch by 10-inch by 10-inch wooden base.

Note: A 1 1/8-inch by 10-inch by 10-inch piece of exterior grade plywood may be used in lieu of the wooden base mentioned above.

Ledgers and Ribbons

The platform should be supported by ledgers and ribbons, nailed, or bolted to the uprights. For ledgers spanning not more than four feet between uprights, use either one piece of two-inch by six-inch lumber securely fastened at each point of support or two pieces of one inch by six-inch board, one being on each side of the uprights and fastened securely at each point of support.

Ribbons should be one inch by six-inch or heavier material securely fastened to both inside and outside uprights directly under and in contact with the ledgers. Vertical spacing of ribbons and ledgers should not exceed seven feet. Ribbons should be long enough to extend from upright to upright without splices.

Railing

Open sides and ends of working levels 7 1/2 feet or more above grade should be provided with top rails and mid-rails as specified in this policy.

Exception: That side of bricklayers' and masons' scaffolds adjacent to the work under construction provided that the wall is higher than the adjacent work platform.

Ties and Braces

The scaffold should be rigidly tied to the building or structure by means of a double looped No. 12 iron wire, or single looped No. 10 iron wire or equivalent or stronger material used in combination with spacer blocks between inside uprights and the structure. Ties should connect to the inside uprights, and they should be not more than 15 feet apart vertically or horizontally. The entire scaffold should be rigidly braced with one inch by six-inch boards, and every part thereof so secured as to prevent swaying, tipping, or collapsing. The diagonal bracing should extend in both directions across the entire outside vertical face.

Platforms

The platform should be not more than four feet wide, constructed of planks at least two inches thick and 10 inches wide, laid closely together. Platform planks that are butt-ended (not overlapped) must be nailed to ledgers consisting of two-inch by six-inch or heavier material. If the planks are not nailed, they should be of such length that they overlap the ledgers at each end by at least six inches. A plank should not overlap an unsupported end of another plank. The working platform should cover the entire space between scaffold uprights except for the open area under the back railing, which should not be more than 8 inches.

Platforms should extend within 14 inches of the finished face of the building, except those used primarily by bricklayers and stonemasons should extend to within seven inches of the finish face of the building on which the work is being performed. When moving platforms to the next level, the old platform should be left undisturbed until the new ledgers have been set in place ready to receive the platform planks.

SCHEDULE OF TIMBER SCAFFOLDS UP TO 60 FEET IN HEIGHT

(Listed lumber sizes are those required for the specified spans; other sizes may be used for different spans, if equivalent strength is provided.)

	Interior	Light Trades	Heavy Trades
Uprights for scaffolds not over 20'in height	2"x4"	2"x4"	4"x4
Uprights for scaffolds 20' to 60'in height	3"x4"	3"x4"	4"x6"
Ribbons directly under ledgers	1"x6"	1"x6"	1"x6"
Ledgers	2"x10"	2-1"x6"	2-1"x6" or 1-2"x6"
Spacing uprights, transverse, at right angles to platform planks	10'	3' in clear	4' in clear
Spacing uprights, longitudinal, parallel to direction of platform planks	10'	10'	7'
Spacing ribbons or ledgers, vertical	7'0" max.	7'0" max.	7'0" max.
Splice pieces 48" long (for uprights)	2-1"x4" or 2-1"x4" or 2-2"x4"	2-2"x4"	2-2"x4"
Braces	1"x6"	1"x6"	1"x6"
Railing	2"x4"	2"x4"	2"x4"
Toeboard	1"x4"	1"x4"	1"x4"
Width of platform	10'	3' max.	4' max.
Planking	2" thick and at least 10" wide		

Scaffolds Over 60 Feet in Height

All wooden pole scaffolds over 60 feet in height should be designed by a Civil Engineer currently registered in California and constructed and erected in accordance with such design.

METAL SCAFFOLDS**General**

Metal scaffolds should be designed to support all dead, live, and wind loads to which they will be subjected. Metal scaffold equipment that is broken or deteriorated to the extent that its section is structurally weakened should not be used.

All stationary scaffold legs, including those of outriggers, should rest upon base plates available from the manufacturer for this service. Each base plate should have support adequate to sustain the load and prevent horizontal movement. When the scaffold or outrigger is resting on earth or soft material, the base plate should rest on and be secured to the equivalent of a 2-inch by 10-inch by 10-inch wooden base.

Note: A 1 1/8-inch by 10-inch by 10-inch piece of exterior grade plywood may be used in lieu of the wooden base mentioned above.

Platform planks should not be placed on guardrails to obtain greater height.

Metal scaffolds should be securely tied to the building or structure by means of a double looped No. 12 iron wire, or single looped No. 10 iron wire or equivalent at intervals not to exceed 30 feet horizontally and subject to the following:

- Ties should be required at the free ends of the scaffold when the height of the scaffold platform exceeds 3 times the least base dimension. The remaining ties of the first row should be required when the height of the scaffold platform is four times the least base dimensions.
- Ties for subsequent levels should be installed at 26-foot intervals vertically, with the last tie no further from the top than four times the least base dimension.
- As an alternate means, scaffolds should be guyed, or outriggers should be used to prevent tipping or upsetting.
- Wind Loading - When scaffolds are partially or fully enclosed, specific precautions should be taken to assure the frequency and adequacy of ties attaching the scaffolding to the building.

Securely attached railings as provided by the scaffold manufacturer, or other material equivalent in strength to the standard two by four-inch wood railing made from "selected lumber" (see definition), should be installed on open sides, and ends of work platforms 7 1/2 feet or more above grade. The top rail should be located at a height of not less than 42 inches, nor more than 45 inches measured from the upper surface of the top rail to the platform level. A mid-rail should be provided approximately halfway between the top rail and the platform.

Note: Toe-boards or side screens may also be required.

- "X" bracing is acceptable as a top-rail if the intersection of the "X" occurs at 45 inches (plus or minus three inches) above the work platform, provided a horizontal rail is installed as a mid-rail between 19 and 25 inches above the work platform. The maximum vertical distance between the "X" brace members at the uprights should not exceed 48 inches.
- "X" bracing is acceptable as a mid-rail if the intersection of the "X" falls between 20 inches and 30 inches above the work platform.

Exceptions:

- Railings are not required on that side of bricklayers' and masons' scaffold adjacent to the work under construction provided the wall is higher than the adjacent work platform.

- For end rail openings less than three feet, double wrapped iron wire at least No. 12 gauge in thickness, or wire rope at least ¼-inch minimum diameter is permitted, provided the wire or wire rope is securely fastened.

Platform planks should be of two-inch by 10-inch or wider material and of such length that they overlap the ledgers at each end by at least 6 inches. A plank should not overlap an unsupported end of another plank. The working platform should cover the entire space between scaffold uprights, except for the open area under the back railing. Such open area should not exceed 10 inches in width. The inboard edge of the work platform should be no more than 16 inches from the building or structure wall except for those scaffolds used by bricklayers and stonemasons the platforms of which should extend to within 7 inches of the finish face of the building or structure on which the work is being performed.

All ladders used for access should conform to ladders, Article 25. When only a part of the width of the metal scaffold frame conforms to ladder spacing, then these frames must be erected in a manner that makes a continuous ladder bottom to top, with ladder sides of the frames in a vertical line.

Tube and Coupler Scaffolds

A light duty tube and coupler scaffold should have all posts, ledgers, ribbons and bracing of nominal two-inch O. D. steel tubing. The posts should be spaced no more than six feet apart by 10 feet along the length of the scaffold. Other structural metals when used must be designed to carry an equivalent load. No dissimilar metals should be used together.

A medium duty tube and coupler scaffold should have all posts, ribbons and bracing of nominal two-inch O. D. steel tubing. Posts spaced not more than six feet apart by 8 feet along the length of the scaffold should have ledgers of nominal 2 1/2-inch O. D. steel tubing. Posts spaced not more than five feet apart by eight feet along the length of the scaffold should have ledgers of nominal two-inch O. D. steel tubing. Other structural metals, when used, must be designed to carry an equivalent load. No dissimilar metals should be used together.

A heavy-duty tube and coupler scaffold should have posts, ribbons, and bracing of nominal two-inch O. D. steel tubing, with the posts spaced not more than six feet by six feet six inches. Other structural metals, when used, must be designed to carry an equivalent load. No dissimilar metals should be used together.

Tube and coupler scaffolds should be limited in heights and working levels to those permitted in Tables 1, 2, and 3. Drawings and specifications of all tube and coupler scaffolds above the limitations in Tables 1, 2, and 3 should be designed by a Civil Engineer currently registered in the State of California.

All tube and coupler scaffolds should be constructed and erected to support four times the maximum intended loads as set forth in Tables 1, 2, and 3, or as set forth in the specifications by a Civil Engineer currently registered in California.

Table 1

Light Duty Tube and Coupler Scaffolds

Uniformly distributed load	Not to exceed 25 p.s.f.	
Post spacing (longitudinal)	10' 0"	
Post spacing (transverse)	6' 0"	
<i>Working Levels</i>	<i>Additional Planked Levels</i>	<i>Maximum Height</i>
1	8	125'
2	4	125'
3	0	91' 0"

Table 2

Medium Duty Tube and Coupler Scaffolds

Uniformly distributed load	Not to exceed 50 p.s.f.	
Post spacing (longitudinal)	8' 0"	
Post spacing (transverse)	6' 0"	
<i>Working Levels</i>	<i>Additional Planked Levels</i>	<i>Maximum Height</i>
1	6	125'
2	0	78' 0"

Table 3

Heavy Duty Tube and Coupler Scaffolds

Uniformly distributed load	Not to exceed 75 p.s.f.	
Post spacing (longitudinal)	6' 6"	
Post spacing (transverse)	6' 0"	
<i>Working Levels</i>	<i>Additional Planked Levels</i>	<i>Maximum Height</i>
1	6	125'

Posts should be accurately spaced, erected on sufficient bases, and maintained plumb.

Ribbons should be erected along the length of the scaffold, located on both the inside and the outside posts at even height. Ribbons should be interlocked to the inside and the outside posts at even heights. Ribbons should be interlocked to form continuous lengths and coupled to each post. The bottom ribbons should be located as close to the base as possible. Ribbons should be placed not more than six feet six inches on centers.

Ledgers should be installed transversely between posts and should be securely coupled to the posts bearing on the ribbon coupler. When coupled directly to the ribbons, the coupler must be kept as close to the posts as possible. Ledgers should be at least four inches but not more than 12 inches longer than the post spacing or ribbon spacing.

Cross bracing should be installed across the width of the scaffold at least every third set of posts horizontally and every fourth ribbon vertically. Such bracing should extend diagonally from the inner and outer ribbons upward to the next outer and inner ribbons.

Longitudinal diagonal bracing on the inner and outer rows of poles should be installed at approximately a 45-degree angle from near the base of the first outer post upward to the extreme top of the scaffold. Where the longitudinal length of the scaffold permits, such bracing should be duplicated beginning at every fifth post. In a similar manner, longitudinal diagonal bracing should also be installed from the last post extending back and upward toward the first post. Where conditions preclude the attachment of this bracing to the posts, it may be attached to the ribbons.

Tubular Welded Frame Scaffolds

Metal tubular frame scaffolds, including accessories such as braces, brackets, trusses, screw legs, ladders, etc., should be designed, constructed, and erected to safely support four times the maximum rated load. The scaffold manufacturer's erection instructions should be followed on all installations.

Spacing of panels or frames should be consistent with the loads imposed.

Panels or frames should be braced by horizontal bracing, cross bracing, diagonal bracing, or any combination thereof for securing vertical members together laterally, and the cross braces should be of such length as will automatically square and align vertical members so that the erected scaffold is always plumb, square, and rigid. All brace connections should be made secure. Panel or frame legs should be set on adjustable bases or plain bases placed on mud sills or other foundations adequate to support the maximum anticipated load.

Panels or frames should be placed one on top of the other with coupling or stacking pins to provide proper vertical alignment of the legs.

Note: Where an intervening ledge prevents the vertical stacking of legs, the ledge may be used as a base provided that an equally safe installation is obtained.

Where uplift may occur, panels should be locked together vertically by pins or other equivalent sufficient means.

Drawings and specifications for all frame scaffolds over 125 feet in height above the base plates should be designed by a Civil Engineer currently registered in California.

OUTRIGGER AND BRACKET SCAFFOLDS

Heavy Trades

Outrigger beams of outrigger scaffolds for use by bricklayers, stonemasons, or other heavy trades should be made of "selected lumber," or better. Those of the following sizes should not project more than six feet beyond the outer support; should be securely anchored and braced to prevent tipping or turning; and should be spaced at centers of seven feet six inches, or closer.

The inboard end of outrigger beams, measured from the fulcrum point to anchorage point, should not be less than 1 1/2 times the outboard end in length. The fulcrum point of the beam should rest on a secure bearing at least 6 inches square.

On continuous scaffolds, where the beams may receive load from work platforms on each side, such beams should not be less than three inches by 16 inches in cross section. For single scaffolds, consisting of a platform between two beams, the outrigger beams may have a smaller cross section, but not less than three inches by 12 inches. The platforms should consist of planks, at least two inches by 10 inches, covering the full width of the projection. Planking should be nailed or bolted or otherwise secured to outriggers.

The ends of the planks should not project more than 18 inches beyond the outrigger, and not less than six inches, unless they are nailed in place. Every outrigger scaffold 7 1/2 feet or more in height should be provided with a railing and toe-board. The top rail should consist of double two-inch by four-inch members. One member should be fastened in a flat position on top of the posts and the other member should be fastened in an edge-up position to the inside of the posts and at the side of the top rail. Additional protection in the form of screen enclosing the opening between rail and toe-board should be provided if material on the scaffold is piled higher than the toe-board.

Where additional working levels are required to be supported by the outrigger method, the plans and specifications of the outrigger and scaffolding structure should be prepared by a Civil Engineer currently registered in California.

Figure Four or Light Outrigger Scaffolds

(See CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Appendix B, Plate B-22, for reference.) Figure Four or light outrigger frames should be spaced not more than 10 feet apart, and should be constructed as follows from sound lumber:

The outrigger ledger should consist of two pieces of one inch by six-inch, or heavier material nailed on opposite sides of the vertical and angle braces. Ledgers should project not more than three feet six inches from the outside wall line and should be substantially braced and secured to prevent tipping or turning. The knee or angle brace should intersect the beam at least three feet from the wall at an angle of 45 degrees, and the lower end should be nailed to a vertical brace near the point where it contacts the wall. The platform should consist of two or more two-inch by 10-inch planks, which should be of such length that they extend at least six inches beyond ledgers at each end. Unsupported projecting ends of planks should be limited to an overhang of 18 inches, or less.

Each wooden bracket should be hooked over a well-secured and adequately strong supporting member.

Every Figure Four or light outrigger scaffold 7 1/2 feet or more in height should be provided with a railing and toe-board. The top rail should consist of double two-inch by four-inch members. One member should be fastened in a flat position on top of the posts and the other member should be fastened in an edge-up position to the inside of the posts and at the side of the top member.

Stud Jacks

(See CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Appendix B, Plate B-40, for reference.) Stud-jack scaffold supports should have ledgers of at least two-inch by six-inch materials, or equal, not longer than five feet, and each jack should attach to not less than two adequately fastened, two-inch by four-inch wall studs of normal length. Stud-jack scaffolds should not be used at elevations of 7 1/2 feet or higher above the ground, unless so designed that a substantial back-rail may be easily attached.

Bracket Scaffolds

The use of bracket scaffolds should be permitted only when through-bolted to walls, with at least 5/8-inch diameter bolts; welded to steel tanks; secured with a metal stud attachment device; or, hooked over a well-secured and adequately strong supporting member.

Note: This does not prohibit the use of bracket scaffolds that are an integral part of movable form panels or similar construction. (See CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Appendix, Plates B-20, and B-21, for reference.)

All form scaffolds should be designed and erected with a minimum safety factor of 4, computed based on the maximum rated load, i.e., the total of all loads including the working load, the weight of the scaffold, and such other loads as may be reasonably anticipated.

Spacing of brackets should be such that they are not more than 10 feet apart horizontally. If brackets are secured to walers held by snap-tie or she-bolts, they must extend through both wall forms and be properly secured. Railings should be installed on bracket scaffolds for all heights 7 1/2 feet or more above the ground. The platform should consist of two or more two-inch by 10-inch planks, laid closely together, and should be of such length that they overlap the ledgers at each end by at least six inches. Unsupported projecting ends of planks should be limited to an overhang of 18 inches or less.

Wooden bracket form scaffolds should be an integral part of the form panel and should not be used to support loads exceeding 25 pounds per square foot, unless specifically designed for a heavier loading. Ledgers should be made from two-inch by six-inch or heavier material and should not project more than three feet six inches from the form panel. Uprights should consist of two-inch by four-inch or heavier material. Scaffold planks should be either nailed, wired, or bolted to the ledgers. Planks should overlap the ledgers at each end by at least six inches. Unsupported projecting ends of platform planks should be limited to a maximum overhang of 18 inches. Ledgers should not be spaced more than eight feet on centers. (See Appendix Plate B-20.)

Bracket scaffolds installed on metal tanks larger than 40 feet in diameter for the use of those engaged in tank erection operations, should have platforms that are at least 30 inches wide, with the open ends and sides protected by a substantial railing, with mid-rail, which may be altered by the substitution of 3/8-inch wire rope for the top and middle rails. Platforms on 40-foot or smaller diameter tanks will be acceptable if not less than 24 inches in width, consisting normally of two two-inch by 12-inch planks side by side, protected by railings as described above.

NOTE: For railing requirements, see CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Section 1620.

Carpenters' Bracket Scaffolds

The brackets should consist of a triangular wood frame not less than 2 x 3 inches in cross section, or of metal of equivalent strength. Each member should be properly fitted and securely joined.

Each bracket should be attached to the structure by means of one of the following:

- A bolt, no less than 5/8-inch in diameter, which should extend through to the inside of the building wall.
- A metal stud attachment device
- Welding to steel tanks
- Hooking over a well-secured and adequately strong supporting member.

The brackets should be spaced no more than 10 feet apart. No more than two employees should occupy any given 10 feet of a bracket scaffold at any one time. Tools and materials should not exceed 75 pounds in addition to the occupancy. The platform should consist of not less than two 2- x 10-inch nominal size planks extending not more than 18 inches or less than six inches beyond each end support.

TOWER SCAFFOLDS AND ROLLING SCAFFOLDS, WOOD OR METAL

The minimum dimension of the base of any free-standing tower or rolling scaffold should not be less than 1/3 the height of the scaffold unless such scaffold is securely guyed or tied. For restrictions when workers ride scaffolds see paragraph titled "riding" below.

Construction and Erection

The uprights, ledgers, ribbons, braces, and splices should be equivalent to the standards specified in other applicable Sections of these Orders. Railings are required if the platform is 7 1/2 feet or more above grade. Railings should be installed in accordance with the provisions of CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Section 1644(a)(6).

Note: Toe-boards or side screens may also be required.

The screw jack should extend into its leg tube at least 1/3 its length, but in no case should the exposed thread exceed 12 inches. The uprights (legs of rolling scaffolds) should not exceed 24 inches without being braced according to the manufacturer's specifications.

Wheels or casters of rolling scaffolds should be provided with an effective locking device and kept locked when workers are climbing or working on the scaffold. At least two of the four casters or wheels should be a swivel type. All wheels or casters should be properly designed for strength and dimension to support at least four times the maximum intended load.

Joints of metal scaffolds should be locked together with lock pins, bolts, or equivalent fastening, including caster joints. Lock pins used must be of a locking type with exception to screw jacks and guardrail posts.

Platform planks on rolling or tower scaffolds should not project farther than 18 inches past supports at the edges of the scaffold. An effective method of preventing platform planks on rolling scaffolds from slipping off must be provided. The nailing of cleats of one-inch material on the underside of each projecting end, or other equivalent means, will be acceptable. Platforms should be tightly planked for the full width of the scaffold except for any necessary entrance openings.

Note: Refer to Orders 1621 and 1637(f) for regulations on required plank and platform sizes.

Ladders

Ladders or other unstable objects should not be placed on top of rolling scaffolds to gain greater height.

Scaffolds on Vehicles

When scaffolds are built on motor trucks or vehicles, they must be rigidly attached to the truck or vehicle. The attachment must be made in a manner that will develop the full strength of the scaffold in resisting an overturning force. Trucks or vehicles that have scaffolds attached to them should have a device in use whenever employees are on the scaffold that prevents swaying or listing of the platforms.

Riding

Employees may ride on rolling scaffolds moved by others below if the following conditions exist:

- The floor or surface is within 3 degrees of level, and free from pits, holes, or obstructions.
- The minimum dimension of the scaffold base, when ready for rolling, is at least 1/2 of the height. Outriggers, if used, should be installed on both sides of staging.
- The wheels are equipped with rubber or similar resilient tires. For towers 50 feet or over, metal wheels may be used.
- The manual force used to move the scaffold should be applied as close to the base as practicable, but not more than five feet (1.5 meters) above the supporting surface of the scaffold.
- Before a scaffold is moved, each employee on the scaffold should be made aware of the move.
- No employee should be on any part of the scaffold which extends outward beyond the wheels, casters, or other supports.

Riding on a Self-Propelled Scaffold

One employee may ride on and move a rolling scaffold while on the platform without assistance from others below provided the following conditions are met:

- All the previous provisions in this section are met, except that the scaffold need not be moved by others below.
- The scaffold platform should not be more than five feet above the floor level.
- The working platform should be no less than 20 inches in width with a maximum one-inch space between platform planks.
- Wheels or casters of rolling scaffolds should be provided with an effective locking device that is used in accordance with this policy or rolling scaffolds should be provided with an effective device that is used to prevent movement of the scaffold when workers are climbing or working on the scaffold.
- The use of power systems such as motor vehicles, add-on motors, or battery powered equipment to propel a rolling scaffold is prohibited.

Training

Employees who ride on rolling scaffolds and employees that assist in moving employees riding on a rolling scaffold should be trained in accordance with the requirements of this Section and with the requirements of the CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Section 1509 to recognize the hazards associated with riding on a rolling scaffold.

HORSE SCAFFOLDS

General

Lumber for construction of scaffolded horses should be of "selected lumber" grade.

Note: The lumber sizes specified are nominal sizes for which standard finished sizes may be substituted. (See Plate B-41, Appendix.)

The members of horses used for scaffolds should be securely nailed or bolted together, and well braced to prevent collapse. The distance between the bottoms of adjacent legs measured perpendicular to the ledger should be approximately 1/2 the horse height. The shimming of horse ledgers to obtain added height is prohibited. Horses or parts which have become weak or defective should not be used.

When horse legs are extended by splicing, the joints must be butt-ended, and scabs not less than 18 inches long and of the same cross section as the leg should be nailed on each side of the joint. As an alternative, new legs of adequate length may be installed, if they completely overlap the original legs and are well secured to them from top to bottom. Vertical extensions should not be used to extend height of metal folding horses if the stability of the horse is impaired.

When arranged in tiers, each horse should be placed directly over the horse in the tier below.

On all scaffolds arranged in tiers, the legs should be nailed down or otherwise secured to the planks to prevent displacement or thrust and each tier should be substantially cross braced.

Railings meeting the requirements of Section 1620 should be installed on all open sides and ends of work platforms 7 1/2 feet or more above the ground, floor, or level underneath.

Light Trades

Horses for light-trade scaffolds should have top horizontal members or ledgers of two-inch by four-inch lumber or material of equivalent strength, if the distance between the leg connections is four feet or less. Ledgers of two-inch by six-inch lumber or material of equivalent strength are required if the distance between the leg connections is greater than four feet but does not exceed 8 feet.

If the distance between leg connections exceeds eight feet, the ledger strength must be increased in proportion to the amount by which the eight-foot distance is exceeded.

The legs of horses for light-trade scaffolds should be one-inch by six-inch lumber or material of equivalent strength for horses not exceeding four feet in height and two-inch by four-inch lumber or material of equivalent strength for horses between four feet and 10 feet in height. Horse scaffolds should not be constructed or arranged more than two tiers or 10 feet in height.

Heavy Trades

Horses for heavy-trade scaffolds should have top horizontal members or ledgers of three-inch by four-inch lumber or material of equivalent strength, if the distance between the leg connections is four feet or less. Ledgers of two-inch by six-inch lumber or material of equivalent strength are required if the distance between the leg connections is greater than four feet but does not exceed eight feet. If the distance between leg connections exceeds eight feet, the ledger strength must be increased in proportion to the amount by which the eight-foot distance is exceeded.

The legs of horses for heavy-trade scaffolds should be one-inch by eight-inch lumber or material of equivalent strength, for horses not exceeding four feet in height, and two-inch by four-inch lumber or material of equivalent strength, for horses between four feet and 10 feet in height.

Collapsible Types

Collapsible horses constructed of well-braced frames hinged at the top may be used in place of the specified rigid horses, if construction is such that equivalent strength is provided.

Adjacent legs of a collapsible horse should be connected near the bottom with securely attached chains, hinged brackets, or other sufficient links to prevent the legs from spreading beyond the distance intended. The height of collapsible horse scaffolds should not exceed six feet.

Platforms

Scaffold platforms should not be supported by single horses having a total height exceeding 10 feet. Tiered horse scaffolds should be limited to 10 feet in height made from no more than two tiers of horses. All horse scaffolds should be substantially constructed and braced both transversely and laterally.

Platforms should be not less than 20 inches wide for light trades, and four feet wide for bricklayers, stonemasons, stone cutters, or concrete workers. Platforms used primarily by bricklayers or stonemasons should extend to within five inches of the building face upon which the work is being performed. A single two-inch by 10-inch plank may be used for light trades work up to a height of four feet.

Planks used for platforms should not be less than two inches by 10 inches, and the distance between supports should not exceed 10 feet for light trades and seven feet six inches for heavy trades.

For horse scaffolds up to a height of 6 feet, platform planks should not be more than two inches apart. Platform planks on higher scaffolds should be laid closely together. Planks should be of such length that they overlap the supports at each end by at least six inches. A plank should not overlap an unsupported end of another plank. Unsupported projecting ends of planks should be limited to an overhang of 18 inches or less.

Douglas fir plywood that is 3/4 inch thick or thicker may be used for platforms if the panels are four feet wide or wider and are supported on cross members at four-foot or closer intervals for light trades and two-foot intervals for heavy trades. Provide standard ladder or other safe, unobstructed means of access to all work platforms.

LADDER-JACK SCAFFOLDS

Ladder-jack scaffolds should not be used when the platform is over 16 feet above the ground. Not more than two employees should be allowed on a scaffold of this type. The ladders should be secured against displacement.

The platform should be at least 14 inches wide consisting of ladder staging, "structural plank" or equivalent, free from damage that affects the strength. The ladders should not be placed over 16 feet center to center, and where the platform consists of a single-dressed 2-inch by 14-inch plank, the spacing should not be greater than 12 feet. Both metal and wood platform planks should overlap the bearing surface by at least 12 inches.

Drop lines of at least 3/4-inch diameter Manila rope or other rope of equivalent diameter and strength should hang from secure overhead anchorages where the working platform is 7 1/2 feet high or more. An independently anchored line should be provided for and used by each employee in accordance with the provisions of Article 24 of the Construction Safety Orders.

All ladders used in connection with ladder jack scaffolds should be Type I, IA, or IAA duty rated ladders and should be designed and constructed in accordance with CAL/OSHA Title 8 Regulations, Subchapter 7 General Industry Safety Orders, Section 3276(c). Job-built ladders should not be used for this purpose.

Note: See CAL/OSHA Title 8 Regulations, Subchapter 7 General Industry Safety Orders, Section 3276(d) for portable ladder types, duty ratings and working loads.

The ladder jack should be so designed and constructed that it will bear on the side rails in addition to the ladder rungs, or if bearing on rungs only, the bearing area should be at least 10 inches on each rung.

BRICKLAYERS' SQUARE SCAFFOLDS

The squares should not exceed five feet in width and five feet in height.

Members should be not less than those specified in the Schedule below:
(See CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Appendix B, Plate B-32, for reference)

Minimum Dimensions for Bricklayers' Square Scaffold Members	
Members	Dimensions
Ledgers or horizontal members	2 x 6 in.
Legs	2 x 6 in.
Braces at corners	1 x 6 in.
Braces diagonally from center frame	1 x 8 in.

The squares should be reinforced on both sides of each corner with 1- x 6-inch gusset pieces. They should also have diagonal braces 1 x 8 inches on both sides running from center to center of each member, or other means to secure equivalent strength and rigidity.

The squares should be set not more than five feet apart for medium duty scaffolds, and not more than 8 feet apart for light duty scaffolds. Bracing, 1 x 8 inches, extending from the bottom of each square to the top of the next square, should be provided on both front and rear sides of the scaffold.

Platform planks should be at least 2- x 10-inch nominal size. The ends of the planks should overlap the ledgers of the squares and each plank should be supported by not less than three squares.

Bricklayers' square scaffolds should not exceed three tiers in height and should be so constructed and arranged that one square should rest directly above the other. The upper tiers should stand on a continuous row of planks laid across the next lower tier and be nailed down or otherwise secured to prevent displacement. Scaffolds should be level and set upon a firm foundation.

For guard-railing requirements see CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Section 1621.

WINDOW JACK SCAFFOLDS

Window jack scaffolds should be used only for the purpose of working at the window opening through which the jack is placed. Window jacks should not be used to support planks placed between one window jack and another or for other elements of scaffolding. Window jack scaffolds should be provided with guardrails unless safety belts and lanyards are provided for and used by employees. Not more than one employee should occupy a window jack scaffold at any one time.

PUMP JACK SCAFFOLDS

Pump jack scaffolds should:

- Be limited to a maximum working load of 500 pounds; and
- Have a Safety Factor of at least four times the maximum intended load.
- The manufactured components should not be loaded more than the manufacturer's recommended limits.

Pump jack brackets, braces, and accessories should be fabricated from metal plates and angles. Each pump jack bracket should have two positive gripping mechanisms to prevent any failure or slippage. The platform bracket should be fully decked, and the planking secured. Planking, or equivalent, should conform with CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Section 1637.

When wood scaffold planks are used as platforms, poles used for pump jacks should not be spaced more than 10 feet center to center. When fabricated platforms are used that fully comply with all other provisions of this Order, pole spacing may exceed 10 feet center to center.

Poles should not exceed 30 feet in height. Poles should be secured to the work wall by rigid triangular bracing, or equivalent, at the bottom, top, and other points as necessary, to provide a maximum vertical spacing of not more than 10 feet between braces. Each brace should be capable of supporting a minimum of 225 pounds tension or compression.

For the pump jack bracket to pass bracing already installed, an extra brace should be used approximately 4 feet above the one to be passed until the original brace is reinstalled.

All poles should bear on mud sill or other adequate firm foundations.

Pole lumber should be two 2 x 4's of Douglas fir, or equivalent, straight-grained, clear, free of cross-grain, shakes, large loose or dead knots, and other defects which might impair strength. When poles are constructed of two continuous lengths, they should be 2 x 4's, spiked together with the seam parallel to the bracket, and with 10d common nails, no more than 12 inches center to center, staggered uniformly from opposite outside edges.

If 2 x 4's are spliced to make up the pole, the splices should be so constructed as to develop the full strength of the member.

Not more than two employees should be permitted at one time upon a pump jack scaffold between any two supports. Pump jack scaffolds should be provided with standard guardrails as described in CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Article 16 but no guardrail is required when safety belts with lanyards are provided for and used by employees.

When a work bench is used at an approximate height of 42 inches, the top guardrail may be eliminated, if the work bench is fully decked, the planking secured, and is capable of withstanding 200 pounds load in any direction. Employees should not be permitted to use a work bench as a scaffold platform.

SUSPENDED SCAFFOLDS - GENERAL

Hoisting machines or winches that are a part of a suspended scaffold, and are used in raising or lowering that scaffold, should be approved. All scaffolds should be fastened or hung to avoid swaying from the building or structure. Window cleaners' anchors should not be used for this purpose. Supporting cables should be vertical for their entire length, unless otherwise designed by a currently registered civil engineer in California. The baskets of single-unit, power-driven suspended scaffolds should not be swayed nor should support cables be fixed to intermediate points to change the original paths of travel.

Design

All scaffold members, including related parts and rigging, should be of adequate strength to support intended loads to which they will be subjected, without exceeding stresses established by factors of safety specified in these Orders; or if no safety factors are given, those generally accepted by the engineering profession.

Ladders should not be used as scaffold platforms, even if a horizontal working surface has been placed over the rungs. Other Orders in this Article call for the use of stage ladders, planking, or specially designed platforms for such service.

Supporting Ropes

Ropes supporting scaffolds should have a factor of safety of at least six. They should be inspected on each job before being used to determine if they are unsafe because of damage, wear, chemical action, or similar defects. The use of repaired wire rope as suspension rope is prohibited.

