SUMMIT

RESTORATION • INSULATION
WATERPROOFING • STONE

SAFETY PROTECTION PROGRAMS

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Environmental, Health and Safety – Policy Statement

It is SUMMIT's belief that our people are our most important assets and that the preservation of employee Safety and Health must remain a constant consideration in every phase of our business. It is our intent to provide a work environment as free of hazards as possible.

All employees are responsible for working safely and productively, always remaining aware of hazards in their jobs and following recognized safe work practices, including the use of Personal Protective Equipment (PPE).

It is also the belief of SUMMIT that all environmental, health and safety programs must have total employee involvement. Therefore, this program has management's highest priority, support, and participation.

PRODUCTION IS NOT SO URGENT THAT WE CANNOT TAKE TIME TO DO OUR WORK SAFELY.

Earnestly,

Stephen Berwanger

Stephen Berwanger, Principal
SUMMIT Sealants and Restoration Services, Inc

Jacob Holland

Jacob Holland, Principal
SUMMIT Sealants and Restoration Services, Inc

WRITTEN ENVIRONMENTAL, HEALTH AND SAFETY PROGRAM GUIDE

GOALS:
Safety begins at the top and goes throughout the company. Our goal is to have an injury free work place. This can be achieved by delegating responsibility and accountability to all involved in this company's operation.

Responsibility: Answering for activities and results.

Accountability: The active measurement by management to ensure compliance and management exploitation of steps to ensure action.

In other words, to reach our goal of a safe work place, everyone needs to take responsibility. Then everyone will be held accountable.

BENNIFITS OF ACHIEVING GOALS:

- Minimize injuries and accidents.
- Minimize loss of property and equipment.
- Prevent fatalities.
- Prevent permanent disabilities.
- Improved Environmental, Health, and Safety conditions in the work place.

MANAGEMENT COMMITMENT:
The management of SUMMIT is committed to the company's Environmental, Health, and Safety, and to provide direction and motivation by:

- The appointment of Stephen Berwanger, Jacob Holland, and Stewart Hopper as Safety Coordinators.
- Establishing annual company safety goals and objectives.
- Having a written Environmental, Health, and Safety Program and being totally committed to it.
- Taking part in employees' safety training.
- Enforce disciplinary procedures.
- Support the Environmental, Health, and Safety Program with people, authority and training.
- Establish accountability and responsibilities for management and employees to follow.

ASSIGNMENT OF RESPONSIBILITY

SAFETY OFFICERS:
Stephen Berwanger, Principal of SUMMIT Sealants and Restoration Services, Inc.
Jacob Holland, Principal of SUMMIT Sealants and Restoration Services, Inc.
Stewart Hopper, Safety Manager

It shall be the duty of the Safety Officers to assist the Project Manager/Supervisor/Foreman and all other levels of Management in the initiation, education, and execution of an effective safety program, generally and more specifically, the following:

- Introduce the safety program to new employees.
- Follow-up on recommendations, suggestions, etc., made at the weekly safety meetings. (All topics of safety concerns shall be documented accordingly).
- Be thoroughly familiar with the company safety program and assist personnel in the execution of standard policies.
- Conduct safety inspections on a periodical basis.
- Address all hazards or potential hazards as needed.
- The preparation of monthly accident reports and investigations.
- Maintain adequate stock of first-aid supplies and other safety equipment to ensure their immediate availability.
- Ensure that there is an adequate number of qualified first-aid certified people on the job.
- Be thoroughly familiar with OSHA, State, and Local safety codes and regulations.

EMPLOYEES:
Every employee will receive a safety orientation upon start of employment and will receive a copy of the Company Environmental, Health, and Safety. It is the duty of every employee to know the safety rules and conduct his/her work in compliance. Disregard of Environmental, Health, and Safety rules shall be grounds for disciplinary action up to and including termination. It is the duty of each employee to make full use of the safeguards provided for their protection.

Partial list of Company Environmental, Health, and Safety Program rules:

- Employees will read, understand and follow safety and health rules, regulations and procedures.
- Employees working in areas where there is a possible danger of injury, Personal Protection Equipment (PPE) will be worn at all times.
- Suitable work clothes will be worn.
- Employees observed working in a manner which might cause injury to themselves or others shall be warned of the danger and will immediately correct their method of operation.
- Employees shall **report all injuries**, no matter how slight, to their Project Manager/Supervisor/Foreman immediately, and seek treatment promptly.
- Employees shall be aware of the location of first aid, fire fighting equipment, and other safety devices.
- Employees shall attend any and all required safety and health meetings.
- Until employee has been properly trained, s/he is not to perform potentially hazardous tasks or use hazardous material.
- Trained employees are to follow all procedures when performing potentially hazardous tasks or using hazardous material.

IF EVER IN DOUBT ABOUT SOMETHING: STOP AND ASK!

PROJECT MANAGER/SUPERVISOR/FOREMAN:
Project Manager/Supervisor/Foreman will establish an operating atmosphere that insures Environmental, Health, and Safety is managed in the same manner and with the same emphasis as production, cost, and quality control.

- Define the responsibilities for safety and health of all subordinates and hold each person accountable for their results through the formal appraisal system and where necessary, disciplinary procedures.
- Regularly emphasize that accident and health hazard exposure prevention are not only moral responsibilities, but also a condition of employment. Accidents create unnecessary loss both personal and financial.
- Identify operational oversights that could contribute to accidents which often result in injuries and property damage. Example: (*lock-out/tag-out*).
- Participate in safety and health related activities, including routinely attending safety meetings, reviews of the facility, correcting employee behavior that can result in accidents and injuries, and quality control problems.
- Spend time with each person hired, explaining the safety policies and the hazards of his/her particular work.
- Make sure that if a "Competent Person" is required, one is on hand to oversee, and instruct employees when necessary.
- Never short-cut safety for expediency, nor allow workers to do so.
- Enforce safety rules consistently and follow Company's discipline/enforcement procedures.
- Conduct daily job site workarounds and correct noted safety violations.

CONTROL OF HAZARDS:
Whenever feasible, workplace hazards are prevented by effective design of the job site or job. When it is not feasible to eliminate such hazards, they must be controlled to prevent unsafe and unhealthy exposure. Once a potential hazard is recognized, the elimination or control must be done in a timely manner. These procedures should include measures such as the following:

- Using engineering techniques where feasible and appropriate.
- Maintaining the facility and all equipment to prevent equipment breakdowns.
- Using administrative controls, such as reducing the duration of exposure.
- Project Managers/Supervisors/Foremen shall maintain a periodic site inspection program.
- Establishing a medical program that includes first aid on site, as well as nearby physician and emergency medical care to reduce the risk of injury or illness.
- Addressing any and all safety hazards when a potential/hazard is observed.
- Employees who are exposed to harmful conditions and/or hazardous materials will be provided medical examinations free of charge per their request.

SAFETY COMMITTEE:
The Committee shall consist of representatives from management and employees with Stephen Berwanger as the chairman. The committee is a forum, created for the purpose of fostering Environmental, Health, and Safety The responsibilities of Safety Committee Members include:

- Discussing safety policies and procedures with management and making recommendations for improvement.
- Serving as liaison between workers and management in safety matters.
- Providing technical reference materials.
- Reviewing accident investigation reports on all accidents and "near misses".
- Identifying unsafe conditions and practices and making recommendations for remedies.

- The Environmental, Health, and Safety Program shall be reviewed annually by the safety committee and be revised, updated, or changed as necessary

TRAINING AND EDUCATION:
Training is an essential component of an effective safety and health program. It addresses the responsibilities of both management and employees at the site. Safety Training is often most effective when incorporated into other educational training practices in real-world jobsite conditions.
SUMMIT is committed to providing all the necessary training for each employee regardless of experience level and strives for every employee to meet OSHA's definition of a *"Competent Person"* which 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)].

INITIAL TRAINING:
Employees engaged in activities which exposes or potentially exposes them to any hazard to their health and safety; shall be notified of the hazards, provided the necessary P.P.E., and trained to eliminate or reduce risks to themselves and others health and safety.
Upon arrival to the jobsite new employees will report to a designated *"Competent Person"* and review any necessary safety documentation, procedures, and hazards associated with the work being performed on the site. The new employee shall shadow the *"Competent Person"* until it is determined by said competent person and the new employee that they are capable of performing each task safely and effectively.

Training programs should be provided as follows:
- Initially when the plan is developed.
- For all new employees.
- When new equipment, materials, or processes are introduced.
- When procedures have been updated or revised.
- When experiences/operations show that employee performance must be improved.
- Annually.

In addition to the standard training, employees should be trained in the recognition of hazards. They should have the ability to look at something/someone and know that there is a problem. This may include and is not limited to:

Falls from:	Floors, Roofs and Roof Openings. Ladders (Straight and Step), Scaffolds, and Wall Openings. Tripping, Trenches, Steel Erection, Stairs and Chairs.
Electrical:	Appliances, Damaged cords, Outlets, and Overloads. Overhead High Voltage, Extension cords, and Portable Tools (broken casing or damaged wiring). Grounding, Metal Box's, Switches and Ground fault circuit interrupters (GFCI).
Housekeeping:	Exits, Walkways and Floors. Trash, Storage of Materials (Hazardous and Non-Hazardous); Protruding Nails etc.
Fire:	Oily-Dirty Rags, Combustibles, Fuel Gas Cylinders, and Exits (blocked).
Trips/Slips:	Stairs, Un-even Flooring, Obstructions, Icy Walkways.
Health:	Silicosis, Asbestos, Chemical Exposure, Loss of Hearing, Repetitive Use Injuries.

Employees trained in the recognition of hazards are less likely to be injured on the job. Overall production will increase, workers compensation insurance will decrease and management/employee relations will be substantially improved.

SAFETY MEETINGS:
All employees of SUMMIT shall attend and participate in safety meetings and training sessions.

Montrose Division

A minimum of fifteen minutes shall be given every two weeks for the safety meeting. Problems that have arisen or that are anticipated shall be discussed in addition to other safety and health topics. Employees will be informed of any new OSHA policies and review existing policies.

Denver Division

Safety Meeting will occur at the Denver Office every month with the entirety of the Denver Division. Training Sessions will occur with each of the Denver Teams (Blue, Green, Red, Insulation) monthly. A schedule will be made available to you regarding which training session you will attend.

SUMMIT is committed to ensuring every employee is aware of safety hazards and has the necessary training to work safely on the job site

Training is not just for the worker, but for everyone.

RECORDKEEPING AND HAZARD ANALYSIS:
If an injury or accident should occur, you are to report it to your supervisor/foreman as soon as possible.

A log and summary report shall be maintained for every recordable injury and illness. The entry should be done as soon as possible; and no later than six working days after the report of injury or illness has occurred.

The OSHA log No. 200 or equivalent shall be used for the recording.

A recordable injury or illness: if it results in any of the following: death, days away from work,

restricted work or transfer to another job, medical treatment beyond first aid, or loss of consciousness.
First Aid: one-time treatment, and any follow-up visit for the purpose of observation, of minor scratches, cuts, burns, splinters, etc., which does not ordinarily require medical care.

An annual summary of recordable injuries and illnesses shall be posted and contain the following information: Calendar year, company name-establishment name, establishment address, certification signature, title, and date.

The summary covering the previous calendar year shall be posted no later than February 1st, and remain in place until March 1st.

If no injury or illness occurred in the year, zeros must be entered on the total line, and be posted.

ACCIDENT INVESTIGATION:

Project Manager/Supervisor/Foreman

- Provide first aid, call for emergency medical care if required.
- If further medical treatment is required, arrange to have an employee accompany the injured employee to the medical facility. Encourage return to work with notation from the physician if possible.
- Secure area, equipment and personnel from injury and further damage.
- Investigate the incident (injury)--gather facts, employee and witness statements; take pictures and physical measurements of incident site and equipment involved.
- Complete an incident investigation report form within 24 hours whenever possible.
- If the injury warrants time away from work, insure that the absence is authorized by a physician and that you maintain contact with your employee while s/he is off work.
- Insure that corrective action to prevent a recurrence is taken.
- Discuss incident, where appropriate, in safety and other employee meetings with the intent to prevent a recurrence. Discuss with other supervisors and management.
- Monitor status of employee(s) off work. Maintain contact with employee(s) and encourage return to work even if restrictions are required by the physician.
- "Return to Work" release from the physician is required in order for an injured employee(s) return to work. They will not be permitted to return to work without "return to work" release.
- Review the release carefully and insure that the employee follows the restrictions indicated by the physician if applicable.

SAFETY RULES AND PROCEDURES:

- No employee is expected to undertake a job prior to receiving adequate training.
- All employees shall be trained on potential hazards they could be exposed to and how to protect themselves.
- No employee is required to work under conditions which are unsanitary, dangerous or hazardous to their health.
- Only trained personnel are permitted to operate machinery or equipment.
- All injuries must be reported to your Project Manager/Supervisor/Foreman.
- Particular attention should be given to new employees and to employees moving to new jobs or doing non-routine tasks.
- All OSHA posters shall be posted.
- Emergency numbers shall be posted and reviewed with employees.
- Employees will learn and abide their Site-Specific Safety and Health Plan
- Employees will attend all Safety and Health training sessions and meetings.
- Employees working in areas where there is potential danger of head injury, excessive noise exposure, or potential eye/face injury, shall be protected by Personal Protection Equipment (PPE).
- All hand and power tools and similar equipment, whether furnished by the employer or the employee, shall be maintained in safe condition.
- All materials stored in tiers shall be stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling or collapsing.
- The employer shall ensure that electrical equipment is free from recognized hazards that are likely to cause death or serious physical harm to employees.
- All scaffolding shall be erected in accordance with the CFR 1926.451 subpart L. Standard guardrails for fall protection and ladders for safe access shall be used. (Refer to detailed section on scaffolding).

- All places of employment shall be kept clean, the floor of every workroom shall be maintained, so far as practicable, in a dry condition; standing water shall be removed.
- Where wet processes are used, drainage shall be maintained and false floors, platforms, mats or other dry standing places or appropriate waterproof footgear shall be provided.
- To facilitate cleaning, every floor, working place, and passageway shall be kept free from protruding nails, splinters, loose boards, holes and openings.
- All floor openings, open sided floor and wall openings shall be guarded by a standard railings and toe boards or cover. (Refer to detailed section on fall hazards).
- Each employee in an excavation/trench shall be protected from cave-ins by an adequate protective system. (Refer to detailed section on excavations).
- The employer shall comply with the manufacturer's specifications and limitations applicable to the operation of any and all cranes and derricks.
- All equipment left unattended at night, adjacent to a highway in normal use, or adjacent to construction areas where work is in progress, shall have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, to identify the location of the equipment.
- No construction loads shall be placed on a concrete structure or portion of a concrete structure unless the employer determines, based on information received from a person who is qualified in structural design, that the structure or portion of the structure is capable of supporting the loads.
- A stairway or ladder shall be provided at all personnel points of access where there is a break in elevation of 19 inches or more, and no ramp, runway, sloped embankment, or personnel hoist is provided. (Refer to detailed section on ladders).

FIRST AID/MEDICAL/EMERGENCIES:
First aid kits are located at the following locations:

- In Office.
- All Company Trucks.
- All Work Sites.

Every employee shall be trained in emergency procedures:

- Potential jobsite emergencies.
- Activating the site-specific Emergency Action Plan (EAP).
- Shutdown procedures for equipment.

SUMMIT SEALANTS AND RESTORATION SERVICES, INC WILL FOLLOW THE RULES AND REGULATIONS FROM THE 29 CFR 1910.120 PERTAINING TO HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE.

ENVIRONMENTAL CONTROL PLAN:
SUMMIT will perform work in compliance with all EPA, and environmental regulations minimizing environmental pollution and damage as the result of construction operations. Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare, unfavorably after ecological balances of importance to human life; affect other species of importance to humankind; or degrade the utility of the environment for aesthetic, cultural and /or historical purposes. The control of environmental pollution and damage requires consideration of land, water, and air and includes management of visual aesthetics, noise, solid waste, as well as other pollutants.

ENVIRONMENTAL PROTECTION PLAN:
The purpose of this Environmental Protection Plan (EPP) is to present an overview discussion of known or potential environmental issues and/or contaminants that according to the Government will be present on one

or more sites SUMMIT performs work on. As with any project, the goal of SUMMIT is to minimize the release of pollutants into the environment and will absolutely comply with any restrictions, laws, and regulations that have been imposed by Federal, State, and/or local authorities.

HAZARD COMMUNICATION PROGRAM 2022

General Company Policy
The purpose of this notice is to inform you that our company is in compliance with the OSHA Hazard Communication Standard, Title 29 CFR 1910.1200. Compliance includes compiling a hazardous chemicals list, using SDS's, ensuring that containers are labeled, and providing employee training.

This program applies to all work operations where there may be exposure to hazardous substances under normal working conditions or during an emergency situation.

Stephen Berwanger is the program coordinator and has overall responsibility for the program. Stephen will review and update the program as necessary. Employees will be informed of the contents of the Hazard Communication Standard, the hazardous properties of chemicals with which she/he works, safe handling procedures, and measures to take to protect oneself from these chemicals. Employees will also be informed of the hazards associated with non-routine tasks, and the hazards associated with chemicals in unlabeled pipes.

List of Hazardous Chemicals
A list of all hazardous chemicals and related work practices used is available at this location and will be updated as necessary. The list identifies all chemicals used and the corresponding SDS for each chemical. A master list of these chemicals may be obtained from the office of SUMMIT Sealants and Restoration Services, Inc.

Safety Data Sheet (SDS)
A Safety Data Sheet provides you with specific information about chemicals used. Each work site maintains an SDS for hazardous materials in that area.

SDS on every substance on the list of hazardous chemicals is located and maintained at the office of SUMMIT.
The chemical manufacturer or vender will be contacted if additional research is necessary or if SDS has not been supplied with an initial shipment. All new procedures for the company must be cleared by Stephen Berwanger. *Do not use a product, which has no SDS. *

Labels and Other Forms of Warning
All hazardous chemicals in the workplace will be properly labeled and updated, as necessary. Labels should list at least the chemical identity, appropriate hazard warnings, and the name and address of the manufacturer, importer or other responsible party.
Refer to the corresponding SDS to verify label information. Containers that are shipped from the workplace will be checked to ensure all containers are properly labeled.

If there are a number of stationary containers within a work area that have similar contents and hazards, signs will be posted on them to convey the hazardous information. On our stationary process equipment, regular process sheets, batch tickets, blend tickets, and similar written materials, will be substituted for container labels when they contain the same information as labels. These written materials will be made readily available at each work site as appropriate.

If you transfer chemicals from a labeled container to a portable container that is intended for your immediate use ONLY, labels are not required on the portable container. Pipes or piping systems will not be labeled, but their contents will be described in the training sessions. Remember: do not use products which are unlabeled or with defaced labels and report such incidences to the Project Manager.

Non-Routine Tasks
When you are required to perform hazardous non-routine tasks, a special training session will be conducted to inform you, regarding the hazardous chemicals to which you might be exposed and the proper precautions to take to reduce or avoid exposure.

Chemical Approval Process
All chemicals received, used or stored at the location/operation are required to be reviewed and approved prior to use. The approval process includes an evaluation of less hazardous chemicals, potential exposure issues, and proper work practices as well as regulatory compliance. As much as feasible, the most appropriate chemical(s) are used in operations, with respect to employee safety, use and storage, regulatory requirements, chemical effectiveness, environmental concerns, waste (disposal), and cost. The following criteria are used in the approval process; Receipt of all required safety/regulatory information (safety data sheets, SDS), certification by customs and other appropriate regulatory agencies, evaluation and approval by EHS personnel, estimated quantities required, and planned use descriptions.

Waste Storage and Disposal
Chemicals or materials that are outdated, expired, or no longer used must be evaluated prior to disposal to determine if it is considered a hazardous waste. EHS can assist in the determination if a material is a hazardous waste. If material is deemed hazardous, it will be disposed of with the appropriate waste management company.