Manila, or other fiber or synthetic ropes should not be used to support scaffolds upon which workers are using welding or burning equipment of any type, sandblasting equipment, or any chemical substance which may damage the rope by chemical action if splashed or spilled on the

rope. Wire rope is required for the above uses. Further, the wire should be protected against burning or a welding arc to a height of eight feet above the platform with a rubber hose or equivalent protection.

Inspection

Suspended scaffolds that are in service should be inspected by a qualified person daily and tested as frequently as is necessary to provide proper maintenance. Special attention should be given to ropes and other rigging.

Suspended scaffolds should be hung to avoid overlap or possible interference with movement from a scaffold above or below.

When suspended scaffolds are supported by a second wire rope, employees should fasten their lanyards to the work platform trolley line or droplines hanging from secure overhead anchorages between each pair of hangers or falls. One line should be provided for each employee. It should be a continuous rope in good condition and free of imperfections, serious wear, or fraying.

Outrigger beams used as supports for suspended scaffold should be tied back or secured in place and placed in saddles or otherwise positively secured against the possibility of turning or twisting. The attachments on these beams for support of suspended loads should consist of well-anchored L-hooks fitted with 1/2-inch shackle bolts, or equivalent.

The outrigger beams and supporting system should be capable of safely sustaining 4 times the rated load of the platform or hoist whichever is greater.

When a counterweight system is used, the counterweights should consist of solid materials such as steel or concrete and the tiebacks should be at least equivalent in strength to the suspension ropes and anchored securely.

Unless otherwise designed by a currently registered civil engineer in California, each suspended stage or plank-type platform should be supported at two or more places by rigging that receives its load from only that one platform. Thus, two or more suspended scaffolds, suspended stage, or plank type platforms should not be combined into one by bridging the distance between them with planks or similar connecting platforms.

Metal hangers for suspended scaffolds should be made of mild steel or equivalent material, capable of sustaining four times the maximum rated load.

Except where overhead protection is required and which would result in a greater hazard, employees working in single or two-point suspended scaffolds, should be required to use safety belts and lanyards attached to independently anchored droplines.

Where the use of independently anchored drop line is not possible, alternate safety measures should be used.

Railing

All scaffolds or staging referred to in this section suspended more than 7 1/2 feet from the ground or floor below should have a standard guardrail of 2-inch by 4-inch of selected structural grade lumber, free of knots or defects, not less than finished size of 1 7/8 inches by 3 1/2 inches, or of other equally rigid materials of equivalent strength. This railing should be not less than 36 inches nor more than 42 inches above the platform with mid-rails attached at half the distance from the platform floor to the top rail. All wood members should not contain any splices that fail to provide full strength and rigidity to the wood member. When railing is longer than 10 feet between stirrups, it should have a vertical support near the midpoint of the span.

Unattended Scaffolds

When a suspended scaffold is left unattended in an elevated position, it should be securely lashed to the building and be cleared of all tools, buckets, or other moveable materials. When employees on the scaffolds are exposed to the hazards of falling objects, overhead protection not more than 9 feet above the platform should be installed.

Hooks used as a part of rigging for scaffold support should be closed or "moused" (See CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Appendix B, Plate C-4, for reference).

Where a single outrigger beam is used, the steel shackles or clevises with which the wire ropes are attached to the outrigger beams should be placed directly over the hoisting machines.

The free end of the suspension wire ropes should be equipped with proper size thimbles and secured by splicing or other equivalent means. Where applicable, the running ends should be securely attached to the hoisting machines and at least four turns of wire rope should always remain on the drum.

Multi-level platforms and suspended scaffolds with overhead protection should be equipped with additional independent lines equivalent in strength to the suspension ropes to support the units if the primary suspension system fails. These additional independent lines should be tied to a structural member other than the primary suspension member, capable of supporting the resulting suspended load imposed.

Gasoline-powered equipment and hoists should not be located on suspension scaffolds.

Devices whose sole function is to provide emergency escape and rescue should not be used as working platforms. This provision does not preclude the use of systems which are designed to function both as suspension scaffolds and emergency systems.

BRICKLAYERS' OR MASONS' SUSPENDED SCAFFOLDS

Note: Stone setters' adjustable multiple point suspended scaffolds should also be constructed in accordance with this Order. See CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Appendix B, Plate B-26.

Each outrigger should be equal in strength to at least a standard seven-inch, 15.3-pound steel at least 15 feet long. It should not project more than six feet six inches beyond the bearing point, and it should be supported laterally at or near its fulcrum point. Where the overhang exceeds six feet six inches, thrust outs should be composed of stronger beams or multiple beams and be installed under the supervision of a person who can secure a safe installation. Outriggers should be securely fastened to the structure by the equivalent of "U" bolts and anchor plates, washers, and nuts. All beams should be set with their webs vertical, and they should rest on wood bearing blocks. A stop bolt should be placed at the outer end of the outrigger to prevent suspension rope from slipping off.

The platform should be suspended by wire ropes capable of supporting at least six times the intended load, properly secured to the outriggers and to each end of the bolster (putlog), or to hoisting machines. Bolsters not more than 4 1/2 feet long between supports may be of wood, provided they are equal in strength to 4-inch by 6-inch "selected lumber" grade, free from damage that affects the strength. The bolsters and outriggers should be spaced not more than eight feet center to center.

Platform Width

The platform should be not less than four feet wide and made of 2-inch by 10-inch or larger "selected lumber" laid closely together and adequately secured to prevent them from slipping, tipping, or collapsing. The scaffold should be as close to the wall as reasonably possible, but not more than six inches from the wall.

When employees are at work on the scaffold and an overhead hazard exists, overhead protection should be provided on the scaffold, not more than 9 feet above the platform, consisting of 2-inch planking, or material of equivalent strength, laid tight, and extending not less than the width of the scaffold. The scaffold should be capable of sustaining a working load of 50 pounds per square foot and should not be loaded more than that figure.

Exception: When the scaffold is designed for loads more than 50 pounds per square foot by a Civil Engineer currently registered in California.

The use of fiber rope is prohibited. Toe-boards and side screens should be installed in accordance with the applicable Sections of CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Article 16.

SUSPENDED SCAFFOLDS FOR LOADS OF 425 POUNDS OR LESS

Only one employee for each fall or hanger should be allowed on this type of suspended scaffold.

Exception: Single, power-driven units described in CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Section 1667.

Stirrups or slings should be made of wire rope of at least 9,000 pounds breaking strength, or of solid round or square mild steel (reinforcing steel should not be used) not less than 3/4-inch dimension, forged or welded into one piece. Loops in wire rope slings for the use of bolsters should be spliced. The top loop should have a galvanized thimble fastened in place with a clip.

Bolsters should be 2-inch by 4-inch "selected lumber," or stronger material, placed so that the 4-inch sides are vertical. An iron or steel bolt 6 inches long and 3/4 inch in diameter should be fastened through wooden bolsters at right angles to same not nearer than 3 inches to the end to prevent sling from accidentally slipping off the end of bolster.

Scaffold platforms should be at least 14 inches wide. Planks of dressed 2-inch lumber should consist of "structural plank" free from damage affecting its strength. Where platforms are composed of two 2-inch by 10-inch or two 2-inch by 12-inch dressed planks, side by side, they should be firmly cleated together to act as a unit. Maximum platform width should be 36 inches.

The span between hangers or falls should not be more than 10 feet when the planks are composed of two 2-inch by 10-inch planks or more than 12 feet when composed of two 2-inch by 12-inch planks. The span between hangers or falls when being used with patented-type planks should not exceed the manufacturer's specifications. The platform should not extend beyond the hangers more than 18 inches. A bar or other effective means should be securely fastened at each end of the platform to prevent it from slipping off the hanger.

Ladder-Type and Needle Beam-Type Platforms

Platforms placed in service after April 18, 1999, should Comply with the American National Standard (ANSI)Scaffolding-Safety Requirements A10.8-1988, which is hereby incorporated by reference. Platforms placed in service on or before April 17, 1999, should comply with ANSI A10-1977, Safety Requirements for or before April 17, 1999, should comply with ANSI A10.8-1977, Safety Requirements for Scaffolding, which is hereby incorporated by reference.

Light metal-type platforms should be approved for use.

Each employee should be provided with and use personal fall protection in accordance with the requirements of CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Article 24. Lanyards should be securely attached to substantial members of the structure (not scaffold), or to securely rigged lines, which will safely suspend the employee in case of a fall. To keep the lanyard continuously attached, with a minimum of slack, to a fixed structure, the attachment point of the lanyard should be appropriately changed as the work progresses.

Hooks supporting scaffolds or staging should be made of mild steel (reinforcing steel should not be used), free from flaws or other imperfections. Each hook should, if loaded to point of failure, be capable of supporting a load 4 times that to which it will be subjected in service. The expected load per hook in service should include its share (normally half) of the total scaffold and rigging weight plus the total weight of employees and movable tools or equipment, which should never be considered as less than 500 pounds. All hooks should be provided with rings for tie-back service. The ring should be fitted through a hole in the hook not more than 5 inches from the hook point. Hooks should be kept clean.

Each hook should be tied back to a substantial object on the roof with at least a 3/4-inch diameter Manila rope or equivalent.

Where the rope blocks supporting scaffolds or boatswains' chairs are not attached directly to hooks, the extension from the top block to the support should be wire rope at least 1/2-inch in diameter, or equivalent, and sufficient protection should be provided to prevent this wire rope from chafing. The sheaves of all blocks, consisting of at least one double and one single block, should fit the size and type of rope used.

SUSPENDED SCAFFOLDS FOR LOADS BETWEEN 425 AND 1000 POUNDS

Suspended scaffolds providing all the safety features required by Orders 1658 and 1660 may be used to support as much as 1,000 pounds if the platform and other components are designed and constructed to carry such a live load without exceeding allowable working stresses. Suspended scaffolds in this load range which are used by cement masons should have platforms at least 24 inches wide.

BOATSWAINS' CHAIRS

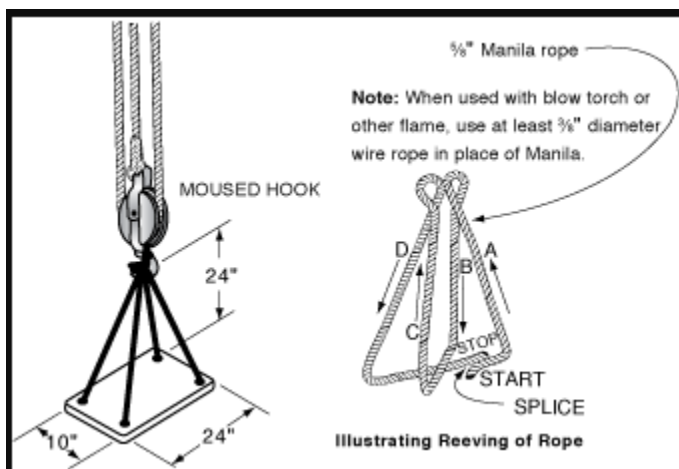
Persons should be trained and/or experienced in the use of boatswains' chairs before being permitted to use such equipment. When a boatswains' chair is suspended over an area traversed by employees, pedestrians or vehicular traffic, the ground area immediately below should be effectively blocked by barricades, or an attendant should be stationed to keep the area clear. Warnings signs should also be posted below.

An employee using a boatswains' chair should wear a safety belt with attached lanyard secured to a separate drop line or other means affording equivalent safety. Rope attachment to a block should be by a thimble and splice. Hooks should be provided with a means to prevent accidental disengagement, or a shackle should be used in place of a hook.

Each double block of luff (or watch) tackle should be branded or otherwise clearly marked to indicate the fully extended length in feet from block to block. A knot or splice should be made in the end of the line to prevent it from running through the block. Thimbles should not be used where the chair connects to the hook. Tackle should consist of rope equivalent in strength to at least 5/8-inch rope of first grade Manila as well as properly sized blocks.

The chair should be suspended from its four corners by means of rope slings. It should have a seat not less than 24 inches long by 10 inches wide and, if of soft wood, two inches thick (1 1/8 inches if of oak or ash). It should be reinforced across the full width by cleats securely fastened to each end. The seat may be constructed of material other than wood, provided the material used is equivalent in strength to two inches of soft wood or 1 1/8 inches of oak or ash. If constructed of material of equivalent strength, cleats across the full width of the seat should be provided unless structural analysis indicates that they are not necessary. Other design and construction of equivalent safety and strength may be substituted.

Boatswains' chairs with fiber rope slings should not be used to support an employee with welding, burning torch, sandblasting equipment, or chemicals harmful to fiber rope. In such cases, the slings should be at least 3/8-inch wire rope, or equivalent. Further, the wire rope should be protected against burning or welding arc by covering with a rubber hose or other equally effective means.



Fiber rope seat slings should be of 5/8-inch Manila rope, or equivalent, reeved through the four seat holes to cross each other on the underside of the seat. Boatswains' chairs, their supports and all accessories should be capable of supporting, without failure, at least 4 times the maximum load. Parapet or cornice hooks or clamps used to support chairs should be provided with rings for tie-back use.

FLOAT SCAFFOLDS

Scaffolds of this type are not to support more than three employees and light tools, such as those needed for riveting, bolting, and welding. They should be constructed as follows, unless substitute designs and materials provide equivalent strength, stability, and safety (See CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Appendix B, Plate B-38, for reference). The platform should be not less than three feet wide and scaffold long, made of 3/4-inch plywood, equivalent to Douglas Fir Plywood Association Grade A-A Exterior.

Under the platform, there should be two supporting bearers made from 2-inch by 4-inch "selected lumber," or better. They should be free of knots or other flaws and project six inches beyond the platform on both sides. The ends of the platform should extend about six inches beyond the outer edges of the bearers. Each bearer should be fastened to the platform by at least two 1/2 inch-diameter bolts.

An edging of wood not less than 3/4 inch by 1 1/2 inches, or equivalent, should be placed around all sides of the platform to prevent tools from rolling off.

Supporting ropes should be 1-inch-diameter Manila rope, or equivalent, free from deterioration, chemical damage, flaws, or other imperfections. Rope connections should be such that the platform cannot shift or slip. If two ropes are used with each float, they should be arranged to provide four ends which are to be securely fastened to an overhead support. Each of the two supporting ropes should be hitched around one end of a bearer and pass under the platforms to the other end of the bearer where it is hitched again, leaving sufficient rope at each end for the supporting ties.

Each employee working from a float scaffold should be provided with and use fall protection in accordance with the requirements of CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Article 24.

NEEDLE-BEAM SCAFFOLDS

Needle-beam scaffolds should be designed with a factor of safety of at least four, to support the loads to be imposed, but in no case should the strength or quality be less than required by the following specifications. (See CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Appendix B, Plate B-37, for reference)

Wood needle beams should be not less than four inches by six inches in cross section if the distance between supports does not exceed 10 feet. Larger beams are required for spans more than 10 feet, and in all cases, they should be placed with the greater dimension vertical. They should be "selected lumber," or equivalent, straight grained, and free of knots or other defects. Other materials or types may be used if of equivalent strength and rigidity.

Wood needle beams should be made from one piece of material without splices or laminated joints. Laminated wood beams, manufactured of good quality, glued members, subjected to proper bonding pressure, may along with other materials be used if of equivalent strength.

Wood needle beams should not be painted in such a manner as to hide the grain structure. They may be coated with linseed oil or other transparent coating.

Ropes used for the support of needle beams should be not less than 1 1/4-inch diameter Manila rope, or equivalent, free from flaws, deterioration, chemical damage, or other imperfections. C-clamps or open hooks should not be used for support of needle beams or needle-beam ropes.

The ropes should be attached to the needle beams by a scaffold hitch, or some other equally effective method, at a point not less than one foot from the end of the beam. Ropes should be so secured to the beams or girders as to prevent tipping or slipping of either the beam or the scaffold. When the rope attachment is within two feet of beam end, bolt or cleat should be attached or other means taken to prevent rope from coming off beam.

Planks making up platforms on needle beams should not be less than two inches by 10 inches and not have more than a 10-foot span. All planks should be secured by sufficient cleats or drop bolts to prevent slipping, tipping, or collapsing, with special attention for those planks that are on the beam overhang outside the rope attachment. When planks are in an inclined position of five percent or more, they should be provided with cleats on the working surface at least 1 3/4 inches by two inches in cross section, spaced not more than 16 inches apart.

Platforms used for riveting or other work requiring similar tools should be not less than 36 inches wide when used on exterior of structures, and not less than 30 inches wide for interior work.

Needle-beam platforms that are used for rivet heaters should be not less than 6 feet wide and 10 feet long, with planks laid close together, and some provision should be made to prevent materials or tools from rolling off edges. Where the supports for needle beams are fixed members rather than suspension ropes, positive means should be taken to prevent the beams from turning or rotating to a position where the strength is reduced.

All unattached tools, bolts, and nuts used on needle beam scaffolds should be kept in sufficient containers, properly secured.

If one end of a needle beam scaffold platform rests on a permanent structural section, all applicable sections of this policy and CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Article 23 should be observed. Each employee working on a needle beam scaffold should be provided with and use personal fall protection in accordance with the requirements of

CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Article 24 or by a safety net rigged as provided in CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Section 1671.

INTERIOR HUNG SCAFFOLDS

An interior hung scaffold should be hung or suspended from the roof structure or ceiling beams. The suspension rope should be wrapped at least twice around the supporting members and twice around the ledgers of the scaffold, with each end of the wire rope secured by at least three standard wire-rope clips properly installed.

For hanging wood scaffolds, the following minimum nominal size material should be used:

- Supporting ledgers 2 x 10 inches on edge
- Planking 2 x 10 inches, with maximum span seven feet for heavy duty and 10 feet for light duty or medium duty.

Steel tube and coupler members may be used for hanging scaffolds with both types of scaffolds designed to sustain a uniform distributed working load up to heavy duty scaffold loads with a safety factor of four.

When a hanging scaffold is supported by means of wire rope, it should be attached with a thimble to a 1/2-inch shackle or bolt of not less than 1/2-inch diameter. The shackle should be secured by means of a stop bolt 4 inches from the end of the beam or ledger. Wire rope should not be wrapped around either member.

STAGING SUPPORTED BY CATENARY OR HORIZONTAL WIRE ROPES

Staging supported by wire rope should have hook-shaped stops on each end of staging members to prevent them from slipping off the wire ropes. These hooks should be so placed that they will also tend to prevent the staging members from falling if one wire rope breaks. Planks should be at least 14 inches wide and consist of "structural plank" or the equivalent.

Wire ropes should not be tightened to the extent that the application of a scaffold load may overstress them.

Note: It is suggested that a hanger or set of falls be used every 50 feet to pick up the sag of the wire rope. Cables should be continuous without splices between anchors.

A safety factor of at least 6 should be used in determining the size of wire rope to be used.

The wire rope manufacturer's recommendations with respect to the number and spacing of clamps should be followed. The clamps should be placed with the "U" on the dead end. See Plate C-2, Appendix.

Standard guardrail should be installed to protect all open sides and ends of staging or safety nets should be installed.

In lieu of guardrails or safety nets, safety belts and lanyards should be used, provided the lanyard is tied off to the structure or to a separate cable for this purpose. (See CAL/OSHA Title 8 Regulations, Subchapter 4 Construction Safety Orders, Article 24 for reference.)

A safe means of access and egress should always be provided to the stage.

SUSPENDED POWER-DRIVEN SCAFFOLDS

Note: For additional details relating to exterior building maintenance and window cleaning operations see CAL/OSHA Title 8 Regulations, Subchapter 7 General Industry Safety Orders, Articles 5 and 6 for reference.

Powered scaffold platforms, not required to be completely railed, such as those supported by two or more hoisting units, should at least have a protective railing, or equivalent, on all open sides and ends. The railing should be not less than 36 inches nor more than 42 inches high, and it should be capable of supporting a 200-pound concentrated load without permanent deflection.

Loading

The total load on any 1 power unit should not exceed the rated working capacity. If a unit is to support 500 pounds or more, special attention should be given in advance to eliminate the possibility that the staging, hooks, shackles, parapet walls, and other load-carrying items will be overstressed. The total allowable load on stage ladders of the type described in Section 1660(f) should not exceed 425 pounds.

Wire Rope

Powered scaffolds should be supported by wire rope providing a safety factor of six or more. It should be 6 by 19 or 6 by 37 hemp center construction or better, not less than 5/16 inch in diameter, or with a breaking strength of not less than 6,000 pounds.

Platforms should not be less than 20 inches wide and should be provided with a guardrail as specified in Section 1658(o). Platforms should be designed to support the loads to be imposed without exceeding allowable working stresses established by recognized engineering practice.

Safety Devices for Electric-Powered Unit

Wiring - All wiring including supply cords should conform to the Electrical Safety Orders.

Electrical Devices - All electrical devices, such as control switches, should conform to the Electrical Safety Orders.

Load Release -A hand-operated release mechanism to allow unit to descend faster than normal speed is prohibited.

Safety Devices for Air-Powered Unit

Control Valve - Control valve should be a nonlocking dead-man-control type. A shutoff valve should be installed ahead of the control valve for the purpose of shutting off air when employees leave the stage.

Load Release - A hand-operated release mechanism to allow unit to descend faster than normal speed is prohibited.

TRAINING

Training should be provided to all employees regarding hazards by Qualified Persons in the subject matter prior to initial assignment.

Training will address:

- Fall Protection
- Electrical Safety
- Falling Object Protection
- Scaffold Use
- Load Capacity

Retraining

Retraining is required when any of the following situations occur:

- Where changes at the worksite present a hazard about which an employee has not been previously trained.
- Where changes in the types of scaffolds, fall protection, falling object protection, or other equipment present a hazard about which an employee has not been previously trained.
- Where inadequacies in an affected employee's work involving scaffolds indicate that the employee has not retained the requisite proficiency.

DEFINITIONS

Brace - A tie that holds one scaffold member in a fixed position with respect to another member. Brace also means a rigid type of connection holding a scaffold to a building or structure.

Coupler - A device for locking together the component tubes of a tube and coupler scaffold.

Harness - A design of straps which is secured about the employee in a manner to distribute the arresting forces over at least the thighs, shoulders, and pelvis, with provisions for attaching a lanyard, lifeline, or deceleration device.

Hoist - A mechanical device to raise or lower a suspended scaffold. It can be mechanically powered or manually operated.

Maximum Intended Load - The total load of all employees, equipment, tool, materials, transmitted, wind, and other loads reasonably anticipated to be applied to a scaffold or scaffold component at any one time.

Mechanically Powered Hoist - A hoist which is powered by other than human energy.

Outriggers - The structural member of a supported scaffold used to increase the base width of a scaffold to provide greater stability for the scaffold.

Platform - The horizontal working surface of a scaffold.

Safety Belt - A strap with means for securing about the waist or body and for attaching to a lanyard, lifeline, or deceleration device.

Scaffold - Any temporary elevated or suspended platform and its supporting structure used for supporting employees or materials or both, except this term does not include crane or derrick suspended personnel platforms.

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



Cirks Construction Inc.

Responsible Safety Person:
Devon Molitor
Corporate Safety Director



Cirks Construction Inc.

Responsible Safety Person:
Devon Molitor
Corporate Safety Director

Short Service Employee (When Applicable / Contractually Mandated)

PURPOSE

The purpose of this document is to outline procedures for Short Service Employees of **Cirks Construction Inc.**; hereafter referred to as "CCI." **This program shall be implemented when mandated by contract or policy.** This program is intended to help new employees, whether experienced or inexperienced, remain safe and on the job.

RESPONSIBILITIES

Supervisor

The responsibilities of Supervisors in the Short Service Employee Program shall:

- Know which jobs and crews are using Short Service Employees
- Ensure Short Service Employees are appropriately identified per this plan
- Complete and communicate DRA to affected personnel upon initial assignment and when the operation changes
- Ensure Short Service Employee is gaining the necessary knowledge and skills in the job tasks
- Follow all safety rules and company policies

Short Service Employee

The responsibilities of the Short Service Employee are to:

- Be willing to watch and listen to the Supervisor
- Learn how to complete and execute DRA
- Stop and report unsafe conditions immediately utilizing the KDC Incident and Injury Protocol procedures.
- Participate in safety meetings
- Follow all safety rules and company policies

SCOPE

This program shall be implemented when mandated by contract or policy. It is important to ensure that newly placed employees work under the direction of experienced personnel. If applicable any subcontractors hired by CCI must adhere to CCI's policies and procedures regarding Short Service Employees (SSEs). SSEs must be monitored for safety performance and adherence to safety policies and procedures.

GENERAL REQUIREMENTS

Short Service Employees should make up no more than 50% of a single crew at one time, and a crew of 5 employees or less should include no more than one Short Service Employee at a time. This program applies to all personnel, employees and sub-contractors performing work on behalf of CCI.

A Short Service Employee should be under this program for at least six (6) months and until the SSE demonstrates the knowledge and skills necessary to perform their tasks safely, as an employee is generally considered a "Short Service Employee" if he/she has less than 6 months' experience with his/her present employer, or in his/her present role.

A Short Service Employee may not work alone and a work crew of less than 5 employees may not have more than one Short Service Employee.

Supervisor must not allow SSEs to work alone.

NOTIFICATION

Prior to starting work, the contractor shall notify the Contract Representative if Short Service Employees are present on work crews.

ORIENTATION

Responsible Safety Person will provide a company-approved orientation. The orientation will include a Job Orientation Checklist with each newly hired employee.

Each SSE will be provided orientation specifically based on job position and job-related topics prior to performing job tasks.

Each SSE will be taught how to access company policies, standards, and procedures. Satisfactory completion of the orientation must be signed and dated by the employee.

IDENTIFICATION SYSTEMS

It is important for supervisors, co-workers, and project managers to recognize a Short Service Employee; therefore, an identification system is developed for this purpose. The identification system is a means of communicating to the workforce that the Short Service Employee is in a transitional period. It will not be a designation of in-experience or used to mark an employee as having lower skill sets.

The SSE will be identified by a vest, colored hardhat, decal or high visibility piece of clothing or PPE that prominently identifies the employee as a SSE employee. The specific method of identification will be communicated to the Contract Representative on each worksite.

A mentoring system shall be implemented to provide guidance to Short Service Employees and assist with their development. A mentor may only be assigned to one crew that includes Short Service Employees, and he/she must remain on site with them.

The Supervisor will provide supervision and not allow the SSE to perform any task in which they have not been properly trained. The Supervisor will ensure that the SSE understands the task to be performed and the associated hazards. The Supervisor shall remove the decals and other identifiers upon expiration of the SSE term, and after verifying that the SSE exhibits a knowledge and skill level to perform the job tasks assigned.

Subcontractors must manage their Short Service Employees in accordance with the requirements of the Short Service Employee program.

DOCUMENTATION

The progress of the Short Service Employee Program from start to completion should be documented, and may include requirements such as: receiving the required safety orientation, required safety training, SSE's ability to do job required, SSE use tools safely, and is able to identify the hazards at the work site, etc.

SSE Assessment:

- Management should review the effectiveness and quality of the Short Service Employee Program at least annually.
- SSE Orientation and Training documentation should be audited for accuracy, timeliness, and completeness.
- Onsite inspections should be conducted to ensure that supervisors, mentors, and Short Service Employees are adhering to the SSE Program.
- The number of incidents involving new employees should be measured, compared to the general workforce, and evaluated for trends or performance variations.
- Management should ensure that all program deficiencies are promptly corrected and documented.

TRAINING

Management will ensure that each SSE is properly trained per federal, state, industry, company, and operator requirements before starting work when:

- The employee is hired
- The employee is appointed a new job assignment; and

- The employee is exposed to new substances, processes, procedures, equipment, etc. that represent a new hazard to the employee.

The Supervisor will ensure that each SSE is properly trained in:

- All foreseeable hazard(s) present in the workplace
- Policies, procedures, processes, and PPE utilized to control these hazards and prevent illnesses, injuries, property damage and/or environmental incidents

Silica Management & Exposure Control Plan

POLICY

This written exposure control plan will be evaluated at least once per year and as necessary. Situations where reevaluation may be necessary include regulatory updates, changes in equipment, and exposure incidents.

PURPOSE

The purpose of this document is to outline the Silica safety policy for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

RESPONSIBILITIES

CCI shall:

- Ensure that the materials (e.g., tools, equipment, personal protective equipment) and other resources (i.e., worker training materials) required to fully implement and maintain this exposure control plan (ECP) are readily available where and when they are required.
- Ensure the need for a Silica exposure control plan is identified through the project site specific Daily Risk Assessment (DRA). Once identified as a risk per the DRA, the Silica Exposure Management Plan (SEMP) shall be completed.
- Complete DRA for each project, which outlines in detail the work methods and practices that will be followed on each site. Considerations will include:
 - Availability and delivery of all required tools/equipment
 - Scope and nature of grinding work to be conducted
 - Control methods to be used
 - Level of respiratory protection required
- The DRA and ECP for each project will outline in detail the work methods and practices that will be followed on each site. Considerations will include:
 - Availability and delivery of all required tools/equipment
 - Scope and nature of grinding work to be conducted
 - Control methods to be used
 - Level of respiratory protection required
 - Coordination plan

CCI will conduct annual review of the effectiveness of the ECP. This would include a review of the available dust-control technologies to ensure these are selected and used when practical.

- Initiating sampling of worker exposure to concrete dust when there are non-standard work practices for which the control methods to be used have not been proven to be adequately protective
- Ensuring that all required tools, equipment, and personal protective equipment are readily available and used as required by the ECP
- Ensuring supervisors and workers are educated and trained to an acceptable level of competency
- Maintaining records of training, fit-test results, crew talks, and inspections (equipment, PPE, work methods/practices)
- Coordinating the work with the prime contractor and other employers to ensure a safe work environment

Supervisor

- Obtaining a copy of the SEMP from the subcontractor and making it available at the worksite
- Well self-performing, maintain a copy of CCI's ECP, and making it available at the worksite
- Selecting, implementing, and documenting the appropriate site-specific control measures
- Providing adequate instruction to workers on the hazards of working with silica-containing materials (e.g., concrete) and on the precautions specified in the job-specific plan covering hazards at the location
- Ensuring that workers are using the proper respirators and have been fit-tested, and that the results are recorded
- Directing the work in a manner that ensures the risk to workers is minimized and adequately controlled
- Communicating with the prime contractor and other sub-contractors to ensure a safe work environment

Employees

- Knowing the hazards of silica dust exposure
- Using the assigned protective equipment in an effective and safe manner
- Be able to communicate the expectations and characteristics of work tasks and their associated hazards
- Possess knowledge and skills in the job tasks assigned
- Adopt a positive safety attitude, avoid criticism, and strive to build confidence and self-esteem in the SSE
- Keep abreast of new equipment in their field of expertise
- Refrain from taking shortcuts and doing anything else that jeopardizes health or safety
- Demonstrate a positive work ethic at all times

- Follow all company policies and procedures
- Setting up the operation in accordance with the site-specific plan
- Following established work procedures as directed by the supervisor
- Reporting any unsafe conditions or acts to the supervisor
- Knowing how and when to report exposure incidents

HEALTH HAZARDS

Crystalline silica dust can cause a disabling, sometimes fatal disease called silicosis. The fine particles are deposited in the lungs, causing thickening and scarring of the lung tissue. The scar tissue restricts the lungs' ability to extract oxygen from the air. This damage is permanent, but symptoms of the disease may not appear for many years.

A worker may develop any of three types of silicosis, depending on the concentrations of silica dust and the duration of exposure:

- Chronic silicosis—develops after 10 or more years of exposure to crystalline silica at relatively low concentrations
- Accelerated silicosis—develops 5 to 10 years after initial exposure to crystalline silica at high concentrations
- Acute silicosis—develops within a few weeks, or 4 to 5 years, after exposure to very high concentrations of crystalline silica
- Exposure to silica has been shown to cause silicosis, lung cancer, pulmonary tuberculosis and other airway diseases.

Initially, workers with silicosis may have no symptoms; however, as the disease progresses, a worker may experience:

- Shortness of breath
- Severe cough
- Weakness

These symptoms can worsen over time and lead to death.

Exposure to silica has also been linked to other diseases, including bronchitis, tuberculosis, and lung cancer.

PERMISSIBLE EXPOSURE LIMIT (PEL)

CCI will ensure that no employee is exposed to an airborne concentration of respirable crystalline silica in excess of 50 µg/m³, calculated as an 8-hour TWA.

EXPOSURE ASSESSMENT

CCI will assess the exposure of each employee who is or is expected to be exposed to respirable crystalline silica at or above the action level (8-hour TWA of $25\mu\text{g}/\text{m}^3$) This assessment shall be performed by monitoring employees individually or taking a representative sample from employees. [1910.1053\(d\)](#).

REGULATED AREAS

CCI shall establish regulated areas wherever an employee's exposure to airborne concentrations of respirable crystalline silica is, or can reasonably be expected to be, in excess of the PEL.

ABRASIVE BLASTING

CCI will comply with other OSHA standards, when applicable, such as [29 CFR 1926.57](#) (Ventilation), where abrasive blasting is conducted using crystalline silica-containing blasting agents, or where abrasive blasting is conducted on substrates that contain crystalline silica.

SPECIFIED EXPOSURE CONTROL METHODS

CCI will 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.

CCI will 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.

Effective engineering controls such as HEPA vacuum attachments and wetting methods, which control silica dust at its source. These controls have been proven to reduce airborne dust levels significantly when selected and operated in accordance with best practices.

CCI will reduce or eliminate worker exposure to silica dust by selecting a combination of the following controls listed in order of preference:

- Elimination and substitution
- Engineering
- Administrative
- Personal protective equipment

- During the project planning phase, CCI will advocate for the use of methods that reduce the need for cutting, grinding, or drilling of concrete surfaces (e.g., formwork planning).
- Whenever possible, CCI will schedule work when concrete is still wet, because we know that much less dust is released at that time.

CONTROL OF DUST

Our dust control systems may employ three well-established techniques:

- Local exhaust ventilation (LEV)
- Wet dust suppression (WDS)
- Restricting or isolating the work activity with barriers or full enclosures (this may be the only option where LEV or WDS is not practical or effective)

When LEV is used in our work, we will employ the following systems and safe work practices:

- Vacuum attachment systems to capture and control the dust at its source whenever possible.
- Dust control systems (used regularly and well maintained).
- Grinding wheels operated at the manufacturers' recommended rpm (operating in excess of this can generate significantly higher airborne dust levels).
- Retrofit shrouds or exhaust cowlings for corner grinding; use manufacturer-specified rpm speeds and a well-maintained HEPA vacuum.
- Diamond stone grinders, which allow for the use of a more efficient suction casing on the grinder, whenever practicable.
- HEPA or good quality, multi-stage vacuum units approved for use with silica dust. [The vacuum units should be capable of creating a target airflow of at least 70 cfm. This should achieve a face velocity at the shroud of about 1.3 m/s (260 fpm)—the higher the face velocity, the more dust captured at source.]
- Work planning, so that concrete grinding can be completed when wet (dust release can be significantly reduced).
- Good housekeeping work practices (for example, use vacuums with high-efficiency particulate air (HEPA) filters, or use wet sweeping).
- Train workers and supervisors on how to properly use and maintain the equipment.

WATER SPRAY SYSTEMS

When water spray systems are used in our work, we will follow these safe work practices:

- Pneumatic grinders will be used instead of electric-powered grinders if water is the method of control.
- Pressure and flow rate of water will be controlled in accordance with tool manufacturers' specifications (for cutting saws, a minimum of 0.5 liters of water per minute [0.13 gallons/minute] should be used).

- When sawing concrete or masonry, we will use only saws that provide water to the blade.
- Wet slurry will be cleaned from work surfaces when the work is completed, using a wet vacuum or wet sweeping.

BARRIERS

When barriers or enclosures are used in our work, we will follow these safe work practices:

- The site foreman will determine the type and design of barrier or enclosure (based on the work activity and the work area) and ensure it is constructed in accordance with the work plan.
- Barriers may be simple hazard-flagging ribbon or more restrictive hoarding.
- We will use commercially available negative air units when constructing a full enclosure.

ADMINISTRATIVE CONTROLS AND SAFE WORK PRACTICES

We will follow these safe work practices:

- Exposure control plans and the site risk assessment/work plan will be submitted to the general contractor prior to the start of work.
- We will establish procedures for housekeeping, restricting work areas, personal hygiene, worker training, and supervision.
- As part of our project planning, we will assess when silica dust may be generated and plan ahead to eliminate or control the dust at the source. We recognize that awareness and planning are key factors in the prevention of silicosis.
- Warning signs will be posted to warn workers about the hazards of silica and to specify any protective equipment required (for example, respirators).

A written exposure control plan will be available for examination and copying by each employee. Copies will be available electronically or physically, depending on location needs and requirements.

ENGINEERING CONTROLS

Engineering and work practice controls must be used to reduce employee exposure to respirable crystalline silica to the lowest feasible level and maintain it at that level when required.

Engineering controls such as ventilation or wet methods must be used to control silica-containing dusts.

RESTRICTED ACCESS TO WORK AREAS

CCI will execute the following procedure(s) 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. Schedule work so only required employees, who are directly engaged in the task, are in the affected work area.

Specified Exposure Control Methods When Working with Materials Containing Crystalline Silica

For each employee engaged in a task identified on the following table (Table 1), CCI will fully and properly implement the engineering controls, work practices, and respiratory protection specified for the task outlined below.

Table 1

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
1	Stationary masonry saws	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	APF 10 APF 10
2b	Handheld power saws (any blade diameter) when used indoors or in an enclosed area	<ul style="list-style-type: none"> 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. 	APF 10	APF 10
3	Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less) for tasks performed outdoors only	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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. 	APF 10	APF 10

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
5	Drivable saws for tasks performed outdoors only	<ul style="list-style-type: none"> Use saw equipped with integrated water delivery system that continuously feeds water to the blade. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. 	None	None
6	Rig-mounted core saws or drills	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> Use drill equipped with commercially available shroud or cowl 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	<ul style="list-style-type: none"> Use shroud around drill bit with a dust collection system. Dust collector must have a filter with 99% or greater efficiency and a filter cleaning mechanism. Use a HEPA-filtered vacuum when cleaning holes. 	APF 10	APF 10
9a	Vehicle-mounted drilling rigs for rock and concrete	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact. 	None	APF 10

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
10b	Jackhammers and handheld powered chipping tools when used indoors or in an enclosed area	<ul style="list-style-type: none"> Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact. 	APF 10	APF 10
10c	Jackhammers and handheld powered chipping tools when used outdoors	<ul style="list-style-type: none"> 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. 	None	APF 10
10d	Jackhammers and handheld powered chipping tools when used indoors or in an enclosed area	<ul style="list-style-type: none"> 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. 	APF 10	APF 10
11	Handheld grinders for mortar removal (i.e., tuckpointing)	<ul style="list-style-type: none"> Use grinder equipped with commercially available shroud and dust collection system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism. 	APF 10	APF 25
12a	Handheld grinders for uses other than mortar removal for tasks performed outdoors only	<ul style="list-style-type: none"> 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

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
12b	Handheld grinders for uses other than mortar removal when used outdoors	<ul style="list-style-type: none"> 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	APF 10
12c	Handheld grinders for uses other than mortar removal when used indoors or in an enclosed area	<ul style="list-style-type: none"> Use grinder equipped with commercially available shroud and dust collection system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism. 	None	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
13a	Walk-behind milling machines and floor grinders	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
14	Small drivable milling machines (less than half-lane)	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Use a machine equipped with supplemental water spray designed to suppress dust. Water must be combined with a surfactant. Operate and maintain machine to minimize dust emissions. 	None	None
16	Crushing machines	<ul style="list-style-type: none"> 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

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab. 	None	None

PERSONAL PROTECTIVE EQUIPMENT (PPE)

CCI will provide employees in a restricted area with protective clothing that protects other clothing worn by the employees from silica contamination. Personal protective equipment such as gloves, coveralls and eye protection should be used to control silica exposures.

RESPIRATORY PROTECTION

CCI shall ensure each employee has an appropriate respirator. Respirators will be provided to employees who are exposed to respirable crystalline silica. Where respiratory protection is required by this section, CCI shall provide each employee with an appropriate respirator that complies with the requirements of [29 CFR 1926.1153\(c\)](#).

If an employee is performing a task listed in Table 1 of [29 CFR 1926.1153\(c\)](#) that does not require the use of a respirator then they are not required. All other tasks not covered by Table 1 must be accounted for by providing respirators if necessary.

Respiratory protection is required:

- Where exposures exceed those specified by Table 1 of this document
- For tasks not listed in Table 1, or where CCI does not fully and properly implement the engineering controls, work practices, and respiratory protection described in Table 1 of this document.
- 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 CCI has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce exposures to or below the PEL.

Respirators must be selected based upon measured exposure levels and the assigned protection factor of respirators.

- All workers who wear respirators will do so in adherence with our respirator program.
- Respiratory protection will be selected based upon the site-specific risk assessment.
- Only NIOSH-approved respirators will be used.
- Workers who wear respirators will be clean-shaven. Filtering face piece respirators give little or no protection to workers with beards, and even a minor growth of stubble can severely reduce the effectiveness of respiratory protection.
- All workers who wear respirators will be fit-tested.

- Workers will be properly trained in the use of respirators, and a high standard of supervision, inspection, and maintenance will be followed.

MEDICAL SURVEILLANCE

CCI will make medical surveillance available at no cost to the employee, and at a reasonable time and place, for each employee who will be required under this section to use a respirator for 30 or more days per year.

CCI will ensure that all medical examinations and procedures required by this section are performed by a PLHCP.

Initial Examination

The employer shall 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 this section within the last three years.

The examination shall consist of:

- A medical work history, with emphasis on:
 - Past, present, and anticipated exposure to respirable crystalline silica, dust, and other agents affecting the respiratory system
 - Any history of respiratory system dysfunction, including signs and symptoms of respiratory disease (e.g., shortness of breath, cough, wheezing); history of tuberculosis; and
 - Smoking status and history
- A physical examination with special emphasis on the respiratory system
- A chest x-ray (a single posteroanterior radiographic projection or radiograph of the chest at full inspiration recorded on either film (no less than 14x17 inches and no more than 16x17 inches) or digital radiography systems), interpreted and classified according to the International Labour Office (ILO) International Classification of Radiographs of Pneumoconiosis by a NIOSH-certified B Reader
- A pulmonary function test to include forced vital capacity (FVC) and forced expiratory volume in one second (FEV₁) and FEV₁/FVC ratio, administered by a spirometry technician with a current certificate from a NIOSH-approved spirometry course
 - Testing for latent tuberculosis infection; and
 - Any other tests deemed appropriate by the PLHCP.

PERIODIC EXAMINATIONS

CCI will make available medical examinations that include the procedures at least every three years, or more frequently if recommended by the PLHCP.

INFORMATION PROVIDED TO THE PLHCP

CCI will ensure that the examining PLHCP has a copy of this standard, and shall provide the PLHCP with 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.

CCI 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.

CCI will obtain a written opinion from the specialist within 30 days of the medical examination.

COMMUNICATION OF RESPIRABLE CRYSTALLINE SILICA HAZARDS TO EMPLOYEES

CCI will include respirable crystalline silica in the program established to comply with the hazard communication standard (HCS) ([29 CFR 1910.1200](#)).

CCI will ensure that each employee has access to labels on containers of crystalline silica and safety data sheets, and is trained in accordance with the provisions of HCS. CCI will ensure that at least the following hazards are addressed:

- Cancer,
- Lung effects
- Immune system effects, and;
- Kidney effects.

EMPLOYEE INFORMATION AND TRAINING

CCI will ensure that each employee covered by this section 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 CCI has implemented to protect employees from exposure to respirable crystalline silica, including engineering controls, work practices, and respirators to be used
- The contents of this section, and the identity of the competent person
- The purpose and a description of the medical surveillance program
- The employer shall make a copy of this section readily available without cost to each employee covered by this section.

PROTECTIVE CLOTHING

Workers will wear protective clothing as specified in our task-specific safe work procedures to prevent contamination of worker clothing. Workers will not use compressed air to clean themselves, their clothing, or their equipment.

HOUSEKEEPING MEASURES

CCI shall ensure a description of housekeeping measures shall be used to limit exposure to respirable crystalline silica. Some examples of these measures include:

- HEPA-filtered vacuuming
- Wet sweeping
- Wetting, and other techniques used to limit the amount of respirable crystalline silica exposure during housekeeping activities.

Compressed air cannot be used to clean clothing or surfaces were doing so could contribute to employee exposure to respirable crystalline silica.

TRAINING

A training program will be provided for all employees who are exposed to action level respirable crystalline silica (8-hour TWA of $25\mu\text{g}/\text{m}^3$). The training will ensure that employees covered by the written exposure control plan can demonstrate knowledge and understanding of the health hazards associated with respirable crystalline silica, the specific tasks in the workplace that could result in exposure to respirable crystalline silica, the specific measures taken to protect employees from exposure to crystalline silica, the contents of the respirable crystalline silica rule, and the purpose of the medical surveillance program.

Training is required prior to using silica-containing materials or working in an environment known to contain airborne concentrations of Silica, and periodic refresher training is also required. Refresher training is done each quarter and is documented. Documentation is kept on file for all employees.

CCI will ensure that a worker who may be exposed to silica:

- Is informed of the health hazards associated with exposure to that substance,
- Is informed of measurements made of airborne concentrations of harmful substances at the work site, and
- Is trained in procedures developed by the employer to minimize the worker's exposure.

CCI will train all employees potentially exposed to airborne silica dust in the following:

- Hazards associated with exposure to silica dust

- The risks of exposure to silica
- Signs and symptoms of silica disease
- Safe work procedures to be followed (e.g., setup of enclosures, disposal of silica waste, personal decontamination)
- Use of respirators and other personal protective equipment (e.g., donning and doffing of personal protective equipment, and cleaning and maintenance of respirators)
- Use of control systems (e.g., LEV and wet methods)
- How to seek first aid (for example, the location and use of eyewash stations)
- How to report an exposure to silica dust.

Records of training will be kept, as specified in the Occupational Health and Safety Regulation.

List or description of tasks

A list or description of tasks in the workplace that expose employees to respirable crystalline silica will be placed in a conspicuous area so that all employees have access.

Tasks include activities such as:

- Sawing
- Drilling
- Jackhammering
- Grinding; and
- Anything else that is likely to expose employees to respirable crystalline silica will be provided for workers on each affected jobsite as well.

This written Silica Exposure Control Plan will be evaluated at least once per year and as necessary. Situations where reevaluation may be necessary include regulatory updates, changes in equipment, and exposure incidents. Any changes resulting from this process must be communicated to affected employees.

The written exposure control plan shall be available for examination and copying by each employee. Copies may be available electronically or physically, depending on location needs and requirements

Stop Work Authority

PURPOSE

The purpose of this procedure is to ensure that all employees of **Cirks Construction Inc.** are given the responsibility and authority to stop work without restrictions or repercussions when employees believe that a situation exists which places them, their coworker(s), contracted personnel, or the public at risk or in danger; or could adversely affect the safe operation or cause damage to the facility. Maintaining a diligent questioning attitude is vital to safe execution of work-scope and is a cornerstone to effective Conduct of Operations and Integrated Safety Management.

This procedure extends the authority to stop work to situations where an employee believes there is a need to clarify work instructions; or to propose additional controls.

RESPONSIBILITIES

Management

- Resolve any issues that have resulted in an individual stopping a specific task(s) or activity
- Provide feedback to individual/s and the affected work group who have exercised their Stop Work responsibility on the resolution of their concern prior to resuming work. If the employee that issued a stop work is not available due to reasons such as vacation, PTB, PTO, shift change, or training then the supervisor provides the feedback to the safety representative and union safety representative, prior to resuming work
- Ensure no actions are taken as reprisal or retribution against individuals who raise safety concerns or stop an activity, they believe is unsafe

Responsible Safety Person

- Assist employees, supervision, and management in the resolution of safety issues and concerns
- Immediately contact management and work to resolve issues when an employee has called a situation to their attention, which has not been resolved
- Discuss resolution with employees involved in a work stoppage where resolution was completed after their shift or when they were unavailable, or where he/she functioned as their representative in reaching resolution
- Work as the agent of an employee that prefers to remain anonymous to work directly in the resolution of the stop work

Employees

In supporting safe execution of work, all personnel, have the following responsibilities:

- The responsibility and authority to stop work or decline to perform an assigned task without fear of reprisal, to discuss and resolve work and safety concerns. The Stop Work may include discussions with co-workers, supervision, or safety representative to resolve work related issues, address potential unsafe conditions, clarify work instructions, propose additional controls, etc.
- The responsibility and authority to initiate a Stop Work IMMEDIATELY, without fear of reprisal, when the employee believes a situation exists which places himself/herself, coworker(s), or the environment in danger or at risk
- The responsibility to report any activity or condition the employee believes is unsafe or for which they have initiated a Stop Work. Notification should be made to the affected worker(s) and to the Supervisor or their Supervisor's designee at the location where the activity or condition exists
- The responsibility to notify their Supervisor if a raised Stop Work issue has not been resolved to their satisfaction through established channels prior to the resumption of work

POLICY

All employees have the authority and obligation to stop any task or operation where concerns or questions regarding the control of Health, Safety, Environmental (HSE) risks exist.

Stop work if an activity or condition is believed to be unsafe, such as:

- A situation exists which places them, their coworker(s), contracted personnel, or the public at risk or in danger
- A situation could adversely affect the safe operation or cause damage to the facility
- A situation could result in a release of radiological or chemical effluents to the environment above regulatory requirements or approvals or
- To clarify work instructions or to propose additional controls

An onsite Supervisor should resolve any issues that have resulted in an employee stopping work or an activity, as well as:

- Involve individuals who initiated the Stop Work or their appropriate safety representatives if the individual is not available, in reaching mutual agreement on the resolution or proposed actions necessary to return to work
- Be sure any necessary corrective or compensatory actions are taken before resuming an activity and are documented

If a Stop Work has not been resolved to the mutual agreement of Supervisor and employee, then the stop work remains in place and the Supervisor will notify the appropriate company management/safety representative.

No work will resume until all stop-work issues and concerns have been adequately addressed.

Every employee, has the responsibility and authority to stop work IMMEDIATELY, without restrictions or repercussions, when the employee believes:

- Conditions exist that pose a danger to the health and safety of workers or the public or
- Conditions exist, that if allowed to continue, could adversely affect the safe operation of, or could cause serious damage to, a facility.

REPORTING UNSAFE CONDITIONS

All employees are responsible to initiate a Stop Work Intervention, when warranted, and management is responsible to create a culture where Stop Work Authority is exercised freely. Employees are expected to report any activity or condition which he or she believes is unsafe.

When an unsafe condition is identified, the Stop Work Intervention shall be initiated, in a direct and positive manner, immediately notifying all affected personnel and supervision (when present) of the stop work issue., Upon correction of the issue, work may resume when safe to do so.

All instances where Stop Work Authority is exercised must be reported to the Safety Team via the Incident and Injury Reporting Procedure.

RIGHT TO A SAFE WORKPLACE

Any employee who reasonably believes that an activity or condition is unsafe is expected to stop or refuse work without fear of reprisal by management or coworkers and is entitled to have the safety concern addressed prior to the work resuming.

Any form of retribution or intimidation directed at any individual or company for exercising their right to issue a Stop Work Authority will not be tolerated.

STOP WORK AUTHORITY PROCESS

Stop Work Authority is a several step process:

- **Stop** - when an employee perceives conditions or behaviors that pose imminent danger, he or she must immediately initiate a Stop Work Intervention.
- **Notify** - notify affected personnel and supervision (when present) of the stop work action.
- **Collaborate** - affected personnel will discuss the situation and come to an

agreement on the Stop Work Action.

- **Correct** - Corrective actions will be made according to the modifications agreed upon.
- **Resume** – Once all affected employees have been notified of the corrective actions that were implemented, the supervisor or project lead has the authority to recommence work.
- **Communicate** - All instances where Stop Work Authority is exercised must be reported to the Safety Team via the Incident and Injury Reporting Procedure.
- **Follow Up** – The Safety Team will produce a Root Cause Analysis report summarizing the event for Management to identify any potential opportunities for improvement.

DOCUMENTATION

All Stop Work Interventions shall be documented for lessons learned and corrective measures to be put into place. Root Cause Analysis reports shall be reviewed by Management to identify common issues, recognize areas for improvement, and facilitate training opportunities.

TRAINING

Employees should be trained on Stop Work Authority and the contents of this program prior to beginning work and on an ongoing basis. The training must be documented including the employee's name, the dates of training and subject.

FOLLOW UP

It is the desired outcome of any Stop Work Intervention that the identified safety concern(s) have been addressed to the satisfaction of all involved persons prior to the resumption of work. Most issues can be adequately resolved in a timely manner at the job site, occasionally additional investigation and corrective actions may be required to identify and address root causes.

Subcontractor Management Plan

PURPOSE

The purpose of this document is to outline the Subcontractor pre-qualification, evaluation, selection, and monitoring process for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

RESPONSIBILITIES

Management

- Will ensure roles associated with supervision and direction provided to subcontractors.
- Apply safe work procedures to ensure contract employees are aware of hazards associated with work to be performed through hazard assessment and/or inspections.

SUBCONTRACTOR PREQUALIFICATION PROCESS

CCI performs the following steps to qualify subcontractors:

- Review of OSHA recordable cases (OSHA's Form 300, 300A, and 301 if applicable)
- Review of Experience Modification Rate.
 - Rates submitted over 1.0 trigger review of subcontractor's safety program by a Responsible Safety Person or designee.
- Review of OSHA Citations
- Ensure subcontractor completes the CCI Safety Program Questionnaire.

SUBCONTRACTOR PARTICIPATION

All subcontractors performing work on behalf of CCI, or on worksites that are under the supervision of CCI will be required to sign-in and sign-out daily at the jobsite and attend all tailgate safety meetings.

NOTIFICATION AND DOCUMENTATION

CCI documents the following incident/injury reporting procedures:

- CCI ensures that hired subcontractors possess and maintain the proper licensing, and insurance requirements.
- All subcontractors shall report to CCI all incidents and accidents in a prompt and timely manner.

- In the event of an incident or accident, CCI shall identify root causes and causal factors, develop corrective actions, and have a methodology for determining the effectiveness of the corrective actions.

Trenching and Excavation - Federal

PURPOSE

To outline procedures for the protection of employees working in and around excavations and trenches for **Cirks Construction Inc.**; hereafter referred to as "CCI." This program is written in accordance with [OSHA CFR 1926.651](#) and pertains to all CCI projects that require any excavation or trenching work.

RESPONSIBILITIES

It is the responsibility of each superintendent and supervisor to implement and maintain the procedures and steps set forth in this program.

Each employee and subcontractor involved with excavation and trenching work is responsible to comply with all applicable safety procedures and requirements of this program.

HAZARDS

One of the reasons CCI requires a competent person on-site during excavation and trenching are the numerous potential hazardous that may be encountered or created. Hazards include:

- Striking underground utilities
- Cave-ins
- Entrapment
- Struck by equipment or falling tools/materials
- Hazardous air contaminants or oxygen-deficient environments

EXCAVATION STATEMENT

The excavator shall be responsible for safe digging practices by determining underground installations BEFORE any excavation. This can be accomplished by either contacting the local utility companies or the local "one-call" center for the area. All underground utility locations must be documented on the proper forms. All overhead hazards (surface encumbrances) that create a hazard to employees must be removed or supported to eliminate the hazard. Any additional applicable state and local laws related to excavations will be followed as well.

UTILITIES AND UNDERGROUND INSTALLATIONS

The estimated location of utility installations, such as sewer, telephone, fiber optic, cable, fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work, shall be determined prior to opening an excavation. Two days before starting work, Excavator shall notify all regional notification centers and all subsurface installation owner who are not members of notifications centers. Exception: emergency repair work to subsurface facilities done in response to an emergency.

The Excavator must receive a positive response from all known owners/operators of subsurface installations.

While the excavation is open, underground installations shall be protected, supported or removed as necessary. Excavators must immediately notify the subsurface installation owner/operator of any damage discovered during or caused by excavation activities. If the damage or escaping material endangers life or property, immediately call 911.

ACCESS AND EGRESS

Structural Ramps

Structural ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a competent person. Structural ramps used for access or egress of equipment shall be designed by a competent person qualified in structural design and shall be constructed in accordance with the design.

Ramps and runways constructed of two or more structural members shall have the structural members connected to prevent displacement.

Structural members used for ramps and runways shall be of uniform thickness.

Cleats or other appropriate means used to connect runway structural members shall be attached to the bottom of the runway or shall be attached in a manner to prevent tripping.

Structural ramps used in lieu of steps shall be provided with cleats or other surface treatments on the top surface to prevent slipping.

Means of Egress from Trench Excavations

A stairway, ladder, ramp, or other safe means of egress shall be in trench excavations that are 4 feet (1.22 m) or more in depth to require no more than 25 feet (7.62 m) of lateral travel for employees. Ladders must be secured and extend 3 feet above the landing.

Exposure to Vehicular Traffic

CCI shall ensure employees exposed to public vehicular traffic shall be provided with, and shall wear, vests or other suitable garments marked with or made of reflectorized or high-visibility material. Appropriate barricades may be placed to provide additional protection for employees.

Exposure to Falling Loads

No employee shall be permitted underneath loads handled by lifting or digging equipment. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles are equipped, to provide adequate protection for the operator during loading and unloading operations.

Warning System for Mobile Equipment

When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation.

HAZARDOUS ATMOSPHERES

Testing and controls. In addition to the requirements set forth in subparts D and E of this part (29 CFR 1926.50 - 1926.107) to prevent exposure to harmful levels of atmospheric contaminants and to assure acceptable atmospheric conditions, the following requirements shall apply:

- Where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or excavations in areas where hazardous substances are stored nearby, the atmospheres in the excavation shall be tested before employees enter excavations greater than 4 feet (1.22 m) in depth.
- Adequate precautions shall be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions include providing proper respiratory protection or ventilation in accordance with subparts D and E of this part respectively.
- Adequate precaution shall be taken such as providing ventilation, to prevent employee exposure to an atmosphere containing a concentration of a flammable gas more than 20 percent of the lower flammable limit of the gas.
- When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, testing shall be conducted as often as necessary to ensure that the atmosphere remains safe.

EMERGENCY RESCUE PLAN

Emergency rescue equipment, shall be readily available where hazardous conditions exist or may reasonably be expected to develop during work in an excavation. When personnel will be entering, an Emergency Rescue Plan shall be submitted for review and approval.

HAZARDS ASSOCIATED WITH WATER ACCUMULATION

Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation.

If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operations shall be monitored by a competent person to ensure proper operation.

STABILITY OF ADJACENT STRUCTURES

Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems such as shoring, bracing, or underpinning shall be provided to ensure the stability of such structures for the protection of employees.

Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees shall not be permitted except when:

- A support system, such as underpinning, is provided to ensure the safety of employees and the stability of the structure
- The excavation is in stable rock
- A registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity
- A registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees
- Sidewalks, pavements, and appurtenant structure shall not be undermined unless a support system or another method of protection is provided to protect employees from the possible collapse of such structures

CAVE-IN PROTECTION

Each employee in an excavation shall be considered protected from cave-ins by an adequate protective system when:

- Excavations are made entirely in stable rock

- Excavations are less than 5 feet (1.52m) in depth and examination of the ground by a competent person provides no indication of a potential cave-in
- Protective systems shall have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied or transmitted to the system

Sloping and Benching Systems

The slopes and configurations of sloping and benching systems shall be selected and constructed by CCI or CCI designee and shall be in accordance with this standard, as follows:

- **Option (1) - Allowable Configurations and Slopes**
 - Excavations shall be sloped at an angle not steeper than one and one-half horizontal to one vertical (34 degrees measured from the horizontal), unless the employer uses one of the other options listed below
 - Slopes shall be excavated to form configurations that are in accordance with the slopes shown for Type C soil in appendix [B to this subpart](#)
- **Option (2) - Determination of Slopes and Configurations Using [Appendices A and B](#).**
 - Maximum allowable slopes, and allowable configurations for sloping and benching systems, shall be determined in accordance with the conditions and requirements set forth in appendices A and B to this subpart
- **Option (3) - Designs Using Other Tabulated Data**
 - Designs of sloping or benching systems shall be selected from and be in accordance with tabulated data, such as tables and charts
 - The tabulated data shall be in written form and shall include all the following:
 - Identification of the parameters that affect the selection of a sloping or benching system drawn from such data
 - Identification of the limits of use of the data, to include the magnitude and configuration of slopes determined to be safe
 - Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data
- **Option (4) - Design by a Registered Professional Engineer**
 - Sloping and benching systems not utilizing Option (1), (2), or (3) shall be approved by a registered professional engineer
 - Designs shall be in written form and shall include at least the following:
 - The magnitude of the slopes that were determined to be safe for the particular project
 - The configurations that were determined to be safe for the project
 - The identity of the registered professional engineer approving the design

At least one copy of the tabulated data which identifies the registered professional engineer who approved the data, shall be maintained at the jobsite during construction of the protective system.

After that time, the data may be stored off the jobsite, but a copy of the data shall be made available upon request.

At least one copy of the design shall be maintained at the jobsite while the slope is being constructed. After that time, the design need not be at the jobsite, but a copy shall be made available upon request.

Design of Support Systems, Shield Systems, and Other Protective Systems

Designs of support systems shield systems, and other protective systems shall be selected and constructed by CCI or CCI designee.

Option (1) - Designs Using Appendices [A](#), [C](#), and [D](#)

Designs for timber shoring in trenches shall be determined in accordance with the conditions and requirements set forth in appendices A and C to this subpart. Designs for aluminum hydraulic shoring shall be in accordance with section, but if manufacturer's tabulated data cannot be utilized, designs shall be in accordance with appendix D.

Option (2) - Designs Using Manufacturer's Tabulated Data

Design of support systems, shield systems, or other protective systems that are drawn from manufacturer's tabulated data shall be in accordance with all specifications, recommendations, and limitations issued or made by the manufacturer.

Deviation from the specifications, recommendations, and limitations issued or made by the manufacturer shall only be allowed after the manufacturer issues specific written approval.

Manufacturer's specifications, recommendations, and limitations, and manufacturer's approval to deviate from the specifications, recommendations, and limitations shall be in written form at the jobsite during construction of the protective system. After that time, this data may be stored off the jobsite, but a copy shall be made available upon request.

Option (3) - Designs Using Other Tabulated Data

Designs of support systems, shield systems, or other protective systems shall be selected from and be in accordance with tabulated data, such as tables and charts. The tabulated data shall be in written form and include all the following:

- Identification of the parameters that affect the selection of a protective system drawn from such data
- Identification of the limits of use of the data
- Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data

At least one copy of the tabulated data, which identifies the registered professional engineer who approved the data, shall be maintained at the jobsite during construction of the protective system. After that time, the data may be stored off the jobsite, but a copy of the data shall be made available upon request.

Option (4) - Design by a Registered Professional Engineer

Support systems, shield systems, and other protective systems not utilizing Option (1), (2), or (3), above, shall be approved by a registered professional engineer. Designs shall be in written form and shall include the following:

- A plan indicating the sizes, types, and configurations of the materials to be used in the protective system
- The identity of the registered professional engineer approving the design

At least one copy of the design shall be maintained at the jobsite during construction of the protective system. After that time, the design may be stored off the jobsite, but a copy of the design shall be made available upon request.

MATERIALS AND EQUIPMENT

Materials and equipment used for protective systems shall be free from damage or defects that might impair their proper function.

Manufactured materials and equipment used for protective systems shall be used and maintained in a manner that is consistent with the recommendations of the manufacturer, and in a manner that will prevent employee exposure to hazards.

When material or equipment that is used for protective systems is damaged, a competent person shall examine the material or equipment and evaluate its suitability for continued use. If the competent person cannot assure the material or equipment is able to support the intended loads or is otherwise suitable for safe use, then such material or equipment shall be removed from service, and shall be evaluated and approved by a registered professional engineer before being returned to service.

INSTALLATION AND REMOVAL OF SUPPORT

Support systems shall be securely connected together to prevent sliding, falling, kickouts, or other predictable failure.

Support systems shall be installed and removed in a manner that protects employees from cave-ins, structural collapses, or from being struck by support system.

Support systems shall not be subjected to loads exceeding those which were designed to withstand.

Before temporary removal of support systems begin, additional precautions shall be taken to ensure the safety of employees, such as installing other structural members to carry the loads imposed on the support system.

Removal shall begin at, and progress from, the bottom of the excavation. Support systems shall be released slowly so as to note any indication of possible failure of the remaining of the structure or possible cave-in of the sides of the excavation.

Additional Requirements for Support Systems for Trench Excavations

Excavation of material to a level no greater than 2 feet (.61 m) below the bottom of the support system shall be permitted, but only if the system is designed to resist the forces calculated for the full depth of the trench, and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the support system.

Installation of a support system shall be closely coordinated with the excavation of trenches.

SLOPING AND BENCHING

Shield Systems

Shield systems shall not be subjected to loads exceeding those which the system was designed to withstand.

Shields shall be installed in a manner to restrict lateral or other hazardous movement of the shield in the event of the application of sudden lateral loads.

Employees shall be protected from the hazard of cave-ins when entering or exiting the areas protected by shields. Ladder shall be secured to the shield and extend 3 feet above landing area.

Employees shall not be allowed in shields when shields are being installed, removed, or moved vertically.