Training
Everyone who works with or is potentially exposed to hazardous chemicals will receive initial training on the Hazard Communication Standard and the safe use of those hazardous chemicals. A program has been prepared for this purpose. When a new hazard is introduced, additional training will be provided. A review of the program will take place annually. The training program will emphasize the following items:

- Summary of the standard and this written program.
- Chemical and physical properties of hazardous materials (e.g., flash point, reactivity) and methods that can be used to detect the presence or release of chemicals (including chemicals in unlabeled pipes).
- Physical Hazards of chemicals (e.g. potential for fire, explosion, etc.).
- Health hazards, including signs and symptoms of exposure, associated with exposure to chemicals and any medical condition known to be aggravated by exposure to the chemical.
- Procedures to protect against hazards (e.g. personal protective equipment required, proper use, and maintenance; work practices or methods to ensure proper use and handling of chemicals; and procedures for emergency response).
- Work procedures to follow to assure protection when cleaning hazardous chemical spills and leaks.

- Where Safety Data Sheets (SDS’s) are located, how to read and interpret the information on both labels and SDS's and how employees may obtain additional information.

Stephen Berwanger will review the employee-training program and meet the retraining needs. Retraining is required when the hazard changes or when a new hazard is introduced, and it is company policy to provide re-training at least annually for all employees to ensure the effectiveness of the program. New employees will be trained as they come on board. Stephen Berwanger will obtain input from employees regarding the training they have received, and their suggestions for improving it.

All employees, or their designated representatives, can obtain further information on this written program, the hazard communication standard, applicable SDS's, and chemical information lists from the office.

FALL PROTECTION PROGRAM

Objective

Falls remain the #1 cause of death in the construction industry. As an employee of SUMMIT you will encounter projects where you may be expected to work at height. SUMMIT is committed to providing all necessary training and equipment to minimize the risks associated with working at height.

Each year, the Bureau of Labor Statistics (BLS) reports that far too many workers die on the job, with many of those fatalities resulting from falls. Events surrounding these types of accidents often involve a number of factors, including unstable working surfaces, misuse of fall protection equipment, and human error. Studies have shown that the use of guardrails, fall arrest systems, covers, and proper training can prevent many deaths and injuries from falls.

Whenever performance of any task would allow a worker to fall a distance of six feet or more to a lower level, the project requires pre-planning in order that fall hazard are identified, evaluated, and controlled. The worker must receive adequate training and be protected from falling. The controlling regulations are OSHA's Fall Protection Standard, 29 CFR 1926, Subpart M.

In order to comply with the Occupational Safety and Health Administration Standards (OSHA), this written program has been established for ***SUMMIT Sealants.*** All company projects and facilities are included and comply with this program. Copies of this written program, including a copy of the OSHA Standard, are available for review by any employee.

Assignment Of Responsibility

The Safety Manager is responsible for:

- Providing oversight and technical support,
- Securing the resources necessary to implement this program;
- Ensuring that routine safety checks of work operations are performed;
- Conducting an annual review of this program, including an inspection of systems
- Updates (as needed) to ensure the effectiveness of the program; and,
- Ensuring that proper reporting and record keeping is executed.

Project Managers / Supervisors/ Foremen are responsible for:

- Compliance with this program at project sites under their supervision.
- Performing routine safety checks of work operations;

- Correcting any unsafe practices or conditions immediately;
- Ensuring employees have the proper tools and personal protective equipment for working on elevated work surfaces;
- Coordinating employee schedules for training;
- Notifying the Safety Manager of potential hazards requiring assessments, or improvements to the program.

Employees are responsible for:

- Complying with all aspects of this program; and,
- Cooperating in all safety and health matters;
- Reporting incidents related to fall protection to your supervisor/foreman immediately;
- Wearing all required personal protective equipment – there are no exceptions;
- Inspecting the equipment in accordance with manufacturer's guidelines and instructions; and,
- *Reporting hazardous conditions or other health and safety concerns immediately to your supervisor/foreman/project manager.*

Training

All employees are trained in and familiar with hazards related to falls, and how to use proper procedures to minimize these hazards. Specifically, training must include, at a minimum:

- Nature of the fall hazards employees may be exposed to;
- Correct procedures for erecting, maintaining, disassembling, and inspecting fall protection systems;
- Use and operation of controlled access zones, guardrails, personal fall arrest systems, warning lines, and safety monitoring systems;
- Role of each employee in the safety monitoring system (if one is used);
- Correct procedures for equipment and materials handling, and storage and erection of overhead protection;.
- Role of each employee in alternative fall protection plans (if used); and,
- Requirements of the OSHA Fall Protection Standard.

In addition, retraining must be provided for each employee, as necessary, so that the employee maintains the understanding and knowledge necessary for the safe performance of specific tasks needing to be conducted by that individual.

Additional training is provided:

- When there is a change in job responsibilities;
- A change in equipment that present a new hazard; or,

- When their work takes them into hazardous areas.

Additional retraining is also provided whenever a periodic inspection reveals, or whenever there is reason to believe there are deviations from or inadequacies in an employee's knowledge of known hazards. Following each training session, the employee is required to sign and date the training record verifying attendance.

The program is reviewed at least annually to ensure both the safety of the company employees and compliance with the OSHA Fall Protection standards, as well as any state and local requirements.

Fall Protection Procedures

Basic Fall Protection

The most effective to prevent falls in the construction industry is to eliminate the hazard. This is commonly referred to as "The Hierarchy of Fall Protection". Which consists of:

1) Elimination of the Fall Hazard, 2) Passive Fall Restraint, 3) Active Fall Restraint, 4) Fall Arrest Systems, and 5) Administrative Controls.

When evaluating a fall hazard elimination should be the first consideration. If elimination is determined to not be feasible each element of the hierarchy is considered in order. Until the safest possible solution is determined.

Before attempting to work in an area where fall hazards are present the work environment should be clean of any items that may interfere with the work being performed following OSHA's guidance of Walking and Working Surfaces.

Fall Protection Systems

Only the Safety Manager and the immediate supervisor can make decisions on the proper fall protection system to be used for any specific application. Fall protection systems will only be utilized after careful consideration and task / project review.

Covers

All hole and wall covers are secured to prevent accidental displacement.

- Covers are color-coded or bear the markings "HOLE" or "COVER".
- Covers are able to support twice the weight of employees, equipment, and materials that might cross them.

- Covers located in roadways are able to support twice the axle load of the largest vehicle that might cross them.

Warning Line Systems

Warning line systems consisting of supporting stanchions and ropes, wires, or chains are erected around all sides of open edged work areas.

- Lines are flagged at no more than six (6) foot intervals with high-visibility materials.
- The lowest point of the line (including sag) is between 34 and 39 inches from the walking/working surface.
- Stanchions of warning line systems are capable of resisting at least 16 pounds of force.
- Ropes, wires, or chains have a minimum tensile strength of 500 pounds.
- Warning line systems are erected at least six (6) feet from the edge, except in areas where mechanical equipment is in use. When mechanical equipment is in use, warning line systems are erected at least six (6) feet from the parallel edge, and at least ten (10) feet from the perpendicular edge.

Guardrail Systems

Guardrail systems are erected at unprotected edges, ramps, runways, or holes where it is determined by the supervisor\foremen that erecting such systems will not cause an increased hazard to employees. The following specifications are followed in the erection of guardrail systems.
Toprails are:

- At least ¼ inch in diameter (steel or plastic banding is unacceptable);
- Flagged every six (6) feet or less with a high visibility material if wire rope is used;
- Inspected by supervisor\foreman as frequently as necessary to ensure strength and stability;
- Forty-two (42) inches (plus or minus three (3) inches) above the walking/working level; and
- Adjusted to accommodate the height of stilts, if they are in use.

Midrails, screens, mesh, intermediate vertical members, and solid panels are erected in accordance with the OSHA Fall Protection Standard. Gates or removable guardrail sections are placed across openings of hoisting areas or holes when they are not in use to prevent access.

A standard railing shall consist of top rail, intermediate rail, and posts, and shall have a vertical height of 42 inches nominal from upper surface of top rail to floor, platform, runway, or ramp level. The top rail shall be smooth-surfaced throughout the length of the railing.

The intermediate rail shall be approximately halfway between the top rail and the floor, platform, runway, or ramp. The ends of the rails shall not overhang the terminal posts except where such overhang does not constitute a projection hazard.

A standard toeboard shall be 4 inches nominal in vertical height from its top edge to the level of the floor, platform, runway, or ramp. It shall be securely fastened in place and with not more than 1/4-inch clearance above floor level. It may be made of any substantial material either solid or with openings not over 1 inch in greatest dimension.

Positioning Device Restraint Systems

Body harness restraint systems are set up so that an employee can free fall no farther than two (2) feet, and are secured to an anchorage capable of supporting twice the potential impact load or 3000 pounds, whichever is greater. Requirements for snaphooks, D-rings, and other connectors are the same as detailed in this Program under *Personal Fall Arrest Systems.*

Personal Fall Arrest Systems

Personal fall arrest systems are issued to and used by employees as determined by the Safety Manager and may consist of anchorage, connectors, body harness, deceleration device, lifeline, or suitable combinations.
Personal fall arrest systems:

- Limit the maximum arresting force to 1800 pounds;
- Are rigged so an employee cannot free fall more than six (6) feet or contact any lower level;
- Bring an employee to a complete stop and limit the maximum deceleration distance traveled to (4) feet;
- Are strong enough to withstand twice the potential impact energy of an employee free falling six (6) feet (or the free fall distance permitted by the system, whichever is less);
- Are inspected prior to each use for damage and deterioration; and
- Are removed from service if any damaged components are detected.

All components of a fall arrest system meet the specifications of the OSHA Fall Protection Standard, and are used in accordance with the manufacturer's instructions.

The use of non-locking snaphooks is prohibited.

D-rings and locking snaphooks:

- Have a minimum tensile strength of 5000 pounds; and
- Are proof-tested to a minimum tensile load of 3600 pounds without cracking, breaking, or suffering permanent deformation.

Lifelines are:

- Designed, installed, and used under the supervision 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.
- Protected against cuts and abrasions; and
- Equipped with horizontal lifeline connection devices capable of locking in both directions on the lifeline when used on suspended scaffolds or similar work platforms that have horizontal lifelines that may become vertical lifelines.
- Self-retracting lifelines and lanyards have ropes and straps (webbing) made of synthetic fibers, and
- Sustain a minimum tensile load of 3600 pounds if they automatically limit free fall distance to two (2) feet; or
- Sustain a minimum tensile load of 5000 pounds (includes ripstitch, tearing, and deforming lanyards).

Anchorages support at least 5000 pounds per person attached and are:

- Designed, installed, and used under the supervision of a qualified person
- Capable of supporting twice the weight expected to be imposed on it; and
- Independent of any anchorage used to support or suspend platforms.

Safety Monitoring Systems

In situations when no other fall protection has been implemented, supervisor\foremen monitor the safety of employees in these work areas.
The supervisor\ foreman is:

- Competent in the recognition of fall hazards;
- Capable of warning workers of fall hazard dangers;
- Operating on the same walking/working surfaces as the employees and able to see them;
- Close enough to work operations to communicate orally with employees; and
- Free of other job duties that might distract them from the monitoring function.

No employees other than those engaged in the work being performed under the Safety Monitoring System are allowed in the area. All employees under a Safety Monitoring System are required to promptly comply with the fall hazard warnings of the supervisor\foremen.

Safety Net Systems

- Safety net systems must be installed no more than 30 feet below the walking/working surface with sufficient clearance to prevent contact with the
-

- surface below, and shall be installed with sufficient vertical and horizontal distances as described in the OSHA Fall Protection Standard.
- All nets shall be inspected at least once a week for wear, damage, or deterioration by *designated employee*. Defective nets shall be removed from use and replaced with acceptable nets.
- All nets shall be in compliance with mesh, mesh crossing, border rope, and connection specifications as described in the OSHA Fall Protection Standard.
- When nets are used on bridges, the potential fall area from the walking/working surface shall remain unobstructed.

Objects that have fallen into safety nets shall be removed as soon as possible, and at least before the next working shift.

TASKS AND WORK AREAS REQUIRING FALL PROTECTION

Hoist Areas

Guardrail systems or personal fall arrest systems will be used in hoist areas when an employee may fall four (4) feet or more. If guardrail systems must be removed for hoisting, employees are required to use personal fall arrest systems.

Holes and Wall Openings

Covers or guardrail systems shall be erected around holes (including skylights) that are six (6) feet or more above lower levels. If covers or guardrail systems must be removed, employees are required to use personal fall arrest systems.

Ramps, Runways, and Other Walkways

Employees using ramps, runways, and other walkways six (6) feet or more above the lower level shall be protected by guardrail systems.

Excavations

Fall protection will be provided to employees working at the edge of an excavation that is six (6) feet or deeper. Employees in these areas are required to use the fall protection systems as designated in this program. Excavations that are six (6) feet or deeper shall be protected by guardrail systems, fences, barricades, or covers.
Never enter an excavation until you have received proper training and has been determined as safe by a *Qualified or Competent Person*.

Ladders

- Ladders shall be inspected frequently and those which have developed defects shall be withdrawn from service for repair or destruction and tagged or marked as "Dangerous, Do Not Use."
- Ladders with broken or missing steps, rungs, or cleats, broken side rails, or other faulty equipment shall not be used; improvised repairs shall not be made.
- Ladders shall not be placed in front of doors opening toward the ladder unless the door is blocked upon, locked, or guarded.
- Ladders shall be placed on secure footing and not be placed on boxes, barrels, or other unstable bases to obtain additional height.
- Tops of the ordinary types of stepladders shall not be used as steps.
- No ladder should be used to gain access to a roof unless the top of the ladder shall extend at least 3 feet above the point of support, at eave, gutter, or roofline.
- Extension Ladders should be place at 4:1 ratio (height vs base).
- When ascending or descending, the climber must face the ladder.
- Employees should not lean too far over the side rails of a ladder such that is causes a fall hazard. A good “rule of thumb” is that employees keep their belt buckle within the side rails at all times.

Roofs

Low-Slope Roofs

- Fall protection shall be provided to employees engaged in roofing activities on low-slope roofs with unprotected sides and edges six (6) feet or more above lower levels.
- The type(s) of fall protection needed shall be determined by Management and may consist of guardrail systems, safety net systems, personal fall arrest systems, or a combination of a warning line system and safety net system, warning line system and personal fall arrest system, or warning line system and safety monitoring system
- On roofs 50 feet or less in width, the use of a safety monitoring system without a warning line system is permitted

Steep Roofs

- Guardrail systems with toeboards, safety net systems, or personal fall arrest systems will be provided to employees working on a steep roof with unprotected sides and edges six (6) feet or more above lower levels, as determined by Management.

Leading Edges

Guardrail systems, safety net systems, or personal fall arrest systems shall be used when employees are constructing a leading edge that is six (6) feet or more above lower levels.

An alternative Fall Protection Plan shall be used if Responsible Person(s) determines that the implementation of conventional fall protection systems is infeasible or creates a greater hazard to employees. All alternative Fall Protection Plans for work on leading edges shall:

- be written specific to the particular jobsite needs;
- include explanation of how conventional fall protection is infeasible or creates
- a greater hazard to employees;
- explain what alternative fall protection will be used for each task;
- be maintained in writing at the jobsite by Responsible Person; and
- meet the requirements of 29 CFR 1926.502(k).

Scaffolds

The following are basic procedures that apply to most scaffolds. There are many different types of scaffolds (see list below) and each type may have specific requirements. Only trained personnel will be permitted to assemble, disassemble, and work from any scaffold.

- 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.
- Scaffolds and their components shall be capable of supporting without failure at least four times the maximum intended load.
- Scaffolds and other devices mentioned or described in this section shall be maintained in safe condition. Scaffolds shall not be altered or moved horizontally while they are in use or occupied.
- Any scaffold damaged or weakened from any cause shall be immediately repaired and shall not be used until repairs have been completed.
- Scaffolds shall not be loaded in excess of the working load for which they are intended.
- All planking or platforms shall be overlapped (minimum 12 inches) or secured from movement.
- An access ladder or equivalent safe access shall be provided.
- Scaffold planks shall extend over their end supports not less than 6 inches nor more than 18 inches.

- The poles, legs, or uprights of scaffolds shall be plumb, and securely and rigidly braced to prevent swaying and displacement.
- Materials being hoisted onto a scaffold shall have a tag line.
- Overhead protection shall be provided for employees on a scaffold exposed to overhead hazards.
- Scaffolds shall be provided with a screen between the toeboard and the guardrail, extending along the entire opening, consisting of No. 18 gauge U.S. Standard Wire one-half-inch mesh or the equivalent, where persons are required to work or pass under the scaffolds. Tools, materials, and debris shall not be allowed to accumulate in quantities to cause a hazard.
- Scaffolds shall be secured to permanent structures, through use of anchor bolts, reveal bolts, or other equivalent means.

Scissor Lifts (Mobile Scaffolds) and Aerial Lifts (Boom Lifts)

- Only trained personal may operate Lifts
- A copy of the manual must be located on the equipment.
- The equipment can only be used if the guard rail system is complete and undamaged.
- Operators must follow manufacturer's recommendations as to which fall protection system to use.
- Aerial Lifts require both a complete guardrail system and either a retractable lanyard or 6' Lanyard.
- Tying a lanyard off to an adjacent pole, structure, or equipment while working from an aerial lift shall not be permitted.

Suspended Scaffolds and Rope Access Methods (Advanced)

Specific training and procedures will be followed for the various types of vertical access solutions.

- Single & two-point suspension scaffolds (Swing Stage)
- Boatswain's chairs / "Chair Drops"
- Hydro-Lift Scaffolding

Protection From Falling Objects

The fall protection regulation is not only designed to protect workers from falls, but also to protect workers from having objects fall on them. The use of toeboards is one method of complying with the requirements for overhead protection. The toeboard should be used as an element of the guardrail system. It is a rail placed at the walking/working surface level.

Toeboards are required to withstand a force of 50 pounds and are generally made of 2x4s. In areas where material is to be stored and the stack is higher than the toeboard, a screen or panel should be placed from the toeboard to either the midrail or top rail, whichever is higher than the stored material, to prevent materials from slipping through.

It is wise to store materials away from the edges of floors or roofs and away from any holes. Even small holes, such as those for heating or cooling ducts, should have covers placed on them and secured to prevent materials or tools from falling through and injuring someone on a lower level.

While working at height it is critical to tie off tools and equipment to yourself or the surrounding structure in a way that will not cause harm to people below and yourself. This principle is known as “100% Tie-Off”.

The key to providing a safer workplace for employees is ensuring that there is a good housekeeping program. If materials and debris are properly cleaned up and tools are put in proper storage areas, the hazard of falling objects can be greatly reduced.

Accident Investigations

All incidents that result in injury to workers, as well as near misses, regardless of their nature, shall be reported and investigated. Investigations shall be conducted by Management as soon after an incident as possible to identify the cause and means of prevention to eliminate the risk of reoccurrence.

Changes To The Plan

In the event of such an incident, the Fall Protection Program (and alternative Fall Protection Plans, if in place) shall be reevaluated by *the Safety Manager* to determine if additional practices, procedures, or training are necessary to prevent similar future incidents.

APPENDIX

TERMS AND 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 that may be secured about the person in a manner that distributes the fall-arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with a means for attaching the harness to other components of a personal fall arrest system.

Connector: A device that is used to couple (connect) parts of a personal fall arrest system or positioning device system together.

Deceleration device: any mechanism, such as a rope, grab, ripstitch lanyard, specially-woven lanyard, tearing lanyard, deforming lanyard, or automatic self-retracting lifeline/lanyard, which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limits the energy imposed on an employee during fall arrest.

Deceleration distance: the additional vertical distance a falling person travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which a deceleration device begins to operate.

Guardrail system: a barrier erected to prevent employees from falling to lower levels.

Hole: a void or gap two (2) inches (5.1 centimeters) or more in the least dimension in a floor, roof, or other walking/working surface.

Lanyard: a flexible line of rope, wire rope, or strap that 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 (such as a deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed.

Lifeline: a component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), that serves as a means for connecting other components of a personal fall arrest system to an anchorage.