Additional requirement for shield systems used in trench excavations. Excavations of earth material to a level not greater than 2 feet (.61 m) below the bottom of a shield shall be permitted, but only if the shield is designed to resist the forces calculated for the full depth of the trench, and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the shield.

HAZARD CONTROLS

Before any work is performed and before any personnel enter the excavation, several items must be checked and insured:

- If the excavation is to be over 20 feet deep, it must be designed by a registered professional engineer who is registered in the state where work will be performed.
- Adequate protective systems will be utilized to protect employees. This can be accomplished through sloping, shoring, or shielding.
- The worksite must be analyzed to design adequate protection systems and prevent cave-ins. There must also be an excavation safety plan developed to protect employees.
- Workers must be supplied with and wear any personal protective equipment deemed necessary to assure their protection.
- All spoil piles will be stored a minimum of two (2) feet from the sides of the excavation. The spoil pile must not block the safe means of egress.
- If a trench or excavation is 4 feet or deeper, stairways, ramps, or ladders will be used as a safe means of access and egress. For trenches, the employee must not have to travel any more than 25 feet of lateral travel to reach the stairway, ramp, or ladder.
- No employee will work in an excavation where water is accumulating unless adequate measures are used to protect the employees.
- Employees must be protected from water accumulation, including the use of shields, and must be inspected by a competent person before work begins.
- A competent person will inspect all excavations and trenches daily, prior to employee exposure or entry, and after any rainfall, soil change, or any other time needed during the shift. The competent person must take prompt measures to eliminate all hazards.
- Excavations and trenches 4 feet or deeper that have the potential for toxic substances or hazardous atmospheres will be tested at least daily. If the atmosphere is inadequate, protective systems will be utilized.
- If work is in or around traffic, employees must be supplied with and wear high visibility reflective vests. Signs and barricades must be utilized to ensure the safety of employees, vehicular traffic, and pedestrians.
- Railings and guardrails will be utilized to protect against falls.
- Walkways to be provided where employees or equipment are required or permitted to cross over excavations.
- Guardrails required where walkways are six feet or more above lower levels.

COMPETENT PERSON RESPONSIBILITIES

The OSHA Standards require that the competent person must be capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary,

hazardous, or dangerous to employees, and have authorization to take prompt corrective measures to eliminate them and, if necessary, to stop the work.

Competent persons should examine the possibility of cave-ins, failures, or protective systems, etc. If problems are found, provisions should be made for immediate personnel removal.

The Competent Person should be specified, and his duties described. Duties might include inspections prior to entry, atmospheric testing, removal of workers if conditions dictate.

A Competent Person will provide certification to verify that they have been provided tools/training to carry out excavation responsibilities.

A Competent Person is required to:

- Have a complete understanding of the applicable safety standards and any other data provided.
- Assure the proper locations of underground installations or utilities, and that the proper utility companies have been contacted.
- Conduct soil classification tests and reclassify soil after any condition changes.
- Determine adequate protective systems (sloping, shoring, or shielding systems) for employee protection.
- Conduct all air monitoring for potential hazardous atmospheres.
- Conduct daily and periodic inspections of excavations and trenches.
- Approve design of structural ramps, if used.

TRENCHING AND EXCAVATION SAFETY PLAN

An excavation safety plan is required in written form. This plan is to be developed to the level necessary to ensure complete compliance with the OSHA Excavation Safety Standard and state and local safety standards.

Excavation Safety Plan Factors

- Utilization of the local one-call system; 811, Dig Alert, etc. (based on locality)
- Determination of locations of all underground utilities
- Consideration of confined space atmosphere potential
- Proper soil protection systems and personal protective equipment and clothing
- Determination of soil composition and classification
- Determination of surface and subsurface water
- Depth of excavation and length of time it will remain open
- Proper adherence to all OSHA Standards, this excavation and trenching safety program, and any other coinciding safety programs

SOIL CLASSIFICATION AND IDENTIFICATION

The OSHA Standards define soil classifications within the Simplified Soil Classification Systems, which consist of four categories: Stable rock, Type A, Type B, and Type C. Stability is greatest in stable rock and decreases through Type A and B to Type C, which is the least stable. Appendix A of the Standard provides soil mechanics terms and types of field tests used to determine soil classifications.

Stable rock is defined as natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.

Soil classifications must be determined by testing and protective systems designed according to soil classifications.

Type A soil is defined as:

- Cohesive soils with an unconfined compressive strength of 1.5 tons per square foot (TSF) or greater.
- Cemented soils like caliche and hardpan are considered Type A.

Soil is NOT Type A if:

- It is fissured.
- The soil is subject to vibration from heavy traffic, pile driving or similar effects.
- The soil has been previously disturbed.
- The material is subject to other factors that would require it to be classified as a less stable material.
- The exclusions for Type A most generally eliminate it from most construction situations.

Type B soil is defined as:

- Cohesive soil with an unconfined compressive strength greater than .5 TSF, but less than 1.5 TSF.
- Granular cohesionless soil including angular gravel, silt, silt loam, and sandy loam.
- The soil has been previously disturbed except that soil classified as Type C soil.
- Soil that meets the unconfined compressive strength requirements of Type A soil but is fissured or subject to vibration.
- Dry rock that is unstable.

Type C soil is defined as:

- Cohesive soil with an unconfined compressive strength of .5 TSF or less.
- Granular soils including gravel, sand and loamy sand.
- Submerged soil or soil from which water is freely seeping.
- Submerged rock that is not stable.

SOIL TEST AND IDENTIFICATION

The competent person will classify the soil type based on at least one visual and one manual analysis. These tests should be run on freshly excavated samples from the excavation and are designed to determine stability based on several criteria: the cohesiveness, the presence of fissures, the presence and amount of water, the unconfined compressive strength, the duration of exposure, undermining, and the presence of layering, prior excavation, and vibration.

The cohesion tests are based on methods to determine the presence of clay. Clay, silt, and sand are size classifications, with clay being the smallest sized particles, silt intermediate and sand the largest. Clay minerals exhibit good cohesion and plasticity (can be molded). Sand exhibits no elasticity and virtually no cohesion unless surface wetting is present. The degree of cohesiveness and plasticity depend on the amounts of all three types and water.

When examining the soil, three questions must be asked: Is the sample granular or cohesive? Fissured or non-fissured? What is the unconfined compressive strength measured in TSF?

The location of underground installations shall be determined before excavation. When utility companies or clients cannot respond to a request to locate underground utility installations within 24 hours, or cannot establish exact location of these installations, the employer may proceed, provided the employer does so with caution and provided detection equipment or other acceptable means to locate utility installations are used.

EMPLOYEE PROTECTION FROM LOOSE SOIL AND ROCK

Adequate protection shall be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection shall consist of scaling to remove loose material; installation of protective barricades at intervals as necessary on the face to stop and contain falling material; or other means that provide equivalent protection.

Employees shall be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations. Protection shall be provided by placing and keeping such materials or equipment at least 2 feet (.61 m) from the edge of excavations, or by the use of retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary.

No employee shall be permitted underneath loads handled by lifting or digging equipment. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles are equipped, in accordance with [§1926.601\(b\)\(6\)](#), to provide adequate protection for the operator during loading and unloading operations.

METHODS OF TESTING SOILS

Visual Test

If the excavated soil is in clumps, it is cohesive. If it breaks up easily, not staying in clumps, it is granular.

Wet Manual Test

Wet your fingers and work the soil between them. Clay is a slick paste when wet, meaning it is cohesive. If the clump falls apart in grains, it is granular.

Dry Strength Test

Try to crumble the sample in your hands with your fingers. If it crumbles into grains, it is granular. Clay will not crumble into grains, only into smaller chunks.

Pocket Penetrometer Test

This instrument is most accurate when soil is nearly saturated. This instrument will give unconfined compressive strength in tons per square foot. The spring-operated device uses a piston that is pushed into a coil up to a calibration groove. An indicator sleeve marks and retains the reading until it is read. The reading is calibrated in tons per square foot (TSF) or kilograms per cubic centimeter.

Thumb Penetration Test

The competent person attempts to penetrate a fresh sample with thumb pressure. If the sample can be dented, but penetrated only with great effort, it is Type A. If it can be penetrated several inches and molded by light pressure, it is Type C. Type B can be penetrated with effort and molded.

The competent person will perform several tests of the excavation to obtain consistent, supporting data along its depth and length. The soil is subject to change several times within the scope of an excavation and the moisture content will vary with weather and job conditions. The competent person must also determine the level of protection based on what conditions exist at the time of the test and allow for changing conditions.

Tests should be conducted for air contaminants (oxygen, flammable gases, etc. and provide ventilation where necessary).

PERSONAL PROTECTION EQUIPMENT (PPE)

It is CCI policy to wear a hard hat, safety glasses, high-visibility apparel, and work boots on the jobsite (where applicable). Because of the hazards involved with excavations, other personal protective equipment may be necessary, depending on the potential hazards present (examples include goggles, gloves, and respiratory equipment).

TRAINING

Training must be conducted for those who have excavation responsibilities.

Training must cover applicable local rules related to:

- Dig Alert – 811 – identification of subsurface installations by a qualified person
- Soil type identification
- Soil failure types
- Cave-in protection
- Atmospheric conditions

The competent person(s) must be trained in accordance with the OSHA Excavation Standard, and all other programs that may apply (examples Hazard Communication, Confined Space, and Respiratory Protection), and must demonstrate a thorough understanding and knowledge of the programs and the hazards associated.

All other employees working in and around the excavation must be trained in the recognition of hazards associated with trenching and excavating.

DEFINITIONS

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

Cave-in - The separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by failing or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.

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

Duration of Exposure - The longer an excavation is open, the the more time is allowed for degrading factors to cause an excavation callopse.

Excavation - Any man-made cut, trench, or depression in an earth surface, formed by earth removal.

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

Protective System - A method of protecting employees from cave-ins, from material that could fall or roll from an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide necessary protection.

Shield - A structure that is capable of withstanding the forces imposed on it by a cave-in and thereby protects employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. All shields must be in accordance with [29 CFR 1926.652\(c\)3 or \(c\)4](#).

Sloping - A method of protecting workers from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences such as soil type, length of exposure, and application of surcharge loads.

Surcharge Loads - Generated by the weight of anything in proximity to the excavation, potentially creating an excavation collapse (any object or structure at surface/ground level pushing down). Common surcharge loads:

- Weight of spoil pile
- Weight of nearby buildings, poles, pavement, or other structural objects
- Weight of material and equipment

Trench - A narrow excavation that is deeper than it is wide, and no more than 15 feet wide at the bottom

Undermining - Undermining can be caused by such things as leaking, leaching, caving or over-digging. Undermined walls can be very dangerous.

Vibration - A force that is present on construction sites and must be considered. The vibrations caused by backhoes, dump trucks, compactors and traffic on job sites can be substantial.

Trenching and Excavation - CA

PURPOSE

The purpose of this document is to outline safety policy and procedures for the protection of employees working in and around excavations and trenches for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

This program pertains to all company projects that require any excavations or trenching work.

RESPONSIBILITIES

It is the responsibility of each superintendent and supervisor to implement and maintain the procedures and steps set forth in this program. Each employee involved with excavation and trenching work is responsible to comply with all applicable safety procedures and requirements of this program.

Responsible Safety Person:

- Ensures all employees and subcontractors adhere to this policy.
- Designates competent persons.

EXCAVATION PLANS

An excavation safety plan is required in written form. This plan is to be developed to the level necessary to ensure complete compliance with the OSHA Excavation Safety Standard and state and local safety standards.

An Annual Trenching & Excavation Permit or Individual trenching & Excavation Permit is required.

Excavation Safety Plan Factors

- Utilization of the local one-call system
- Determination of locations of all underground utilities
- Consideration of confined space atmosphere potential
- Proper soil protection systems and personal protective equipment and clothing
- Determination of soil composition and classification
- Determination of surface and subsurface water
- Depth of excavation and length of time it will remain open
- Proper adherence to all OSHA and CAL/OSHA Standards, this excavation and trenching safety program, and any other coinciding safety programs

TRAINING

Competent persons must be trained in accordance with the CAL/OSHA Excavation Standard, and all other programs that may apply (examples Hazard Communication, Confined Space, and Respiratory Protection), and must demonstrate a thorough understanding and knowledge of the programs and the hazards associated. All other employees working in and around the excavation must be trained in the recognition of hazards associated with trenching and excavating. Employees who are involved in the excavation operation and exposed to excavation operation hazards should be trained in the excavator notification and excavation practices. Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems such as shoring, bracing, or underpinning should be provided to ensure the stability of such structures for the protection of employees. Employee training will occur upon job assignment, and annually at a minimum, but as often as deemed necessary by the Responsible Safety Person.

GENERAL REQUIREMENTS

Inspections

An initial inspection as well as daily inspections of excavations, the adjacent areas, and protective systems should be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection should be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections should also be made after every rainstorm or other hazard increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated.

Where the competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees should be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

Surface Encumbrances

All surface encumbrances that may create a hazard to employees should be removed or supported, as necessary, to safeguard employees.

Subsurface Installations

The approximate location of subsurface installations, such as sewer, telephone, fuel, electric, water lines, or any other subsurface installations that reasonably may be expected to be encountered during excavation work, should be determined by the excavator prior to initiating an excavation.

Excavation should not commence until:

- The excavation area has been marked as specified in Government Code Section 4216.2 by the excavator.
- The excavator has received a positive response from all known owner/operators of subsurface installations within the boundaries of the proposed project. Those responses should confirm that the owner/operators have located their installations, and either advise the excavator of those locations or advise the excavator that the owner/operator does not operate a subsurface installation that would be affected by the proposed excavation.

When the excavation is proposed within 10 feet of a high priority subsurface installation, the excavator should be notified by the facility owner/operator of the existence of the high priority subsurface installation before the legal excavation start date and time in accordance with Government Code Section 4216.2(a), and an onsite meeting involving the excavator and the subsurface installation owner/operator's representative should be scheduled by the excavator and the owner/operator at a mutually agreed on time to determine the action or activities required to verify the location of such installations. High priority subsurface installations are high pressure natural gas pipelines with normal operating pressures greater than 415 kPA gauge (60 p.s.i.g.), petroleum pipelines, pressurized sewage pipelines, conductors or cables that have a potential to ground of 60,000 volts or more, or hazardous materials pipelines that are potentially hazardous to employees, or the public, if damaged.

Only qualified persons should perform subsurface installation locating activities, and all such activities should be performed in accordance with this section and Government Code Sections 4216 through 4216.9. Persons who complete a training program in accordance with the requirements of CAL/OSHA Title 8 regulations, Subchapter 4, Article 3, Section 1509, Injury and Illness Prevention Program (IIPP), that meets the minimum training guidelines and practices of the Common Ground Alliance (CGA) Best Practices, Version 3.0, published March 2006, or the standards of the National Utility Locating Contractors Association (NULCA), Standard 101: Professional Competence Standards for Locating Technicians, 2001, First Edition, should be deemed qualified for the purpose of this section.

Employees who are involved in the excavation operation and exposed to excavation operation hazards should be trained in the excavator notification and excavation practices required by this section and Government Code Sections 4216 through 4216.9.

All Regional Notification Centers as defined by Government Code Section 4216(j) in the area involved and all known owners of subsurface facilities in the area who are not members of a Notification Center should be advised of the proposed work at least 2 working days prior to the start of any digging or excavation work.

The following exception applies: Repair work to subsurface facilities done in response to an emergency as defined in Government Code Section 4216(d).

When excavation or boring operations approach the approximate location of subsurface installations, the exact location of the installations should be identified by safe and acceptable means by CCI that will prevent damage to the subsurface installation, as provided by Government Code Section 4216.4. While the excavation is open, subsurface installations should be protected, supported, or removed as necessary to safeguard employees.

An excavator discovering or causing damages to a subsurface installation should immediately notify the facility owner/operator or contact the Regional Notification Center to obtain subsurface installation operator contact information immediately after which the excavator should notify the facility operator. All breaks, leaks, nicks, dents, gouges, grooves, or other damages to an installation's lines, conduits, coatings, or cathodic protection should be reported to the subsurface installation operator. If damage to a high priority subsurface installation results in the escape of any flammable, toxic, or corrosive gas or liquid or endangers life, health or property, the excavator responsible should immediately notify 911, or if 911 is unavailable, the appropriate emergency response personnel having jurisdiction. The facility owner/operator should also be contacted.

Note: The terms excavator and operator as used in this section is defined in Government Code Section 4216(c) and (h) respectively. The term "owner/operator" means an operator as the term "operator" is defined in Government Code Section 4216(h).

Access and Egress

Structural ramps that are used solely by employees as a means of access or egress from excavations should be designed by a competent person. Structural ramps used for access or egress of equipment should be designed by a competent person qualified in structural design and should be constructed in accordance with the design.

Ramps and runways constructed of two or more structural members should have the structural members connected to prevent displacement.

Structural members used for ramps and runways should be of uniform thickness.

Cleats or other appropriate means used to connect runway structural members should be attached to the bottom of the runway or should be attached in a manner to prevent tripping.

Structural ramps used in lieu of steps should be provided with cleats or other surface treatments to the top surface to prevent slipping.

Means of Egress from Trench Excavations

A stairway, ladder, ramp, or other safe means of egress should be in trench excavations that are 4 feet or more in depth to require no more than 25 feet of lateral travel for employees.

Exposure to Vehicular Traffic

Employees exposed to public vehicular traffic should be provided with, and should wear, warning vests or other suitable garments marked with or made of reflectorized or high-visibility material.

Exposure to Falling Loads

Employees should not be permitted underneath loads handled by lifting or digging equipment. Employees are required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles are equipped, to provide adequate protection for the operator during loading and unloading operations.

Warning System for Mobile Equipment

When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system should be utilized such as barricades, hand and/or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.

Hazardous Atmospheres

In addition to the requirements set forth in the Construction Safety Orders and the General Industry Safety Orders of the CAL/OSHA Title 8 regulations, to prevent exposure to harmful levels of atmospheric contaminants and to assure acceptable atmospheric conditions, the following requirements apply:

- When oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or excavations in areas where hazardous substances are stored nearby, the atmospheres in the excavation should be tested before employees enter excavations greater than 4 feet in depth.
- Adequate precautions should be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions include providing proper respiratory protection or ventilation.
- Adequate precaution should be taken such as providing ventilation, to prevent employee exposure to an atmosphere containing a concentration of a flammable gas in excess of 20 percent of the lower flammable limit of the gas.

- When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, testing should be conducted as often as necessary to ensure that the atmosphere remains safe.

Emergency Rescue Plan

- Emergency rescue equipment, shall be readily available where hazardous conditions exist or may reasonably be expected to develop during work in an excavation. When personnel will be entering, an Emergency Rescue Plan shall be submitted for review and approval.

Note: For shafts greater than 20 feet in depth and excavations unrelated to the Construction Safety Orders, refer to Title 8, Division 1, Chapter 4, Subchapter 20, the Tunnel Safety Orders.

Hazards Associated with Water Accumulation

Employees should not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation.

If water is controlled or prevented from accumulating using water removal equipment, the water removal equipment and operations should be monitored by a competent person to ensure proper operation.

Stability of Adjacent Structures

Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems such as shoring, bracing, or underpinning should be provided to ensure the stability of such structures for the protection of employees.

Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees should not be permitted except when:

- A support system, such as underpinning, is provided to ensure the safety of employees and the stability of the structure
- The excavation is in stable rock
- A registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees

Sidewalks, pavements, and adjacent structures should not be undermined unless a support system or another method of protection is provided to protect employees from the possible collapse of such structures.

Protecting Employees from Loose Rock or Soil

Adequate protection should be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection should consist of scaling to remove loose material; installation of protective barricades at intervals as necessary on the face to stop and contain falling material; or other means that provide equivalent protection.

Employees should be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations. Protection should be provided by placing and keeping such materials or equipment at least 2 feet from the edge of excavations or using retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary.

Fall Protection

Where employees or equipment are required or permitted to cross over excavations over 6-feet in depth and wider than 30 inches, walkways or bridges with standard guardrails should be provided. Adequate barrier physical protection should be provided at all remotely located excavations. All wells, pits, shafts, etc., should be barricaded or covered. Upon completion of exploration and other similar operations, temporary wells, pits, shafts, etc., should be backfilled.

REQUIREMENTS FOR PROTECTIVE SYSTEMS

Protecting Employees in Excavations

Each employee in an excavation should be considered protected from cave-ins by an adequate protective system except when 1 of the following is present:

- Excavations are made entirely in stable rock
- Excavations are less than 5 feet in depth and examination of the ground by a competent person provides no indication of a potential cave-in

Protective systems should have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied or transmitted to the system.

Design of Sloping and Benching Systems

The slopes and configurations of sloping and benching systems should be selected and constructed by CCI or designee and should be in accordance with one or more of the following options:

Option 1 - Allowable configurations and slopes

- Excavations should be sloped at an angle not steeper than one and one-half horizontal to one vertical (34 degrees measured from the horizontal), unless CCI uses one of the other options listed below.
- Slopes specified in the above bullet should be excavated to form configurations that are in accordance with the slopes shown for Type C soil in Appendix B to this article.

Option 2 - Determination of slopes and configurations using Appendices A and B

- Maximum allowable slopes, and allowable configurations for sloping and benching systems, should be determined in accordance with the conditions and requirements set forth in Appendices A and B to this article.

Option 3 - Designs using other tabulated data

- Designs of sloping or benching systems should be selected from and be in accordance with tabulated data, such as tables and charts.
- The tabulated data should be in written form and should include all of the following:
 - Identification of the parameters that affect the selection of a sloping or benching system drawn from such data
 - Identification of the limits of use of the data, to include the magnitude and configuration of slopes determined to be safe
 - Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data
 - At least one copy of the tabulated data which identifies the registered professional engineer who approved the data, should be maintained at the jobsite during construction of the protective system. After that time, the data may be stored off the jobsite, but a copy of the data should be made available upon request.

Option 4 - Design by a registered professional engineer

- Sloping and benching systems not utilizing Option 1, 2, or 3 should be stamped and signed by a registered professional engineer.
- Designs should be in written form and should include at least the following:
 - The magnitude of the slopes that were determined to be safe for the particular project
 - The configurations that were determined to be safe for the particular project
 - The identity of the registered professional engineer approving the design

At least one copy of the design should be maintained at the jobsite while the slope is being constructed. After that time, the design need not be at the jobsite, but a copy should be made available upon request.

Design of Support Systems, Shield Systems, and Other Protective Systems

Designs of support systems, shield systems, and other protective systems should be selected and constructed by CCI or his designee and should be in accordance with the requirements as follows:

Option 1 - Designs using Appendices A, C and D

- Designs for timber shoring in trenches should be determined in accordance with the conditions and requirements set forth in Appendices A and C to this article. Designs for aluminum hydraulic shoring should be in accordance with the next option, but if

manufacturer's tabulated data cannot be utilized, designs should be in accordance with Appendix D.

Option 2 - Designs using manufacturer's tabulated data

- Design of support systems, shield systems, or other protective systems that are drawn from manufacturer's tabulated data should be in accordance with all specifications, recommendations, and limitations issued or made by the manufacturer.
- Deviation from the specifications, recommendations, and limitations issued or made by the manufacturer should only be allowed after the manufacturer issues specific written approval.
- Manufacturer's specifications, recommendations, and limitations, and manufacturer's approval to deviate from the specifications, recommendations, and limitations should be in written form at the jobsite during construction of the protective system. After that time this data may be stored off the jobsite, but a copy should be made available upon request.

Option 3 - Designs using other tabulated data

- Designs of support systems, shield systems, or other protective systems should be selected from and be in accordance with tabulated data, such as tables and charts.
- The tabulated data should be in written form and include all the following:
 - Identification of the parameters that affect the selection of a protective system drawn from such data.
 - Identification of the limits of use of the data.
 - Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data.

At least one copy of the tabulated data, which identifies the registered professional engineer who approved the data, should be maintained at the jobsite during construction of the protective system. After that time the data may be stored off the jobsite, but a copy of the data should be made available upon request.

Option 4 - Design by a registered professional engineer

- Support systems, shield systems, and other protective systems not utilizing Option 1, 2 or 3, above, should be approved by a registered professional engineer.
- Designs should be in written form and should include the following:
 - A plan indicating the sizes, types, and configurations of the materials to be used in the protective system; and
 - The identity of the registered professional engineer approving the design.
- At least one copy of the design should be maintained at the jobsite during construction of the protective system. After that time, the design may be stored off the jobsite, but a copy of the design should be made available upon request.

Materials and Equipment

Materials and equipment used for protective systems should be free from damage or defects that might impair their proper function. Manufactured materials and equipment used for protective systems should be used and maintained in a manner that is consistent with the recommendations of the manufacturer, and in a manner that will prevent employee exposure to hazards.

When material or equipment that is used for protective systems is damaged, a competent person should examine the material or equipment and evaluate its suitability for continued use. If the competent person cannot assure the material or equipment is able to support the intended loads or is otherwise suitable for safe use, then such material or equipment should be removed from service and should be evaluated and approved by a registered professional engineer before being returned to service.

Installation and Removal of Supports

- Members of support systems should be securely connected to prevent sliding, falling, kickouts, or other predictable failure.
- Support systems should be installed and removed in a manner that protects employees from cave-ins, structural collapses, or from being struck by members of the support system.
- Individual members of support systems should not be subjected to loads exceeding those which those members were designed to withstand.
- Before temporary removal of individual members begins, additional precautions should be taken to ensure the safety of employees, such as installing other structural members to carry the loads imposed on the support system.
- Removal should begin at, and progress from, the bottom of the excavation. Members should be released slowly to note any indication of possible failure of the remaining members of the structure or possible cave-in of the sides of the excavation.
- Backfilling should progress together with the removal of support systems from excavations.

Additional Requirements for Support Systems for Trench Excavations

Excavation of material to a level no greater than 2 feet below the bottom of the members of a support system should be permitted, but only if the system is designed to resist the forces calculated for the full depth of the trench, and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the support system.

Installation of a support system should be closely coordinated with the excavation of trenches.

Sloping and Benching Systems

Employees should not be permitted to work on the faces of sloped or benched excavations at levels above other employees except when employees at the lower levels are adequately protected from the hazard of falling, rolling, or sliding material or equipment.

Shield Systems

- Shield systems should not be subjected to loads exceeding those which the system was designed to withstand.
- Shields should be installed in a manner to restrict lateral or other hazardous movement of the shield in the event of the application of sudden lateral loads.
- Employees should be protected from the hazard of cave-ins when entering or exiting the areas protected by shields.
- Employees should not be allowed in shields when shields are being installed, removed, or moved vertically.

Additional requirements for shield systems used in trench excavations. The sides of the shield should extend a minimum of 18 inches above the vertical walls of compound excavations as shown in Appendix B, figures B-1, B-1.2 and B-1.3. On vertically cut trenches, the shield should extend to at least the catch point of the trench. Excavations of earth material to a level not greater than 2 feet below the bottom of a shield should be permitted, but only if the shield is designed to resist the forces calculated for the full depth of the trench, and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the shield.

Uprights should extend to the top of the trench with the lower end of the upright not more than 2 feet from the bottom of the trench.

SHAFTS

- All wells or shafts over 5 feet in depth into which employees are permitted to enter should be retained with lagging, spiling, or casing with exception in relation to exploration shafts as referenced in this section.
- The lagging, spiling, or casing should extend at least one-foot above ground level and should be provided the full depth of the shaft or at least five feet into solid rock if possible.
- All wells, pits, shafts, caissons, etc. should be barricaded or securely covered.
- Upon completion of exploration and similar operations, temporary wells, pits, shafts, etc., should be backfilled.

Small Shafts in Hard Compact Soil

Two-inch (nominal) cribbing may be used in square shafts not over 4 feet square in hard compact soil. Each member should be cut 1/2 way through the width of the member and dovetailed into

position so each member will act as a shore as well as lagging. Strips should be nailed in each corner to prevent the boards from dropping down.

Shafts in Other Than Hard Compact Soil

A system of lagging supported by braces and corner posts should be used for square or rectangular shafts. Corner posts of 4-inch by 4-inch material are normally acceptable in shafts 4 feet square, or smaller, if they are braced in each direction with horizontal 4-inch by 4-inch members at intervals not exceeding 4 feet. Braces and corner posts in larger shafts should be correspondingly larger as determined by a civil engineer. Round shafts should be completely lagged with 2-inch material which is supported at intervals not greater than 4 feet by means of adjustable rings of metal or timber that are designed to resist the collapsing force, or cased in a manner that provides equivalent protection.

Exploration Shafts

Only a geotechnical specialist should be permitted to enter an exploration shaft without lagging, spiling, or casing for the purpose of subsurface investigations under the conditions that follow.

Inspection - The type of materials and stability characteristics of the exploration shaft should be personally observed and recorded by the geotechnical specialist during the drilling operation. Potentially unsafe exploration shafts should not be entered.

Surface Casing - The upper portion of the exploration shaft should be equipped with a surface ring-collar to provide casing support of the material within the upper 4 feet of the exploration shaft. The ring-collar should extend at least 1-foot above the ground surface.

Gas Tests - Prior to entry into exploration shafts, tests and/or procedures should be instituted to assure that the atmosphere within the shaft does not contain dangerous air contamination or oxygen deficiency. These tests and/or procedures should be maintained while working within the shaft to assure that dangerous air contamination or oxygen deficiency will not occur. (See Section 5156 of the General Industry Safety Orders.)

Unstable Local Conditions - The geotechnical specialist should not descend below any portion of any exploration shaft where caving or groundwater seepage is noted or suspected.

Ladder and Cable Descents - A ladder may be used to inspect exploration shafts 20 feet or less in depth. In deeper exploration shafts, properly maintained mechanical hoisting devices with a safety factor of at least 6 should be provided and used. Such devices should be under positive control of the operator being positive powered up and down with fail-safe brakes.

Emergency Standby Employee - An emergency standby employee should be positioned at the surface near the exploration shaft opening whenever a geotechnical specialist is inside the shaft.

Communication - A two-way, electrically operated communication system should be in operation between the standby employee and the geotechnical specialist whenever boring inspections are being made in exploration shafts over 20 feet in depth or when ambient noise levels make communication difficult.

Safety Equipment - The following safety equipment should be used to protect the geotechnical specialist:

- An approved safety harness which will suspend a person upright and that is securely attached to the hoist cable.
- A 12-inch to 18-inch diameter steel cone-shaped headguard/deflector that is attached to the hoist cable above the harness.
- A hoist cable having a minimum diameter of 5/16 inches.
- Approved head protection. (See CAL/OSHA Title 8 Regulations, Subchapter 4, Section 1515.)

Electrical Devices - All electrical devices used within the exploration shaft by the geotechnical specialist should be approved for hazardous locations.

Surface Hazards - The storage and use of flammable or other dangerous materials should be controlled at the surface to prevent them from entering the exploration shaft.

COFFERDAMS

If overtopping of the cofferdam by high waters is possible, means should be provided for controlled flooding of the work area. Warning signs for evacuation of employees in case of emergency should be developed and posted. Cofferdam walkways, bridges, or ramps with at least two means of rapid exit, should be provided with guardrails. Cofferdams located close to navigable shipping channels should be protected from vessels in transit, where possible.

DEFINITIONS

Accepted engineering practices - means those requirements which are compatible with standards of practice required by a registered professional engineer.

Aluminum hydraulic shoring - A pre-engineered shoring system comprised of aluminum hydraulic cylinders (cross braces) used in conjunction with vertical rails (uprights) or horizontal rails (walers). Such system is designed specifically to support the sidewalls of an excavation and prevent cave-ins.

Bell-bottom pier hole - A type of shaft or footing excavation, the bottom of which is made larger than the cross section above to form a belled shape.

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

Cave-in - The separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.

Cross braces - The horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or Wales.

Excavation - Any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.

Faces or Sides - The vertical or inclined earth surfaces formed as a result of excavation work.

Failure - The breakage, displacement, or permanent deformation of a structural member or connection so as to reduce its structural integrity and its supportive capabilities.

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

Kickout - The accidental release or failure of a cross brace.

Protective system - A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

Ramp - An inclined walking or working surface that is used to gain access to one point from another and is constructed from earth or from structural materials such as steel or wood.

Registered professional engineer - A person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer, registered in any state is deemed to be a "registered professional engineer" within the meaning of this standard when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce.

Sheeting - The members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.

Shield (Shield system) - A structure that can withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Additionally, shields can be either premanufactured or job-built in accordance with the policy. Shields used in trenches are usually referred to as "trench boxes" or "trench shields."

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

Sloping (Sloping system) - A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

Stable rock - Natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material on the side or sides of the excavation is secured against caving-in or movement by rock bolts or by another protective system that has been designed by a registered professional engineer.

Structural ramp- A ramp built of steel or wood, usually used for vehicle access. Ramps made of soil or rock are not considered structural ramps.

Support system - A structure such as underpinning, bracing, or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.

Tabulated data- Tables and charts approved by a registered professional engineer and used to design and construct a protective system.

Trench (Trench excavation) - A narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet. If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet or less, (measured at the bottom of the excavation), the excavation is also considered to be a trench.

Uprights - The vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not contact each other. Uprights placed so

that individual members are closely spaced, in contact with or interconnected to each other, are often called "sheeting,"

Wales - Horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the shoring system or earth.

REQUIREMENTS FOR PROTECTIVE SYSTEMS APPENDIX A

Soil Classification

This appendix describes a method of classifying soil and rock deposits based on site and environmental conditions, and on the structure and composition of the earth deposits. The appendix contains definitions, sets forth requirements, and describes acceptable visual and manual tests for use in classifying soils.

Application

This appendix applies when a sloping or benching system is designed in accordance with the requirements set forth as a method of protection for employees from cave-ins. This appendix also applies when timber shoring for excavations is designed as a method of protection from cave-ins in accordance with Appendix C to this article, and when aluminum hydraulic shoring is designed in accordance with Appendix D. This appendix also applies if other protective systems are designed and selected for use from data prepared in accordance with the requirements set forth in this section, and the use of the data is predicated on the use of the soil classification system set forth in this appendix.

DEFINITIONS

Cemented soil - A soil in which the particles are held together by a chemical agent, such a calcium carbonate, such that a hand-size sample cannot be crushed into powder or individual soil particles by finger pressure.

Cohesive soil - Clay (fine grained soil), or soil with a high clay content, which has cohesive strength. Cohesive soil does not crumble, can be excavated with vertical side slopes, and is plastic when moist. Cohesive soil is hard to break up when dry and exhibits significant cohesion when submerged. Cohesive soils include clayey silt, sandy clay, silty clay, clay, and organic clay.

Dry soil - Soil that does not exhibit visible signs of moisture content.

Fissured - A soil material that tends to break along definite planes of fracture with little resistance, or a material that exhibits open cracks, such as tension cracks, in an exposed surface.

Granular soil - Gravel, sand, or silt (coarse grained soil) with little or no clay content. Granular soil has no cohesive strength. Some moist granular soils exhibit apparent cohesion. Granular soil cannot be molded when moist and crumbles easily when dry.

Layered system - Two or more distinctly different soil or rock types arranged in layers. Micaceous seams or weakened planes in rock or shale are considered layered.

Moist soil - A condition in which a soil looks and feels damp. Moist cohesive soil can easily be shaped into a ball and rolled into small diameter threads before crumbling. Moist granular soil that contains some cohesive material will exhibit signs of cohesion between particles.

Plastic - A property of a soil which allows the soil to be deformed or molded without cracking, or appreciable volume change.

Saturated soil - A soil in which the voids are filled with water. Saturation does not require flow. Saturation, or near saturation, is necessary for the proper use of instruments such as a pocket penetrometer or shear vane.

Soil classification system - A method of categorizing soil and rock deposits in a hierarchy of Stable Rock, Type A, Type B, and Type C, in decreasing order of stability. The categories are determined based on an analysis of the properties and performance characteristics of the deposits and the environmental conditions of exposure.

Stable rock - Natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.

Submerged soil - Soil which is underwater or is free seeping.

Type A soil - Cohesive soils with an unconfined, compressive strength of 1.5 ton per square foot (tsf) or greater. Examples of cohesive soils are clay, silty clay, sandy clay, clay loam and, in some cases, silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A.

Soil is not considered Type A if any of the following are present:

- The soil is fissured
- The soil is subject to vibration from heavy traffic, pile driving, or similar effects
- The soil has been previously disturbed
- The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater
- The material is subject to other factors that would require it to be classified as a less stable material

It is considered Type B soil if any of the following are present:

- Cohesive soil with an unconfined compressive strength greater than 0.5 tsf but less than 1.5 tsf
- Granular cohesionless soils including angular gravel (similar to crushed rock), silt, silt loam, sandy loam and, in some cases, silty clay loam and sandy clay loam
- Previously disturbed soils except those which would otherwise be classed as Type C soil
- Soil that meets the unconfined compressive strength or cementation requirements for Type A but is fissured or subject to vibration
- Dry rock that is not stable
- Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontals to one vertical (4H:1V), but only if the material would otherwise be classified as Type B

It is considered Type C soil when any of the following is present:

- Cohesive soil with an unconfined compressive strength of 0.5 tsf or less
- Granular soils including gravel, sand, and loamy sand
- Submerged soil or soil from which water is freely seeping
- Submerged rock that is not stable
- Material in a sloped, layered system where the layers dip into the excavation or a slope of four horizontal to one vertical (4H:1V) or steeper

Unconfined compressive strength - The load per unit area at which a soil will fail in compression. It can be determined by laboratory testing, or estimated in the field using a pocket penetrometer, by thumb penetration tests, and other methods.

Wet soil - Soil that contains significantly more moisture than moist soil, but in such a range of values that cohesive material will slump or begin to flow when vibrated. Granular material that would exhibit cohesive properties when moist will lose those cohesive properties when wet.

Requirements

Classification of soil and rock deposits. Each soil and rock deposit should be classified by a competent person as Stable Rock, Type A, Type B, or Type C.

The classification of the deposits should be made based on the results of at least one visual and at least one manual analysis. Such analyses should be conducted by a competent person using tests described below, or in other approved methods of soil classification and testing such as those adopted by the American Society for Testing Materials, or the U.S. Department of Agriculture textural classification system.

The visual and manual analyses should be designed and conducted to provide sufficient quantitative and qualitative information as may be necessary to identify properly the properties, factors, and conditions affecting the classification of the deposits.

In a layered system, the system should be classified in accordance with its weakest layer. However, each layer may be classified individually where a more stable layer lies under a less stable layer.

If, after classifying a deposit, the properties, factors, or conditions affecting its classification change in any way, the changes should be evaluated by a competent person. The deposit should be reclassified as necessary to reflect the changed circumstances.

Visual Tests

Visual analysis is conducted to determine qualitative information regarding the excavation site in general, the soil adjacent to the excavation, the soil forming the sides of the open excavation, and the soil taken as samples from excavated material.

- Observe samples of soil that are excavated and soil in the sides of the excavation. Estimate the range of particle sizes and the relative amounts of the particle sizes. Soil that is primarily composed of fine-grained material is cohesive material. Soil composed primarily of coarse-grained sand or gravel is granular material.
- Observe soil as it is excavated. Soil that remains in clumps when excavated is cohesive. Soil that breaks up easily and does not stay in clumps is granular.
- Observe the side of the opened excavation and the surface area adjacent to the excavation. Crack-like openings such as tension cracks could indicate fissured material. If chunks of soil spall off a vertical side, the soil could be fissured. Small spalls are evidence of moving ground and are indications of potentially hazardous situations.
- Observe the area adjacent to the excavation and the excavation itself for evidence of existing utility and other underground structures, and to identify previously disturbed soil.
- Observe the opened side of the excavation to identify layered systems. Examine layered systems to identify if the layers slope toward the excavation. Estimate the degree of slope of the layers.
- Observe the area adjacent to the excavation and the sides of the opened excavation for evidence of surface water, water seeping from the sides of the excavation, or the location of the level of the water table.
- Observe the area adjacent to the excavation and the area within the excavation for sources of vibration that may affect the stability of the excavation face.

Manual Tests

Manual analysis of soil samples is conducted to determine quantitative as well as qualitative properties of soil and to provide more information to classify soil properly.

- **Plasticity** - Mold a moist or wet sample of soil into a ball and attempt to roll it into threads as thin as 1/8-inch in diameter. Cohesive material can be successfully rolled into threads without crumbling. For example, if at least a two-inch length of 1/8-inch thread can be held on one end without tearing, the soil is cohesive.
- **Dry strength** - If the soil is dry and crumbles on its own or with moderate pressure into individual grains or fine powder, it is granular (any combination of gravel, sand, or silt). If the soil is dry and falls into clumps which break up into smaller clumps, but the smaller clumps can only be broken up with difficulty, it may be clay in any combination with gravel, sand, or silt. If the dry soil breaks into clumps which do not break up into small clumps and which can only be broken with difficulty, and there is no visual indication the soil is fissured, the soil may be considered un-fissured.
- **Thumb penetration** - The thumb penetration test can be used to estimate the unconfined compressive strength of cohesive soils. Type A soils with an unconfined compressive strength of 1.5 tsf can be readily indented by the thumb; however, they can be penetrated by the thumb only with very great effort. Type C soils with an unconfined compressive strength of 0.5 tsf can be easily penetrated several inches by the thumb and can be molded by light finger pressure. This test should be conducted on an undisturbed soil sample, such as a large clump of spoil, as soon as practicable after excavation to keep to a minimum the effects of exposure to drying influences (rain, flooding), the classification of the soil must be changed accordingly.
- **Other strength tests** - Estimates of unconfined compressive strength of soils can also be obtained by use of a pocket penetrometer or by using a hand-operated Shearvane.
- **Drying test** - The basic purpose of the drying test is to differentiate between cohesive material with fissures, un-fissured cohesive material, and granular material. The procedure for the drying test involves drying a sample of soil that is approximately one inch thick and six inches in diameter until it is thoroughly dry:
 - If the sample develops cracks as it dries, significant fissures are indicated.
 - Samples that dry without cracking are to be broken by hand. If considerable force is necessary to break a sample, the soil has significant cohesive material content. The soil can be classified as an un-fissured cohesive material, and the unconfined compressive strength should be determined.
 - If a sample breaks easily by hand, it is either a fissured cohesive material or a granular material. To distinguish between the two, pulverize the dried clumps of the sample by hand or by stepping on them. If the clumps do not pulverize easily, the material is cohesive with fissures. If they pulverize easily into very small fragments, the material is granular.

REQUIREMENTS FOR PROTECTIVE SYSTEMS APPENDIX B

Sloping and Benching

This appendix contains specifications for sloping and benching when used as methods of protecting employees working in excavations from cave-ins. The requirements of this appendix apply when the design of sloping and benching protective systems is to be performed in accordance with the requirements of this policy.

DEFINITIONS

Actual slope - means the slope to which an excavation face is excavated.

Distress - means that the soil is in a condition where a cave-in is imminent or is likely to occur. Distress is evidenced by such phenomena as the development of fissures in the face of or adjacent to an open excavation; the subsidence of the edge of an excavation; the slumping of material from the face or the bulging or heaving of material from the bottom of an excavation; the spalling of material from the face of an excavation; and raveling, i.e., small amounts of material such as pebbles or little clumps of material suddenly separating from the face of an excavation and trickling or rolling down into the excavation.

Maximum allowable slope - means the steepest incline of an excavation face that is acceptable for the most favorable site conditions as protection against cave-ins, and is expressed as the ratio of horizontal distance to vertical rise (H: V).

Short term exposure - means a period less than or equal to 24 hours that an excavation is open.

Requirements

Soil and rock deposits should be classified in accordance with Appendix A.

The maximum allowable slope for a soil or rock deposit should be determined from Table B-1 of this appendix.

Actual Slope

The actual slope should not be steeper than the maximum allowable slope. The actual slope should be less steep than the maximum allowable slope when there are signs of distress. If that situation occurs, the slope should be cut back to an actual slope which is at least 1/2 horizontal to one vertical (1/2H:1V) less steep than the maximum allowable slope.

When surcharge loads from stored material or equipment, operating equipment, or traffic are present, a competent person should determine the degree to which the actual slope must be reduced below the maximum allowable slope and should assure that such reduction is achieved. Surcharge loads from adjacent structures should be evaluated in accordance with this policy.

Configurations of sloping and benching systems should be in accordance with Figure B-1.

TABLE B-1
MAXIMUM ALLOWABLE SLOPES

SOIL OR ROCK TYPE	MAXIMUM ALLOWABLE SLOPES (H:V)(1) FOR EXCAVATIONS LESS THAN 20 FEET DEEP(3)
STABLE ROCK	VERTICAL (90 Deg.)
TYPE A (2)	3/4:1 (53 Deg.)
TYPE B	1:1 (45 Deg.)
TYPE C	1 1/2:1 (34 Deg.)

NOTES:

1. Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.
2. A short-term maximum allowable slope of 1/2H:1V (63 degrees) is allowed in excavations in Type A soil that are 12 feet (3.67 m) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth should be 3/4H:1V (53 degrees).
3. Sloping or benching for excavations greater than 20 feet deep should be designed by a registered professional engineer.

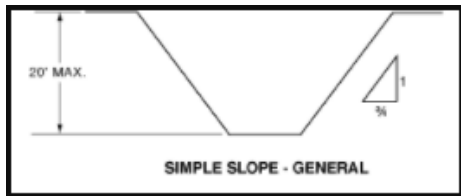
Figure B-1
Slope Configurations

(All slopes stated below are in the horizontal to vertical ratio)

B-1.1 Excavations made in Type A soil

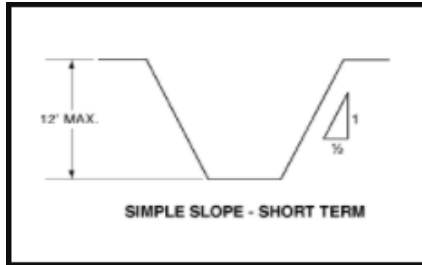
All simple slope excavations 20 feet or less in depth should have a maximum allowable slope of 3/4:1.

Simple Slope-General



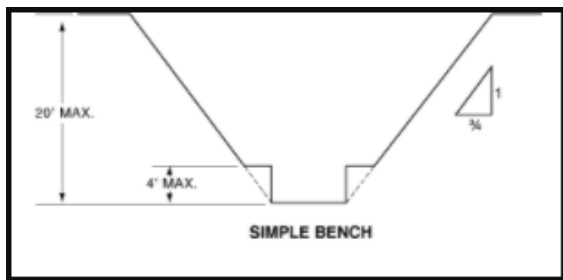
Simple slope excavations which are open 24 hours or less (short term) and which are 12 feet or less in depth should have a maximum allowable slope of 1/2:1.

Simple Slope- Short Term

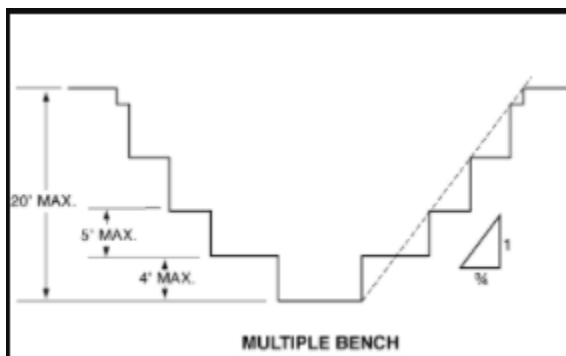


All benched excavations 20 feet or less in depth should have a maximum allowable slope of 3/4 to 1 and maximum bench dimensions as follows:

Simple Bench

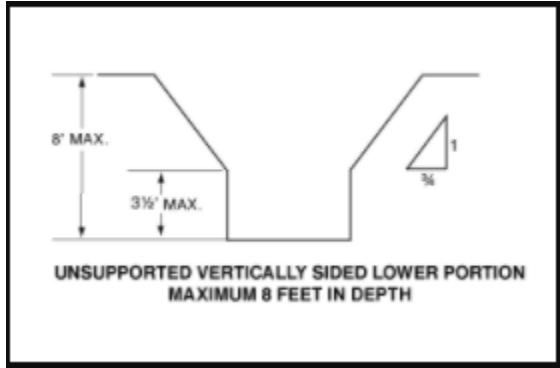


Multiple Bench



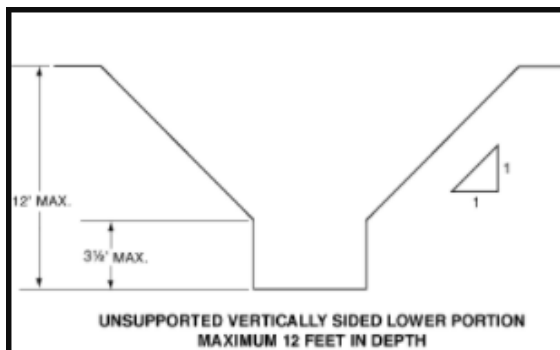
All excavations 8 feet or less in depth which have unsupported vertically sided lower portions should have a maximum vertical side 3 1/2 feet.

Unsupported Vertically Sided Lower Portion-Maximum 8 Feet Depth



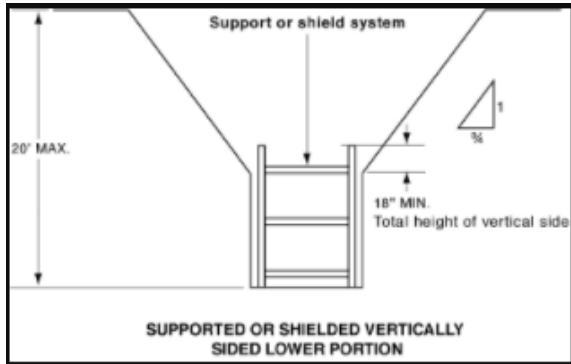
All excavations more than 8 feet but not more than 12 feet in depth with unsupported vertically sided lower portions should have a maximum allowable slope of 1:1 and a maximum vertical side of 3 1/2 feet.

Unsupported Vertically Sided Lower Portion-Maximum 12 Feet in Depth



All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded should have a maximum allowable slope of 3/4:1. The support or shield system must extend at least 18 inches above the top of the vertical side.

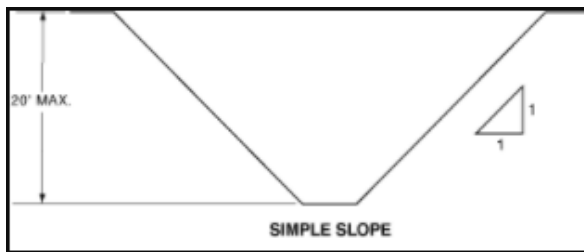
Supported or Shielded Vertically Sided Lower Portion



B- 1.2 Excavations Made in Type B Soil

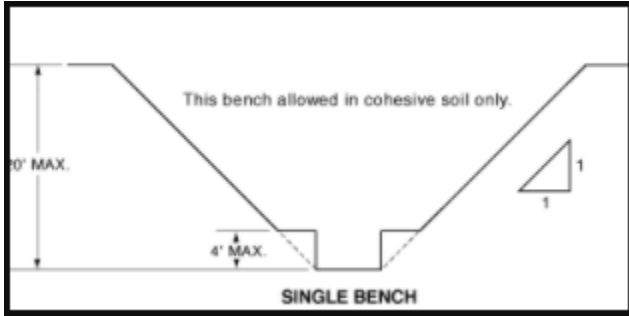
All simple slope excavations 20 feet or less in depth should have a maximum allowable slope of 1:1.

Simple Slope

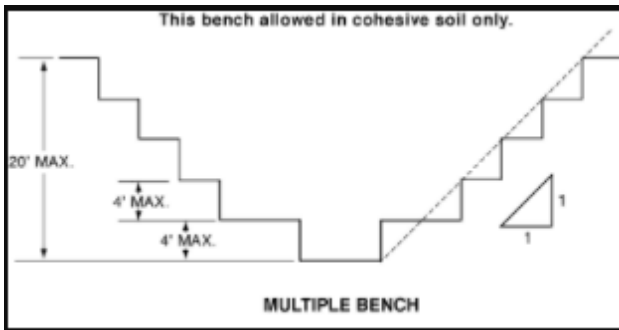


All benched excavations 20 feet or less in depth should have a maximum allowable slope of 1:1 and maximum bench dimensions as follows:

Single Bench

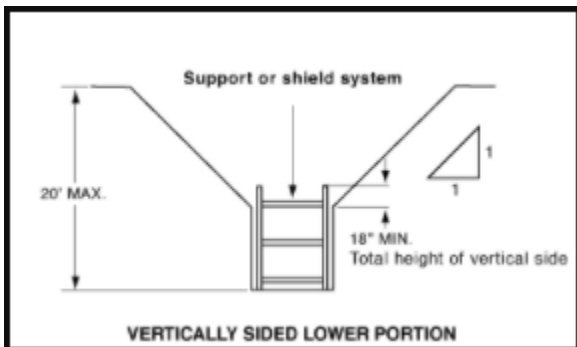


Multiple Bench



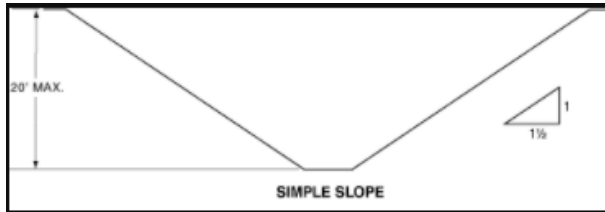
All excavations 20 feet or less in depth which have vertically sided lower portions should be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations should have a maximum allowable slope of 1:1

Vertically Sided Lower Portion

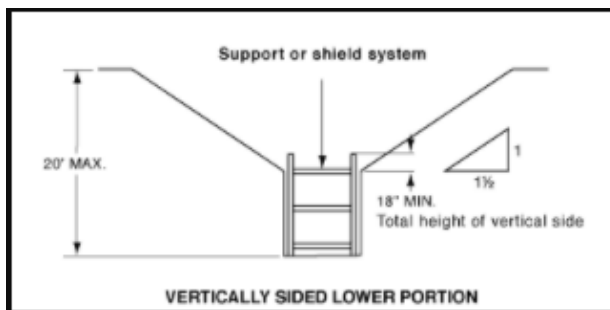


B- 1.3 Excavations Made in Type C Soil

All simple slope excavations 20 feet or less in depth should have a maximum allowable slope of 1 1/2:1

Simple Slope

All excavations 20 feet or less in depth which have vertically sided lower portions should be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations should have a maximum allowable slope of 1 1/2:1.

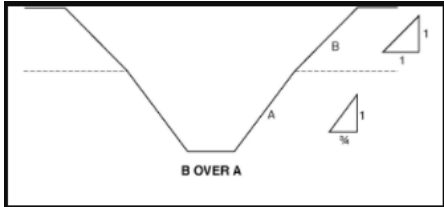
Vertically Sided Lower Portion

All other sloped excavations should be in accordance with the other options permitted.

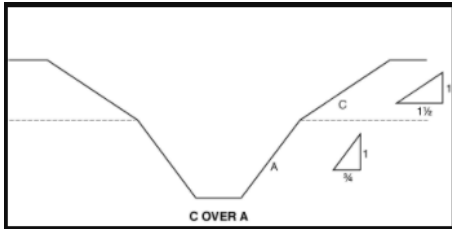
B- 1.4 Excavations Made in Layered Soil

All excavations 20 feet or less in depth made in layered soils should have a maximum allowable slope for each layer as set forth below:

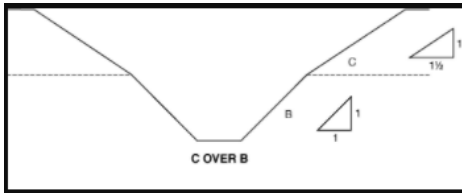
B OVER A



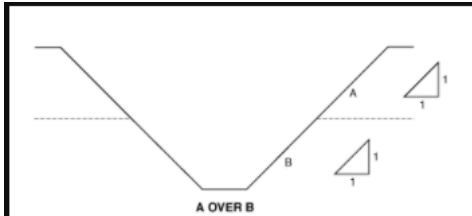
C OVER A



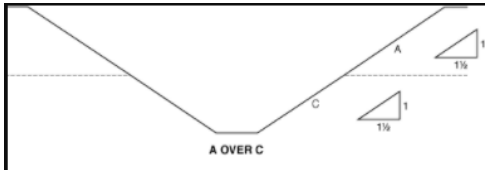
C OVER B

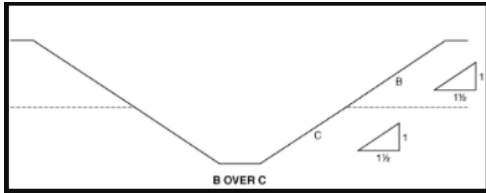


A OVER B



A OVER C



B OVER C

All other sloped excavations should be in accordance with the other options permitted.

REQUIREMENTS FOR PROTECTIVE SYSTEMS APPENDIX C**Timber Shoring for Trenches**

This appendix contains information that can be used when timber shoring is provided as a method of protection from cave-ins in trenches that do not exceed 20 feet in depth. This appendix must be used when design of timber shoring protective systems is to be performed in accordance with this policy. Other timber shoring configurations; other systems of support such as hydraulic and pneumatic systems; and other protective systems such as sloping, benching, shielding, and freezing systems must be designed in accordance with the requirements of this policy.

Soil Classification

To use the data presented in this appendix, the soil type, or types in which the excavation is made must first be determined using the soil classification method set forth in Article 6.

Presentation of Information

Information is presented in several forms as follows:

- Information is presented in tabular form in Tables C-1.1, C-1.2 and C-1.3, and Tables C-2.1, C-2.2 and C-2.3. Each table presents the minimum sizes of timber members to use in a shoring system, and each table contains data only for the soil type in which the excavation or portion of the excavation is made. The data are arranged to allow the user the flexibility to select from among several acceptable configurations of members based on varying the horizontal spacing of the cross-braces. Stable rock is exempt from shoring requirements and therefore, no data are presented for this condition.
- Information concerning the basis of the tabular data and the limitations of the data is presented in this appendix, and on the tables themselves.
- Information explaining the use of the tabular data is presented in this appendix.
- Miscellaneous notations regarding Tables C-1.1 through C-1.3 and Tables C-2.1 through C-2.3 are presented in this appendix.

Basis and Limitations of the Data

Dimensions of timber members:

- The sizes of the timber members listed in Tables C-1.1 through C-1.3 are taken from the National Bureau of Standards (NBS) report, "Recommended Technical Provisions for Construction Practice in Shoring and Sloping of Trenches and Excavations." In addition, where NBS did not recommend specific sizes of members, member sizes are based on an analysis of the sizes required for use by existing codes and on empirical practice.
- The required dimensions of the members listed in Tables C-1.1 through C-1.3 refer to actual dimensions and not nominal dimensions of the timber. Companies wanting to use nominal size shoring are directed to Tables C-2.1 through C-2.3 or have this choice under the Options provided in this policy.

Limitation of Application

It is not intended that the timber shoring specification apply to every situation that may be experienced in the field. These data were developed to apply to the situations that are most experienced in current trenching practice. Shoring systems for use in situations that are not covered by the data in this appendix must be designed as specified in accordance with this policy.

When any of the following conditions are present, the members specified in the tables are not considered adequate. Either an alternate timber shoring system must be designed, or another type of protective system designed in accordance with this policy.

When loads imposed by structures or by stored material adjacent to the trench weigh more than the load imposed by a two-foot soil surcharge. The term "adjacent" as used here means the area within a horizontal distance from the edge of the trench equal to the depth of the trench.

When vertical loads imposed on cross braces exceed a 240-pound gravity load distributed on a one-foot section of the center of the cross brace.

When surcharge loads are present from equipment weighing more than 20,000 pounds.

When only the lower portion of a trench is shored and the remaining portion of the trench is sloped or benched unless: The sloped portion is sloped at an angle less steep than three horizontals to one vertical; or the members are selected from the tables for use at a depth which is determined from the top of the overall trench, and not from the toe of the sloped portion.

Use of Tables

The members of the shoring system that are to be selected using this information are the cross braces, the uprights, and the Wales, where Wales are required. Minimum sizes of members are specified for use in different types of soil. There are six tables of information, two for each soil type. The soil type must first be determined in accordance with the soil classification system described in Appendix A. Using the appropriate table, the selection of the size and spacing of the

members is then made. The selection is based on the depth and width of the trench where the members are to be installed and, in most instances, the selection is also based on the horizontal spacing of the cross braces. Instances where a choice of horizontal spacing of cross bracing is available, the horizontal spacing of the cross braces must be chosen by the user before the size of any member can be determined. When the soil type, the width and depth of the trench, and the horizontal spacing of the cross braces, the size and vertical spacing of the cross braces are known, the size and vertical spacing of the cross braces, the size and vertical spacing of the Wales, and the size and horizontal spacing of the uprights can be read from the appropriate table.

Examples to Illustrate the Use of Tables C-1.1 through C-1.3

Example 1

A trench dug in Type A soil is 13 feet deep and five feet wide. From Table C-1.1, four acceptable arrangements of timber can be used.

Arrangement #1

Space 4X4 cross braces at six feet horizontally and four feet vertically. Wales are not required.

Space 3X8 uprights at six feet horizontally. This arrangement is commonly called "skip shoring."

Arrangement #2

Space 4X6 cross braces at eight feet horizontally and four feet vertically.

Space 8X8 wales at four feet vertically.

Space 2X6 uprights at four feet horizontally.

Arrangement #3

Space 6X6 cross braces at 10 feet horizontally and four feet vertically.

Space 8X10 wales at four feet vertically.

Space 2X6 uprights at five feet horizontally.

Arrangement #4

Space 6X6 cross braces at 12 feet horizontally and four feet vertically.

Space 10X10 wales at four feet vertically.

Space 3X8 uprights at six feet horizontally.

Example 2

A trench dug in Type B soil is 13 feet deep and five feet wide. From Table C-1.2 three acceptable arrangements of members are listed.

Arrangement #1

Space 6X6 cross braces at six feet horizontally and five feet vertically.

Space 8X8 wales at five feet vertically.

Space 2X6 uprights at two feet horizontally.

Arrangement #2

Space 6X8 cross braces at eight feet horizontally and five feet vertically.

Space 10X10 wales at five feet vertically.

Space 2X6 uprights at two feet horizontally.

Arrangement #3

Space 8X8 cross braces at 10 feet horizontally and five feet vertically.

Space 10X12 wales at five feet vertically.

Space 2X6 uprights at two feet vertically.

Example 3

A trench dug in Type C soil is 13 feet deep and five feet wide.

From Table C-1.3 two acceptable arrangements of members can be used.

Arrangement #1

Space 8X8 cross braces at six feet horizontally and five feet vertically.

Space 10X12 wales at five feet vertically.

Position 2X6 uprights as closely together as possible.

If water must be retained use special tongue and groove uprights to form tight sheeting.

Arrangement #2

Space 8X10 cross braces at eight feet horizontally and five feet vertically.

Space 12X12 wales at five feet vertically.

Position 2X6 uprights in a close sheeting configuration unless water pressure must be resisted. Tight sheeting must be used where water must be retained.

Example 4

A trench dug in Type C soil is 20 feet deep and 11 feet wide. The size and spacing of members for the section of trench that is over 15 feet in depth is determined using Table C-1.3. Only one arrangement of members is provided.

Space 8X10 cross braces at six feet horizontally and five feet vertically.

Space 12X12 wales at five feet vertically.

Use 3X6 tight sheeting.

Use of Tables C-2.1 through C-2.3 would follow the same procedures.

Notes for All Tables

- Members sizes at spacings other than indicated are to be determined as specified in the section, "Design of Protective Systems."
- When conditions are saturated or submerged use Tight Sheeting. Tight Sheeting refers to the use of specially edged timber planks (e.g., tongue and groove) at least three inches thick, steel sheet piling, or similar construction that when driven or placed in position provide a tight wall to resist the lateral pressure of water and to prevent the loss of backfill material. Close Sheeting refers to the placement of planks side-by-side allowing as little space as possible between them.
- All spacing indicated is measured center to center.
- Wales to be installed with greater dimension horizontal.
- If the vertical distance from the center of the lowest cross brace to the bottom of the trench exceeds two and one-half feet, uprights should be firmly embedded, or a

mudsill should be used. Where uprights are embedded, the vertical distance from the center of the lowest cross brace to the bottom of the trench should not exceed 36 inches. When mudsills are used, the vertical distance should not exceed 42 inches. Mudsills are wales that are installed at the toe of the trench side.

- Trench jacks may be used in lieu of or in combination with timber cross braces.
- Placement of cross braces. When the vertical spacing of cross braces is four feet, place the top cross brace no more than two feet below the top of the trench. When the vertical spacing of cross braces is five feet, place the top cross brace no more than 2.5 feet below the top of the trench.