Opening: a gap or void 30 inches (76 centimeters) or more high and 18 inches (46 centimeters) or more wide, in a wall or partition through which employees can fall to a lower level.

Personal fall arrest system: a system including but not limited to an anchorage, connectors, and a body harness used to arrest an employee in a fall from a working level.

Positioning device system: a 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 backwards.

Rope grab: a deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest a fall.

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 minimal tension during normal employee movement and which, after onset of a fall, automatically locks the drum and arrests the fall.

Snaphook: a connector consisting of a hook-shaped member with a normally closed keeper, or a similar arrangement, which may be opened to permit the hook to receive an object and, when released automatically, closes to retain the object.

Steep roof: a roof having a slope greater than 4 in 12 (vertical to horizontal).

Toeboard: a low protective barrier that prevents material and equipment from falling to lower levels and which protects personnel from falling.

Unprotected sides and edges: any side or edge (except at entrances to points of access) of a walking/working surface (e.g., floor, roof, ramp, or runway) where there is no wall or guardrail system at least 39 inches (1 meter) high.

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. Does not include ladders, vehicles, or trailers on which employees must be located to perform their work 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.

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Written Confined Space Entry Program

Introduction

A. Statement of Need

There are two primary reasons why Summit Sealants will implement a Confined Space Entry Program. SUMMIT must comply with the OSHA Confined Spaces Standard found in Federal OSHA 29CFR1910.146. Additionally, this program will assist SUMMIT in achieving the overall goal of a safer work place.

B. Anticipated Benefits

Several benefits are anticipated with the implementation of the Confined Space Entry Program.

1. Prevention of illnesses and injuries related to entry and/or work in permit-required confined spaces.
2. Overall improvement of the company's Safety Program.
3. Improvement of employer-employee relations by establishing regular lines of communication.
4. Avoidance of citations, violations, and related problems from the Federal and state regulations.

C. Program Administrator:

The Confined Space Entry Program Administrator is the company's Safety Organization.

D. Location and contact person for the written program:

A copy of this written confined space entry program is available, upon request, to employees, their designated representatives, directors or designees of the Federal Occupational Health and Safety Administration (OSHA). A copy of this written confined space entry program will be kept at:

SUMMIT Sealants and Restoration Services, Inc.

E. Notice

Employees and contractors of SUMMIT shall not enter a confined space until the following requirements are met:

1. Hazards are identified and evaluated; and
2. Workers entering the space are trained on confined space hazards and entry procedures; and
3. Workers entering the space are identified and made aware of possible hazards that may be encountered on that particular job; and
4. Appropriate danger signs have been posted; and

5. Proper personal protective equipment has been selected and issued to affected employees.

If a confined space is not entered because one of the conditions mentioned above has not been met, the confined space will be restricted to employees and others by erecting barriers, installing locks, and/or posting warning signs until requirements have been met.

I. Purpose

The purpose of this program is to ensure the protection of all employees of SUMMIT from the hazards associated with confined space entry. This document contains requirements for practices and procedures to protect employees from those hazards of entry into and work within permit required confined spaces.

It shall be the policy of SUMMIT to reduce the need for confined space entry. It shall also be the policy of SUMMIT to eliminate whenever possible, all confined space hazards in order to reclassify permit-required confined spaces to non-permit required confined spaces. When confined space entry is necessary, all provisions of this document are to be followed

II. Authority

SUMMIT's Confined Space Entry Program is required by the Federal and state regulations.

III. Summary

SUMMIT has the responsibility to establish a written, comprehensive program which includes provisions for working in confined spaces. These provisions entail preventing unauthorized entries, identifying and evaluating hazards, establishing procedures for safe permit space entry, issuing and maintaining proper equipment, using outside attendants, establishing rescue and emergency procedures, identifying duties and job classifications of employees entering and/or working in confined spaces, establishing a system for issuing entry permits, developing post-entry procedures, and conducting post-illness/injury reviews.

The written plan will be reviewed every year in January for accuracy and completeness.

The written plan and its elements will be updated in the following situations:

1. When there is reason to believe that provisions of the program may not protect employees.
2. When new processes and/or technologies are introduced.
3. When job duties mentioned in the program are changed.
4. When locations mentioned in the program are changed.
5. When requirements for written confined space entry programs have changed in accordance with applicable standards, codes and regulations.
6. When any other elements are changed.

IV. Definition of a Confined Space

A confined space means a space that: **1)** is large enough and so configured that an employee can bodily enter and perform assigned work; **2)** has limited or restricted means for entry or exit; and **3)** is not designed for continuous human occupancy. Examples of confined spaces include but are not limited to storage tanks, process vessels, bins, silos, boilers, ventilation or exhaust ducts, sewers, pipe chassis, underground utility vaults, tunnels, and pipelines.

A permit-required confined space means a confined space that either **1)** contains or has the potential to contain a hazardous atmosphere, **2)** contains a material that has the potential for engulfing an entrant, **3)** 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 **4)** contains any other serious safety or health hazard.

A. Responsibilities

The Safety Organization shall be responsible for the development, documentation, and administration of SUMMIT's Confined Space Entry Program. In fulfilling these responsibilities, the Safety Organization shall carry out the following tasks:

1) Develop the Written Confined Space Entry Program and revise the program as necessary.
2) Maintain records of employee training.
3) Provide guidance for the proper selection and use of appropriate air monitoring equipment, respiratory protection, and personal protective equipment to meet the requirements of this program.
4) Periodically audit work operations and documentation using 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.
5) Assist each Manager/Supervisor in identifying confined spaces encountered by his/her employees.
6) Provide guidance for the proper selection and use of appropriate safety and rescue equipment to meet the requirements of the Confined Space Entry Program.

2. SUPERVISORS

Supervisors shall identify and report all job areas and locations that are or may be confined spaces. A list of confined spaces that are identified shall be submitted to the Safety Organization. In addition to this, designated supervisors shall carry out the following tasks:

1) Classify confined spaces as "permit required," “Alternate Procedure” or "non-permit required."
2) Identify personnel who will enter confined spaces.
3) Identify the personnel under their supervision required to wear respirators.
4) Advise personnel on routine measurement of respiratory hazards in confined spaces.
5) Provide detailed instruction and training on confined space hazards and entry procedures to those who may enter confined spaces.
6) Provide instruction to personnel on the proper use of equipment required for confined space entry.
7) Maintain equipment that is used to enter confined spaces.
8) Conduct work site inspections to review unit compliance with confined space entry procedures.
9) Maintain records of equipment maintenance and employee training.
10) Inform employees who may enter the permit confined space by posting danger signs or by training.
11) Issuance and cancellation of entry permits.
12) Establishment of a lockout program for their department.
13) Identify and evaluate the hazards of permit spaces before employees enter them.
14) Conduct a pre-entry briefing to inform entrants of possible hazards that may be encountered.
15) Identify the people who will enter the confined spaces.
16) Take the necessary measures to prevent entrance into prohibited permit spaces.

3. EMPLOYEES WHO MAY ENTER CONFINED SPACES

Employees who may enter confined spaces shall comply with the confined space entry procedures contained herein and with those procedures stipulated by their supervisor. To comply, employees shall carry out the following tasks:

1) Store, clean, maintain and guard against damage, equipment used for confined space entry.
2) Report any deficiencies or malfunction of equipment to a supervisor.
3) Understand emergency procedures in case of an accident in a confined space.
4) Under no circumstance enter a confined space that is suspect of having a non-respirable atmosphere, even to rescue a fellow employee.

B. Permit-Required Confined Space Program

Departments will identify and classify every confined space as either a Permit-Required Confined Space or, when the confined space does not present a real potential hazard, a Non-Permit Confined Space. When Permit-Required Confined Spaces are identified, department heads and supervisors will also be responsible for the following:

a. Preventing Unauthorized Entry
b. Identifying Permit Space Hazards
c. Developing Safe Entry Practices
d. Maintaining and Using Equipment Properly
e. Testing for Acceptable Entry Conditions
f. Providing Permit Space Attendants
g. Providing Emergency Retrieval Systems

1. PROGRAM ELEMENTS FOR PERMIT-REQUIRED CONFINED SPACES

1) **Preventing Unauthorized Entry**
In order to prevent unauthorized entry into permit-required confined spaces, Departments must utilize at least two of the following mechanisms:

- Providing information to visitors
- Posting warning signs
- Erecting barriers
- Installing locks or covers at entry points

Each Department will document the implementation of these mechanisms and ensure that they remain in place.

2) **Identifying Permit Space Hazards**
Each Department will identify and evaluate the hazards of permit spaces before employees enter them. The following hazards shall be identified prior to entry into a confined space:

- Atmospheric hazards
- Asphyxiating atmospheres
- Flammable atmospheres
- Toxic atmospheres
- Burn hazards
- Heat stress hazards
- Mechanical hazards
- Engulfment hazards
- Physical hazards (falls, debris, slipping hazards)
- Electrocution
- Danger of unexpected movement of machinery
- Noise hazards

3) **Developing Safe Entry Practices**
Departments will implement procedures and practices necessary for safe permit space entry operations. Theses include, but are not limited to:

- Acceptable entry conditions
- Isolating the permit space
- Purging, inerting, flushing or ventilating the permit space as necessary to eliminate or control atmospheric hazards.

- Pre-entry Briefing. The lead worker will conduct a meeting of all employees who will enter the confined space. Employees will be informed of the hazards and safety conditions of the particular job

4) **Controlling Hazards**

Hazards shall be controlled by the following mechanisms:

- Lockout of energy sources
- Cleaning and purging(See Appendix c, Ventilation of Confined Spaces)
- Personal protective equipment (see the City of Spokane's Written Respiratory Protection Program)

5) **Entering Confined Spaces along Roadways**

The following precautions shall be followed when entering a confined space located along a roadway, parking lot, or any areas where traffic flow may cause a potential hazard:

- Approach the area cautiously and activate flashers upon approach to the confined area to be entered.
- Park any vehicles in such a way that traffic will flow in the most unobstructed manner, and where possible, the vehicle should provide protection for the entry crew.
- Park the vehicle in such a manner that exhaust fumes are not drawn down into the manhole. If this is not possible, extend the exhaust stack above the vehicle.
- Before uncovering a manhole, place traffic safety cones around the manhole and vehicle, visible to traffic in all directions. Place cones to protect the crew and to channel traffic flow. The cones should be placed at sufficient distances and intervals to adequately warn oncoming traffic.
- In areas of high traffic volume or other sites warranting additional highly visible safety equipment, use illuminating traffic arrows, barricades, and "Men Working" signs.
- When placement of the vehicle creates a situation of having only one open lane of traffic in a congested area, use a flag person to direct traffic flow. When a flag person is necessary, an additional crew member is required to attend the employee in the manhole. Wear traffic safety vests or equivalent at all times when working on the street or easement surface in the field.
- In the case of opening or obstructions in the street or sidewalk being worked on or left unattended, effectively display danger signals such as warning signs, cones, and flags. Under these same conditions at night, prominently display warning lights. Enclose excavations and openings with suitable barricades.

2. EQUIPMENT USE AND MAINTENANCE

Equipment, including testing, ventilating, lighting, monitoring, communication and personal protective equipment, necessary for the safe entry into a Permit Space shall be provided, maintained and properly used by each Department. See Appendix d, Basic Confined Space Entry and Rescue Equipment.

3. TESTING FOR ACCEPTABLE ENTRY CONDITIONS

Permit space evaluation will include all testing conducted before an entry as well as all testing and monitoring activities to ensure that acceptable entry conditions are maintained throughout the entry. Atmospheric testing should be conducted in accordance with Appendix b of this program.

4. PROVIDING PERMIT SPACE ATTENDANTS

Each Department will provide at least one attendant outside a permit space to be entered for the duration of the entry operations. See Appendix e, "Duties of the Attendant" for specific responsibilities.

5. TRAINING AND DUTIES OF ENTRY PERSONNEL

There are three specific members of a confined space entry team:

1) Authorized Entrants
2) Attendants

3) Entry Supervisor or “Lead Worker”

The department shall provide 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 shall be provided to each affected employee:

- Before the employee are first assigned duties.
- 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.
- Whenever the department has reason to believe either that there are deviations from the permit space entry procedures or that there are inadequacies in the employee's knowledge or use of these procedures.

The training shall establish employee proficiency in the duties outlined in Appendix e and shall establish new or revised procedures, as necessary, for compliance with applilcable standards, codes and regulations.

The department shall certify that the training required by the previously mentioned paragraphs has been accomplished. The certification shall contain each employee's name, the signatures or initials of the trainers, and the dates of training. The certification shall be available for inspection by employees and their authorized representatives.

Only trained attendants, authorized entrants, and personnel authorizing or in charge of entry shall work in and around a Permit Space.

6. RESCUE AND EMERGENCY SERVICES – “911” IS NOT A PRIMARY EMERGENCY SERVICE FOR CONFINED SPACE RESCUE

Where ever possible, the use of non-entry rescue systems or methods shall be used. Where non-entry rescue is not possible, departments will coordinate rescue and emergency services. These service prividers will be made aware of the hazards they may confront when called on to perform rescues. They shall be responsible to equip, train, and conduct it appropriately. Designated departments will provide the service providers with access to all permit spaces from which rescue may be necessary so that they can develop appropriate rescue plans and practice rescue operations.

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 Retrieval Systems shall meet the following requirements:

1) 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, or above the entrant's head. Wristlets 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 is the safest and most effective alternative.

2) 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 deep.

3) 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.

7. WRITTEN PERMIT SYSTEM
A permit system shall be utilized for entry into Permit Spaces

Each canceled entry permit shall be retained 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.

8. COORDINATING ENTRY OPERATIONS
All outside contractors performing work in confined space entry permit areas shall be informed of any fire, explosion, health or other safety hazards of that confined space. This information shall be based on current or past history of the confined space and the nature of the contractor's work procedure in making such disclosure.

Each Department shall inform contractors of SUMMIT safety rules and emergency plans which may be applicable to the contractor's employees. Contractors and their employees must not be allowed to enter a confined space until the provisions of this program have been satisfied. When both company and contractor personnel are working in or near permit spaces, their entry operations must be coordinated to avoid endangering any personnel.

At the conclusion of the entry operations, the contractor must be debriefed regarding the permit space program that was followed and concerning any hazards confronted or created in permit spaces during entry operations.

It is the responsibility of each contractor who is retained to perform permit space entry operations to obtain any available information regarding permit space hazards and entry operations. They must also coordinate entry operations with SUMMIT when both will be working in or near permit spaces. The company must be informed of the permit space program that the contractor will follow and of any hazards confronted or created in permit spaces, either through a debriefing or during the entry operations.

9. CONCLUDING ENTRY
The lead worker will determine when the entry operations have been completed. The permit space will be closed and the permit canceled. The lead worker will write "Permit Canceled" with the date, time, and signature at the bottom of the Confined Space Permit. Entry into the permit space will only be allowed after following all aspects of this program.

10. PROGRAM REVIEW AND REVISION
Each Department will review entry operations and revise the procedures to correct any deficiencies before subsequent entries are authorized. Any revisions will be reported to the Safety Organization in order to revise the written program.

11. ANNUAL COMPLIANCE REVIEW
The Safety Organization will review the program annually in light of actual entry, work, and exit experience to determine how the program can be improved.

C. ALTERNATIVE ENTRY

Employees who enter a confined space need not comply with the procedures set forth in the program provided that:

- **a.** It can be demonstrated that the only hazard posed by the permit space is an actual or potential hazardous atmosphere.
- **b.** It can be demonstrated that continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry.
- **c.** Monitoring and inspection data are developed that support the previous conclusions.

d. If an initial entry of the permit space is necessary to obtain the data required, the entry is performed according to the procedures set forth in this document concerning the entry of a permit required confined space.
e. The determinations and supporting data required are documented and made available to each employee who enters the space.

D. Reclassification to a Non-Permit Confined Space

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

If it is necessary to enter the permit space to eliminate hazards, such entry shall be performed. If testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated.

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

The department shall document the basis for determining that all hazards in a permit space have been eliminated, 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.

If hazards arise within a permit space that has been declassified to a non-permit confined space under this section, each employee in the space shall exit the space. The Department shall then reevaluate the space and determine whether it must be reclassified as a permit space, in accordance with other applicable provisions.

Appendix a.- Definitions

Acceptable entry conditions: means the conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

Alternate Entry Procedures: means procedures that may be used when the only hazard of a confined space, based upon monitoring and inspection data, is an actual or potential hazardous atmosphere in which continuous forced air ventilation alone is all that is needed to maintain the permit required confined space for safe entry.

Attendant: means 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.

Authorized Entrant: means an employee who is authorized by the employer to enter a permit required confined space.

Blanking or Blinding: means 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 is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

Confined Space: means a space that the space:

1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and
2) 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.); and
3) Is not designed for continuous employee occupancy.

Double Block and Bleed: means 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.

Emergency: means any occurrence (including any failure of hazard control or monitoring equipment) or event(s) internal or external to the confined space that could endanger entrants.

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.

Entry: means the action by which 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.
Entry permit: means the written or printed document that is provided by the employer to allow and control entry into a permit space and contains the information specified in paragraph (f) of this section.

Entry permit system: means the employer's written procedures for preparing and issuing permits for entry and returning the permit space to service following termination of entry and designates by name or title the individuals who may authorize entry.

Entry supervisor: See "Lead Worker". The term "Lead Worker" is utilized by The City of Spokane wherever 29 CFR 1910.146 refers to the "entry supervisor".

Hazardous atmosphere: means an atmosphere that may expose employees to the risk of death, incapacitation, and 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:

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

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

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

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

4) Atmospheric concentration of any substance which may exceed a permissible exposure limit.

   Note: An airborne concentration of a substance that isn't capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to it health effects isn't covered by this definition.

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

   Note: For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Material Safety Data Sheets that comply with the Hazard Communication Standard, 1910.1200 , published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

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): means any condition which poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.
Note: Some materials - hydrogen fluoride gas and cadmium vapor, for example - may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse

12 - 72 hours after exposure. The victim "feels normal" from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.

Inerting: means the displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.
Note: This procedure produces an IDLH oxygen-deficient atmosphere.

Isolation: means the process by which a permit space is removed from service and completely protected against the release of energy and material into the space 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; or blocking or disconnecting all mechanical linkages.
Lead Worker (Entry Supervisor): means the 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 section. The term "Lead Worker" is utilized by the City of Spokane wherever 29 CFR 1910.146 refers to the "entry supervisor."

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

Line breaking: means 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.

Non-permit confined space: means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

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

Oxygen enriched atmosphere: means an atmosphere containing more that 23.5 percent oxygen by volume.

Permit required confined space: (permit space) means a confined space that has one or more of the following characteristics:

1) Contains or has a potential to contain a hazardous atmosphere;
2) Contains a material that has the potential for engulfment of an entrant;
3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or a floor which slopes downward and tapers to a smaller cross-section; or,
4) Contains any other recognized serious safety or health hazard.

Permit required confined space program: means 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.

Permit system: means the employer's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

Prohibited condition: means any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

Rescue service: means the personnel designated to rescue employees from permit spaces.

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

Testing: means the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space. Testing enable

employers both to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to, and during, entry.

Appendix b.- Atmospheric Testing and Monitoring

1. PROCEDURES FOR ATMOSPHERIC TESTING AND MONITORING

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

1) **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 entry procedures can be developed and acceptable entry conditions stipulated for that space. A minimum of three tests should be performed to identify atmospheric hazards in confined spaces. These tests must be performed in the following sequence:

- Oxygen Content
- Flammability
- Toxicity

2) **Verification Testing**

The atmosphere of a permit space which 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.

3) **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.

4) **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 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.

5) **Equipment Calibration**

To ensure that the atmospheric testing equipment is functioning properly, any direct reading test device should not be used without performing the following three operations:

- Inspection
- Calibration

Function Test: All three operations should be performed according to specific manufacturer’s instructions.

2. AIR MONITORING GUIDE

1) **Calibrate Instrument**
2) **Inspect Instrument**

Check physical condition of instrument (case, meter, attachments, hoses for cracks)

- Review instructions to insure you know how to use the device and interpret results.