Table C-1.1

TABLE C-1.1
TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS *
SOIL TYPE A $P(a) = 25 \times H + 72$ psf (2 ft Surcharge)

DEPTH OF TRENCH (FEET)	SIZE (ACTUAL) AND SPACING OF MEMBERS **						VERT. SPACING (FEET)
	HORIZ. SPACING (FEET)	CROSS BRACES					
		WIDTH OF TRENCH (FEET)					
	UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15		
5	UP TO 6	4X4	4X4	4X6	6X6	6X6	4
TO	UP TO 8	4X4	4X4	4X6	6X6	6X6	4
10	UP TO 10	4X6	4X6	4X6	6X6	6X6	4
	UP TO 12	4X6	4X6	6X6	6X6	6X6	4
	UP TO 6	4X4	4X4	4X6	6X6	6X6	4
10	UP TO 8	4X6	4X6	6X6	6X6	6X6	4
TO	UP TO 10	6X6	6X6	6X6	6X8	6X8	4
15	UP TO 12	6X6	6X6	6X6	6X8	6X8	4
	UP TO 6	6X6	6X6	6X6	6X8	6X8	4
15	UP TO 8	6X6	6X6	6X6	6X8	6X8	4
TO	UP TO 10	8X8	8X8	8X8	8X8	8X10	4
20	UP TO 12	8X8	8X8	8X8	8X8	8X10	4
OVER 20	SEE NOTE 1						

Table C-1.1 Continued

TABLE C-1.1
TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS *
SOIL TYPE A P(a) = 25 X H + 72 psf (2 ft Surcharge)
[Continued]

DEPTH OF TRENCH (FEET)	SIZE (ACTUAL) AND SPACING OF MEMBERS **						
	WALES		UPRIGHTS				
	SIZE (IN)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)				
			CLOSE	4	5	6	8
5	Not Req'd	---				2X6	
TO	Not Req'd	---					2X8
10	8X8	4			2X6		
	8X8	4				2X6	
	Not Req'd	---				3X8	
10	8X8	4		2X6			
TO	8X10	4			2X6		
15	10X10	4				3X8	
	6X8	4	3X6				
15	8X8	4	3X6				
TO	8X10	4	3X6				
20	10X10	4	3X6				
OVER 20	SEE NOTE 1						

* Mixed oak or equivalent with a bending strength not less than 850 psi.

** Manufactured members of equivalent strength may be substituted for wood.

Table C-1.2

TABLE C-1.2
TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS *
SOIL TYPE B P(a) = 45 X H + 72 psf (2 ft Surcharge)

DEPTH OF TRENCH (FEET)	SIZE (ACTUAL) AND SPACING OF MEMBERS **						VERT. SPACING (FEET)
	HORIZ. SPACING (FEET)	WIDTH OF TRENCH (FEET)					
		UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15	
5	UP TO 6	4X6	4X6	6X6	6X6	6X6	5
TO	UP TO 8	6X6	6X6	6X6	6X8	6X8	5
10	UP TO 10	6X6	6X6	6X6	6X8	6X8	5
	See Note 1						
	UP TO 6	6X6	6X6	6X6	6X8	6X8	5
10	UP TO 8	6X8	6X8	6X8	8X8	8X8	5
TO	UP TO 10	8X8	8X8	8X8	8X8	8X10	5
15	See Note 1						
	UP TO 6	6X8	6X8	6X8	8X8	8X8	5
15	UP TO 8	8X8	8X8	8X8	8X8	8X10	5
TO	UP TO 10	8X10	8X10	8X10	8X10	10X10	5
20	See Note 1						
OVER 20	SEE NOTE 1						

Table C-1.2 Continued

TABLE C-1.2
TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS *

SOIL TYPE B P(a) = 45 X H + 72 psf (2 ft Surcharge)

[Continued]

DEPTH OF TRENCH (FEET)	SIZE (ACTUAL) AND SPACING OF MEMBERS **					
	WALES		UPRIGHTS			
	SIZE (IN)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)			
			CLOSE	2	3	
5	6X8	5			2X6	
TO	8X10	5			2X6	
10	10X10	5			2X6	
	8X8	5			2X6	
10	10X10	5			2X6	
TO	10X12	5			2X6	
15						
	8X10	5	3X6			
15	10X12	5	3X6			
TO	12X12	5	3X6			
20						
OVER 20	SEE NOTE 1					

* Mixed oak or equivalent with a bending strength not less than 850 psi.

** Manufactured members of equivalent strength may be substituted for wood.

Table C-1.3

TABLE C-1.3
TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS *
SOIL TYPE C P(a) = 80 X H + 72 psf (2 ft Surcharge)

DEPTH OF TRENCH (FEET)	SIZE (ACTUAL) AND SPACING OF MEMBERS **						VERT. SPACING (FEET)
	HORIZ. SPACING (FEET)	CROSS BRACES					
		WIDTH OF TRENCH (FEET)					
		UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15	
5	UP TO 6	6X8	6X8	6X8	8X8	8X8	5
TO	UP TO 8	8X8	8X8	8X8	8X8	8X10	5
10	UP TO 10	8X10	8X10	8X10	8X10	10X10	5
	See Note 1						
	UP TO 6	8X8	8X8	8X8	8X8	8X10	5
10	UP TO 8	8X10	8X10	8X10	8X10	10X10	5
TO	See Note 1						
15	See Note 1						
	UP TO 6	8X10	8X10	8X10	8X10	10X10	5
15	See Note 1						
TO	See Note 1						
20	See Note 1						
OVER 20	SEE NOTE 1						

Table C-1.3 Continued

TABLE C-1.3
TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS *

SOIL TYPE C P(a) = 80 X H + 72 psf (2 ft Surcharge)

[Continued]

DEPTH OF TRENCH (FEET)	SIZE (ACTUAL) AND SPACING OF MEMBERS **					
	WALES		UPRIGHTS			
	SIZE (IN)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)			
			CLOSE			
5	8X10	5	2X6			
TO	10X12	5	2X6			
10	12X12	5	2X6			
	10X12	5	2X6			
10	12X12	5	2X6			
TO						
15						
	12X12	5	3X6			
15						
TO						
20						
OVER 20	SEE NOTE 1					

* Mixed oak or equivalent with a bending strength not less than 850 psi.
** Manufactured members of equivalent strength may be substituted for wood.

Table C-2.1

TABLE C-2.1

TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS *

SOIL TYPE A P(a) = 25 X H + 72 psf (2 ft Surcharge)

		SIZE (S4S) AND SPACING OF MEMBERS **					
DEPTH OF TRENCH (FEET)		CROSS BRACES					VERT. SPACING (FEET)
	HORIZ. SPACING (FEET)	WIDTH OF TRENCH (FEET)					
		UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15	
5	UP TO 6	4X4	4X4	4X4	4X4	4X6	4
	UP TO 8	4X4	4X4	4X4	4X6	4X6	4
10	UP TO 10	4X6	4X6	4X6	6X6	6X6	4
	UP TO 12	4X6	4X6	4X6	6X6	6X6	4
10	UP TO 6	4X4	4X4	4X4	6X6	6X6	4
	UP TO 8	4X6	4X6	4X6	6X6	6X6	4
15	UP TO 10	6X6	6X6	6X6	6X6	6X6	4
	UP TO 12	6X6	6X6	6X6	6X6	6X6	4
15	UP TO 6	6X6	6X6	6X6	6X6	6X6	4
	UP TO 8	6X6	6X6	6X6	6X6	6X6	4
20	UP TO 10	6X6	6X6	6X6	6X6	6X8	4
	UP TO 12	6X6	6X6	6X6	6X8	6X8	4
OVER 20	SEE NOTE 1						

Table C-2.1 Continued

TABLE C-2.1
TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS *
SOIL TYPE A P(a) = 25 X H + 72 psf (2 ft Surcharge)
[Continued]

		SIZE (S4S) AND SPACING OF MEMBERS **				
DEPTH OF TRENCH (FEET)	WALES		UPRIGHTS			
	SIZE (IN)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)			
			CLOSE	4	5	6
5	Not Req'd	Not Req'd				4X6
TO	Not Req'd	Not Req'd				4X8
10	8X8	4			4X6	
	8X8	4				4X6
	Not Req'd	Not Req'd				4X10
10	6X8	4		4X6		
TO	8X8	4			4X8	
15	8X10	4		4X6		4X10
	6X8	4	3X6			
15	8X8	4	3X6	4x12		
TO	8X10	4	3X6			
20	8X12	4	3X6	4x12		
OVER 20	SEE NOTE 1					

* Douglas fir or equivalent with a bending strength not less than 1500 psi.
** Manufactured members of equivalent strength may be substituted for wood.

Table C-2.2

TABLE C-2.2
TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS *
SOIL TYPE B P(a) = 45 X H + 72 psf (2 ft Surcharge)

DEPTH OF TRENCH (FEET)	SIZE (S4S) AND SPACING OF MEMBERS **						VERT. SPACING (FEET)
	HORIZ. SPACING (FEET)	CROSS BRACES WIDTH OF TRENCH (FEET)					
		UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15	
5	UP TO 6	4X6	4X6	4X6	6X6	6X6	5
TO	UP TO 8	4X6	4X6	6X6	6X6	6X6	5
10	UP TO 10	4X6	4X6	6X6	6X6	6X8	5
	See Note 1						
	UP TO 6	6X6	6X6	6X6	6X8	6X8	5
10	UP TO 8	6X8	6X8	6X8	8X8	8X8	5
TO	UP TO 10	6X8	6X8	8X8	8X8	8X8	5
15	See Note 1						
	UP TO 6	6X8	6X8	6X8	6X8	8X8	5
15	UP TO 8	6X8	6X8	6X8	8X8	8X8	5
TO	UP TO 10	8X8	8X8	8X8	8X8	8X8	5
20	See Note 1						
OVER 20	SEE NOTE 1						

Table C-2.2 Continued

TABLE C-2.2
TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS *
SOIL TYPE B P(a) = 45 X H + 72 psf (2 ft Surcharge)
[Continued]

DEPTH OF TRENCH (FEET)	SIZE (S4S) AND SPACING OF MEMBERS **					
	WALES		UPRIGHTS			
	SIZE (IN)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)			
			CLOSE	2	3	
5	6X8	5			3X12 4X8	4X12
TO	8X8	5		3X8		4X8
10	8X10	5			4X8	
10	8X8	5	3X6	4X10		
TO	10X10	5	3X6	4X10		
15						
15	8X10	5	4X6			
TO	10X12	5	4X6			
20	12X12	5	4X6			
OVER 20		SEE NOTE 1				

* Douglas fir or equivalent with a bending strength not less than 1500 psi.
** Manufactured members of equivalent strength may be substituted for wood.

Table C-2.3

TABLE C-2.3

TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS *

SOIL TYPE C P(a) = 80 X H + 72 psf (2 ft Surcharge)

SIZE (S4S) AND SPACING OF MEMBERS **							
DEPTH OF TRENCH (FEET)	HORIZ. SPACING (FEET)	WIDTH OF TRENCH (FEET)					VERT. SPACING (FEET)
		UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15	
		5	UP TO 6	6X6	6X6	6X6	
TO	UP TO 8	6X6	6X6	6X6	8X8	8X8	5
10	UP TO 10	6X6	6X6	8X8	8X8	8X8	5
	See Note 1						
	UP TO 6	6X8	6X8	6X8	8X8	8X8	5
10	UP TO 8	8X8	8X8	8X8	8X8	8X8	5
TO	See Note 1						
15	See Note 1						
	UP TO 6	8X8	8X8	8X8	8X10	8X10	5
15	See Note 1						
TO	See Note 1						
20	See Note 1						
OVER 20	SEE NOTE 1						

Table C-2.3 Continued

TABLE C-2.3
TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS *
SOIL TYPE C P(a) = 88 X H + 72 psf (2 ft Surcharge)
[Continued]

DEPTH OF TRENCH (FEET)	SIZE (S4S) AND SPACING OF MEMBERS **					
	WALES		UPRIGHTS			
	SIZE (IN)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)			
			CLOSE			
5	8X8	5	3X6			
TO	10X10	5	3X6			
10	10X12	5	3X6			
	10X10	5	4X6			
10	12X12	5	4X6			
TO						
15						
	10X12	5	4X6			
15						
TO						
20						
OVER 20	SEE NOTE 1					

* Douglas fir or equivalent with a bending strength not less than 1500 psi.
** Manufactured members of equivalent strength may be substituted for wood.

REQUIREMENTS FOR PROTECTIVE SYSTEMS APPENDIX D

Aluminum Hydraulic Shoring for Trenches

This appendix contains information that can be used when aluminum hydraulic shoring is provided as a method of protection against cave-ins in trenches that do not exceed 20 feet in depth. This appendix must be used when design of the aluminum hydraulic protective system cannot be performed in accordance with this policy.

Soil Classification

To use data presented in this appendix, the soil type, or types in which the excavation is made must first be determined using the soil classification method set forth in Appendix A.

Presentation of Information - Information is presented in several forms as follows:

- Information is presented in tabular form in Tables D-1.1, D-1.2, D-1.3 and D-1.4. Each table presents the maximum vertical and horizontal spacings that may be used with various aluminum member sizes and various hydraulic cylinder sizes. Each table contains data only for the soil type in which the excavation or portion of the excavation is made. Tables D-1.1 and D-1.2 are for vertical shores in Types A and B soil. Tables D-1.3 and D-1.4 are for horizontal waler systems in Types B and C soil.
- Information concerning the basis of the tabular data and the limitations of the data is presented in this appendix.
- Information explaining the use of the tabular data is presented in this appendix.
- Miscellaneous notations (footnotes) regarding Table D-1.1 through D-1.4 are presented in this appendix.
- Figures, illustrating typical installations of hydraulic shoring, are included just prior to the Tables. The illustrations page is entitled "Aluminum Hydraulic Shoring: Typical Installations."

Basis and Limitations of the Data

Vertical shore rails and horizontal Wales are those that meet the Section Modulus requirements in the D-1 Tables. Aluminum material is 6061-T6 or material of equivalent strength and properties.

Hydraulic Cylinders Specifications

2-inch cylinders should be a minimum 2-inch inside diameter with a minimum safe working capacity of no less than 18,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufacturer. 3-inch cylinders should be minimum 3-inch inside diameter with a safe working capacity of not less than 30,000 pounds axial compressive load at extensions as recommended by product manufacturer.

Limitation of Application

It is not intended that the aluminum hydraulic specification apply to every situation that may be experienced in the field. These data were developed to apply to the situations that are most experienced in current trenching practice. Shoring systems for use in situations that are not covered by the data in this appendix must be otherwise designed as specified in this policy. When any of the following conditions are present, the members specified in the Tables are not considered adequate. In this case, an alternative aluminum hydraulic shoring system or other type of protective system must be designed in accordance with this policy.

- When vertical loads imposed on cross braces exceed a 100-pound gravity load distributed on a one-foot section of the center of the hydraulic cylinder.
- When surcharge loads are present from equipment weighing more than 20,000 pounds.
- When only the lower portion of a trench is shored and the remaining portion of the trench is sloped or benched unless: The sloped portion is sloped at an angle less steep than three horizontals to one vertical; or the members are selected from the tables for use at a depth which is determined from the top of the overall trench, and not from the toe of the sloped portion.

Use of Tables D-1.1, D-1.2, D-1.3 and D-1.4

The members of the shoring system that are to be selected using this information are the hydraulic cylinders, and either the vertical shores or the horizontal wales. When a waler system is used the vertical timber sheeting to be used is also selected from these tables. The Tables D-1.1 and D-1.2 for vertical shores are used in Type A and B soils that do not require sheeting. Type B soils that may require sheeting, and Type C soils that always require sheeting, are found in the horizontal wale Tables D-1.3 and D-1.4. The soil type must first be determined in accordance with the soil classification system described in Appendix A. Using the appropriate table, the selection of the size and spacing of the members is made. The selection is based on the depth and width of the trench where the members are to be installed. In these tables the vertical spacing is held constant at four feet on center. The tables show the maximum horizontal spacing of cylinders allowed for each size of wale in the waler system tables, and in the vertical shore tables, the hydraulic cylinder horizontal spacing is the same as the vertical shore spacing.

EXAMPLES TO ILLUSTRATE THE USE OF THE TABLES

Example 1: A trench dug in Type A soil is 6 feet deep and 3 feet wide. From Table D-1.1: Find vertical shores and 2-inch diameter cylinders spaced 8 feet on center (o.c.) horizontally and 4 feet on center (o.c.) vertically. (See Figures 1 And 3 for typical installations.)

Example 2: A trench is dug in Type B soil that does not require sheeting, 13 feet deep and 5 feet wide. From Table D-1.2: Find vertical shores and 2-inch diameter cylinders spaced 6.5 feet o.c. horizontally and 4 feet o.c. vertically. (See Figures 1 And 3 for typical installations.)

Example 3: A trench is dug in Type B soil that does not require sheeting but does experience some minor raveling of the trench face. The trench is 16 feet deep and 9 feet wide. From Table D-1.2: Find vertical shores and 2-inch diameter cylinder (with special oversleeves as designated by footnote #2) spaced 5.5 feet o.c. horizontally and 4 feet o.c. vertically. Plywood (per footnote to the D-1 Table) should be used behind the shores. (See Figures 2 And 3 for typical installations.)

Example 4: A trench is dug in previously disturbed Type B soil, with characteristics of a Type C soil, and will require sheeting. The trench is 18 feet deep, and 12 feet wide. 8 foot horizontal spacing between cylinders is desired for working space. From Table D-1.3: Find horizontal wale with a section modulus of 14.0 spaced at 4 feet o.c. vertically and 3-inch diameter cylinder spaced at 9 feet maximum o.c. horizontally, 3 x 12 timber sheeting is required at close spacing vertically. (See Figure 4 for typical installation.)

Example 5: A trench is dug in Type C soil, 9 feet deep and 4 feet wide. Horizontal cylinder spacing more than 6 feet is desired for working space. From Table D-1.4: Find horizontal wale with a section modulus of 7.0 and 2-inch diameter cylinders spaced at 6.5 feet o.c. horizontally. Or find horizontal wale with a 14.0 section modulus and 3-inch diameter cylinder spaced at 10 feet o.c. horizontally. Both wales are spaced 4 feet o.c. vertically, 3x12 timber sheeting is required at close spacing vertically. (See Figure 4 for typical installation.)

Footnotes, and General Notes, for Tables D-1.1, D-1.2, D-1.3, and D-1.4

- For applications other than those listed in the tables, refer to the policy for use of manufacturer's tabulated data. For trench depths more than 20 feet, refer to the policy.
- 2-inch diameter cylinders, at this width, should have structural steel tube (3.5 x 3.5 x 0.1875) oversleeves, or structural oversleeves of manufacturer's specification, extending the full, collapsed length.
- Hydraulic cylinders capacities:
 - 2-inch cylinders should be a minimum 2-inch inside diameter with a safe working capacity of not less than 18,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufacturer.
 - 3-inch cylinders should be a minimum 3-inch inside diameter with a safe work capacity of not less than 30,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufacturer.
- All spacing indicated is measured center to center.
- Vertical shoring rails should have a minimum section modulus of 0.40 inch.
- When vertical shores are used, there must be a minimum of three shores spaced equally, horizontally, in a group.

- Plywood should be 1.125 inches thick of wood or 0.75 inch thick, 14 ply, arctic white birch (Finland form). Please note that plywood is not intended as a structural member, but only for prevention of local raveling (sloughing of the trench face) between shores. Equivalent material may be used if it has been approved in accordance with CAL/OSHA Title 8, Subchapter 4, Article 2, section 1505.
- See Appendix C for timber specifications.
- Wales are calculated for simple span conditions.
- See Appendix D for basis and limitations of the data.

ALUMINUM HYDRAULIC SHORING TYPICAL INSTALLATIONS

FIGURE 1

VERTICAL ALUMINUM HYDRAULIC SHORING (SPOT BRACING)

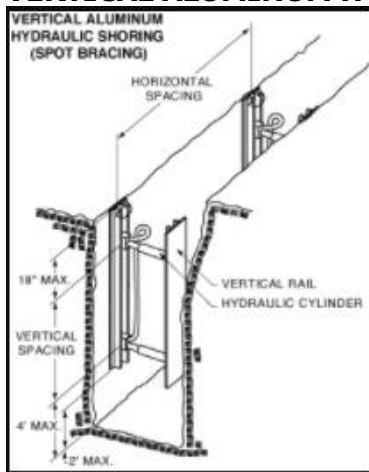


FIGURE 2
VERTICAL ALUMINUM HYDRAULIC SHORING (WITH PLYWOOD)

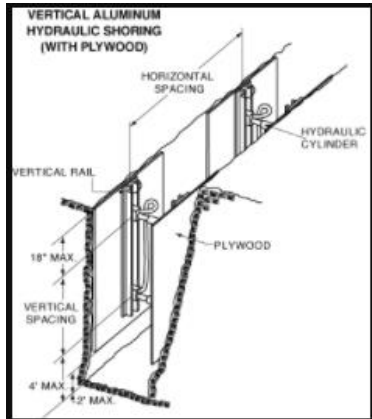


FIGURE 3
VERTICAL ALUMINUM HYDRAULIC SHORING (STACKED)

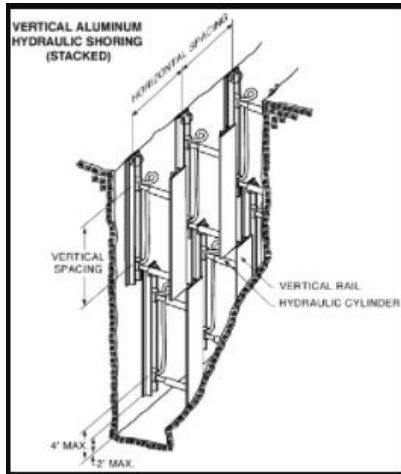


FIGURE NO.4
ALUMINUM HYDRAULIC SHORING WALER SYSTEM (TYPICAL)

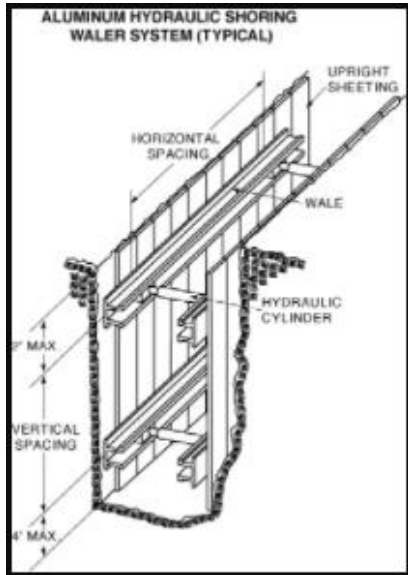


Table D-1.1

TABLE D - 1.1
ALUMINUM HYDRAULIC SHORING
VERTICAL SHORES
FOR SOIL TYPE A

DEPTH OF TRENCH (FEET)	HYDRAULIC CYLINDERS				
	MAXIMUM HORIZONTAL	MAXIMUM VERTICAL	WIDTH OF TRENCH (FEET)		
	SPACING (FEET)	SPACING (FEET)	UP TO 8	OVER 8 UP TO 12	OVER 12 UP TO 15
OVER 5 UP TO 10	8				
OVER 10 UP TO 15	8	4	2 INCH DIAMETER	2 INCH DIAMETER NOTE(2)	3 INCH DIAMETER
OVER 15 UP TO 20	7				
OVER 20	NOTE(1)				

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)
 Note (1): See Appendix D, Item (g)(1)
 Note (2): See Appendix D, Item (g)(2)

Table D-1.2

TABLE D - 1.2
ALUMINUM HYDRAULIC SHORING
VERTICAL SHORES
FOR SOIL TYPE B

DEPTH OF TRENCH (FEET)	HYDRAULIC CYLINDERS				
	MAXIMUM HORIZONTAL SPACING (FEET)	MAXIMUM VERTICAL SPACING (FEET)	WIDTH OF TRENCH (FEET)		
			UP TO 8	OVER 8 UP TO 12	OVER 12 UP TO 15
OVER 5 UP TO 10	8				
OVER 10 UP TO 15	6.5	4	2 INCH DIAMETER	2 INCH DIAMETER NOTE(2)	3 INCH DIAMETER
OVER 15 UP TO 20	5.5				
OVER 20	NOTE(1)				

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)
 Note (1): See Appendix D, Item (g)(1)
 Note (2): See Appendix D, Item (g)(2)

Table D-1.3

TABLE D - 1.3
ALUMINUM HYDRAULIC SHORING
WALER SYSTEMS
FOR SOIL TYPE B

DEPTH OF TRENCH (FEET)	WALES		HYDRAULIC CYLINDERS			
	VERTICAL SPACING (FEET)	* SECTION (IN(3))	WIDTH OF TRENCH (FEET)			
TRENCH (FEET)	MODULUS (IN(3))	UP TO 8		OVER 8 UP TO 12		
		HORIZ SPACING	CYLINDER DIAMETER	HORIZ SPACING	CYLINDER DIAMETER	
OVER 5	4	3.5	8.0	2 IN	8.0	2 IN NOTE (2)
		7.0	9.0	2 IN	9.0	2 IN
UP TO 10						NOTE (2)
OVER 10	4	14.0	12.0	3 IN	12.0	3 IN
		3.5	6.0	2 IN	6.0	2 IN NOTE (2)
UP TO 15		7.0	8.0	3 IN	8.0	3 IN
		14.0	10.0	3 IN	10.0	3 IN
OVER 15	4	3.5	5.5	2 IN	5.5	2 IN NOTE (2)
		7.0	6.0	3 IN	6.0	3 IN
UP TO 20						
OVER 20		14.0	9.0	3 IN	9.0	3 IN
		NOTE (1)				

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)

Note (1): See Appendix D, Item (g)(1)

Note (2): See Appendix D, Item (g)(2)

*Consult product manufacturer and/or qualified engineer for Section Modulus of available wales.

**Douglas fir or equivalent with a bending strength not less than 1500 psi.

Table D-1.3

TABLE D - 1.3
ALUMINUM HYDRAULIC SHORING
WALER SYSTEMS
FOR SOIL TYPE B

[Continued]

DEPTH OF TRENCH (FEET)	WALES		HYDRAULIC CYLINDERS		TIMBER UPRIGHTS		
	VERTICAL SPACING (FEET)	* MODULUS (IN(3))	SPACING (FEET)	DIAMETER (IN)	MAX. HORIZ SPACING (ON CENTER)		
			OVER 12 UP TO 15		SOLID SHEET	2 FT	3 FT
OVER 5	4	3.5	8.0	3 IN			
UP TO 10		7.0	9.0	3 IN	---	---	3x12
OVER 10	4	3.5	6.0	3 IN			
UP TO 15		7.0	8.0	3 IN	---	3x12	---
OVER 15	4	3.5	5.5	3 IN			
UP TO 20		7.0	6.0	3 IN	3x12	---	---
OVER 20							

NOTE (1)

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)

Note (1): See Appendix D, Item (g)(1)

Note (2): See Appendix D, Item (g)(2)

*Consult product manufacturer and/or qualified engineer for Section Modulus of available wales.

**Douglas fir or equivalent with a bending strength not less than 1500 psi.

Table D-1.4

TABLE D - 1.4
ALUMINUM HYDRAULIC SHORING
WALER SYSTEMS
FOR SOIL TYPE C

DEPTH OF TRENCH (FEET)	WALES		HYDRAULIC CYLINDERS			
	VERTICAL SPACING (FEET)	* SECTION MODULUS (IN ³)	WIDTH OF TRENCH (FEET)			
TRENCH (FEET)		MODULUS (IN ³)	UP TO 8		OVER 8 UP TO 12	
			HORIZ SPACING	CYLINDER DIAMETER	HORIZ SPACING	CYLINDER DIAMETER
OVER 5	4	3.5	6.0	2 IN	6.0	2 IN NOTE (2)
		7.0	6.5	2 IN	6.5	2 IN
UP TO 10						NOTE (2)
		14.0	10.0	3 IN	10.0	3 IN
OVER 10	4	3.5	4.0	2 IN	4.0	2 IN NOTE (2)
		7.0	5.5	3 IN	5.5	3 IN
UP TO 15						
		14.0	8.0	3 IN	8.0	3 IN
OVER 15	4	3.5	3.5	2 IN	3.5	2 IN NOTE (2)
		7.0	5.0	3 IN	5.0	3 IN
UP TO 20						
		14.0	6.0	3 IN	6.0	3 IN
OVER 20	NOTE (1)					

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)

Note (1): See Appendix D, Item (g)(1)

Note (2): See Appendix D, Item (g)(2)

*Consult product manufacturer and/or qualified engineer for Section Modulus of available wales.

**Douglas fir or equivalent with a bending strength not less than 1500 psi.

Table D-1.4

TABLE D - 1.4
ALUMINUM HYDRAULIC SHORING
WALER SYSTEMS
FOR SOIL TYPE C

[Continued]

DEPTH OF TRENCH (FEET)	WALES		HYDRAULIC CYLINDERS		TIMBER UPRIGHTS		
	VERTICAL SPACING (FEET)	* SECTION MODULUS (IN(3))	WIDTH OF TRENCH (FEET)		MAX. HORIZ SPACING (ON CENTER)		
			HORIZ SPACING	CYLINDER DIAMETER	SOLID SHEET	2 FT	3 FT
OVER 5	4	3.5	6.0	3 IN			
UP TO 10		7.0	6.5	3 IN	3x12	---	---
OVER 10	4	3.5	4.0	3 IN			
UP TO 15		7.0	5.5	3 IN	3x12	---	---
OVER 15	4	3.5	3.5	3 IN			
UP TO 20		7.0	5.0	3 IN	3x12	---	---
OVER 20		14.0	6.0	3 IN			
OVER 20	NOTE (1)						

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)

Note (1): See Appendix D, Item (g)(1)

Note (2): See Appendix D, Item (g)(2)

*Consult product manufacturer and/or qualified engineer for Section Modulus of available wales.

**Douglas fir or equivalent with a bending strength not less than 1500 psi.

REQUIREMENTS FOR PROTECTIVE SYSTEMS APPENDIX E

Alternatives to Timber Shoring

Figure 1 - Aluminum Hydraulic Shoring

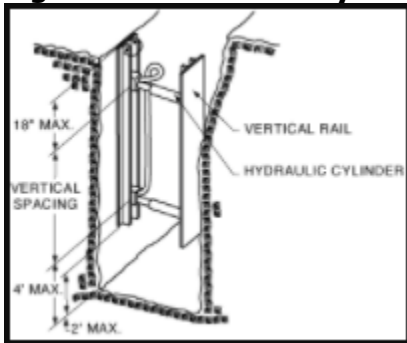


Figure 2 - Pneumatic/hydraulic Shoring

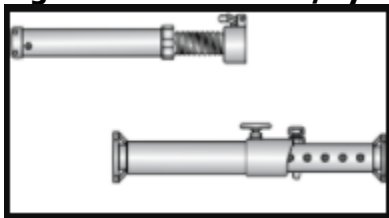


Figure 3 - Trench Jacks (Screw Jacks)

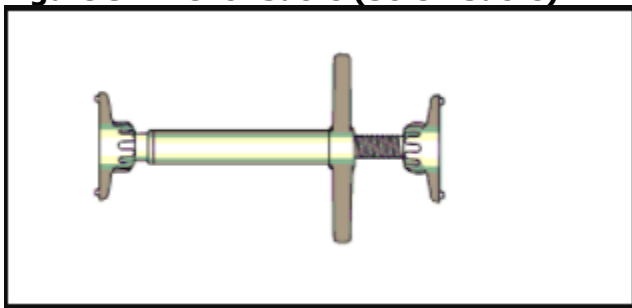
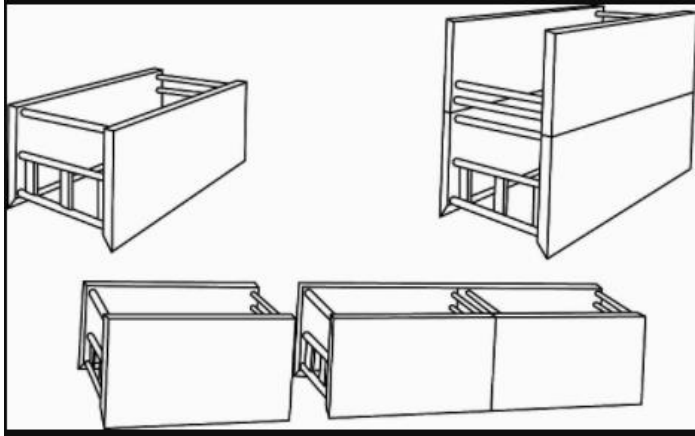


Figure 4 - Trench Shields



REQUIREMENTS FOR PROTECTIVE SYSTEMS APPENDIX F

The following figures are a graphic summary of the requirements contained in Article 6 for excavations 20 feet or less in depth. Protective systems for use in excavations more than 20 feet in depth must be designed by a registered professional engineer in accordance with this policy.