3) **Perform Function Test**

- Oxygen sensor: breathe into sampling device to reduce the oxygen level below 19.5%. The oxygen alarm should sound.
- Combustible gas sensor: remove cap of solvent magic marker or open a cigarette lighter without a flame near the sampling device until it reaches a 10% reading. The gas sensor should sound.
- Always perform a function test in the field before use.
- Never perform a function test in the suspected atmosphere.

4) **Pre-Test Space**

- Zero instrument in known fresh air.
- Test entire space, top to bottom, every four feet and in the direction of travel.
- Order of tests:
  - ◊ Oxygen
  - ◊ Flammability
  - ◊ Toxicity

5) **Monitor the Space**

- If continuous monitoring is required, position the instrument near the workers breathing zone.

Appendix c.- Ventilation of Confined Spaces

Ventilation is one of the most effective means of controlling hazardous atmospheres in confined spaces. In this procedure, clean air replaces contaminated air by natural or forced (mechanical) ventilation.

1. FACTORS IN VENTILATING CONFINED SPACES
When ventilating a confined space, the following factors must be taken into consideration:

1) **Volume of air:**
This determines the capacity of the blower or ejector.

2) **Type of atmosphere:**
This will determine the type of blower or ejector used and the length of time needed to ventilate until it is safe for people to enter the space.

3) **Access to space:**
This determines how to get the ventilating air into and out of the space.

4) **Power requirements and availability:**
This will influence the power source and fan motor size. A portable generator may be required as a source of power.

5) **Cost, efficiency, and maintenance:**
This may have an effect on the type of device that is selected and what is necessary to keep it working properly.

6) **Shape of space:**
This will affect the type of directional device needed and the amount of air pressure required to provide sufficient ventilation.

7) **Source of clean air:**
This is necessary to ensure adequate ventilation.

8) **Length of time ventilation is needed:**
This is determined by the type of contaminant and the work that is to be done in the space.

9) **Type of work to be done:**
This determines whether local exhaust ventilation or general ventilation is required.

2. VENTILATION GUIDE

1) Select fan with a capacity to quickly replace the air in the space. Limitations are pasted on the fan housing.
2) Use reliable, grounded electrical power.
3) Eliminate any hazardous atmosphere. Exhaust toxic and flammable air; supply fresh air when oxygen-deficient.
4) Provide constant circulation of fresh air while space is occupied.

    - Natural ventilation is allowable only on "non-permit" entry.
    - Direct high-velocity supply ventilation to mix the air throughout the space.
    - Capture contaminants during hot work or cleaning with solvents by using additional local (or point) exhaust.
      Pure oxygen is not "fresh air". Never use bottled oxygen for ventilation.

5) Arrange ductwork to ensure safety:

    - Locate supply fan intake away from flammable or toxic air.
    - Position exhaust fan outlet to avoid recirculation of bad air or endangering others outside the space.
    - Position exhaust duct inlet next to the source of contaminants.
    - Keep ducts short and straight.
    - Make sure air circulates through entire space and does not short-circuit.

6) Monitor the air to ensure ventilation is keeping the air safe to breathe.

Appendix d.- Basic Confined Space Entry and Rescue Equipment

Equipment shall include, but not be limited to:

Safety Cones

Safety Vest

Barricades (as required)

Men Working Signs (as required)

Safety Flags

Manhole Hook (or pick)

Combustible Gas/Oxygen/CO2/Toxic Gas Detector

Utility Ropes

Full Body Harness

Retrieval Line

Mechanical Retrieval Device

Tri-pod or Other Anchoring Point

Forced Air Ventilation Blower & Hose

Fire Extinguisher

First Aid Kit

Safety Ladder

Manhole Access Bracket

Self Contained Air Units

Hard Hats

Safety Glasses

Safety Shoes

Rescue Telephone Number

Appendix e.- Employee Duties

1. DUTIES OF AUTHORIZED ENTRANTS:

1) Know the hazards that may be faced during entry.
2) Recognize the signs and symptoms of hazard exposure.
3) Understand the consequences of hazardous exposure.
4) Use equipment properly.
5) Communicate with the attendant.
6) Alert the attendant of hazards.
7) Exit the permit space quickly when required.

2. DUTIES OF THE ATTENDANT:

1) Know entry hazards.
2) Know behavioral effects of exposure.
3) Maintain accurate entrant identification.
4) Remain outside the permit space.
5) Communicate with entrants.
6) Monitor entry activities.
7) Summon rescue and emergency services.
8) Prevent unauthorized entry.
9) Perform non-entry rescue.
10) Perform no conflicting duties.

3. DUTIES OF THE "LEAD WORKER" (ENTRY SUPERVISOR):

1) Know the potential hazards during entry and work.
2) Determine if acceptable entry conditions are present at a permit space where entry is planned.
3) Terminate entry as required by the standard.
4) Verify that rescue services are readily available and the means for summoning them are operable.
5) Remove unauthorized individuals who enter or try to enter the permit space during entry and work.
6) Determine that entry and work operations remain consistent with entry permit terms and that acceptable entry conditions are maintained.

Note: The person authorizing the entry may also serve as the entrant or attendant for the entry

Appendix f.- Confined Space Entry Procedures

1. Determine if entry into confined space is necessary to perform work.

2. The following minimum required equipment should be on hand:

1) Ventilation,
2) Barrier and warning signs,
3) Gas monitor capable of measuring concentrations of oxygen, flammable gases, hydrogen sulfide and carbon monoxide.

3. Eliminate any unsafe conditions before the access door or cover is opened.

4. Immediately guard the entry by some barrier and signs to prevent people or objects from accidentally entering the confined space.

5. Conduct hazard assessment

1) *Test the real or potential atmospheric hazards*

- Oxygen content less than 19.5% or greater than 23.5%
- Flammable gases and vapors greater than 10% of the LEL (Lower Explosive Limit)
- Hydrogen Sulfide concentrations greater than 10 ppm (Parts per million)
- Carbon Monoxide concentrations greater than 35 ppm
- Other toxic gases or vapors greater than PEL (Permissible Exposure Limit)

Note: For more information, see Air Monitoring Guide (Appendix B).

2) Review the space for other observable serious safety and health hazards:

- mechanical,
- electrical,
- burn,
- heat stress,
- engulfment, or
- entrapment hazards, etc.

6. If any hazardous atmosphere exists, do the following:

1) If possible, determine and eliminate the source of the atmospheric hazards (for example: carbon monoxide from nearby truck or gas-powered generator).

2) When the atmosphere contains toxins or flammables, ventilate the space by drawing air out until the air has been changed over several times.

3) When oxygen deficient, ventilate by pushing air into the space until the air has been changed over several times.

4) Verify the hazardous atmosphere has been eliminated by testing the air.

Note: For more information, see Ventilation Guide (Appendix C).

7. Determine from information gathered above which of the following entry procedures is appropriate:

1) **Non-Permit Space**
If there are neither real nor potential atmospheric hazards and no observable serious safety and health hazards, this should be certified in writing.

2) **Alternative Entry Procedures**
If no observable serious safety and health hazards exist and atmospheric hazards are controlled with continuous ventilation, this should be certified in writing.

3) **Permit-Required Space**
If there are any observable serious safety/health hazards in addition to potential or real atmospheric hazards, all procedure here must be followed. Authorize permit with signature.

4) **Non-Respirable Atmospheres**
If hazardous atmosphere cannot be eliminated by continuous ventilation, contact EHS before continuing.

8. Follow pre-entry precautions:

1) Notify affected departments of service interruption.

2) Lock-out/tag-out all sources of energy (e.g. steam, electric, mechanical) posing a risk to workers.

3) Install blank in affected pipes where valves are not secure or seated.

4) Clean and/or purge any chemical storage vessel.

5) Wear appropriate personal protective and respiratory protection.

6) Have lights and or ladder available.

7) If coordination is needed with contractors, see Contractor Checklist.

8) Have appropriate SDS's (Safety Data Sheet).

9) Determine how often air monitoring will be conducted.

9. Additional precautions necessary for Permit-Required Spaces:

1) Determine start and end times for authorized entry.

2) Assign roles and responsibilities as entrant(s), attendant(s), leadworker(s).

3) Set up non-entry rescue equipment (tri-pod, harness).

4) Identify rescue service.

5) Determine communication method between entrant/attendant.

6) Conduct pre-entry briefing: review hazards, procedures, and precautions.

10. Sign and post the Permit/Certification at the site.

11. Continually ventilate the space by pushing air so that a positive pressure changes the air over several times every hour. Direct the clean air toward the worker.

12. Test the air periodically while personnel are in the confined space to ensure the ventilation is preventing any accumulation of a hazardous atmosphere.

13. Under the following conditions, personnel must exit the confined space, re-evaluate hazards, and modify entry procedures.

1) If any hazardous atmosphere is detected after entry.

Note: If a hazardous atmosphere has been detected after entry, EHS staff should be notified before re-entry.

2) If any health or safety hazard develops that were not anticipated.

3) If Attendant (on Permit-Required Confined Space Entry) cannot effectively perform duties.

4) If personnel in confined space are experiencing symptoms from heat stress or over-exposure to atmospheric hazards.

14. When work is completed, return the space to original condition. Close out the permit/certification and submit the completed paperwork to your supervisor.

CONFINED SPACE ENTRY PERMIT

Date:_____
Entry period:_____

Permit Space:
Identity:_____
Purpose:_____
Hazards:_____

Personnel: **Enter Names of Qualified Personnel**

Supervisor	Entrant(s)	Attendant(s)	Emergency Responders

Monitoring: List readings of monitoring instruments. Tester Signature_____

	Oxygen (%)	Explosive (% LEL)	Toxic (ppm)
Initial Reading			
Periodic Readings			

Requirements: Completed prior to entry.

Requirements Completed	Date	Time	Initials	Requirements Completed	Date	Time	Initials
Lockout/Tagout & De-energize				Escape Harness			
Lines Broken – Capped/Blanked				Tripod Emergency Escape Unit			
Purge – Flush and Vent				Lifelines			
Ventilation				Fire Extinguishers			
Secure Area (Post and Flag)				Lighting (Explosion proof)			
Breathing Apparatus				Protective Clothing			
Resuscitator – Inhalator				Respirator			
Standby Safety Personnel				Medical Requirements			
Hot-work Permit (attached)							

Communication: Outline procedures.

Ventilation Procedures: Outline procedures.

Rescue Procedures: Outline Procedures. Emergency Rescue Number:_____

Recordkeeping Requirement: Maintain completed copies on file for one year from the date of entry.

Supervisor Signature_____

SUMMIT

RESTORATION • INSULATION
WATERPROOFING • STONE

Hot Work Safety Program

(Welding, Cutting and Brazing)

INTRODUCTION

The following Hot Work Program provides written procedures to help prevent the outbreak of fire, fire alarm activations, and smoke/odor migration in buildings resulting from work involving open flames, producing heat or sparks. This includes, but is not limited to brazing, cutting, grinding, torch soldering, thawing pipes, and torch applied roofing and welding.

This procedure applies to hot work done by SUMMIT. Subcontractors working for SUMMIT must have their own written Hot Work Program or follow the guidance in this program and submit copies of completed Hot Work Permits to SUMMIT's Safety Manager.

RESPONSIBILTIES

Environmental Health & Safety

- Is responsible for maintaining the written Hot Work Program;
- Is responsible for providing and maintaining Hot Work Permits to SUMMIT employees when notified of hot work activities. Additionally, EH&S staff conducts hot work permit inspections and approvals prior to hot work being done; and
- EH&S accepts completed Hot Work Permits from employees/subcontractors performing hot work activities. EH&S will provide assistance to employees/subcontractors upon request.

Supervisors/Project Managers

- Ensure employees conducting hot work have received proper training and are provided appropriate equipment and personal protective equipment to complete the job safely;
- Be capable of identifying hazards when hot work is anticipated;
- Ensure Hot Work Permits are completed and submitted to EH&S for approval; and
- Ensure hired subcontractors have their own Hot Work Program or follow the guidance in this program and provide EH&S with completed permits.

Authorized Employees

Authorized employees are those who have received appropriate training and possess adequate knowledge to safely conduct hot work and are responsible for the following:

- Ensure the safe handling of cutting or welding equipment and safe use during the process;
- Identify combustible materials and hazardous areas present or likely to be present in the work area;
- Protect combustible materials from ignition by moving the hot work to a location free from dangerous combustibles; or, if not feasible, moving combustibles to a safe location or

provide shielding to prevent ignition;
- Ensure hot work operations do not interfere with other operations in the area;
- Notify EH&S of all planned hot work and ensure appropriate hot work permits are complete prior to work;
- Ensure appropriate fire protection and extinguishing equipment are properly located at the site;
- Ensure a fire watch is present, when required;
- Ensure smoke/fire detection devices have been adequately addressed; and
- Ensure HVAC precautions have been adequately addressed.

DEFINITIONS

Brazing and Soldering: Soldering and brazing use molten metal to join two pieces of metal. The metal added during both processes has a melting point lower than that of the workpiece, so only the added metal is melted, not the workpiece. Brazing produces a stronger joint than does soldering, and often is used to join metals other than steel, such as brass. Brazing can also be used to apply coatings to parts to reduce wear and protect against corrosion.

Cutting/Grinding: Any process which produces sparks capable of igniting combustible or flammable materials and transmits heat to the work material from a hot gas.

Designated Area: A permanent location designed for or approved for hot work operations to be performed regularly.

Fire Watch: Trained personnel who are in attendance during the entire hot work operation and are immediately available to extinguish a fire or take other effective action if needed.

Hot Work: Any process that can be a source of ignition when flammable material is present or can be a fire hazard regardless of the presence of flammable material in the workplace. Common hot work processes are welding, soldering, cutting and brazing.

Hot Work Permit: A document issued for the purpose of authorizing a specified activity.

Welding: Joining together (metal pieces or parts) by heating the surfaces to the point of melting using a blowtorch, electric arc, or other means, and uniting them by pressing, hammering, etc.

PRE-HOT WORK ACTIVITES

All hot work activities are required to have a Hot Work Permit, unless the welding, cutting or brazing operations are being conducted in an area/shop designed to facilitate safe hot work operations.

If possible, move hot work activities to a safe area free from all combustible materials and fire hazards.

If hot work activities cannot be relocated to a safe area, the following precautions must be taken, in addition to acquiring the proper Hot Work Permit, to ensure fire, and other hazards, are addressed prior to hot work commencing:

- Hot work permits are posted at the entrance to the work site to inform personnel of the hot work operations taking place;
- Smoke detectors and sprinkler systems have been addressed;
- Heating, Ventilation and Air Conditioning (HVAC) have been addressed by Facilities Operations staff;
- Ducts that might carry sparks to a distant combustible material must be suitably protected or disengaged;
- Welding and cutting equipment is in proper working order; and
- First aid supplies are readily available.
- Precautions have been taken to protect the area within 35 feet of the hot work area:
    - Floors are swept clean of dust and combustibles;
    - Combustible floors are wetted or covered with damp sand, metal or other suitable shields;
    - No combustible materials or flammable liquids are present;
    - Combustible surfaces are protected with covers, guards or metal shields;
    - Combustible materials in adjacent rooms are moved away from walls;
    - All wall and floor openings are covered, blocked or shielded; and
    - Grated floors (i.e. catwalks) are protected to ensure collection of sparks during work.
- Precautions within 50 feet of the hot work area:
    - Relocate or protect explosive material, compressed gas cylinders or stored fuel.
- A fire watch is established and assigned to a properly trained individual.

<u>Fire Watch</u>

During and after hot work activities, the work area must be monitored to ensure hot work does not result in a fire.

- Personnel assigned to fire watch responsibilities must be trained in the contents of the Hot Work Program and fire extinguisher use and limitations;
- Fire watch must be conducted during and at least 30 minutes following the hot work activity;
- Appropriate fire extinguishing equipment must be readily available during fire watch; and

- Fire watch personnel must have the ability to sound the fire alarm and alert the responding Fire Department in the event of a fire.

Prior to commencement of hot work, a supervisor will inspect the work area and confirm the aforementioned precautions have been taken to prevent fire in accordance with NFPA 51B.

Prohibited Areas

Cutting or welding shall not be permitted in the following situations:

- In sprinklered buildings, while such protection is impaired;
- In the presence of explosive atmospheres or potential for explosive atmospheres;
- In areas near the storage of large quantities of exposed readily ignitable materials; and
- In areas not approved by EH&S through the hot work permitting process.

SPECIALIZED HOT WORK PRECAUTIONS

Pipes:

- Prior to cutting or welding on pipes, the operator must ensure the pipes are purged and empty; and
- 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.

Containers:

- No welding, cutting or other hot work shall be performed on used drums, barrels, tanks or other containers until they have been cleaned to ensure no flammable materials or vapors are present;
- Pipes connected to containers must be disconnected prior to hot work; and
- All hollow spaces, cavities, or containers must be vented during the hot work to permit the escape of air and gases. Purging with inert gas is recommended.

Confined Space:

If hot work activities are to take place in a confined space the operator must be trained under and follow all components of the Confined Space Entry Program.

Prior to hot work in a confined space the following precautions must be addressed:

- Ensure a confined space entry permit is completed;
- Ensure all openings/covers are open and secured from closing;
- Test atmosphere within the confined space for oxygen, explosives, and toxins;

- Isolate lines and maintain vents open and valves leak-free;
- Lockout/tagout all systems not required during hot work;
- Provide a means for readily turning off power, gas and other supplies from outside the confined space;
- Protect or remove any hazardous materials which may become hazardous when exposed to hot work; and
- Ventilation within the confined space must be supplied to ensure fumes and gases do not exceed exposure limits and oxygen limits remain within an acceptable range.
    - If ventilation is not possible, the operators must be provided airline respirators or a self-contained breathing apparatus to ensure safe respirable air at all times. Respiratory protection users must have medical clearance and be included in the University Respiratory Protection Program.
- Gas cylinders and welding machines must be left outside the confined space and secured to prevent movement during hot work operations;
- Where an operator must enter a confined space through a manhole or other small opening, means must be provided to quickly remove (rescue) the operator in an emergency (i.e. lifeline); and
- When breaks in hot work occur (lunch or overnight) all valves must be turned off and hoses and connections must be disconnected at the power source.

PERSONAL PROTECTIVE EQUIPMENT

Operators performing hot work, and any personnel assigned to the hot work project as assistants must be provided appropriate personal protective equipment (PPE).

Eye Protection: Suitable eye protection must be provided and worn by operators and assistants during all hot work operations.

- PPE used for eye protection such as goggles, helmets and hand shields must meet minimum ANSI standards; and
- Table 1 provides recommendations for selection of the proper shade numbers for eye protection based on the type of hot work being done.

Protective clothing: Heat resistant clothing must be provided and worn by operators during hot work operations.

- Other PPE including head, hand and foot protection shall be provided based on the hazard evaluation of the work area and work to be completed; and
- Screens shall be utilized to provide protection to the worker as well as others not involved in the hot work.

Table 1:

Welding Operation	Shade Number
Shielded metal-arc welding (1/16, 3/32, 1/8, 5/32-inch electrodes)	10
Gas-shielded arc welding (nonferrous) (1/16, 3/32, 1/8, 5/32-inch electrodes)	11
Gas-shielded arc welding (ferrous) (1/16, 3/32, 1/8, 5/32-inch electrodes)	12
Shielded metal-arc welding (3/16, 7/32, 1/4-inch electrodes)	12
Shielded metal-arc welding (5/16, 3/8-inch electrodes)	14
Atomic hydrogen welding	10-14
Carbon arc welding	14
Soldering	2
Torch brazing	3-4
Light cutting (up to 1-inch)	3-4
Medium cutting (1-6-inches)	4-5
Heavy cutting (6-inches and over)	5-6
Light gas welding (up to 1/8-inch)	4-5
Medium gas welding (1/8 to 1/2-inch)	5-6
Heavy gas welding (1/2-inch and over)	6-8

VENTILATION

Ventilation must be adequate during general welding and cutting hot work operations.

Mechanical ventilation must be provided when welding or cutting operations take place:

- In a space less than 10,000 cubic feet per welder;
- In a room having a ceiling height of less than 16 feet;
- In a confined space; and
- In a space containing partitions, balconies or other structural barriers, which may significantly obstruct ventilation.

Ventilation should be provided at a rate of 2,000 cubic feet per minute (CFM) per welder unless local exhaust hoods, booths, or supplied breathing air is provided in the work area.

Natural ventilation will be considered sufficient where the restrictions in Mechanical ventilation of this plan are not present.

Cutting or welding operations involving hazardous materials must be pre-approved and reviewed by EH&S prior to work.

POST HOT-WORK ACTIVITES

Upon completion of hot work operations, the fire watch personnel must remain on site for at least 30 minutes to ensure fire hazards are mitigated.

Upon completion of the fire watch, the attendant must sign the hot work permit indicating the hot work is complete.

As a precautionary measure, it is recommended the hot work area be inspected again at the end of the shift to ensure fire hazards or potential fires are properly handled.

TRAINING

Supervisors must ensure all hot work operators, fire watch personnel and assistants receive training relating to hot work operations.

Training shall cover all aspects of the hot work program including:

- Pre-hot work operations;
- Completion of hot work permits;
- Personal protective equipment;
- Ventilation; and
- Post-hot work operations

RECORDKEEPING

Hot work permit

- A copy of the hot work permit must be maintained by SUMMIT.

Training records

- Records for training provided by EH&S will be maintained by EH&S but should also be kept in the employment file.

Appendix A – Hot Work Permit

HOT WORK PERMIT

Seek an alternative/safer method if possible!

Before initiating hot work, ensure precautions are in place as required by NFPA 51B and ANSI Z49.1.
Make sure an appropriate fire extinguisher is readily available.

This Hot Work Permit is required for any operation involving open flame or producing heat and/or sparks. This work includes, but is not limited to, welding, brazing, cutting, grinding, soldering, thawing pipe, torch-applied roofing, or chemical welding.

Date	Hot work by ❑ employee ❑ contractor
Location/Building and floor _____	Name (print) and signature of person doing hot work
Work to be done _____	I verify that the above location has been examined, the precautions marked on the checklist below have been taken, and permission is granted for this work.
Time started _____ Time completed _____	Name (print) and signature of permit-authorizing individual (PAI)
THIS PERMIT IS GOOD FOR ONE DAY ONLY	

❑ Available sprinklers, hose streams, and extinguishers are in service and operable.

❑ Hot work equipment is in good working condition in accordance with manufacturer's specifications.

❑ Special permission obtained to conduct hot work on metal vessels or piping lined with rubber or plastic.

Requirements within 35 ft (11 m) of hot work

❑ Flammable liquid, dust, lint, and oily deposits removed.
❑ Explosive atmosphere in area eliminated.
❑ Floors swept clean and trash removed.
❑ Combustible floors wet down or covered with damp sand or fire-resistive/noncombustible materials or equivalent.
❑ Personnel protected from electrical shock when floors are wet.
❑ Other combustible storage material removed or covered with listed or approved materials (welding pads, blankets, or curtains; fire-resistive tarpaulins), metal shields, or noncombustible materials.
❑ All wall and floor openings covered.
❑ Ducts and conveyors that might carry sparks to distant combustible material covered, protected, or shut down.

Requirements for hot work on walls, ceilings, or roofs

❑ Construction is noncombustible and without combustible coverings or insulation.
❑ Combustible material on other side of walls, ceilings, or roofs is moved away.

Requirements for hot work on enclosed equipment

❑ Enclosed equipment is cleaned of all combustibles.
❑ Containers are purged of flammable liquid/vapor.
❑ Pressurized vessels, piping, and equipment removed from service, isolated, and vented.

Requirements for hot work fire watch and fire monitoring

❑ Fire watch is provided during and for a minimum of 1 hour after hot work, including any break activity.
❑ Fire watch is provided with suitable extinguishers and, where practical, a charged small hose.
❑ Fire watch is trained in use of equipment and in sounding alarm.
❑ Fire watch can be required in adjoining areas, above and below.
❑ Yes ❑ No Per the PAI/fire watch, monitoring of hot work area has been extended beyond 1 hour.

Appendix B – Hot Work Warning Sign

SUMMIT

RESTORATION • INSULATION
WATERPROOFING • STONE

Silica Exposure Control Program

2023

SUMMIT Respirable Crystalline Silica Program

This Silica Exposure Control Program was developed to prevent employee exposure to hazardous levels of Respirable Crystalline Silica that could result through construction activities or nearby construction activities occurring on worksites. Respirable Crystalline Silica exposure at hazardous levels can lead to lung cancer, silicosis, chronic obstructive pulmonary disease, and kidney disease. It is intended to meet the requirements of the Respirable Crystalline Silica Construction Standard (29 CFR 1926.1153) established by the Occupational Safety and Health Administration.

All work involving chipping, cutting, drilling, grinding, or similar activities on materials containing Crystalline Silica can lead to the release of respirable-sized particles of Crystalline Silica (i.e., Respirable Crystalline Silica). Crystalline Silica is a basic component of soil, sand, granite, and many other minerals. Quartz is the most common form of Crystalline Silica. Many materials found on constructions sites include Crystalline Silica; including but not limited to – cement, concrete, asphalt, pre-formed structures (inlets, pipe, etc.) and others. Consequently, this program has been developed to address and control these potential exposures to prevent our employees from experiencing the effects of occupational illnesses related to Respirable Crystalline Silica exposure.

SCOPE

This Silica Exposure Control Program applies to all employees who have the potential to be exposed to Respirable Crystalline Silica when covered by the OSHA Standard. The OSHA Respirable Crystalline Silica Construction Standard applies to all occupational exposures to Respirable Crystalline Silica in construction work, except where employee exposure will remain below 25 micrograms of Respirable Crystalline Silica per meter of air (25 $\mu g/m^3$) as an 8-hour time-weighted average (TWA) under any foreseeable conditions.

RESPONSIBILITIES

SUMMIT firmly believes protecting the health and safety of our employees is everyone's responsibility. This responsibility begins with upper management providing the necessary support to properly implement this program. However, all levels of the organization assume some level of responsibility for this program including the following positions: Project Manager, Superintendent, Foreman, Safety Personnel and Laborers.

SAFETY DEPARTMENT

- Conduct job site assessments for Silica containing materials and perform employee Respirable Crystalline Silica hazard assessments to determine if an employee's exposure will be above 25 $\mu g/m^3$ as an 8-hour TWA under any foreseeable conditions.
- Select and implement into the project's Silica Exposure Control Plan (SECP) the appropriate control measures in accordance with the Construction Tasks identified in OSHA 's Construction Standard Table 1; and potentially including - a written Silica Exposure Control Plan (SECP), exposure monitoring, Hazard Communication training, medical surveillance, housekeeping, and technical assistance.
- Ensure that the materials, tools, equipment, PPE, and other resources required to fully implement and maintain this Respirable Crystalline Silica Program are in place and readily available if needed.
- Ensure that supervisory personnel and employees are educated in the hazards of Silica exposure and trained to work safely with Silica in accordance with OSHA 's Respirable Crystalline Silica Construction Standard and OSHA's Hazard Communication Standard.
- Maintain written records of training, SECPs, inspections, medical surveillance, respirator medical clearances.
- Conduct an annual review (or more often if conditions change) of the effectiveness of this program and any active project SECP's that extend beyond a year. This includes a review of available dust control technologies to ensure these are selected and used when practical.
- Coordinate work with other employers and contractors to ensure a safe work environment relative to Silica exposure.

PROJECT MANAGER:

- Ensure all applicable elements of this Respirable Crystalline Silica Program are implemented on the project including the selection of a Competent Person.
- Assist the Safety Department in conducting job site assessments for Silica containing materials and perform employee Respirable Crystalline Silica hazard assessments to determine if an SECP, exposure monitoring, and medical surveillance is necessary.
- Assist in the selection and implementation of the appropriate control measures in accordance with the Construction Tasks identified in OSHA Construction Standard Table 1; Silica Exposure Control Plan (SECP), exposure monitoring, Hazard Communication training, medical surveillance, housekeeping, and technical assistance.
- Ensure that employees using respirators have been properly trained, medically cleared, and fit-tested in accordance with the company's Respiratory Protection Program.
- Ensure that work is conducted in a manner that minimizes and adequately controls the risk to workers. This includes ensuring that workers use appropriate engineering controls, work practices, and wear the necessary PPE.
- Where there is risk of exposure to Silica dust, verify employees are properly trained on the applicable contents of this program, the project specific (SSECP), and the applicable OSHA Standards (such as Hazard Communication). Ensure employees are provided appropriate PPE when conducting such work.

COMPETENT PERSON AND/OR SITE MANAGER (SUPERINTENDENT, FOREMAN, ETC.)

- Make frequent and regular inspections of job sites, materials, and equipment to implement the written SECP.
- Identify existing and foreseeable Respirable Crystalline Silica hazards in the workplace and take prompt corrective measures to eliminate or minimize them.
- Notify the Project Manager and/or Safety Department of any deficiencies identified during inspections to coordinate and facilitate prompt corrective action.
- Assist the Project Manager and Safety Department in conducting job site assessments for Silica containing materials and perform employee Respirable Crystalline Silica hazard assessments to determine if an SSECP, exposure monitoring, and medical surveillance is necessary.

EMPLOYEES (Laborers):

- Follow recognized work procedures (such as the Construction Tasks identified in OSHA's Construction Standard Table 1) as established in the project's SSECP and this program.
- Use the assigned PPE in an effective and safe manner.
- Participate in Respirable Crystalline Silica exposure monitoring and the medical surveillance program if applicable.
- Report any unsafe conditions or acts to the Site Manager and/or Competent Person immediately.
- Report any exposure incidents or any signs or symptoms of Silica illness immediately

REQUIREMENTS

SPECIFIED EXPOSURE CONTROL METHODS

When possible and applicable, SUMMIT will conduct activities with potential Silica exposure to be consistent with OSHA 's Construction Standard Table 1. Supervisors will ensure each employee under their supervision and engaged in a task identified on OSHA 's Construction Standard Table 1 have fully and properly implemented the engineering controls, work practices, and respiratory protection specified for the task on Table 1.

Table 1: Specified Exposure Control Methods When Working with Materials Containing Crystalline Silica

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
1	Stationary masonry saws	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
2a	Handheld power saws (any blade diameter) when used outdoors	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
2b	Handheld power saws (any blade diameter) when used indoors or in an enclosed area	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
3	Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less) for tasks performed outdoors only	• Use saw equipped with commercially available dust collection system. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency.	None	None
4a	Walk-behind saws when used outdoors	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
4b	Walk-behind saws when used indoors or in an enclosed area	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
5	Drivable saws for tasks performed outdoors only	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None

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

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

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
13a	Walk-behind milling machines and floor grinders	• Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
13b	Walk-behind milling machines and floor grinders	• Use machine equipped with dust collection system recommended by the manufacturer. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide the air flow recommended by the manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. • When used indoors or in an enclosed area, use a HEPA-filtered vacuum to remove loose dust in between passes.	None	None
14	Small drivable milling machines (less than half-lane)	• Use a machine equipped with supplemental water sprays designed to suppress dust. • Water must be combined with a surfactant. • Operate and maintain machine to minimize dust emissions.	None	None
15a	Large drivable milling machines (half-lane and larger) for cuts of any depth on asphalt only	• Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust. • Operate and maintain machine to minimize dust emissions.	None	None
15b	Large drivable milling machines (half-lane and larger) for cuts of four inches in depth or less on any substrate	• Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust. • Operate and maintain machine to minimize dust emissions.	None	None
15c	Large drivable milling machines (half-lane and larger) for cuts of four inches in depth or less on any substrate	• Use a machine equipped with supplemental water spray designed to suppress dust. • Water must be combined with a surfactant. • Operate and maintain machine to minimize dust emissions.	None	None
16	Crushing machines	• Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated (e.g., hoppers, conveyers, sieves/sizing or vibrating components, and discharge points). • Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions. • Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote-control station.	None	None

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	• Operate equipment from within an enclosed cab.	None	None
17b	Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (e.g., hoe- ramming, rock ripping) or used during demolition activities involving silica-containing materials	• When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions.	None	None
18a	Heavy equipment and utility vehicles for tasks such as grading and excavating but not including demolishing, abrading, or fracturing silica-containing materials	• Apply water and/or dust suppressants as necessary to minimize dust emissions.	None	None
18b	Heavy equipment and utility vehicles for tasks such as grading and excavating but not including demolishing, abrading, or fracturing silica-containing materials	• When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab.	None	None

When implementing the control measures specified in Table 1, SUMMIT shall:

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

For measures implemented that include an enclosed cab or booth, ensure that the enclosed cab or booth:

- Is maintained as free as practicable from settled dust
- Has door seals and closing mechanisms that work properly
- Has gaskets and seals that are in good condition and working properly
- Is under positive and or negative pressure maintained through continuous delivery of fresh air, depending on the task
- Has intake air that is filtered through a filter that is 95% efficient in the 0.3-10.0 µm range (e.g., MERV-16 or better); and
- Has heating and cooling capabilities.

- Where an employee performs more than one task included on OSHA 's Construction Standard Table 1 during the course of a shift, and the total duration of all tasks combined is more than four hours, the required respiratory protection for each task is the respiratory protection specified for more than four hours per shift. If the total duration of all tasks on Table 1 combined is less than four hours, the required respiratory protection for each task is the respiratory protection specified for less than four hours per shift.

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

- **Scheduled Monitoring Option:**
  - SUMMIT will perform initial monitoring to assess the 8-hour TWA exposure for each employee on the basis of one or more personal breathing zone air samples that reflect the exposures of employees on each shift, for each job classification, and in each work area. Where several employees perform the same tasks on the same shift and in the same work area, SUMMIT will plan to monitor a representative fraction of these employees. When using representative monitoring, SUMMIT will sample the employee(s) who are expected to have the highest exposure to Respirable Crystalline Silica.
  - If initial monitoring indicates that employee exposures are below the Action Level, SUMMIT will probably discontinue monitoring for those employees whose exposures are represented by such monitoring. The data will be logged and reviewed at the time of the annual review and documented.
  - Where the most recent exposure monitoring indicates that employee exposures are at or above the Action Level but at or below the PEL, SUMMIT will repeat such monitoring within six months of the most recent monitoring.
  - Where the most recent exposure monitoring indicates that employee exposures are above the PEL,
  - SUMMIT will repeat such monitoring within three months of the most recent monitoring.
  - Where the most recent (non-initial) exposure monitoring indicates that employee exposures are below the Action Level, SUMMIT will repeat such monitoring within six months of the most recent monitoring until two consecutive measurements, taken seven or more days apart, are below the Action Level, at which time SUMMIT will probably discontinue monitoring for those employees whose exposures are represented by such monitoring, except when a reassessment is required. SUMMIT will reassess exposures whenever a change in the production, process, control equipment, personnel, or work practices may reasonably be expected to result in new or additional exposures at or above the Action Level, or when
    has any reason to believe that new or additional exposures at or above the Action Level have occurred.

SUMMIT will ensure that all Respirable Crystalline Silica samples taken to satisfy the monitoring requirements of this program and OSHA are collected by a qualified individual (i.e., a Certified Industrial Hygienist) and the samples are evaluated by a qualified laboratory (i.e., accredited to ANS/ISO/IEC Standard 17025:2005 with respect to Crystalline Silica analyses by a body that is compliant with ISO/IEC Standard 17011:2004 for implementation of quality assessment programs).

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

Whenever an exposure assessment indicates that employee exposure is above the PEL, SUMMIT will describe in the written notification the corrective action being taken to reduce employee exposure to or below the PEL, documented in the site specific SECP.

Where air monitoring is performed, SUMMIT will provide affected employees or their designated representatives an

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

Once air-monitoring has been performed, SUMMIT will determine its method of compliance based on the monitoring data and the hierarchy of controls. SUMMIT will use engineering and work practice controls to reduce and maintain employee exposure to Respirable Crystalline Silica to or below the PEL, unless SUMMIT can demonstrate that such controls are not feasible. Wherever such feasible engineering and work practice controls are not sufficient to reduce employee exposure to or below the PEL, SUMMIT will nonetheless use them to reduce employee exposure to the lowest feasible level and shall supplement them with the use of respiratory protection.

In addition to the requirements of this program, will comply with other programs and OSHA (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.

CONTROL METHODS

SUMMIT will provide control methods that are either consistent with Table 1 or otherwise minimize worker exposures to Silica. These exposure control methods can include engineering controls, work practices, and respiratory protection. Listed are some control methods to be used when Table 1 is not followed (Air Scrubbers, Control Areas, HEPA-Vacuum, Task Rotation)

RESPIRATORY PROTECTION

Where respiratory protection is required by this program, SUMMIT will provide each employee an appropriate respirator that complies with the requirements of the company's Respiratory Protection Program and the OSHA Standard. Respiratory protection is required where specified by the OSHA Construction Standard Table 1, for tasks not listed in Table 1, or where the company has not fully and properly implemented the engineering controls, work practices, and respiratory protection described in Table 1. Situations requiring respiratory protection include:

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

SITE SILICA EXPOSURE CONTROL PLAN

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

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

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

The SSECP will be reviewed at least annually to evaluate the effectiveness of it and update it as necessary. Having said this, SSECP's are project specific, and most project durations do not exceed a year. The SSECP will be readily available for examination and copying, upon request, to each employee covered by this program and/or SSECP, their designated representatives.

MEDICAL SURVEILLANCE

Medical surveillance will be made available for each employee who will be required to use a respirator for 30 or more days per year due to their Respirable Crystalline Silica exposure. Medical surveillance (i.e. medical examinations and procedures) will be performed by a PLHCP and provided at no cost to the employee at a reasonable time and place. SUMMIT will make available an initial (baseline) medical examination within 30 days after initial assignment, unless the employee has received a medical examination that meets the requirements of the OSHA Respirable Crystalline Silica Construction Standard within the last three years. The examination shall consist of:

- A medical and work history, with emphasis on past, present, and anticipated exposure to Respirable Crystalline Silica, dust, and other agents affecting the respiratory system in addition to any history of respiratory system dysfunction, including signs and symptoms of respiratory disease (e.g., shortness of breath, cough, wheezing), history of tuberculosis, and smoking status and history.
- A physical examination with special emphasis on the respiratory system.
- A chest X-ray (a single postero-anterior radiographic projection or radiograph of the chest at full inspiration recorded on either film [no less than 14 x 17 inches and no more than 16 x 17 inches] or digital radiography systems) interpreted and classified according to the International Labor Office (ILO) International Classification of Radiographs of Pneumoconiosis by a NIOSH-certified B Reader.
- A pulmonary function test to include forced vital capacity (FVC) and forced expiratory volume in one second (FEV1) and FEV1/FVC ratio, administered by a spirometry technician with a current certificate from a NIOSH-approved spirometry course.
- Testing for latent tuberculosis infection; and
- Any other tests deemed appropriate by the PLHCP.

SUMMIT will make available medical examinations that include the above-mentioned procedures at least every three years. If recommended by the PLHCP, periodic examinations can be more frequently than every three years.

SUMMIT will ensure that the examining PLHCP has a copy of the OSHA AND CAL/OSHA Respirable Crystalline Silica Construction Standard, this program, and the following information:

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

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

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

SUMMIT will also obtain a written medical opinion from the PLHCP within 30 days of the medical examination. The written opinion shall contain only the following to protect the employee’s privacy:

- The date of the examination.
- A statement that the examination has met the requirements of the OSHA AND CAL/OSHA Respirable Crystalline Silica

Construction Standard; and

- Any recommended limitations on the employee's use of respirators.

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

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

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

SUMMIT will ensure that the Specialist explains to the employee the results of the medical examination and provides each employee with a written medical report within 30 days of the examination. The written report will contain:

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

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

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

HAZARD COMMUNICATION

SUMMIT will include Respirable Crystalline Silica in the company's Hazard Communication Program established to comply with the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SUMMIT will ensure that each employee has access to labels on containers of Crystalline Silica and those containers respective Safety Data Sheets (SDS's).