Figure 1

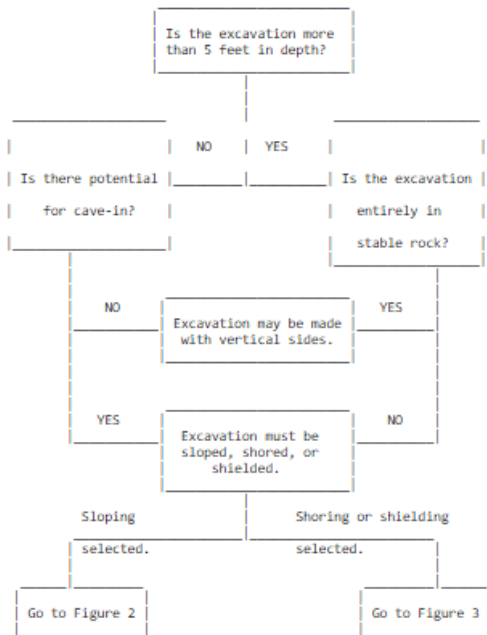


Figure 2

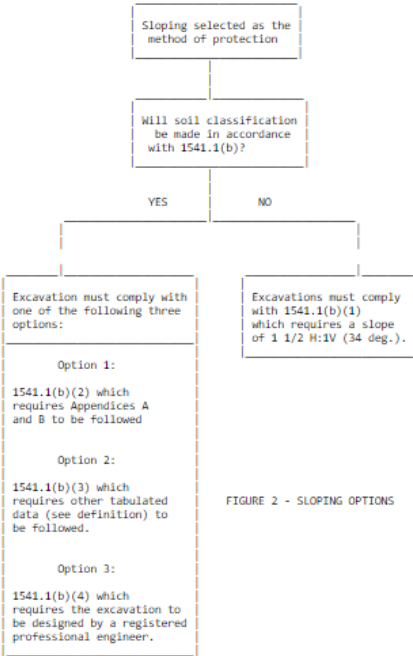
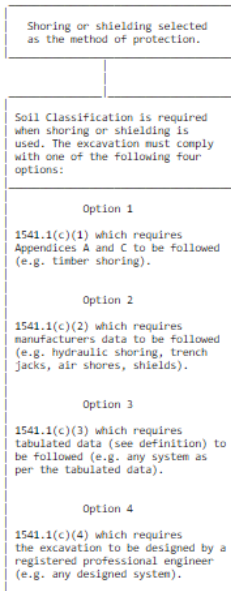


FIGURE 2 - SLOPING OPTIONS

Figure 3



Walking Working Surfaces - WA

PURPOSE

The purpose of this program is to establish the minimum requirements and responsibilities for employees of **Cirks Construction Inc.**, hereafter referred to as "CCI," when on walking-working surfaces. This policy has been written by CCI to ensure a safe and healthful work environment for its personnel.

RESPONSIBILITIES

Directors, Supervisors, and Managers

Directors, supervisors, and managers have primary responsibility for the management and enforcement of the Walking Working Surfaces – Fall Protection Program in their areas.

Employees

All employees are responsible for complying with the rules set forth by this program. They are additionally responsible for:

- Notifying their supervisor when questions arise surrounding safe procedures, the need for fall prevention equipment, and difficulties complying with these requirements
- Reporting all accidents and near miss incidents
- Inspecting all personal fall arrest systems for signs of damage and deterioration prior to each use
- Attending all required Walking/Working Surfaces – Fall Protection Training annually

POLICY

It is the policy of CCI to provide a work environment free from recognized hazards that are causing or are likely to cause death or serious physical harm. CCI shall establish guidelines and procedures regarding the Walking Working Surfaces Policy.

GENERAL REQUIREMENTS

Surface Conditions

Supervisor shall ensure:

All places of employment, passageways, storerooms, service rooms, and walking-working surfaces are kept in a clean, orderly, and sanitary condition. The floor of each workroom is maintained in a clean and, to the extent feasible, in a dry condition. When wet processes are used, drainage must be maintained and, to the extent feasible, dry standing places, such as false floors, platforms, and mats must be provided.

Walking-working surfaces shall be maintained free of hazards such as sharp or protruding objects, loose boards, corrosion, leaks, spills, snow, and ice. Supervisor shall ensure that each walking-working surface can support the maximum intended load for that surface. Supervisor shall provide, and ensure each employee uses, a safe means of access and egress to and from walking-working surfaces. Supervisor shall ensure:

- Walking-working surfaces are inspected, regularly and as necessary, and maintained in a safe condition.
- Hazardous conditions on walking-working surfaces are corrected or repaired before an employee uses the walking-working surface again. If the correction or repair cannot be made immediately, the hazard must be guarded to prevent employees from using the walking-working surface until the hazard is corrected or repaired.
- When any correction or repair involves the structural integrity of the walking-working surface, a qualified person performs or supervises the correction or repair.

COVERS AND GUARDRAILS

All open vats and tanks where workers could fall shall be guarded with railings or screen guards. All open vats and tanks where workers are employed shall have a platform or walkway 36 to 42 inches below the top of vat or tank or where walkway is flush with top of vat or tank, a standard safeguard of 36 to 42 inches high must be constructed.

Every tank over 5 feet deep, excepting where agitators are used or where products may be damaged by ladders, has a ladder fixed on the inside so placed as to connect with means of access from the outside. Rungs must have a clearance of at least 6 inches measured between the rung and the side of the tank.

STAIRWAYS

Handrails, stair rail systems, and guardrail systems are provided in accordance with WAC 296-24-74015. Vertical clearance above any stair tread to any overhead obstruction is at least 6 feet 8 inches (203 cm), as measured from the leading edge of the tread. Spiral stairs must meet the vertical clearance requirements in WAC 296-24-74015. Stairs have uniform riser heights and tread depths between landings.

Stairway landings and stair platforms are at least the width of the stair and at least 30 inches (76 cm) in depth as measured in the direction of travel. When a door or a gate opens directly on a stairway, a stair platform is provided, and the swing of the door or gate does not reduce the stair platform's effective usable depth to:

- Less than 20 inches (51 cm) for stair platforms installed before October 1, 2020
- Less than 22 inches (56 cm) for stair platforms installed on or after October 1, 2020

Each stair can support at least five times the normal anticipated live load, but never less than a concentrated load of 1,000 pounds (454 kg) applied at any point.

Standard stairs are used to provide access from one walking-working surface to another when operations necessitate regular and routine (once per week) travel between levels, including access to operating platforms for equipment. Winding stairways may be used on tanks and similar round structures when the diameter of the tank or structure is at least 5 feet (1.5 m).

Spiral, ship, or alternating tread-type stairs are used only when the employer can demonstrate that it is not feasible to provide standard stairs. Each tread and the top landing of a stairway, where risers are used, should have a nose which extends .5 inch to 1 inch beyond the face of the lower riser. Stair tread noses should have an even leading edge.

Standard Stairs

In addition to WAC 296-24-74005, Supervisor shall also ensure standard stairs:

- Are installed at angles between 30 to 50 degrees from the horizontal
- Have a maximum riser height of 9.5 inches (24 cm)
- Have a minimum tread depth of 9.5 inches (24 cm)
- Have a minimum width of 22 inches (56 cm) between vertical barriers

Spiral Stairs

In addition to WAC- 296-24-74005, Supervisor must also ensure spiral stairs:

- Have a minimum clear width of 26 inches (66 cm)
- Have a maximum riser height of 9.5 inches (24 cm)
- Have a minimum headroom above spiral stair treads of at least 6 feet 6 inches (2 m), measured from the leading edge of the tread
- Have a minimum tread depth of 7.5 inches (19 cm), measured at a point of 12 inches (30 cm) from the narrower edge
- Have a uniform tread size

HANDRAIL, STAIR RAIL, AND GUARDRAIL SYSTEMS

Handrails shall not be less than 30 inches (76 cm) and not more than 38 inches (97 cm), as measured from the leading edge of the stair tread to the top surface of the handrail. The height of stair rail systems must meet the following:

- The height of stair rail systems installed before October 1, 2020, is not less than 30 inches (76 cm) from the leading edge of the stair tread to the top surface of the top rail
- The height of stair rail systems installed on or after October 1, 2020, is not less than 42 inches (107 cm) from the leading edge of the stair tread to the top surface of the top rail

This 42-inch height requirement for stair rail systems installed on or after October 1, 2020, intentionally conflicts with the requirement detailed above that the handrail heights be between 30 to 38 inches above the stair tread.

Handrails and stair rails constructed after the effective date above must be separate. The top rail of a stair rail system installed before October 1, 2020, may serve as a handrail only when:

- The height of the stair rail system is not less than 36 inches (91 cm) and not more than 38 inches (97 cm) as measured at the leading edge of the stair tread to the top surface of the top rail

Finger Clearance - The minimum clearance between handrails and any other object is 2.25 inches (5.7 cm).

Surfaces - Handrail/stair rail systems are smooth-surfaced to protect employees from injury, such as punctures or lacerations, and to prevent catching or snagging of clothing.

Openings in Stair Rails - No opening in a stair rail system exceeds 19 inches (48 cm) at its least dimension.

Handholds - Handrails have the shape and dimension necessary so that employees can grasp the handrail firmly.

Projection Hazards - The ends of handrails and stair rail systems do not present any projection hazards.

Strength Criteria - Handrails and the top rails of stair rail systems are capable of withstanding, without failure, a force of at least 200 pounds (890 N) applied in any downward or outward direction within 2 inches (5 cm) of any point along the top edge of the rail.

FLOOR OPENINGS

Every ladderway floor opening or platform shall be guarded by a standard railing with standard toe board on all exposed sides (except at entrance to opening), with the passage through the railing either provided with a swinging gate or so offset that a person cannot walk directly into the opening. Every hatchway and chute floor opening shall be guarded by one of the following:

- Hinged floor opening cover of standard strength and construction equipped with standard railings or permanently attached thereto to leave only one exposed side. When the opening is not in use, the cover must be closed, or the exposed side must be guarded at both top and intermediate positions by removable standard railings.
- A removable railing with toe board on not more than two sides of the opening and fixed standard railings with toe boards on all other exposed sides. The removable railings must be kept in place when the opening is not in use and should preferably be hinged or otherwise mounted to be conveniently replaceable.

Where operating conditions necessitate the feeding of material into any hatchway or chute opening, protection must be provided to prevent a person from falling through the opening. The area under floor openings must, where practical, be fenced off. When this is not practical, the

areas must be plainly marked with yellow lines and telltales shall be installed to hang within 5 1/2 feet of ground or floor level.

Where floor openings are used to drop materials from one level to another, audible warning systems must be installed and used to indicate to employees on the lower level that material is to be dropped. Every skylight opening and hole shall be guarded by a standard skylight screen or a fixed standard railing on all exposed sides.

Every pit and trapdoor floor opening, infrequently used, shall be guarded by a floor opening cover of standard strength and construction which should be hinged in place. While the cover is not in place, the pit or trap opening must be constantly attended by someone or must be protected on all exposed sides by removable standard railings.

Every manhole floor opening is guarded by a standard manhole cover which need not be hinged in place. While the cover is not in place, the manhole opening must be constantly attended by someone or must be protected by removable standard railings.

SCAFFOLDS

Scaffolds shall be erected, moved, dismantled, or altered only under the supervision of a competent person and will have guardrails and toe boards installed. When scaffolding hazards exist that cannot be eliminated, then engineering practices, administrative practices, safe work practices, Personal Protective Equipment (PPE), and proper training regarding Scaffolds will be implemented. These measures will be implemented to minimize those hazards to ensure the safety of employees and the public.

- The footing or anchorage for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks shall not be used to support scaffolds or planks.
- There shall be no modifications by non-qualified employees at any point.
- No scaffold shall be erected, moved, dismantled, or altered except under the supervision of a competent person(s) or as requested for corrective reasons by Safety and Loss Control Personnel.
- Guardrails and toe boards shall be installed on all open sides and ends of platforms more than 10 feet above the ground or floor, except needle beam scaffolds and floats. Scaffolds 4 feet to 10 feet in height having a minimum horizontal dimension in either direction of less than 45 inches shall have standard guardrails installed on all open sides and ends of the platform.
- Guardrails must be 2 X 4 inches, or the equivalent, not less than 36 inches or more than approximately 42 inches high, with a mid-rail, when required, of 1 X 4-inch

lumber, or the equivalent. Supports must be at intervals not to exceed 8 feet. Toe board and the guardrail shall extend along the entire opening.

- Guardrail systems shall be installed along all open sides and ends of platforms. Guardrail systems shall be installed before the scaffold is released for use by employees other than erection/dismantling crew.
- Scaffolds and their components must be capable of supporting without failure at least 4 times the maximum intended load.
- Each scaffold platform and walkway must be at least 18 inches (46 cm) wide, guardrails and/or personal fall arrest systems must be used.
- A competent person must inspect scaffolding and the components of scaffolding prior to each work shift and after any event which could affect the scaffold's structural integrity.
- Any scaffold, including accessories such as braces, brackets, trusses, screw legs, ladders, couplers, etc., damaged or weakened from any cause must be repaired or replaced immediately, and shall not be used until repairs have been completed.
- Any part of the scaffold that is found to be damaged or weakened must be immediately repaired, replaced, braced, or removed from service until repaired.
- All load-carrying timber members of scaffold framing shall be a minimum of 1,500 fiber (Stress Grade) construction grade lumber.
- An access ladder or equivalent safe access must be provided.
- The poles, legs, or uprights of scaffolds must be plumb and securely and rigidly braced to prevent swaying and displacement.
- Supported scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means.

TYPES OF SCAFFOLDS

There are many different types of scaffolds; three major categories are:

- Self-supporting scaffolds
- Suspension scaffolds
- Special use scaffolds

Self-supporting scaffolds are one or more working platforms supported from below by outriggers, brackets, poles, legs, uprights, posts, frames, or similar supports. The types of self-supporting scaffolds include:

- Fabricated Frame
- Tube and Coupler
- Mobile
- Pole

Suspension scaffolds are one or more working platforms suspended by ropes or other means from an overhead structure(s). The types of suspension scaffolds include:

- Single-Point Adjustable (Boatswain's Chairs)
- Two-Point Adjustable (Swing Stage)
- Multiple-Point Adjustable
- Multi-Lend
- Category
- Float (Ship)
- Interior Hung
- Needle Beam

Special use scaffolds and assemblies can support their own weight and at least 4-times the maximum intended load. The types of special use scaffolds include:

- Form and Carpenter Bracket
- Roof Bracket
- Outrigger
- Pump Jack
- Ladder Jack
- Window Jack
- Horse
- Crawling Boards
- Step, Platforms, and Trestle Ladder

Working at Heights - US

PURPOSE

The purpose of this document is to prevent injury resulting from Working at Height for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

The hazards of potential falls at **heights of 6 feet and above** will be addressed in this document. This instruction describes a systematic approach that must be used to protect and prevent people from falling. This instruction also lists some of the most common fall hazards and provides recommendations and guidelines for selecting fall arrest systems.

RESPONSIBILITIES

CCI's The Responsible Safety Person is responsible for the administration of this program and has full authority to make necessary decisions to ensure success of the program.

All company employees are responsible for safety at all times. CCI has expressly authorized all employees to halt any company operation where there is danger of serious personal injury.

A fall protection plan shall be prepared by the competent person for the specified jobsite.

Management shall perform annual reviews of this safety policy and any corresponding training programs/records to ensure that all workers are trained in the awareness and avoidance of unsafe acts and situations surrounding the use and or exposure of fall protection.

Contractor Responsibilities

There should be an analysis of the conditions prevailing in the areas that working at heights will be performed, prior to implementation to identify existing risk factors.

In addition to complying with the fall protection requirements that apply to all company employees, each subcontractor who is retained to perform operations that involve fall protection will:

- Obtain any available information regarding fall hazards and protective measures from CCI.
- Coordinate fall protection operations with CCI when both CCI personnel and subcontractor personnel will be working in or near recognized fall hazard locations.
- Inform CCI of the fall protection program that the subcontractor will follow and of any hazards confronted or created in conducting operations involving fall protection.

It will remain the duty of CCI's active management team to ensure that all fall prevention equipment is properly maintained and used by trained personnel.

Employees and personnel of CCI, including part-time and temporary labor, shall follow this written health and safety policy to ensure a safe work environment for all.

POLICY

Fall protection is required whenever employees are potentially exposed to falls from heights that exceed applicable regulatory thresholds. Guard rails, safety nets, or personal or fall arrest systems should be used.

Working form heights must be performed only by authorized personnel; the authorization must contain the following:

- The name of the authorized employee
- The type of work to be done and the area or location where they will perform the work
- Fall protection measures to be implemented pursuant to performing working at heights and the risk factors identified in the analysis of the conditions prevailing in the area where the work will be done
- The date and time of commencement of work, and the estimated duration
- The name and signature of the Competent Person designated to grant authorization.

The ground level, where working from heights is to be performed, should be identified by barriers and signage in order to prevent people being hit by a falling object when entering the work zone.

CCI's employees will adhere to the fall protection standards set for below depending upon which job function they are performing.

The fall protection plan shall be prepared by the competent person for each specific work site.

When conventional fall protection is not used these locations will be identified and classified as controlled access zones.

Where no other alternate methods have been implemented, a safety monitoring system will be implemented. A competent person will be assigned to:

- Recognize fall hazards
- Warn employees if they are unaware of a fall hazard or are acting in an unsafe manner
- Be on same working surface and in visual sight
- Stay close enough for verbal communication

- Not have other assignments that would take monitor's attention from the monitoring function

All accidents and serious incidents (near accidents) shall be investigated, implementing changes to the fall protection plan as necessary.

When purchasing equipment and raw material for use in fall protection systems applicable ANSI and ASTM requirements will be met.

CCI will provide for prompt rescue of employees in the event of a fall or shall assure the employees are able to rescue themselves.

The jobsite shall be assessed before each assigned job for potential fall hazards. Proper fall arrest equipment will be used for jobs requiring fall protection when elimination of the hazard(s) is not possible. CCI will evaluate the facilities by department to determine fall hazards. This preliminary evaluation will detail the required steps for protecting employees from fall hazards.

TRAINING

The instructions, manuals or procedures for installation, operation and maintenance of systems or equipment used in working at heights should be developed based on the manufacturer's instructions.

CCI shall provide a training program for each employee who may be exposed to fall hazards, or who may have the likelihood of exposure to this risk. Training shall enable each employee to recognize the hazards of falling and shall train each employee in the procedure to follow to minimize all associated falling hazards.

CCI will have written certification records showing the following:

- Who was trained, when, dates of training?
Signature of person providing training

CCI will provide re-training when the following are noted, occur, or observed:

- Deficiencies in training
- Workplace changes
- Fall protection systems or equipment changes that render previous training obsolete

Workers who perform work at heights should be provided with training and information according to the type of system or equipment used, the tasks assigned, and emergency response for the system prior to work.

INITIAL TRAINING

Training will be conducted prior to job assignment. CCI shall provide training to ensure that the purpose, function, and proper use of fall protection is understood by employees and that the knowledge and skills required for the safe application and usage is acquired by employees. This standard practice instruction will be provided to and read by all employees receiving training.

The training will include, as a minimum the following:

- Types of fall protection equipment appropriate for use.
- Recognition of applicable fall hazards associated with the work to be completed and the locations of such.
- Load determination and balancing requirements.
- Procedures for removal of protection devices from service for repair or replacement.
- All other employees whose work operations are or may be in an area where protection devices fall may be utilized, will be instructed to an awareness level concerning hazards associated with fall protection operations.
- Fall protection equipment identification. Fall protection equipment having identification numbers will be checked for legibility. Fall protection equipment having illegible identification markings will be turned in to the supervisor for inspection.
- Equipment maintenance and inspection requirements.
- Equipment donning and doffing procedures.
- Equipment strengths and limitations.

CERTIFICATION TRAINING

CCI will certify that employee training has been accomplished and is being kept up to date. The certification will contain each employee's name and dates of training. Training will be accomplished by competent personnel.

REFRESHER TRAINING

This standard practice instruction will be provided to and read by all employees receiving refresher training.

Retraining will be provided for all authorized and affected employees whenever (and prior to) a change in their job assignments, a change in the type of fall protection equipment used, or when a known hazard is added to the work environment which affects the fall protection program.

Additional retraining will also be conducted whenever a periodic inspection reveals, or whenever CCI has reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of fall protection equipment or procedures.

Whenever a fall protection procedure fails. The retraining will reestablish employee proficiency and introduce new or revised methods and procedures, as necessary.

Certification

CCI will certify that employee training has been accomplished and being kept up to date. The certification will contain each employee's name and dates of training. Training will be accomplished by competent personnel.

FALL PREVENTION

Once a site evaluation has been accomplished, procedures will be developed, documented and utilized for the control of potential fall hazards. Fall prevention plans will be designed by a competent person. Competent personnel will be provided with any required specialized training to recognize fall hazards, to understand and address fall prevention techniques, and to become familiar with fall arrest equipment and procedures. It is critical that they consider fall protection design for the safety of operations where employees must work at elevated heights. Safety during access and egress from elevated work sites will also be considered. The following guidelines will be used when planning work at elevated heights:

- Involve Safety personnel early in the project planning/job planning so that they can recommend appropriate fall protection measures and equipment.
- Subcontractors will be required to provide a written fall protection program which describes their fall protection policies and procedures when they will be working at elevated heights.

PROTECTIVE MATERIALS AND HARDWARE

Appropriate fall protection devices will be provided for potential fall hazards. Selection of the equipment will be based on the fall protection evaluation.

- Fall Protection devices will be singularly identified; will be the only device(s) used for controlling falls; will not be used for other purposes; and will meet the following requirements:
- Capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.
- Anchor points will not deteriorate when located in corrosive environments such as areas where acid and alkali chemicals are handled and stored.
- Capable of withstanding the ultimate load of 5,000 lbs. for the maximum period of time that exposure is expected.
- Standardization within company facilities. Fall protection devices will be standardized whenever possible.

FALL PROTECTION SYSTEMS

When fall hazards cannot be eliminated through any other means, fall arrest systems will be used to control falls. Proper training on the use of fall arrest equipment is essential and will be provided prior to use.

Full Body Harness Systems. A full body harness system consists of a full-body harness, lanyard, energy shock absorber, and self-locking snap hook. Before using a full-body harness system, the supervisor and/or the user must address such issues as:

- Has the user been trained to recognize fall hazards and to use fall arrest systems properly?
- Are all components of the system compatible according to the manufacturer's instructions?
- Have appropriate anchorage points and attachment techniques been reviewed?
- Has free fall distance been considered so that a worker will not strike a lower surface or object before the fall is arrested?
- Have swing fall hazards been eliminated?
- Have safe methods to retrieve fallen workers been planned?
- Has the full-body harness and all of its components been inspected both before each use and on a regular semi-annual basis?
- Is any of the equipment, including lanyards, connectors, and lifelines, subject to such problems as welding damage, chemical corrosion, or sandblasting operations?

RETRACTABLE LINES

- A retractable lifeline is a fall arrest device used in conjunction with other components of a fall arrest system. Retractable lifelines should be used by one person at a time.
- A properly inspected and maintained retractable lifeline, when correctly installed and used as part of the fall arrest system, automatically stops a person's descent in a short distance after the onset of an accidental fall.
- Retractable lifelines may be considered when working in areas such as on roofs and scaffolds, or in tanks, towers, vessels, and manholes. Also, retractable lifelines should be considered when climbing such equipment as vertical fixed ladders. Before using a retractable lifeline, the supervisor and/or the user must address the following questions:
 - Has the user been trained to use a retractable lifeline correctly?
 - Is the retractable lifeline being used in conjunction with a complete fall arrest system?
 - Is the equipment under a regular maintenance program?
 - Has the equipment been inspected within the last six months?

STANDARD HARNESESSES

Harnesses for general purpose work should be Class III, constructed with a sliding back D-ring. Standard harnesses are suitable for continuous fall protection while climbing, riding, or working on elevated personnel platforms. They are suitable for positioning, fall arrest, and the rescue and evacuation of people who are working at elevated heights.

RESCUE PROCEDURES

The following rescue procedures are ordered **(A)** through **(D)**, with **(A)** being the preferred method and **(D)** being the method used when there is no other means of rescue.

- A.** Elevating Work Platform Rescue—If an elevating work platform (EWP) is available on or near the site and the suspended worker can be reached by the platform.
- B.** Ladder Rescue—If an elevating work platform is not available, use ladders to rescue the fallen worker.
- C.** Rescue from Work Area or Floor Below—If the fallen worker is suspended near a work area and can be safely reached from the floor below or the area from which they fell.
- D.** Tower Rescue—If a worker has fallen and is suspended in an inaccessible area or height, you need to perform a rescue using Descent Control System or **self-braking descender**.
 - Make sure preferred methods A, B, and C are not possible.
 - Notify the 911 operator right away to the possibility of a tower rescue. Relay how many people will be doing the tower rescue and the condition of the worker being rescued.
 - Rig a controlled descent load line above and as close as possible the fallen worker.
 - Rig a second lifeline to a separate anchor point on the tower, next to the controlled descent line.
 - Attach the rescuer from his D-ring to a rope grab on the lifeline.
 - Connect the rescuer's descending device to the load line and move into place behind the fallen worker.
 - Attach a self-locking carabineer to the back-D ring of the fallen worker. Attach this carabineer to the controlled descending device.
 - Remove the fallen worker from his fall arrest or suspension device and lower safely to the ground.
 - Once the worker has been brought to a safe location, administer first aid as needed
 - If necessary arrange transportation to a medical facility. A designated worker must accompany the injured worker to hospital.

Boatswain Chair/Suspended Scaffolds

If self-rescue is not possible and the fallen worker cannot be hauled or belayed to safety using rig-to-rescue method, the following rescue procedures can be performed using one (same set as casualty) or two sets of ropes (separate set of ropes)

Steps to Rescue (descent mode):

- Determine which rope is the fallen worker's main rope, and which is the back-up rope
- Climb to fallen worker using their back-up rope and have back-up device on their main rope
- Climb up to fallen worker and place mobile fall arrester on the rope above their self-braking descender
- Remove main back-up
- Carry on ascending past casualty and change into descent mode
- Attach fallen worker's spare lanyard to rescuers waist D-ring
- Clip the spare (pic) lanyard into the self-braking descender then to the fallen worker's sternal attachment
- Remove the fallen worker's main back up from the rope
- Set the mobile fall arrester at eye height
- Unlock the fallen worker's self-braking descender and lower fallen worker until their weight is on the rescuers system, then remove self-braking descender
- Use extra carabineer for added friction
- Unlock mobile fall arrester and position high, generally over rescuers shoulders
- Carefully unlock self-braking descender and keep control of rope above extra carabineer
- Descent to the ground keeping fallen worker suspended, then detach and lower to a sitting position

Treat for first aid within rescuer's scope of training as needed. In severe cases, lower and put fallen worker into recovery position and await emergency services arrival.

INSPECTION AND MAINTENANCE

To ensure that fall protection systems are ready and able to perform their required tasks, a program of inspection and maintenance will be implemented and maintained. The following as a minimum, will comprise the basic requirements of the inspection and maintenance program:

- Equipment manufacturer's instructions will be incorporated into the inspection and preventive maintenance procedures.
- All fall protection equipment will be inspected prior to each use, and a documented inspection at intervals not to exceed six months, or in accordance with the manufacturer's guidelines.

- The user will inspect his/her equipment prior to each use and check the inspection date.
- Any fall protection equipment subjected to a fall or impact load will be removed from service immediately and inspected by a qualified person (sent back to the manufacturer).
- Check all equipment for mold, damage, wear, mildew, or distortion.
- Hardware should be free of cracks, sharp edges, or burns.
- Ensure that no straps are cut, broken, torn, or scraped.
- Special situations such as radiation, electrical conductivity, and chemical effects will be considered.
- Equipment that is damaged or in need of maintenance will be discarded.
- A detailed inspection policy will be used for equipment stored for periods exceeding one month.
- Anchors and mountings will be inspected before each use by the user and supervisor for signs of damage.
- The system or equipment used must be inspected annually or at the frequency indicated by the manufacturer, whichever is less, to ensure they are in optimal safety conditions.

Accident investigations shall be conducted to evaluate the fall protection plan for potential updates to practices, procedures, or training to prevent reoccurrence.

The system or equipment for working at heights should be inspected before use according to the manufacturer's instructions with respect to possible wear, damage, deterioration, malfunction, or other abnormalities. Defective components must be removed from service. Any component to be replaced must be replaced only by another original unless otherwise authorized by the manufacturer in the maintenance manual provided with this system. The inspection of the system prior to use and according to the manufacturer's instructions, should at least contain the following:

- That there is no corrosion or other degradation of the materials on metal parts
- There should be no deformation, cracking, breaking or other similar damage in the buckles, rings, hooks, snap hooks, or carabineers
- The opening, closing, and locking connectors are properly working
- There should be no cracks, frayed, rips, scuffs, bends, corrosion or burns on the ropes, bands, or wires
- The labels and markings are legible.

MOST COMMON AND MOST DANGEROUS FALL HAZARDS

The tasks and situations listed below present inherent fall hazards. Give special attention to providing fall prevention and/or fall control for each situation, remembering that this attention is

necessary in the design, engineering, planning, and execution stages of work. Supervisors will give special consideration to fall protection for the following tasks:

- Working from ladders and scaffolds
- Working from crane booms and tower cranes
- Working on top of machinery and equipment, such as overhead cranes, furnaces, conveyors, and presses
- Other work that involves fall hazards, such as 'off-chutes' from main piping in duct work or boilers
- Working on roofs, with deteriorating or unsupported sections and framing
- Working over chemical tanks or open pits
- Working from fixed or portable ladders or climbing systems
- Performing work on water towers, product tanks, silos, pipe racks, presses, and floor pits

RECORDKEEPING

Records must be kept of inspections and maintenance provided to systems or equipment used. The inspection must provide at least the following information:

- The particulars of the system or equipment such as make, model and serial number or other identification of the piece of equipment
- The dates of inspections and maintenance work
- The observations resulting from the revisions made to the system or equipment
- The preventive and corrective actions taken, such as repairs, replacements, , destruction, etc.
- The identification of the worker or workers responsible for repairing equipment
- The marking of those responsible for releasing equipment for use

DEFINITIONS

Anchorage - A secure point of attachment for lifelines, lanyards, or deceleration devices.

Body Belt - A strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.

Body Harness - Straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with means for attaching it to other components of a personal fall arrest system.

Competent Person - A person who is capable of identifying hazardous or dangerous conditions in any personal fall arrest system or any component thereof, as well as in their application and use with related equipment.

Connector - A device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabiner, or it may be an integral component of part of the system.

Deceleration Device - Any mechanism with a maximum length of 3.5 feet, such as a rope grab, rip stitch lanyard, tearing or deforming lanyards, self-retracting lifelines, etc. which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.

Energy Shock Absorber - A device that limits shock-load forces on the body.

Failure - Load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.

Fall Arrest System - A system specifically designed to secure, suspend, or assist in retrieving a worker in or from a hazardous work area. The basic components of a fall arrest system include anchorage, anchorage connector, lanyard, shock absorber, harness, and self-locking snap hook. Connectors such as snaps, hooks, carabineers, and other fasteners, which are kept closed and locked automatically, must be used to prevent opening or releasing accidentally. These should be disconnected only by running at least two consecutive deliberate actions of the worker (double action).

Anchoring points or devices should be selected respectively to support the arresting force generated during a fall. The anchor device should never be selected below the level of support for the worker.

Free Fall - Means the act of falling before a personal fall arrest system begins to apply force to arrest the fall.

Free Fall Distance - Means the vertical displacement of the fall arrest attachment point on the employee's body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall (maximum of 6 feet). This distance excludes deceleration distance, and lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.

Hole - A gap or void two inches or more in its least dimension, in a floor, roof, or other walking/working surface.

Lanyard - Flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage.

Leading Edge - The edge of a floor roof, or formwork for a floor or other walking/working surface which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed. A leading edge is considered to be an unprotected side and edge during periods when it is not actively and continuously under construction.

Lifeline - A component consisting of a flexible line for connection to an anchorage at one end to hang vertically or for connection to anchorages at both ends to stretch horizontally and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

Opening - A gap or void 30 inches or more high and 18 inches or more wide, in a wall or partition, through which employees can fall to a lower level.

Personal Fall Arrest System - System used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, or body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. As of January 1, 1998, the use of a body belt for fall arrest is prohibited.

Positioning Device System - Body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.

Qualified Person - Recognized degree or professional certificate and extensive knowledge and experience in the subject field who is capable of design, analysis, evaluation and specifications in the subject work, project, or product.

Retractable Lifeline - A fall arrest device that allows free travel without slack rope but locks instantly when a fall begins.

Rope Grab - A deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking, or both.

Safety-Monitoring System - A safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.

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

Snap Hook - A connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snap hooks are generally one of two types:

- The locking type with a self-closing, self-locking keeper, who remains closed and locked until unlocked and pressed open for connection or disconnection; or
- The non-locking type with a self-closing keeper which remains closed until pressed open for connection or disconnection. As of January 1, 1998, the use of a non-locking snap hook as part of personal fall arrest systems and positioning device systems is prohibited.

Toe Board - A low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.

Walking/Working Surface - Any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork, and concrete reinforcing steel but not including ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.

Warning Line System - A barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect employees in the area.