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

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

- The health hazards associated with exposure to Respirable Crystalline Silica
- Specific tasks in the workplace that could result in exposure to Respirable Crystalline Silica
- Specific measures SUMMIT has implemented to protect employees from exposure to Respirable Crystalline Silica, including engineering controls, work practices, and respirators to be used
- The contents of the OSHA Respirable Crystalline Silica Construction Standard
- The identity of the Competent Person; and
- The purpose and a description of the company's Medical Surveillance Program.

SUMMIT will make a copy of the OSHA Respirable Crystalline Silica Construction Standard readily available without cost to any employee who requests it.

RECORDKEEPING

SUMMIT will make and maintain an accurate record of all exposure measurements taken to assess employee exposure to Respirable Crystalline Silica (See Appendix A). This record will include at least the following information:

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

SUMMIT will ensure that exposure records are maintained and made available in accordance with 29 CFR 1910.1020 Recordkeeping. Exposure records will be kept for at least 30 years.

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

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

SUMMIT will ensure that exposure records are maintained and made available in accordance with 29 CFR 1910.1020, Recordkeeping. Objective data records will be kept for at least 30 years.
SUMMIT will make and maintain an accurate record for each employee enrolled in the Medical Surveillance portion of this program. The record shall include the following information about the employee:

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

SUMMIT will ensure that medical records are maintained and made available in accordance with 29 CFR 1910.1020. and Title 8, section 3204 Medical records will be kept under lock and key for at least the duration of employment plus 30 years. It is necessary to keep these records for extended periods because Silica- related diseases such as cancer often cannot be detected until several decades after exposure. However, if an employee works for an employer for less than one year, the employer does not have to keep the medical records after employment ends, if the employer gives those records to the employee.

PROGRAM EVALUATION

This program will be reviewed and evaluated on an annual basis by the Safety Department unless changes to operations, the OSHA Respirable Crystalline Silica Construction Standard (29 CFR 1926.1153)

SUMMIT Lockout and Tagout Policy

Purpose: This procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance, servicing, or work is done on energized equipment/environments. It shall be used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources and locked out before employees perform any servicing or maintenance where the unexpected energizing or start-up of the machine or equipment or release of stored energy could cause injury.

Who: All employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout. The authorized employees are required to perform the lockout in accordance with this procedure. All employees, upon observing a machine or piece of equipment which is locked out to perform servicing or maintenance shall not attempt to start, energize, or use that machine or equipment.

DEFINITIONS

Authorized employee: An employee who locks or tags machines or equipment in order to perform servicing or maintenance.

Affected employee: An employee who is required to use machines or equipment on which servicing is performed under the Lockout and tagout standard or who performs other job responsibilities in an area where such servicing is performed.

1.0 POLICY

1.1 It is the policy of Summit Sealants that any individual engaged in maintaining, repairing, cleaning, servicing, or adjusting of machinery, or equipment will abide by the procedures outlined in this document and specific procedures outlined in our injury prevention program. These procedures are designed to meet or exceed applicable OSHA standards for safe work practices.

1.2 As part of this policy a Job Hazard Analysis (JHA) will be conducted for all major maintenance, repair, and work operations. JHA will be used to develop Standard Operating Procedures (SOPS) to help assure safe work practices.

1.3 Lockout is a first means of protection; warning tags only supplement the use of locks. Tags alone may be used only when the application of a lock is not feasible and with approval of the appropriate supervisor.

2.0 PURPOSE

Lockout and tagout ensures that all employees are protected from the unexpected activation of mechanical and/or electrical equipment during maintenance, repairing, cleaning, servicing, or adjusting of machinery, or equipment. It also assures that all employees are protected against the release of residual (stored) energy in machines.

3.0 DEFINITIONS

3.1 LOCKOUT

The practice of using keyed or combination security devices ("locks") to prevent the unwanted activation of mechanical or electrical equipment.

3.2 TAGOUT

- The practice of using tags in conjunction with locks to increase the visibility and awareness that equipment is not to be energized or activated until such devices are removed.
- Tagout devices will be of the non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds.

3.3 ACTIVATION/ENERGIZATION

- Energy that sets machinery into motion by starting, switching, pushing, moving, or otherwise engaging power sources for such equipment. Completing a circuit that provides a flow of electricity that is the main or secondary power source for machinery/equipment.

3.4 ENERGY CONTROL PROCEDURES

- Use of lock out/tag out equipment to ensure safe work practices.

3.5 HAZARDOUS MOTION AND ENERGY

- Hazardous motion may result even after power sources are disconnected. Examples are coiled springs, raised hydraulic equipment, and any source energy (e.g., electricity, pressurized steam) that may cause injury. Hazards may be caused by equipment under mechanical stress or gravity that may abruptly release and cause injury.

4.0 RESPONSIBILITIES

4.1 SAFETY LEADERSHIP TEAM

- Conduct a Job Safety Analysis for repair, maintenance or work processes.
- Provide annual training to employees affected by Lockout and tagout procedures.
- Inspect energy control procedures and practices at least annually to ensure that general and specific lockout and tagout procedures are being followed.
- Inspections should be carried out by persons OTHER than those employees directly utilizing energy control procedures.
- Inspections will include a review between the inspector and each authorized employee, of that employee's responsibilities under the energy control procedure being inspected.
- Certify that periodic inspections have been performed (see RECORDKEEPING and Appendix A, LOCK OUT/TAG OUT INSPECTION FORM)

- Maintain a file of equipment, machinery, and operations that require the use of lock out/tag out procedures. The file will include the location, description, power source, and primary hazards of equipment/ machinery, a list of the primary operators/maintenance personnel, and a list of lock out/tag out equipment that is used and maintained on site.

4.2 SUPERVISORS

- Ensure that each employee engaging in work requiring locking/tagging out of energy sources understands and adheres to adopted procedures.
- Assure that employees have received training in energy control procedures prior to commencement of work.
- Provide and maintain the necessary equipment and resources, including injury prevention signs, tags, padlocks, and seals.

4.3 EMPLOYEES

- Adhere to specific procedures as outlined in this document for all tasks that require the use of lockout and tagout procedures.

5.0 SPECIFIC PROCEDURES

5.1 PREPARATION FOR LOCKOUT AND TAGOUT

- Make a survey to locate and identify all isolating devices to be certain which switch(es), valve(s), or other energy isolating devices apply to the equipment to be locked or tagged out. More than one energy source (electrical, mechanical, hydraulic, thermal, and chemical) may be present with a single piece of equipment.

5.2 SEQUENCE OF LOCKOUT OR TAGOUT SYSTEM PROCEDURE

- Notify affected employees that a lock out or tag out system is going to be utilized and the reason.
- The authorized employee shall know the type and magnitude of energy that the machine or equipment utilizes and shall understand the hazards thereof.
- If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open toggle switch, etc.).
- Operate the switch, valve, or other energy isolating device(s) so that the equipment is isolated from it energy source(s). Stored energy (such as that in springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as repositioning, blocking, bleeding down, etc.
- Lock out/Tag out the energy isolating devices with assigned individual lock(s) or tag(s).
- “1 lock, 1 key, 1 person” must be followed.
- After ensuring that no personnel are exposed, and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate.
- CAUTION: Return operating control(s) to neutral or off position after the test.
- The equipment is now locked out or tagged out.

5.3 RESTORING MACHINES OR EQUIPMENT TO NORMAL OPERATIONS

- After the servicing and/or maintenance is complete and equipment is ready for normal production operations, check the area around the machines or equipment to ensure that no one is exposed.
- After all tools have been removed from the machine or equipment, guards have been reinstalled and employees are in the clear, remove all lockout or tagout devices. Operate the energy isolating devices to restore energy to the machine or equipment.

5.4 PROCEDURE INVOLVING MORE THAN ONE PERSON

- In the preceding steps, if more than one individual is required to lockout or tagout equipment, each shall place his/her own personal lockout and Tagout device on the energy isolating device(s). When an energy isolating device cannot accept multiple locks or tags, a multiple lockout or tagout device (hasp) may be used. If lockout is used, a single lock may be used to lockout the machine or equipment and the key placed in a lockout box or cabinet, which allows the use of multiple locks. Each employee will then use his/her own lock to secure the box or cabinet. As each person no longer needs to maintain his or her lockout protection, that person will remove his/her lock from the box or cabinet.

5.5 TEMPORARY REMOVAL OF LOCKOUT AND TAGOUT DEVICES

- In situations where lockout and 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 will be followed:
- Remove non-essential items and ensure that machine or equipment components are operationally intact.
- Notify affected employees that lockout and tagout devices have been removed and ensure that all employees have been safely positioned or removed from the area.
- Have employees who applied the lockout and tagout devices remove the lockout and tagout devices.
- Energize and proceed with testing or positioning.
- De-energize all systems and reapply energy control measures in accordance with section 5.2 of these procedures.

5.6 ABANDONED LOCK/TAG REMOVAL PROCESS

- Under normal circumstances, each lockout or tagout device shall be removed from each energy isolating device by the employee who applied the device. If lockout or tagout devices are not removed and the equipment/system needs to be reactivated, the Abandoned Lock/Tag Removal steps must be followed, and the abandoned lock/tag removal form must be filled out.
- Abandoned Lock/Tag Removal Name of employee on lock/tag:
- Attempt to contact the employee to determine their location.
- Attempted to contact employee on the radio:
- Attempted to contact employee on cell or home phone: If employee answers and indicates they are not present and forgot to remove their lock/tag, the supervisor or Lockout Coordinator can remove the lock/tag and proceed with written equipment/system startup procedure. If the employee cannot be reached, the supervisor or Lockout Coordinator must perform a complete inspection of the affected work area to ensure the employee is not present. If the employee cannot be found, the supervisor or Lockout Coordinator can remove the lock/tag and proceed with written equipment/system startup procedure.
- Inspection performed Lock/Tag Removal Information Equipment/System Affected:
- Equipment/System Location:
- Reason lock/tag is to be removed: Supervisor/Lockout Coordinator Name:
- Date & Time (of lock/tag removal):
- Affected Employee Signature:
- The employee must sign the abandoned lock/tag form before they start work again. A copy of the signed form must be filed with the Safety Manager.

5.7 MAINTENANCE REQUIRING UNDISRUPTED ENERGY SUPPLY

- Where maintenance, repairing, cleaning, servicing, adjusting, or setting up operations cannot be accomplished with the prime mover or energy source disconnected, such operations may only be performed under the following conditions:
- The operating station (e.g. external control panel) where the machine may be activated must be under the control of a qualified operator at all times.
- All participants must be in clear view of the operator or in communication with each other.
- All participants must be beyond the reach of machine elements which may present a hazard.
- Where machine configuration or size requires that the operator leave the control station to install tools, and where there are machine elements, which may move rapidly, if activated, such elements must be separately locked out.
- During repair procedures where mechanical components are being adjusted or replaced, the machine shall be de-energized or disconnected from its power source.

6.0 EMPLOYEE TRAINING

- Designated employees will receive annual lock out/tag out training outlined in 29CFR [Specifically 1910.147 (c)(7)(i),(ii), & (iii)]. During this training employees should be made aware of lockout and tagout procedures as well as how and why they are being used.
- Employees need to be trained to ensure that they know, understand, and follow the applicable provisions of the hazardous energy control procedures. The training must cover at least three areas: aspects of the energy control program; elements of the energy control procedure relevant to the employee's duties or assignment; and the various requirements of the OSHA standards related to lockout and Tagout.

7.0 RECORDKEEPING

7.1 INSPECTION RECORDS

- Maintain inspection records.
- Safety Manager/Project Manager/Superintendent will complete and maintain all LOCKOUT AND TAGOUT INSPECTION FORMS.

7.2 TRAINING RECORDS

- Training records will be maintained by Stewart Hopper. Records will include an outline of topics covered and a sign in sheet of those employees attending.

APPENDIX A

MODEL LOCKOUT AND TAGOUT INSPECTION FORM

1. Inspection date: _____
2. Inspector: _____
3. Employee(s): _____

_____

4. Machine/equipment on which the energy control procedure was being utilized:

_____

Does employee have or have access to adequate lock out/tag out devices?	☐ Yes	☐ No
Has employee tested the effectiveness of his/her lock out/tag out devices?	☐ Yes	☐ No
Has employee received lockout and tagout training in the last year?	☐ Yes	☐ No
If this is an outside contractor, has a supervisor informed him/her of the necessity for adhering to these procedures?	☐ Yes	☐ No
Have all procedures been followed?	☐ Yes	☐ No
Were tagouts legible and clearly displayed?	☐ Yes	☐ No

Comments/Observations:

_____

Abandoned Lock/Tag Removal Form

Under normal circumstances, each lockout or tagout device shall be removed from each energy isolating device by the employee who applied the device.

If lockout or tagout devices are not removed and the equipment/system needs to be reactivated, the Abandoned Lock/Tag Removal steps must be followed and this form must be filled out.

Abandoned Lock/Tag Removal

Name of employee on lock/tag: _____
Attempt to contact the employee to determine their location.

Attempted to contact employee on the radio:

☐ yes ☐ no If no, reason _____

Answered? ☐ yes ☐ no

Attempted to contact employee on cell or home phone:

☐ yes ☐ no If no, reason _____

Answered? ☐ yes ☐ no

If employee answers and indicates they are not present and forgot to remove their lock/tag, the supervisor or Lockout Coordinator can remove the lock/tag and proceed with written equipment/system startup procedure.

If the employee cannot be reached, the supervisor or Lockout Coordinator must perform a complete inspection of the affected work area to ensure the employee is not present. If the employee cannot be found, the supervisor or Lockout Coordinator can remove the lock/tag and proceed with written equipment/system startup procedure.

☐ Inspection performed

Lock/Tag Removal Information

Equipment/System Affected: _____

Equipment/System Location: _____

Reason lock/tag is to be removed:

_____

_____

_____

Supervisor/Lockout Coordinator Name: _____

Signature: _____

Date & Time (of lock/tag removal): _____

Affected Employee Signature: _____

This form must be signed by the employee before they start work again. A copy of the signed form must be filed with the Safety Manager.

Abrasive Blasting Program

1. Purpose

This program has been developed to establish procedures outlining the safety requirements for abrasive blasting to protect employees.

2. Scope

This procedure applies to all employees and subcontractors working within controlled worksites. This *Abrasive Blasting Procedure* covers the minimum requirements to perform abrasive blasting.

3. Introduction

Abrasive blasting is primarily used for surface preparation of metal/concrete surfaces to prepare them to accept a coating or lining. This procedure covers the safety requirements pertaining to mechanical precautions, personal protective equipment, housekeeping and sanitation, administrative dust control methods, and respiratory protection.

4. General requirements

All employees who are subjected to silica exposure shall be provided information about adverse health effects, work practices, chemical safety as required by the Hazard Communication Standard, and training in the proper use and care of personal protective equipment. Training shall be documented in writing with the employee's name, date of training, instructor and a copy of materials presented. These records shall be maintained by the company throughout the employee's tenure.

5. Program

5.1. Mechanical 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.
- The blast cleaning nozzle shall be equipped with an operating valve which must be held open manually.
- Lengths of hose should be joined by external metallic connectors. The connectors shall have pin-clips to prevent disengagement. Anti-whip arresters may be used between each connector.
- All Bull Hoses, from the compressor to the abrasive blast pot, shall have pinclips and anti-whip arresters on each end.

5.2. Personal Protective Equipment

- Operators should be equipped with heavy canvas or leather gloves and aprons. Safety shoes should also be worn.
- Eye, face, hearing and respiratory protection shall be supplied to all personnel working.
- Precautions shall be taken to protect personnel in the blasting zone including;
    - the blasting operator from excessive noise exposure by supplying and requiring the use of earplugs or muffs.
    - Vortex tubes which cool the air supply to the blasters hood should be considered depending on season and exposure of the employee to heat sources.

5.3. Housekeeping and Sanitation

- 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 before eating and after blasting operations.

5.4. Administrative dust control methods

5.4.1. Isolation

5.4.1.1. As most of the 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 and Ear Protection and Respirators Must Be Worn In This Area.

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

5.4.2. Enclosure

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

5.5. Respiratory protection

- Apron and dust collar, properly fitted and properly worn, shall be used by all persons blasting. In addition to the hood, blasters should also wear a disposable respirator when working in a high dust concentration. This would provide protection when the blasting operation has ceased, and the blaster is removing the air supplied equipment or when merely taking a break.

Abrasive-blasting hoods shall be worn by all abrasive-blasting operators:

1. At all times,

2. When working inside of blast-clean rooms,

3. When using silica sand in manual blasting operations where the nozzle and blast are not physically separated from the operator in an exhaust ventilated enclosure, and

4. Where concentrations of toxic dust dispersed by the abrasive blasting may jurisdictionally reach limits and the nozzle and blast are not physically separated from the operator in an exhaust-ventilated enclosure.

- Particulate filter respirators, commonly referred to as dust-filter respirators, properly fitted, may be used for short, intermittent, or occasional dust exposure such as clean-up, dumping of dust collectors, or unloading shipments of sand at a receiving point, when it is not feasible to control the dust by enclosure, exhaust ventilation, or other means. Respirators used shall be certified for protection against the specific type of dust.
    - Dust-filter respirators may be used to protect the operator of outside abrasive-blasting operations where non-silica abrasives are used on materials having low toxicities.

    - Dust-filter respirators shall not be used for continuous protection where silica sand is used as the blasting abrasive, or toxic materials are blasted.

Maintenance

1. Respirators should be cleaned daily. This can be accomplished by use of vacuum or water.

2. Respirators should be always kept in maximum operating condition.

3. After their daily cleaning, respirators and hoods should be kept and hung in an upright position to prevent sand spilling inside.

Air Supply and Air Compressors for Abrasive Blasting Hoods

1. Air supply shall be free of harmful quantities of dust, mists or noxious gases, and shall meet CSA requirements.

2. The air from the regular compressed air line of a compressor unit may be used for the abrasive-blasting hood if:

    a. A trap and carbon filter is installed that will remove oil, water particulate and odor and is regularly maintained. A record of the maintenance of these filters should be kept.

    b. A pressure reducing diaphragm or valve is installed to reduce the pressure to requirements of the particular type of abrasive blasting respirator.

    c. An automatic control is provided to either sound an alarm or shut down the compressor in case of overheating.

    d. Periodic checks should be made to ensure low amounts of carbon monoxide, >10 ppm, are not being emitted to the worker.

NIOSH recommendations:

NIOSH recommends the following measures to reduce exposures to respirable crystalline silica in the workplace and to prevent silicosis and deaths in construction workers:

1. Recognize when silica dust may be generated and plan ahead to eliminate or control the dust at the source. Awareness and planning are keys to prevention of silicosis.

2. Do not use silica sand or other substances containing more than 1% crystalline silica as abrasive blasting materials. Substitute less hazardous materials.

3. Use engineering controls and containment methods such as blast-cleaning machines and cabinets, wet drilling, or wet sawing of silica-containing materials to control the hazard and protect adjacent workers from exposure.

4. Routinely maintain dust control systems to keep them in good working order.

5. Practice good personal hygiene to avoid unnecessary exposure to other worksite contaminants such as lead.

6. Wear disposable or washable protective clothes at the worksite.

7. Shower (if possible) and change into clean clothes before leaving the worksite to prevent contamination of cars, homes, and other work areas.

8. Conduct air monitoring to measure worker exposures and ensure that controls are providing adequate protection for workers.

9. Use adequate respiratory protection when source controls cannot keep silica exposures below the jurisdictional level.

10. Provide periodic medical examinations for all workers who may be exposed to respirable crystalline silica.

11. Post warning signs to mark the boundaries of work areas contaminated with respirable crystalline silica.

12. Provide workers with training that includes information about health effects, work practices, and protective equipment for respirable crystalline silica.

13. Report all cases of silicosis to your local jurisdiction.

Dust Control

The key to preventing silicosis is to keep dust out of the air. Dust controls can be as simple as a water hose to wet the dust before it becomes airborne. Use the following methods to control respirable crystalline silica:

- Use the dust collection systems available for many types of dust-generating equipment. When purchasing equipment, look for dust controls. Use local exhaust ventilation to prevent dust from being released into the air. Always use the dust control system, and keep it well maintained. Do not use equipment if the dust control system is not working properly.

- During rock drilling, use water through the drill stem to reduce the amount of dust in the air, or use a drill with a dust collection system. Use drills that have a positive pressure cab with air conditioning and filtered air supply to isolate the driller from the dust.

- When sawing concrete or masonry, use saws that provide water to the blade.

- Use good work practices to minimize exposures and to prevent nearby workers from being exposed. For example, remove dust from equipment with a water hose rather than with compressed air. Use vacuums with high-efficiency particulate air (HEPA) filters, or use wet sweeping instead of dry sweeping.

- Use abrasives containing less than 1% crystalline silica during abrasive blasting to prevent quartz dust from being released in the air.

- Use containment methods such as blast-cleaning machines and cabinets to prevent dust from being released into the air.

Personal Hygiene

The following personal hygiene practices are essential for protecting workers from respirable crystalline silica and other contaminants such as lead, particularly during abrasive-blasting operations [NIOSH 1991a]:

- Do not eat, drink, or use tobacco products in dusty areas.
- Wash hands and face before eating, drinking, or smoking outside dusty areas.
- Park cars where they will not be contaminated with silica and other substances such as lead.

Protective Clothing

Take the following steps to assure that dusty clothes do not contaminate cars, homes, or worksites outside the dusty area:

- Change into disposable or washable work clothes at the worksite.
- Shower and change into clean clothes before leaving the worksite.

Air Monitoring

Air monitoring is needed to measure worker exposures to respirable crystalline silica and to select appropriate engineering controls and respiratory protection. Perform air monitoring as needed to measure the effectiveness of controls. Collect and analyze air samples according to NIOSH Method Nos. 7500 and 7602 [NIOSH 1994] or their equivalent.

IMPORTANT HEALTH INFORMATION & COMPANY POLICY REGARDING SILICA

Silicosis is a deadly disease characterized by shortness of breath, fever and bluish skin. Sometimes it may be diagnosed as pulmonary edema (fluid in lungs), pneumonia or tuberculosis. Silica dust causes severe fungal infections to develop. This condition can cause death.

Types, Symptoms and Complications of Silicosis

There are three types of silicosis, depending upon the airborne concentration of crystalline silica to which a worker has been exposed:

1. Chronic silicosis usually occurs after 10 or more years of overexposure.
2. Accelerated silicosis results from higher exposures and develops over 5-10 years.
3. Acute silicosis occurs where exposures are the highest and can cause symptoms to develop within a few weeks or up to 5 years.

Chronic silicosis, the most common form of the disease, may go undetected for years in the early stages; in fact, a chest X-ray may not reveal an abnormality until after 15 or 20 years of exposure. The body's ability to fight infections may be overwhelmed by silica dust in the lungs, making workers more susceptible to certain illnesses, such as tuberculosis.

As a result, workers may exhibit one or more of the following symptoms:

- shortness of breath following physical exertion
- severe cough
- fatigue
- loss of appetite
- chest pains
- fever

Specific engineering controls can be implemented that will reduce or eliminate occupational exposure to silica in abrasive blasting operations. These include:

- Use of an alternate blasting media
- Containment methods such as blast cleaning machines and cabinets
- Use of blasting rooms or portable equipment.

Air monitoring should be performed to measure worker exposure to airborne crystalline silica and to provide a basis for selecting engineering controls.

Personal hygiene is an essential component in employee safety regarding exposure to silica. For example:

- All sandblasters should wash their hands and faces before eating, drinking or smoking.
- No eating, drinking or tobacco products are allowed the blasting area.
- Workers should shower before leaving worksite.
- Vehicles should not be parked in an area contaminated by silica products.

Protective clothing is an important safety measure when working with silica products.

- Workers should change into disposable or washable work clothes at the worksite.
- Workers should change into clean clothing before leaving the worksite.

If engineering controls cannot keep silica exposures below the jurisdictional level, then respiratory protection shall be used.

Medical monitoring of workers exposed to crystalline silica is required under this program. Such examinations shall be conducted prior to job placement and at least every three years thereafter.

More frequent examinations (for example, annual) may be necessary for workers at risk, or in suspected cases of acute or accelerated silicosis. Examinations should include at least the following components:

- A medical and occupational history of the individual employee to collect data on worker exposure.
- Chest X-rays.
- Pulmonary function testing.
- Annual evaluation for tuberculosis.

Warning signs shall be posted to communicate to workers and individuals in the area about the hazards of silica exposure and to specify any protective equipment required.

Spray Polyurethane Foam Safety Plan

1. Potential Health Hazards of SPF Chemicals

It is critical to follow all safety and health guidelines when applying SPF. Before work begins, read and understand information contained in your supplier's Safety Data Sheet (SDS) and safe handling guidance for both the A and B side components you are using. While we cannot review all the potential health effects that could result from spray foam chemicals here because that specific information would be in the supplier's Safety Data Sheet, however you should understand that workers could be exposed to SPF chemicals by breathing chemical mists or vapors, skin or eye contact, or ingestion. A few key points are presented here.

A-Side – Inhalation overexposure can cause 1) irritation of the nose, throat, and lungs, causing runny nose, sore throat, coughing, tightness in the chest, and shortness of breath, and 2) respiratory tract sensitization (e.g., the development of asthma) with symptoms of chest tightness, shortness of breath, coughing, and/or wheezing. An asthma attack can be life-threatening. NIOSH notes that "early recognition of sensitization and prompt and strict elimination of exposures is essential to reduce the risk of long-term or permanent respiratory problems for workers who have become sensitized. Skin contact can cause 1) irritation, and 2) sensitization (allergy). Symptoms include reddening, itching, swelling, and rash. Skin contact alone may lead to respiratory sensitization. Eye contact can cause reddening, tearing, stinging, and/or swelling of the eyes.

B-Side – Inhalation overexposure can cause irritation of the respiratory tract, causing cough, sore throat, and runny nose. Irritation of the eyes (liquid or vapor) and skin (liquid) are also possible. In addition, skin contact with some amine catalysts may lead to skin sensitization. Cardiac arrhythmia (irregular heartbeat) is a symptom of overexposure to certain blowing agents. In addition, the vapors of some amine catalysts can temporarily cause vision to become foggy or blurry, and halos may appear around bright objects such as lights. **It is critical to avoid inhalation of, and skin and eye contact with, SPF chemicals.**

Refer to your supplier's Safety Data Sheets (SDS) for a complete listing of the composition and potential health effects of A and B-side chemicals.

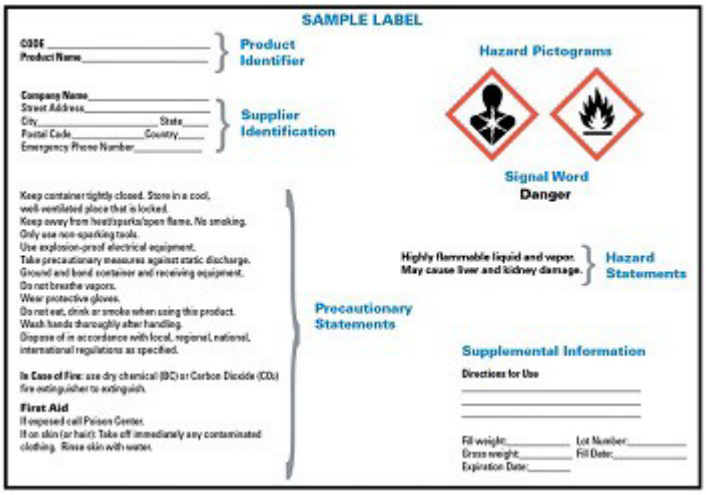
2. Worker Protection

Always read and understand the manufacturers' Safety Data Sheet (SDS) and drum or container labels for SPF and other materials before you start your application. Many different variables are present during SPF application, so evaluation is needed at each application and job site individually so that appropriate worker protection is implemented.

The OSHA Hazard Communication Standard was designed to provide employees with information on the identities and hazards of all chemicals or materials used in the workplace and the recommended protective measures

Hazard Communication - According to the OSHA Hazard Communication Standard, chemical containers must be labeled, and the information contained on the label must be legible and prominently displayed.

Labels and Other Forms of Warnings - Chemical labels identify the contents of a container used at a worksite. In addition, labels also convey information related to the toxicological, chemical, and physical properties associated with the chemical. As of, June 1, 2015, all labels are required by OSHA to have pictograms, a signal word, hazard and precautionary statements, the product identifier, and supplier identification. A sample of a new Hazard Communication label, identifying the required label elements, is shown below.



Many systems have been developed for labeling potentially hazardous chemicals. Our company may choose to label workplace containers either with the same label that would appear on shipped containers for the chemical under the revised Hazard Communication Standard, or with label alternatives that meet the requirements for the revised standard. Alternative labeling systems such as the National Fire Protection Association (NFPA) and the Hazardous Material Information System (HMIS) are permitted for workplace containers. However, the information supplied on these labels must be consistent with the revised OSHA Hazard Communication Standard for labeling.

The HMIS refers to hazards during anticipated use while the NFPA system describes hazards under fire conditions. Therefore, the two systems may have different hazard categories for the same material.

An example of a typical HMIS hazard-warning label is shown below:

It ranks the hazard the material poses from 0 to 4 in these categories: Health (blue), Flammability (red), and Reactivity/Physical Hazard (yellow). A rank of 0 indicates that the material presents a minimal hazard for that category. A rank of 4 indicates a severe hazard for that category. The HMIS label also may depict the type of PPE required, but the narrative descriptions on the drum label and in the SDS should be reviewed. In the NFPA label, the left diamond is for the health ranking (blue), the top for the fire or flammability

ranking (red), and the right for the instability ranking (yellow). The bottom diamond (white) denotes any other significant hazards associated with the material such as a chemical that is reactive with water.

Safety Data Sheets (SDS) – As part of the Hazard Communication Standard, OSHA requires chemical manufacturers and importers to obtain or develop an SDS (formerly known as Material Safety Data Sheet or MSDS) for each hazardous chemical they produce or import. We are required to have an SDS in the workplace for each hazardous chemical they use. If no SDS can be found the manufacturer can be contacted.

Before using any SPF product, read and understand the entire SDS for the product. As of June 1, 2015 OSHA will require new SDSs to be in a uniform format, and include the section numbers, the headings, and associated information. The SDS contains important information about the product, including the chemicals constituents and the approximate concentrations; the PPE appropriate for the job; information on how to handle accidental releases; and information on storage, handling, transportation, and disposal.

OSHA requires that all SDS be readily available to all workers at the jobsite, which may include other trade workers. Many SDS are now available online, so workers with enabled mobile devices or in-truck internet service may also be able to access them electronically on site. In addition, it may be possible to obtain the SDS in multiple languages if needed. Contact the manufacturer for more information.

Employee Training and Information - As a component of the OSHA Hazard Communication Standard, employees are provided Hazard Communication training upon initial assignment.

The training includes information on the hazardous chemicals the employees are working with, the control measures to reduce the potential for exposure, and how to read the SDS and product labels. The training also includes worksite-specific information including work practices, PPE to be used, and emergency procedures. OSHA requires that the employee have the opportunity to ask questions and be able to demonstrate comprehension.

The training must be understandable for the employee. When employees receive work instructions in languages other than English, employers are required to provide training in that language as well. Additional training is needed when a new physical or health hazard is introduced into the work area. At multi-employer worksites, additional training may be needed so that all employees know where the SDSs are located, details related to the labeling systems, and the hazards associated with other chemicals at the worksite they may be exposed to.

3. Site Preparation

There are many factors to consider when planning an SPF high pressure installation. Will the work take place in an occupied building or a building under construction? Will the building be vacated? Will other trades workers be present at the time of application? Will the application take place indoors or outdoors? What is the size of the work area – a large open area or an attic or crawlspace with limited ventilation? HVAC systems are typically shut down during some parts of roof preparation, as well as during application of primers, spray polyurethane foam, and coatings. System shut down stops the drawing of dusts, aerosols and/or vapors into interior spaces. Once the HVAC system is shut down, seal the air intakes with plastic sheeting and tape, which will prevent dust and spray from entering the intakes.

Keep the plastic sheeting in place at least several hours after the spray application is completed, typically 24 hours or more; a longer period may be appropriate for coatings, depending on when the coatings have hardened or set and are no longer emitting vapors. The HVAC system should not be restarted until appropriate time has elapsed and the plastic sheeting and tape is removed.

Consider the following practices when preparing a site for an SPF high pressure application:

- If the entire building is not vacated, consider the potential for SPF chemicals to migrate to other floors. Containment and ventilation methods may help prevent migration. Discuss with property management or other contractors which floors will be occupied.
- If local exhaust ventilation and containment methods are not used, establish a work zone around the work area to protect adjacent workers. The distance between the work area and adjacent workers is typically 25 feet, but depends on several factors, including but not limited to the volume of SPF applied, the area covered, and air movement. Signage may be used to communicate access restrictions. Consider limiting access to persons wearing proper personal protective equipment or trying to schedule other trade workers at times when SPF application is not underway.
- Before beginning work, designate an area for putting on and removing PPE.
- Determine in advance the potential for overspray damages. Have a plan in place to address overspray damages to adjacent property. Train all employees in overspray prevention.

- Identify and protect surfaces that could be damaged (e.g., windows, doors, equipment, or building exterior) in advance of application.
- For work outdoors, take wind direction into account for all spraying operations. Note that for a job that takes place over several days, the wind direction may change and the work area should be adjusted as needed. In slightly windy conditions, use windscreens.
- Do not spray foam or coatings in excessively windy conditions. Sustained wind speeds or gusts of about 15 mph (24 kph) make controlled application more difficult.

4. Good Practices

It is critical to avoid inhalation of, and skin and eye contact with, SPF chemicals, for applicators, helpers, occupants, and adjacent workers. The following good practices include engineering controls, work practices, and PPE intended to reduce the potential for exposure to SPF chemicals via inhalation or skin or eye contact. Consider a combination of engineering controls, work practices, and PPE for SPF applications. Engineering controls must always be the first line of defense against chemical exposure, followed by the use of work practices and PPE.

Engineering Controls: Proper containment and ventilation techniques can help prevent workers and building occupants from potential chemical exposure due to SPF application, particularly in interior applications when buildings cannot be vacated. Containment creates a contained workspace while the ventilation system removes SPF chemicals from the work area by drawing the air out of the workspace through the use if a fan. In addition to the

engineering controls, PPE may be needed to further reduce the potential for inhalation exposure.

Workplace Containment - Workspace containment is used in conjunction with ventilation to isolate and remove chemicals from the work area. A workspace does not need to be perfectly airtight, but containment is most effective when a workspace is as close to airtight as can practically be achieved. If a workspace is contained, clearly mark the area externally, and take appropriate steps to restrict entry into the workspace to personnel wearing proper PPE.

Ventilation Design - Ventilation used with workspace containment removes chemicals from the isolated area via negative pressure. Having a negative pressure in a contained work zone will draw in air from small cracks and gaps around the workspace boundary and exhaust the work zone air. Active ventilation is achieved by using one or more fans to draw air to or from the workspace and create a negative pressure inside the workspace. Give careful consideration to the location of the exhaust. Ideally, exhaust is released to an unoccupied space where it is not likely to be drawn through an air intake. This will help protect occupants and workers in adjacent areas from potential chemical exposure.

5. Personal Protective Equipment (PPE)

Even with effective engineering controls, personnel who work with SPF chemicals still need to wear appropriate PPE. This section provides general information about PPE. Although not exhaustive, the information provided may complement information contained within your company's safety program, as well as the SDS. An SDS is an important source of safety and handling information for a product. Generally, PPE is required for applicators, helpers, and other adjacent workers who may enter a spray foam application work area. However, bear in mind that formulations of SPF may vary, particularly with respect to B-side chemicals.

It is critical to avoid inhalation of, and skin and eye contact with, SPF chemicals. A PPE evaluation prior to beginning work is a useful tool to determine the appropriate PPE for the job. PPE to consider includes: protective clothing, gloves, eye and face protection, and respiratory protection. The effectiveness of PPE depends on both proper selection and proper use. It is important for workers to understand what PPE is needed, how to put on, operate, and take off the equipment, and how to maintain and/or dispose of the equipment. Generally, appropriate PPE for high pressure applications includes at a minimum chemical-resistant gloves, protective clothing, eye and face protection, and respiratory protection. The specific types of PPE may vary depending on the conditions at the jobsite, such as whether the application takes place indoors or outdoors, the amount of ventilation, the specific components of the B-side chemicals, and the quantity of SPF chemicals applied.

PPE Evaluation - PPE evaluations are conducted to determine the appropriate type of PPE needed for a job task, depending on the conditions at the worksite. Consider the following when selecting PPE for a job task:

- Location of the job tasks, such as outdoors vs. indoors, whether the work will take place in an enclosed space, the type of ventilation available, and the ambient temperature and relative humidity and wind speed and direction if applicable.
- Potential for inhalation exposure or eye or skin contact with SPF chemicals based on the job tasks.
- The quality of SPF chemicals applied and the delivery method.
- The type of work being conducted and the potential for wear and tear on the PPE.
- Characteristics of the PPE that may affect the wearer's ability to complete a task such as gloves that permit dexterity and respiratory protection that allows adequate peripheral vision.
- Wearer acceptance. PPE that does not fit the user may not provide sufficient protection. In addition, if an individual does not like the PPE he or she may be less likely to use it when needed.

Air Monitoring - Air monitoring is one way to evaluate the potential for inhalation exposure to SPF chemicals. Air samples may be collected at specific time intervals during application and after spray application has ceased. These data are helpful in determining when it is safe to enter the enclosure or spray area. An environmental health and safety professional can

help develop a sampling strategy for contractors that would like to explore the use of this tool.

Protective Clothing - The use of appropriate protective clothing is necessary whenever there is possibility of direct contact with SPF chemicals. The appropriate protective clothing varies depending upon the potential for exposure. Applicators and helpers typically wear disposable coveralls to keep spray and mist from contacting skin and clothing. To protect skin, wear PPE in such a manner as to protect all skin (in other words, there should be no exposed skin showing). When not wearing a hood respirator, select a coverall with an attached hood or spray head cover. For tasks where there is a potential for splash, consider a suit coated with an impermeable coating such as PVC and MDI-resistant fitted.

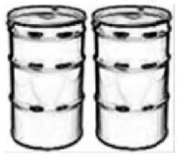
Gloves - Gloves made of nitrile, neoprene, butyl or PVC generally provide adequate protection against A-side materials. (See Guidance for the Selection of Protective Clothing for MDI Users, Center for the Polyurethane Industry (CPI) Guidance Document AX178). A-side protection is generally considered adequate to provide B-side protection; however, consult the manufacturer's SDS for specific information about B-side protection. A range of sizes should be available. A glove which is too large or small for the user may not provide proper protection. A fabric glove fully coated with nitrile, neoprene, butyl, or PVC can provide good protection for SPF applicators.

Eye and Face Protection - Appropriate eye protection helps prevent eye contact from splashes of liquid SPF chemicals, accidental sprays of reacting foam, aerosols and vapors that are likely to be present during spraying, and airborne particulate associated with sanding and grinding operations. The type of eye protection needed depends on the nature

of the activity. Persons handling liquid SPF chemicals in open containers can protect their eyes by wearing safety goggles or safety goggles in combination with face shields. The use of contact lenses is discouraged. During application of SPF, eye protection may be provided by virtue of wearing a full-face or hood respirator. OSHA requires that an eyewash* or safety shower be provided in the work area where the eyes or body may be exposed to "injurious corrosive materials." Consult the SDS for all materials to be used on the job in advance to help you understand whether such materials will be present, and if so, how to comply with applicable OSHA requirements.

Respiratory Protection - Engineering controls, such as local exhaust ventilation, can be used to control SPF chemical exposures. Administrative controls, such as work schedules and work practices, are used concurrently to minimize exposure. Respirators are needed when air concentrations continue to exceed occupational exposure limits when engineering and administrative controls are implemented. These limits have been set for a number of SPF chemicals and some common chemicals encountered during SPF application.