Working at Heights - WA

PURPOSE

The purpose of this document is to provide guidance and procedures for the activation and operation of Working at Heights for **Cirks Construction Inc.**; hereafter referred to as "CCI," This program was written in accordance with the Washington Administration Code (WAC) 296-880-100 through 500.

WAC 296-880-200 Fall protection **required at 4 feet or more**. This section sets forth requirements for the use of fall protection at four feet or more unless specifically addressed in WAC 296-880-300 of this chapter.

POLICY

It is the policy of CCI to provide a work environment free from recognized hazards that are causing or are likely to cause death or serious physical harm. CCI shall establish guidelines and procedures regarding the Working at Heights Policy.

GENERAL

Fall protection is required whenever employees are potentially exposed to falls from heights that exceed applicable regulatory thresholds. Guard rails, safety nets, or personal or fall arrest systems should be used.

Fall Protection Required

No matter the height, CCI shall guard open-sided floors, walkways, platforms, or runways above or adjacent to dangerous equipment, such as dip tanks and material handling equipment, and similar hazards with a standard guardrail system.

The employer must guard holes into which an employee can trip, step into, or step through by a cover of standard strength and construction or a standard guardrail system. No matter the height CCI shall protect employees from falling into or onto impalement hazards, such as: Reinforcing steel (rebar,) exposed steel, or wood.

WALKING WORKING SURFACES

Surface Conditions

Surfaces shall be kept clean and in a sanitary condition. Maintain walking working surfaces free from hazards, such as sharp or protruding objects, loose boards, corrosion, leaks, spills, snow, and ice.

Surface Load and Access

The surface shall support the maximum intended load for that surface. Employees shall use a safe means of access and egress to and from the surface.

Surface Inspection, Maintenance, and Repair

Walking working surfaces shall be inspected, regularly and as necessary, and be maintained in a safe condition. Hazardous conditions shall be corrected or repaired before an employee uses the walking-working surface again. The hazard shall be guarded until corrected or repaired. If not made immediately. A Competent Person must perform or supervise the correction or repair.

ELEVATED WORK PLATFORMS

This section applies to the following types of elevating work platforms covered under the scope of chapter 296-869 WAC, elevating work platforms:

- Aerial lifts
- Manually propelled elevating work platforms that have a platform that cannot be positioned completely beyond the base
- Self-propelled elevating work platforms that have a platform that cannot be positioned completely beyond the base
- Boom-supported elevating work platforms that have a boom-supported platform that can be positioned completely beyond the base

Before elevating the platform, the employer must ensure all persons on the platform wear a full body harness with a lanyard attached to either:

- The manufacturer's recommended attachment point
- The boom or platform if the manufacturer does not specify an attachment point

Employees shall never attach a lanyard to an adjacent pole, structure, or equipment. Before elevating the platform, the employer must ensure all persons on the platform are wearing fall protection devices and other safety gear, if required by the manufacturer of the platform. Before elevating the platform, the employer must ensure all persons on a boom-supported elevating work platforms wear a full body harness and lanyard fixed to manufacturer provided and approved attachment points.

SCAFFOLDS

CCI shall protect each employee on a scaffold from falling ten feet or more to a lower level, by providing either:

- A personal fall arrest system
- Guardrails

Personal fall arrest systems shall be attached by a lanyard to one of the following:

- Vertical lifeline

- Horizontal lifeline
- Appropriate structural member of the scaffold

Provide fall protection for persons erecting or dismantling supported scaffolds. a competent person shall determine the feasibility of providing fall protection for persons erecting or dismantling supported scaffolds. Fall protection shall be provided if the installation and use of fall protection is:

- Feasible
- Does not create a greater hazard

FALL PROTECTION

All surfaces that employees will be working or walking on shall be structurally sound and will support them safely prior to allowing employees to work or walk on them.

Inspection

The employer must inspect all components (including hardware, lanyards, and positioning harnesses or full body harnesses depending on which system is used) of personal fall arrest systems, personal fall restraint systems, and positioning device systems prior to each use according to manufacturer's specifications for mildew, wear, damage, and other deterioration. The employer must remove defective components from service if their function or strength has been adversely affected.

The employer must inspect safety nets at least once a week according to manufacturer's specifications for wear, damage, and other deterioration. The employer must also inspect safety nets after any occurrence which could affect the integrity of the safety net system. The employer must remove defective components from service. The employer must not use defective nets.

The employer must only use personal fall arrest systems, personal fall restraint systems, positioning device systems, and their components for employee protection and not to hoist materials. The employer must plan for and provide prompt rescue of employees in the event of a fall or must assure the self-rescue capability of employees.

Inspect all components (including hardware, lanyards, and harnesses) of personal fall arrest and restraint systems and positioning device systems prior to each use according to the manufacturer's specifications. Remove defective equipment from service if function or strength is adversely affected.

Safety nets shall be inspected at least once a week and shall be checked for wear, damage, deterioration, and anything that could affect the integrity of the safety net system. CCI shall plan

for and provide prompt rescue of employees in the event of a fall or assure the self-rescue capability of employees.

TRAINING

Provide fall protection training for employees exposed to fall hazards. The employer must provide training for each employee exposed to fall hazards. The training must enable each employee to recognize the hazards of falling and procedures to be followed in order to minimize those hazards. Each affected employee must be trained by a competent person to know at least the following:

- The nature of fall hazards in the work area
- When fall protection is required
- What fall protection is required
- The correct procedures for erecting, maintaining, assembling, disassembling, and inspecting
- The fall protection systems to be used
- The use and operation of fall protection systems used
- Limitations of fall protection systems used
- Proper care, maintenance, useful life, removal from service

Make sure before an employee is allowed to perform work requiring the use of fall protection that the employee can:

- Demonstrate an understanding of the training specified above
- Demonstrate the ability to use fall protection properly

Retrain employees who use fall protection, if necessary. Retrain an employee when the employer has reason to believe the understanding, motivation, and skills required to use fall protection has not been retained. Circumstances where retraining is required include:

- Changes in the workplace that make previous training out of date
- Changes in the types of fall protection to be used make previous training out of date
- Work habits or demonstrated knowledge indicate that the employee has not retained the necessary understanding, skill, or motivation to use fall protection

Document fall protection training. Document in writing that each employee has received and understood the required training. This documentation must include:

- Name and signature of each employee
- Date(s) of training
- Subject(s) of the training
- Name and signature of the competent person who conducted the training

Working Near Water

PURPOSE

The purpose of this document is to outline safety policy and procedures of Working Near Water for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

POLICY

- Employees working over or near water shall be provided with a U.S. Coast Guard-approved life jacket or buoyant work vest when the danger of drowning exists.
- When fall protection will prevent persons from falling into water, a personal flotation device is not required.
- CCI shall provide fall protection during construction activities when employees are working 6 feet or more above the water.
- Workers shall inspect buoyant work vests or life preservers for defects which could alter their strength or buoyancy prior to and after each use. Defective units shall not be used.
- For construction activities:
 - Ensure a life ring with 90 ft. of line is readily available and that travel distance between the life rings does not exceed 200 ft.
 - On open waterways, ensure at least one boat is immediately available at the job location.

TRAINING

Employees working over or near water must be adequately trained in their responsibilities and the safe work practices associated with this task.

WATER CRAFTS

- Ensure operators have demonstrated skills and/or training to operate watercraft safely. Contact the U.S. Coast Guard for boating safety training resources.
- Ensure all watercrafts meet U.S. Coast Guard requirements.
- When in a watercraft, wear Coast Guard-approved personal flotation devices.
- Ensure watercraft longer than 16 ft. is equipped with a Coast Guard-approved throwable personal flotation device.
- When the atmospheric and/or water temperatures are less than 50 F, wear hypothermic protection. Note: Hypothermic protection is not required when the temperature is less than 50° F for short duration jobs (5 minutes or less) where

workers are in visual contact with coworkers on shore. Routine cold weather apparel provides sufficient protection for short exposure time.

- Inspect personal flotation devices and float coats before and after each use.
- Use the engine-kill switch on any watercraft so equipped.
- Wear eye protection to protect from UV rays and/or flying debris.
- When conditions warrant, wear proper clothing, and/or use sunblock.
- Before operating watercraft, evaluate weather conditions. Do not perform work in unsafe conditions (e.g., lightning, high wind, low visibility).
- Communicate about plan before departure.
- Ensure watercraft has a means of communication with a land-based contact.
- Business units shall develop aquatic search and rescue plans as appropriate.

Rescue

CCI must have a lifesaving skiff available that could, at the minimum, retrieve an employee from the water no more than three (3) to four (4) minutes from the time they entered the water. However, if there are any additional hazards, such as very cold water, rapids an employee could be swept into, etc., the lifesaving skiff would have to be able to retrieve an employee before they sustained injuries as a result of those additional hazards.

In addition to the preceding, CCI shall comply with all other applicable standards including, but not limited to, the requirements that an injured employee be treated by medical personnel, or an employee certified in first aid within three (3) to four (4) minutes from the time the injury occurred. This could mean that first aid treatment would have to begin in the lifesaving skiff.

BARGES

The following applies to barges used for maintenance and construction around dams and generating plants. It does not apply to coal barges.

- When working on a barge, wear U.S. Coast Guard-approved Type I, II, III, or V personal flotation devices. Inspect personal flotation devices before and after each use. Note: Personal flotation devices must be available but are not required to be worn on structural barges with substantial guardrails.
- Ensure availability of a Coast Guard-approved 30 in. life ring with 90 ft. of line and at least one permanent ladder that will reach the surface of the water from the top of the barge.
- Ring buoys must be provided with at least 90 feet of line, and the distance between ring buoys may not exceed 200 feet.
- When combustible materials are present, ensure fire extinguishers are readily available.
- Ensure safe access/egress to/from the barge.
- Ensure handrails are installed unless their presence is a more significant safety hazard.

- Ensure all barge connections are in place before operation (e.g., barge-to-barge, spud wells-to-barge, and anchorage).
- Ensure engineering has approved all barge modifications.
- Designate and maintain unobstructed walkways/aisles at all times.
- Use and maintain anti-skid material on walking/working surfaces.
- Safely secure all material/equipment to the barge deck.
- Ensure operators of equipment (e.g., cranes, drills) are familiar with the equipment and can demonstrate the skills necessary to safely operate it from an unstable platform (e.g., barges, dredges).
- At least one lifesaving skiff shall be made immediately available when employees are working over or adjacent to water.
- A pre-task plan is required to be completed and signed by all members of the crew who may be working over or near water before the work may begin.

DIVING OPERATIONS

For diving requirements, see OSHA [29CFR 1910.401](#), Subpart T, Commercial Diving Operations.

WORKING ALONE

Employees who will be performing work over or near water where the danger of drowning exists are not permitted to work alone at any time.

Workplace Housekeeping

PURPOSE

The purpose of this document is to establish the procedures and responsibilities for routine housekeeping for **Cirks Construction Inc.**, hereafter referred to as "CCI," to ensure that work areas are maintained in a safe, clean manner and present an acceptable appearance.

RESPONSIBILITIES

Management:

- Ensure that the requirements of this safety policy remain current with the applicable regulatory directives.
- Ensure good housekeeping standards are maintained.

Supervisors:

- Ensure that requirements and procedures of this safety program are being followed by conducting inspections, reviews, spot-checks, and other warranted follow-up action.
- Ensure that each work area under their supervision is inspected and maintained at an acceptable level of appearance and cleanliness.
- Initiate corrective action for deficient items noted during inspections.

Employees:

- Follow all aspects of this program.

POLICY

Lack of housekeeping is a major contributor to occupational injuries and illnesses. The guidelines outlined in this document represent the acceptable housekeeping practices for CCI.

All personnel will work towards maintaining their respective workplace in a clean and orderly manner.

Housekeeping encompasses all activities related to the cleanliness of workplace facilities, materials, and equipment and the elimination of nonessential materials and hazardous conditions. The following general housekeeping practices must be applied to all areas within CCI and all areas where personnel perform maintenance, construction, or other activities.

MAINTENANCE

The maintenance of buildings and equipment may be the most important element of good housekeeping. Maintenance involves:

- Keeping buildings, equipment, and machinery in safe, efficient working order and in good repair.
- Maintaining sanitary facilities and regularly painting and cleaning walls.
- Replacing or fixing broken or damaged items as quickly as possible.
- The inspection, maintenance, upkeep, and repair of tools, equipment, machines, and processes.

DUST/DIRT REMOVAL

Vacuum cleaners are suitable for removing light dust and dirt which is not dangerous otherwise.

- Industrial models have special fittings for cleaning walls, ceilings, ledges, machinery and other hard-to-reach areas where dust and dirt can build up.

Special vacuums are useful to remove dangerous products. Vacuum cleaners fitted with HEPA filters (high efficiency particle air) can be used to capture fine particles of asbestos or fiber glass.

Dampening (wetting) floors or using sweeping compounds before sweeping reduces airborne dust. Dust and grime in places such as shelves, piping, conduits, light fixtures, reflectors, windows, cupboards, and lockers may require manual cleaning.

Compressed air must not be used for removing dust, dirt, or chips from equipment or work surfaces.

Light Fixtures

Dirty light fixtures can dramatically reduce essential light levels. Light fixtures must be kept clean to ensure efficient lighting.

- The areas in which a worker is present, and the means of access to and egress from those areas, will be sufficiently illuminated.
- A light bulb used in a temporary lighting system must be enclosed by a mechanical protection device.

FLOORS/AISLES AND STAIRWAYS

Floors

Poor floor conditions are a major cause of incidents, so it is important to remove oil and other liquids immediately.

The accumulation of chips, shavings, and dust can also cause incidents. Collecting chips, shavings, and dust regularly from the ground can prevent them from accumulating.

Areas which cannot be continuously cleaned, such as entrance areas, will have anti-slip flooring. Floors that are not in good order (i.e., torn, ripped, or damaged flooring) poses a risk of tripping and shall be replaced.

Aisles and Stairways

It is important to keep the aisles and stairs clear. They must not be used for temporary storage. Stairways and aisles will be equipped with sufficient lighting.

Aisle space must allow for the movement of people, products, and materials. CCI shall ensure aisles will be wide enough to accommodate people and vehicles safely and comfortably.

- Warning signs and mirrors will be in place to improve sightlines in blind corners.
- Personnel will use properly arranged aisles so that shortcuts are not taken through hazardous areas.

Spill Control

The best way to control spills is to stop them before they occur.

- Drip pans and guards must be used where possible spills may occur.

Spills will be cleaned up immediately.

- Absorbent materials can be used for wiping up greasy, oily, or other liquid spills.
- Used absorbents must be disposed of properly and safely.

SLIPS, TRIPS, AND FALLS (STF)

Slips, Trips, and Falls (STF) are among the most frequent type of reported injuries for employees. STF hazards can occur in virtually every type of workplace. Some of the top hazards include:

- Contaminants on the Floor
- Indoor Surface Irregularities
- Outdoor Surface Irregularities
- Weather Conditions: Ice and Snow
- Inadequate Lighting
- Stairs and Handrails
- Stepstools and Ladders
- Tripping Hazards: Tools, Cords, etc.
- Improper Use of Floor Mats
- Poor Drainage: Pipes and Drains

Human Factors

- Health and physical condition may affect the vision, judgment, and balance of a person.
- The transport or movement of cumbersome objects or too many objects that impede your vision, impairs your balance, and prevents you from holding onto the handrails.
- Not paying attention: distractions (e.g., using cell phone, talking, and not watching where you are going, etc.).
- Taking shortcuts; not using designated walkways clear pathways; moving with haste (rushing)

Contaminants on the Floor

Water, grease, and other fluids can make the surfaces slippery. Highly polished floors like marble, terrazzo, or ceramic tiles can be extremely slippery even in dry conditions. Freshly waxed surfaces can be dangerous as well. Dry contaminants may also be a STF hazard, such as wood dust, flour, etc.

Some potential and appropriate controls for these hazards include:

- Keep floors clean and dry
- Use proper cleaning procedures for floors
- Wear slip-resistant shoes
- Prevent entry into areas that are wet
- Use high visibility caution signs warning of a slip/fall hazard

Indoor Surface Irregularities

Damaged, warped, buckled, or uneven flooring surfaces inside facilities can cause employees to slip, trip, or fall.

Some potential fixes or solutions to these hazards include:

- Replace loose or buckled carpet and other flooring
- Remove and replace vinyl tiles or broken ceramic tiles
- Show changes in the elevation of the walkway with safety yellow warning paint
- Replace smooth flooring materials with rougher floors in areas normally exposed to water, grease and/or particulate matter when renovating or replacing floors

Outdoor Surface Irregularities

Poorly maintained, irregular ground, projecting structures, holes, rocks, leaves and other debris can cause slipping, tripping, or falling. Sloping pavement areas may be identified with safety yellow paint.

Some potential fixes or solutions to these hazards include:

- Patch or fill cracks in walkways larger than 1/2 " wide
- Patch, fill, or repave outdoor areas with deep grooves, cracks, or holes
- Highlight curb or walkway elevation changes with safety yellow warning paint.
- Concrete wheel stops in parking lots can be a tripping hazard and should not be used
- Ensure that the structures of the underground irrigation system are covered or clearly marked

Stairs and Handrails

Proper design and maintenance of stairs and handrails can reduce hazards. Stairs that are badly marked or uneven, as well as handrails that are not in the right size, height or condition, can lead to missteps and cause employees to stumble.

Some potential fixes or solutions to these hazards include:

- Marking step edges and transition areas (height changes)
- Use non-slip strips
- Make sure that the stairs are adequately lit and have handrails
- Make sure that the stairs are kept free of ice, snow, and other slippery substances
- Check that stairwells have adequate lighting

Tripping Hazards

Clutter can accumulate in storage areas, work areas, corridors and sidewalks, which can lead to an STF incident. Exposed cords on the floor can catch the foot of an employee and lead to a trip and fall.

Some potential fixes or solutions to these hazards include:

- Organize storage areas to remove clutter
- Clear walkways
- Bundle cords
- Cover cords on the floor with a covering or tape cords to the floor

Floor Mats

Mats are used to absorb fluids and remove dirt, debris, and liquid from shoes, minimizing STF hazards. Mats are only effective if they are properly used and maintained. Worn or poorly placed mats can contribute to slipping, tripping, and falling.

Some potential fixes or solutions to these hazards include:

- Mats and runners at entrances should be large enough so that several footsteps remove dirt from the shoes before the shoes touch the interior ground surface.
- If necessary, place additional mats in the entrances for ice, snow and rain.
- Non-slip mats shall be used in areas where employees may routinely encounter wet floors. Beveled, flat, and continuous or interlocking mats should be used.
- Mats that are curled, ripped, or worn will be replaced.

Exit Access

Employees shall keep exits and access to exits free from obstruction.

TOOLS AND EQUIPMENT

Tool housekeeping is very important, whether in a tool room, on the rack, or on the bench.

- Suitable fixtures with marked locations may be provided to be used to maintain an orderly arrangement.
- Tools must be promptly returned to storage after use to reduce the chance of being misplaced or lost.
- Workers will regularly inspect, clean, and repair all tools and take any damaged or worn tools out of service.

WASTE DISPOSAL

Regular collection, grading, and sorting of scrap is necessary for good housekeeping practices. It also allows for the separation of recyclable materials from those going to waste disposal facilities.

Material is not allowed to build up on the floor.

- CCI shall place scrap containers near where waste is produced.
- All waste receptacles will be clearly labelled (e.g., recyclable, , scrap, etc.)

Scraps and Left-Over Dangerous Debris

During construction, alteration, or repairs, form and scrap lumber with protruding nails, and all other debris, shall be kept cleared from work areas, passageways, and stairs, in and around buildings or other structures. [1926.25 \(a\)\(b\)\(c\)](#)

Combustible scrap and debris shall be removed at regular intervals during construction. Safe means shall be provided to facilitate such removal.

Containers shall be provided for the collection and separation of waste, trash, oily and used rags, and other refuse. Containers used for garbage and other oily, flammable, or hazardous wastes,

such as caustics, acids, harmful dusts, etc. shall be equipped with covers. Garbage and other waste shall be disposed of at frequent and regular intervals.

EMPLOYEE FACILITIES

Employee facilities will be adequate, clean, and well maintained.

- Washroom facilities are required to be cleaned once or more each shift; and should also have a compliant supply of soap, towels/hand dryers, plus disinfectants, if needed.

CCI shall provide special precautions as needed such as showers, washing facilities, and change rooms, if workers are using hazardous products.

- Workers affected by hazardous materials must shower off workplace contaminants to reduce the chance of contaminating the clothing they wear home.

Smoking, eating, or drinking in the work area where hazardous products are handled is prohibited.

A separate eating area shall be designated.

MATERIAL/EQUIPMENT STORAGE

Material or equipment at a project will be stored and moved in a manner that does not endanger a worker. Material and equipment at a project must be piled or stacked in a manner that prevents it from tipping, collapsing, or rolling.

No material will be stored, stacked, or piled closer than 6 feet to:

- The open edge of a floor, roof, or balcony
- An excavation

The location of the stockpiles should not interfere with work, but they should still be readily available when required.

- Stored materials must allow at least three (3) feet of clear space under sprinkler heads.
- Stacking cartons and drums on a firm foundation and cross tying them, where necessary, reduces the chance of movement.
- Stored materials must not obstruct aisles, stairs, exits, fire equipment, emergency eyewash fountains, emergency showers, or first aid stations.
- **Combustible, corrosive, or toxic substances** must be stored in suitable containers.
- **Non-compatible materials** shall be segregated in storage.
- **Storage cylinders for compressed gas** will be secured in an upright position.

- The control valve of a storage cylinder for compressed gas, other than a cylinder connected to a regulator, supply line, or hose must be covered by a protective cap that is secured in its proper position.
- A spent storage cylinder will **not** be stored inside a building.
- No storage cylinder for propane will be placed closer than ten (10) feet to an ignition source or flame. (35 feet – see Hot Work)

A **flammable liquid or gas** will be stored in a building or storage tank that is suitable for the purpose and, if practicable, not less than 330 feet from a magazine for explosives.

- No more than one workday's normal supply of a flammable liquid may be stored in a building or structure on a project unless it is stored:
 - In a container that is suitable for the hazards of the liquid; and,
 - In a controlled access area or a room that:
 - Has sufficient window area to provide explosion relief to the outside; and,
 - Is remote from the means of egress from the building or structure.

A portable container used to store, or transport flammable liquids must:

- Be approved for use for that liquid by a recognized testing laboratory; and,
- Have a label stating the use for which the container is approved and the name of the testing laboratory which gave the approval.

CCI ensures the storage of materials shall meet all requirements specified in the fire codes and the regulations of environmental and occupational health and safety agencies.

INSPECTIONS

Inspections will be performed at a frequency that ensures that CCI's desired level of cleanliness and appearance are maintained. During inspections, any safety related deficiencies that constitute hazardous conditions will be given priority attention.

Inspection Guidelines

- Receptacles are available for waste and debris
- Cleaning and removal of waste, debris, and dust is being performed regularly
- Enough waste receptacles are available to make their use convenient
- Aisles and stairways are free from loose material and debris and are not used for storage
- Tools, cords, and other materials are secured such that they cannot cause tripping or other safety hazards
- Employee facilities are being constantly maintained in a sanitary condition
- Deficiencies in physical appearance (such as a need for painting and other appearance related maintenance items) should be noted during the inspections

- Deficiencies in corrective maintenance (such as leaking valves or fittings, excessive motor vibrations, etc.), should be noted during the inspections

Workplace Violence

PURPOSE

The purpose of this document is to establish guidelines and procedures for taking preventative measures to minimize the potential workplace violence for **Cirks Construction Inc.**; hereafter referred to as "CCI,"

RESPONSIBILITIES

Management

- Provide support to all investigations of instances of violence in the workplace
- Identifying the vulnerable locations and work activities most susceptible to workplace violence
- Provide training for Managers, Supervisors, and Employees
 - Demonstrate concern for workers' emotional and physical health and safety, communicating that violence is not permitted
- Ensure the following policy is enforced
- Promote compliance with this safety policy and procedure through training and communication.
 - Prohibit violence or harassment in the workplace, and take corrective action against any employee who subjects another employee to harassment
 - Develop emergency signaling, alarms and/or monitoring systems

Supervisors

- Assist managers in the identification of vulnerable locations and work activities within their organization
- Report all instances of workplace violence and harassment
- Support employees in reporting workplace violence
- Assist in all investigations

Employees

- Follow CCI guidelines regarding violence and harassment
- Report any acts of violence or threatening behaviors to Supervisors
- Participate in training required by this policy and procedure

POLICY

It is the policy of CCI to provide a place of employment that is free from recognized hazards that cause or are likely to cause death or serious physical harm to employees or the public.

CCI is committed to maintaining a safe, healthful, and efficient working environment where employees and the public are free from the threat of workplace violence. When these workplace violence hazards are recognized and identified, then proper training and appropriate security measures shall be implemented.

Response to violence in the workplace will depend on the nature of the incident and will focus on reducing the negative impacts of the incident and discovering ways to prevent similar incidents in the future.

CCI will not tolerate harassment in the workplace.

DEFINITIONS

Violence- Whether at a work site or work-related, means the threatened, attempted, or actual conduct of a person that causes or is likely to cause physical or psychological injury or harm and includes domestic or sexual violence.

Harassment - Any single incident or repeated incidents of objectionable or unwelcome conduct, comment, bullying, or action by a person that should reasonably know will or would cause offence or humiliation to a worker, adversely affect the worker's health and safety, and includes:

- Conduct, comment, bullying or action because of race, religious beliefs, color, physical disability, mental disability, age, ancestry, place of origin, marital status, source of income, family status, gender, gender identity, gender expression and sexual orientation.
- An unwelcomed sexual solicitation or advance.

PROHIBITED BEHAVIOR

Prohibited behaviors are those behaviors that are defined in this program and that:

- Threaten the safety of an employee, customer, or the public
- Affect the health, life, or well-being of an employee, customer, or the public.
- Result in damage to employee, company customer,, or public property (excluding vehicle and equipment accidents).

Such acts include, but are not limited to:

- Threatening, intimidating, coercing, harassing, or assaulting an employee, customer, or the public.
- Sexually harassing an employee, customer, or the public.
- Allowing unauthorized persons access to buildings without management permission.
- Using, duplicating, or possessing keys to buildings or offices within the building without authorization.

- Damaging, or attempting to damage, property of CCI, an employee, customer, or the public.

Carrying weapons (concealed or exposed) on CCI property unless the employee's possession of a weapon:

- Is authorized by the CCI President; or
- Is by an employee who is a certified law enforcement officer with approval from the CCI President; or
- Is required as a part of the employee's job duties with CCI; or
- Is connected with training received by the employee in order to perform the responsibilities of their job with CCI.

Any unacceptable personal conduct as provided in CCI's Handbook Policy shall subject the employee to disciplinary action up to and including dismissal. In situations considered to be potentially volatile or where fitness for duty concerns exist, management has the option to consider the use of a management-directed referral to an Employees' Assistance Program.

CCI will ensure that a worker is advised to consult a health professional of the worker's choice for treatment or referral if the worker:

- Reports an injury or adverse symptom resulting from workplace violence, or
- Is exposed to workplace violence.

NOTIFICATION

Employees will notify a supervisor as soon as safely possible if an incident involving violence occurs.

If there is an imminent danger of harm and the situation demands the presence of emergency responders, an employee should contact the appropriate authorities or see that a supervisor contacts them. Employees should report any criminal act immediately to police if safely possible and keep a line of communication open with the authorities until police arrive.

All worksites will have a means to alert others to an emerging incident. Such means include alarms, codes, and signals. These procedures shall be set in place and shared with employees before an incident occurs, to ensure their effectiveness.

REPORTING AND INVESTIGATION

Any employee who has been threatened, is a victim of a violent act, witnesses any threats or violent acts, or learns of any threats or violent acts, is to report immediately such activity to their supervisor or the Human Resources.

Each report will be promptly evaluated and investigated by management to determine what follow-up actions are necessary. Management has the authority and responsibility to request law enforcement intervention if it is thought to be necessary.

A designated competent person at the completion of the investigation must provide CCI a written report with conclusions and recommendations.

Upon completion of the investigation:

- A record will be kept of the report; and
- A copy of the report will be provided to the safety team without disclosing the identity of persons involved unless they consent.

Controls must be implemented to prevent a recurrence of the workplace violence.

CONFIDENTIALITY

Information about an incident or threat will be disclosed only on a needs-to-know basis, so that a fair and thorough investigation can be conducted, and appropriate corrective action can be taken. CCI will make every effort to ensure the safety and privacy of the individuals involved.

Nothing in this Policy should discourage or prevent a worker from referring a harassment complaint to CCI, the Department of Labor or exercising any other legal rights available under any other law.

DISCIPLINE

An employee who engages in prohibited behavior will be subject to appropriate disciplinary action, as determined by the findings of the investigation. Such discipline may include warnings, demotion, suspension, or immediate dismissal. In addition, certain actions may cause the employee to be held legally liable under state or federal law.

Where harassment has not been substantiated, no action will be taken against a worker who has made a complaint in good faith. However, a deliberate false accusation of harassment will subject the offending employee to disciplinary action up to and including dismissal .

RETALIATION

Episodes of workplace violence can only be eliminated if employees are willing and able to report threats, violent acts, and other unsafe conditions. To encourage employees to come forward without the fear of retaliation, CCI promises to promptly investigate all complaints of retaliation and impose appropriate disciplinary action, up to and including dismissal.

COUNSELING

Dealing with or being exposed to a violent or abusive situation can be emotionally unsettling. CCI will provide access to support to reduce tension and stress. Follow-up support services may be provided and arranged by CCI as requested for affected employees. If employees prefer external counseling for emotional and/or family support, they should be encouraged to contact Human Resources. In all instances, confidentiality is assured.

VIOLENCE PREVENTION ASSESSMENT

Evaluate the physical layout of the worksite. Check for and consider the following:

- External lighting to cover walkways and parking areas
- Controlled access to all worksite entry points
- Video surveillance cameras at critical points
- Procedures for allowing access to the facility

WORKPLACE HARASSMENT

“Harassment” means any objectionable conduct, comment or display by a person that:

- Is directed at a worker, or
- Constitutes a threat to the health or safety of the worker.

CCI shall make every reasonably practicable effort to ensure that no worker is subjected to harassment. Any worker who believes they have been subjected to harassment is encouraged to make clearly and firmly known to the alleged harasser that the harassment is objectionable and must stop.

Where circumstances prevent a worker from acting, or the action taken is unsuccessful, the worker should report the alleged harassment to Human Resources.

Where the worker has reported the alleged harassment to the person designated, that person will immediately bring the complaint to the attention of senior management.

CCI will not disclose the name of the complainant or an alleged harasser, or the circumstances related to the complaint to any person except where disclosure is:

- Necessary for the purposes of investigating the complaint or taking corrective action with respect to the complaint, or
- Required by law.

RECORDKEEPING

This policy will be reviewed, and these reviews documented, at least once a year or under the following circumstances:

- Following a workplace violence incident or report,
- To make needed changes or improvements to the policy, or
- To identify new training or refresher training needs.

TRAINING

CCI will ensure that employees are instructed in:

- How to recognize workplace violence,
- The policy, procedures, and workplace arrangements that effectively minimize or eliminate workplace violence,
- The appropriate response to workplace violence, including how to obtain assistance,
- Procedures for reporting, investigating, and documenting incidents of workplace violence, and
- Procedures for identifying conflict escalation, techniques for de-escalating conflict, and other appropriate incident responses.

Employees shall be informed of their responsibilities and of the measures they can take to protect themselves and their co-workers from workplace violence.

TRAINING GUIDELINES

Supervisor and Manager Training

Creating a non-violent work environment requires that supervisors and managers:

- Treat employees fairly and respectfully;
- Are clear and consistent in their expectations;
- Provide assignments that are appropriate for the employees' skill levels;
- Set realistic workloads, deadlines, and performance standards;
- Ensure employees have the resources they need to complete assignments;
- Acknowledge and follow-through on employee requests and concerns;
- Provide regular and constructive feedback;
- Keep employees informed of what is going on in the organization; and
- Provide opportunities for professional growth.

Despite CCI's best efforts to create a healthy work atmosphere, there are likely to be some performance and behavior-related problems. To keep these problems from escalating, supervisors and managers should be trained to recognize and handle them at the lowest possible level. This can be accomplished by providing training on:

- Conflict resolution
- Non-violent responses

- Disciplinary procedures
- Crisis management

Employee Training

Incidents of workplace violence can also be reduced if employees receive "awareness training" which addresses:

- CCI's position on workplace violence (e.g., zero tolerance);
- Behaviors that are prohibited by CCI policy;
- Disciplinary action that will result from policy violations;
- Procedures for reporting and investigating threats, violent acts, and unsafe conditions;
- Measures that will be taken to ensure confidentiality; and
- Steps CCI has taken to increase security.