General Personal Protective Equipment (PPE) Guidelines for Spray Polyurethane Foam (SPF) Application*

	Low Pressure SPF			High Pressure SPF
	One-Component Cans	Two-Component Kits	Refillable Systems	High Pressure Spray Systems
				
Potential Routes of Exposure	PPE recommendations may include:	PPE recommendations may include:	PPE recommendations may include:	PPE recommendations may include:
Eyes	 Safety Glasses with Side Shields	 or  Safety Glasses or Safety Goggles	 or  Safety Glasses or Safety Goggles	 or  Full Face (FF) Mask or Supplied-Air (SA) Hood
Skin	 Long Sleeves	 Long Sleeves	 Long Sleeves* *Additional PPE may be required (i.e., full body suit) depending on the job and/or the product. Consult manufacturer's instructions.	 Full Body Suit or Coverall with Hood/Long Sleeves
Hands	 Chemical Resistant Gloves	 Chemical Resistant Gloves	 Chemical Resistant Gloves	 Chemical Resistant Gloves
Lungs	Avoid Breathing Vapors Provide Good Ventilation 	Respirator  Air Purifying Organic Vapor (OV)/Pre-filter Provide Good Ventilation 	Respirator*  Air Purifying Organic Vapor (OV)/Pre-filter Provide Good Ventilation  *Additional respiratory protection may be required (i.e., FF mask) depending on the job and/or the product. Consult manufacturer's instructions.	Respiratory Protection*  or  or  FF Mask/ 5A Hood Pre-filter or FF Air OV/ Purifying or Supplied Air Provide Good Ventilation  *PPE may vary depending on the job and/or the product. Consult manufacturer's instructions.
*Additional information may be found at www.spraypolyurethane.com. Consult manufacturer's Safety Data Sheet for product-specific information.				

6. Disposal of SPF Chemicals

This provides general guidance related to disposal of SPF chemicals. Not covered here are the many other materials and chemicals that may be present at a job site, including but not limited to solvents, oils and fuels, coatings, primers, and other chemicals, all of which may have separate and very specific waste disposal requirements under applicable law. All persons involved in waste disposal have an independent obligation to ascertain that their actions are in compliance with current federal, state, and local laws and regulations. Consult the manufacturer for additional assistance on waste disposal.

The proper disposal of any remaining SPF chemicals is a crucial part of an SPF application. Likewise, drums containing SPF need to be properly prepared, decontaminated, and disposed of in accordance with regulatory requirements. It is never acceptable to abandon or discard a drum without following proper disposal procedures in accordance with legal requirements. Consult the SDS for more information.

Note that small amounts of unused A-side chemicals can be reacted with small amounts of unused B-side chemicals to produce foam. Cured foam is typically non-hazardous, and if it is determined to be non-hazardous, cured foam can be disposed of as non-hazardous waste.

Always wear appropriate PPE at all times when handling SPF chemicals and the drums containing these materials. Consult the manufacturer's SDS for specific information about PPE.

7. Spill Response

A spill or release is the unplanned discharge of a material to the ground, water, or air. It is advisable to have an emergency spill containment kit available that contains absorbent materials such as clay, pads, or socks to contain or minimize the affected area. A clean work site helps reduce trips, slips, and falls. Because B-side chemicals can be extremely slippery, mark and clean up spills, particularly from smooth walkways or floors, as soon as possible.

Although infrequent, sizable spills and releases of A- and B-side chemicals can occur. If this happens, it is important to take immediate action to minimize environmental contamination.

You may be required to report spills and releases of spray foam and coating ingredients to local, state, and/or federal authorities. For this reason, keep all containers of chemicals tightly sealed except when they are actually in use. In the event of a large A-side chemical spill or release (i.e., more than a few pounds or gallons), consider the following:

- Direct all personnel away from the immediate area to avoid unnecessary exposure.
- Provide appropriate PPE for individuals involved in the cleanup. PPE for cleanup crews may include appropriate respiratory protective devices, impervious clothing, footwear, eye protection, and gloves in accordance with OSHA regulations.
- Absorb the A-side chemicals with sand, wet earth or absorbent clays (e.g., vermiculite or cat litter). Place the absorbed material in drums and neutralize. Do not seal these drums for an appropriate period (typically, at least 48 hours).

- Check to see if you have exceeded the reportable quantity (RQ) (Reportable quantity for MDI is 5,000 lbs), which is the equivalent of approximately 15 drums of a typical A-side material. Note that 10 drums of A-side chemicals are a large quantity; a typical single family residence or commercial application is likely to have fewer drums present. Call the EPA's Superfund Call Center 1-800-424-9346 or consult 40 CFR §302.4. If it is determined that you have exceeded this amount, you must report the spill to various government agencies.
- Characterize waste (e.g., hazardous or nonhazardous waste) and dispose of waste in accordance with all applicable regulations.

You may be required to report sizable MDI or solvent spills or releases to a Local Emergency Planning Committee (LEPC), State Emergency Response Commission (SERC), and the National Response Center (NRC). The penalties associated with not reporting are quite substantial, so it is better to be conservative.

Job site wastes consisting solely of construction debris, such as old roofing materials, do not normally require any special handling or packaging for disposal, unless they contain asbestos or other unusual hazardous materials. If you are unsure, it is suggested that they be treated as hazardous. However, cured polyurethane foam does not meet the criteria of a hazardous waste according to Resource Conservation and Recovery Act (RCRA), and should be acceptable for landfill disposal. Some landfill facilities may ask for a SDS on cured polyurethane foam before allowing disposal. It is suggested that the state and/or local waste disposal regulatory authority be consulted prior to disposal of any type of waste.

Spill & Clean-Up Response Program

In the event of a chemical spill, the individual(s) who caused the spill ar responsible for prompt and proper clean-up. It is also their responsibility to have spill control and personal protective equipment appropriate for the chemicals being handled readily available.

The following are general guidelines to be followed for a chemical spill.

Emergency Actions

- Immediately alert area occupants and supervisor, and evacuate the area, if necessary.
- If there is a fire or medical attention is needed, contact 911
- Attend to any people who may be contaminated. Contaminated clothing must be removed immediately and the skin flushed with water for no less than fifteen minutes (Unless SDS advises otherwise). Clothing must be laundered before reuse.
- If a volatile, flammable material is spilled, immediately warn everyone, control sources of ignition and ventilate the area.

Immediate Spill Response

- Don personal protective equipment, as appropriate to the hazards. Refer to the Safety Data Sheet for information.
- Consider the need for respiratory protection. The use of a respirator or self-contained breathing apparatus requires specialized training and medical surveillance. Never enter a contaminated atmosphere without protection or use a respirator without training.
- Using the chart below, determine the extent and type of spill.

Category	Size	Response	Treatment Materials
Small	up to 300mL	chemical treatment or absorption	neutralization or absorption spill kit
Medium	300mL to	absorption	absorption spill kit

Category	Size	Response	Treatment Materials
	5L		
Large	more than 5L	call EHS department (970-964-8018)	outside help

- Protect floor drains or other means for environmental release. Spill socks and absorbents may be placed around drains, as needed.
- Contain and clean-up the spill according to the table above.
  Loose spill control materials should be distributed over the entire spill area, working from the outside, circling to the inside. This reduces the chance of splash or spread of the spilled chemical. Many neutralizers for acids or bases have a color change indicator to show when the spill is neutralized.
- When spilled materials have been absorbed, use brush and scoop to place materials in an appropriate container. Polyethylene bags may be used for small spills. Five gallon pails or 20 gallon drums with polyethylene liners may be appropriate for larger quantities.
- Complete a hazardous waste sticker, identifying the material as Spill Debris involving XYZ Chemical, and affix onto the container. Spill control materials will probably need to be disposed of as hazardous waste. Contact EHS at (970)-964-8018 for advice on storage and packaging for disposal.
- Report all spills to your supervisor or the Safety Manager.

Developing a Spill Response Plan

An effective spill response procedure should consider all of the items listed below. The complexity and detail of the plan will, of course depend upon the physical characteristics and volume of materials being handled, their potential toxicity, and the potential for releases to the environment.

- Review Safety Data Sheets (SDSs) or other references for recommended spill cleanup methods and materials, and the need for personal protective equipment (e.g., respirator*, gloves, protective clothing, etc.)
- Acquire sufficient quantities and types of appropriate spill control materials to contain any spills that can be reasonably anticipated. The need for equipment to disperse, collect and contain spill control materials (e.g., brushes, scoops, sealable containers, etc.) should also be reviewed. EHS maintains EHS chemical spill control kits that can be used if no other materials are available. After use, please call EHS at (970)-964-8018 to restock.
- Acquire recommended personal protective equipment and training in its proper use. **For example, if an air purifying respirator or self-contained breathing apparatus are needed, personnel must be enrolled in the Respiratory Protection Program and attend annual training and fit-testing.*

    - Place spill control materials and protective equipment in a readily accessible location within or immediately adjacent to the jobsite.
    - Develop a spill response plan that includes:
        - Names and telephone numbers of individuals to be contacted in the event of a spill.
        - Evacuation plans for the jobsite, as appropriate.
        - Instructions for containing the spilled material, including potential releases to the environment (e.g., protect floor drains).
        - Inventory of spill control materials and personal protective equipment.
        - Means for proper disposal of cleanup materials (in most cases, as hazardous waste) including contaminated tools and clothing.
        - Decontamination of the area following the cleanup.
- Discuss the spill response plans with all workers in the area.

Stop Work Authority Program

Purpose

The Stop Work Authority (SWA) process involves a stop, notify, correct, and resume approach for the resolution of a perceived unsafe condition, act, error, omission or lack of understanding that could result in an undesirable event. All Summit employees have the authority and obligation to stop any task or operation where concerns or questions regarding the control of health, safety or environmental risks exist.

Scope

This program applies to all Summit projects and operations.

Key Responsibilities

- Employees are responsible to initiate a Stop Work Intervention when warranted and management is responsible to create a culture where SWA is exercised freely.
- All employees have the authority to stop work when the control of the HSE risk is not clearly established or understood.
- Supervisors are responsible to ensure a culture is created where SWA is exercised and honored freely to resolve issues before operations resume and recognize proactive participation.
- Management must establish and support clear expectations to exercise SWA, create a culture where SWA is exercised freely and hold those accountable that chose not to comply with established SWA policies.

Stop Work Authority Procedure

- When an unsafe condition is identified the Stop Work Intervention will be initiated, coordinated through the supervisor, initiated in a positive manner, notify all affected personnel and supervision of the stop work issue, correct the issue and resume work when safe to do so.
- No work will resume until all stop work issues and concerns have been adequately addressed.
- 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 by Summit.

Follow-Up

- All Stop Work Interventions shall be documented for lessons learned and corrective measures to be put into place.
- Stop Work reports shall be reviewed by supervision order to measure participation, determine quality of interventions and follow-up, trend common issues, identify opportunities for improvement, and facilitate sharing of learning.
- 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.

Training

Employees shall receive Stop Work Authority training before their initial assignment. The training will be documented including the employee name, the dates of training and subject matter.

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F: 970-240-0951

Denver Office
2000 W. Quincy Ave.
Englewood, CO 80110
P: 720-389-8633
F: 720-242-9276

Seattle Office
4210 B Street NW, Ste A
Auburn, WA 98001
P: 253-243-6172
F: 253-243-6194

Montrose • Gypsum • Denver • Seattle

[Insert Date]

[Insert Recipient Name]

[Insert Address]

[Contract Number]

[Project Name/Number]

NOTICE OF SAFETY NON COMPLIANCE

Your company [insert company name] is believed to be in violation of the safety requirements applicable to the project for [insert project].

On [insert date], in accordance with the [insert contract/compliance doc name], your representative [insert person responsible for non compliance] was given a notice of safety non-compliance (copy attached).

This notice specified areas where your company does not comply with project safety requirements and requested that these items be corrected by [insert rectification date].

If there is no correction, more stringent measures may be taken. Please call me at 970-964-8018 or email me at stewarth@summitsealants.com if I can provide additional information or assistance. Thank you for your cooperation.

Signed by,
Stewart Hopper
Summit Sealants

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Training Matrix

Applies to:	Required training Class	Training frequency
All classifications	Fire extinguisher use*	Initial hire, and annually thereafter
	Personal Protective equipment	Initial hire, and annually thereafter
	Hierarchy of controls	Initial hire
	Hazard communication	Initial hire, and annually thereafter
Users of any type of respiratory protection, or participation in any respirable silica creating activities.	Respiratory protection, silica awareness, and fit testing.	Initial hire, prior to using PPE, and annually thereafter.
Employees performing maintenance on stationary machinery or de-energized environments.	Lockout/tagout	Prior to working on the equipment and when procedures change.
Employees who generate or handle hazardous waste/chemicals	Hazardous waste/chemical management, and general chemical handling training	Initially, and annual refresher**
Employees entering vaults, sewer manholes or environments not meant for continuous occupation or act as an attendant	Confined space entry or confined space attendant.	Prior to entering a confined space or acting as an attendant.
Employees using portable or stationary power tools	Tool Safety	Initial hire, and annual refresher.
Users of fixed industrial or portable ladders	Ladder safety	Initial hire, and annually thereafter.
Employees exposed to high noise levels	Hearing protection	Initial hire, and annually thereafter.

Operators of forklifts and powered elevated work platforms	Training on specific equipment to be used	Before initial use of the equipment, or certification expires.
Suspended scaffolding	Suspended scaffolding training including operation and rigging.	Before initial use of equipment.
Rope access	Rope access training including rigging.	Before rope access work commences.
All Classifications	CPR & First Aid certification	When workers will be the competent person on site, and every 2 years.
Employees working near a leading edge more than 6 feet off the ground, or elevated work environments.	Fall protection	Initial hire, and annual refresher.
All Classifications	Risk Assessment Training	Initial hire, and annual refresher.
Chemical grout injections, and any other work involving high pressure environments.	Pressure Work	Before start of work, when task changes, and annual refresher.
Employees involved in all classifications	Fire extinguisher use*, Personal Protective equipment, Hierarchy of controls, Hazard communication, Respiratory protection, silica awareness, fit testing, Lockout/tagout, Hazardous waste/chemical management, general chemical handling training, Confined space entry or confined space attendant, Tool Safety, Ladder safety, Hearing protection, Training on specific equipment to be used, Suspended scaffolding training including operation and rigging, Rope access training including rigging, CPR & First Aid certification, Fall protection, Risk Assessment Training, and Pressure Work.	Initial hire, annual refresher, before initial use of equipment, and before work commences.

* Fire extinguisher training should be made available on a voluntary basis to everyone.
** Depending on job duties, other requirements may apply.

Summit Sealants will ensure that all employees receive general and job-specific training prior to **initial or new job assignments.** In addition, training is required:

- whenever new substances, processes, procedures, or equipment are introduced to the workplace which may create new hazards.
- when new or previously unrecognized hazards are introduced into the work environment or brought to a supervisor's attention.
- when an employee cannot demonstrate adequate understanding of the safety requirements of a task or incident occurs.

SAFE PRACTICES FOR ROPE ACCESS WORK

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1. Purpose, Scope, Exceptions

1.1. Purpose

1.1.1. The purpose of this document is to provide accepted practices for rope access work.

1.1.2. This document is to be used in conjunction with SPRAT's *Rope Access Certification Requirements* and SPRAT's *Defined Terms*.

1.2. Scope

1.2.1. This document provides practices and procedures to protect persons from the hazards associated with rope access work.

1.2.2. This document provides requirements and recommendations for establishing, administering, and operating within a comprehensive rope access program.

1.2.3. This document is written for all persons involved with rope access work, including clients, ***employers***, ***rope access technicians***, and regulatory authorities.

1.3. Exceptions

1.3.1. This document does not address the use of single ***main systems*** without ***backup systems*** in the course of planned work.

1.3.2. This document does not apply to technical rescue, emergency response, or emergency response training, except as provided in Section 16.

2. Rope Access Program Management

2.1. The ***employer*** has the overall responsibility for its rope access program.

2.2. The ***employer*** shall provide the resources that are necessary for the development, implementation, and operation of its rope access program.

2.3. The ***employer*** shall appoint a ***Rope Access Program Administrator*** to manage and direct the rope access program.

2.3.1. The ***Rope Access Program Administrator*** should, at a minimum, have the knowledge and experience of a ***Level III Technician***.

2.3.2. The ***Rope Access Program Administrator*** shall have a working knowledge of relevant regulations that apply to rope access and working at height, and ensure compliance with all such requirements.

2.3.3. The ***Rope Access Program Administrator*** should be knowledgeable about and experienced in supervising fall protection programs and incorporating fall protection systems for rope access work.

2.4. The ***Rope Access Program Administrator*** is responsible for the development, implementation, and management of the ***employer's*** rope access program in accordance with Section 3.

2.5. The ***Rope Access Program Administrator*** shall be the main contact point for matters relating to the safety, training, and regulatory aspects of the rope access program.

2.6. When the ***Rope Access Program Administrator*** delegates a requirement of the rope access program to another ***rope access technician*** or appropriate personnel, the ***Rope Access Program Administrator*** remains responsible to verify the effective completion of the requirement.

3. Rope Access Program Requirements

3.1. General

3.1.1. A policy statement shall be developed and implemented that provides general goals and guidance for a rope access program that emphasizes the ***employer's*** commitment to providing a safe workplace for personnel engaged in rope access work.

3.1.2. Rope access program policies and procedures shall be documented and available to all affected personnel.

3.1.3. Policies and procedures shall be consistent with requirements of the ***presiding regulatory authority*** related to the work environment to ensure that such requirements are followed by all ***rope access technicians*** when conducting work.

3.1.4. Where a ***presiding regulatory authority*** has requirements that are stricter than this standard, those requirements shall be followed.

3.1.5. The program shall ensure communication and coordination with clients and their safety representatives regarding rope access safety and rescue procedures.

3.2. Training, Certification, Experience

3.2.1. The program shall provide for or verify provision of, and ensure the maintenance of all ***rope access technician*** training and certification in accordance with Section 6.

3.2.2. Rope access experience and training hours shall be recorded in accordance with Section 7.

3.3. Worksite Requirements

3.3.1. Currently certified ***rope access technicians*** shall be used to conduct all rope access operations.

3.3.2. ***Rope access technicians*** shall be informed of foreseeable hazards that they may encounter during the performance of their responsibilities.

3.3.3. Rope access work shall be supervised in accordance with Section 8.2.

3.3.4. The program shall ensure that ***rope access technicians*** have the knowledge, training, skills, and experience necessary to safely perform their responsibilities and the rope access work to which they are assigned in accordance with Section 4 and Section 5.

3.3.5. The program shall recognize the limitations of the ***rope access technicians*** to perform rope access work and ensure that no work is undertaken that exceeds those limitations.

3.3.6. Prior to the commencement of rope access work, the ***access work plan*** shall be completed in accordance with Section 9.

3.3.7. Work zones shall be identified and marked in accordance with Section 10.

3.4. ***Rope Access Systems*** and Equipment

3.4.1. ***Rope access systems*** shall be installed and utilized in accordance with Section 12.

3.4.2. The program shall provide, or verify provision of all appropriate rope access equipment in accordance with Section 13.

3.4.3. Rope access equipment shall be inspected and maintained in accordance with Section 13.3.

3.4.4. The program shall provide, or verify provision of all appropriate tools, work equipment, materials, and personal protective equipment in accordance with Section 14.

3.5. Rescue

3.5.1. Prompt rescue shall be possible for any access or work location of a member of the work team in accordance with Section 16.

3.6. Post-Job Debriefs and Accident Reporting

3.6.1. Post-job debriefs should be conducted in accordance with Section 17.

3.6.2. An accident reporting system shall be established in accordance with Section 17.

4. Responsibilities of the Rope Access Supervisor

4.1. General

4.1.1. A ***Rope Access Supervisor*** is responsible for the implementation and oversight of the ***employer's*** rope access program at the worksite.

4.1.2. When the ***Rope Access Supervisor*** delegates a task that is their responsibility to another ***rope access technician*** or appropriate personnel, the ***Rope Access Supervisor*** remains responsible to verify the effective completion of the task.

4.1.3. The ***Rope Access Supervisor*** has the responsibilities of a ***rope access technician*** in accordance with Section 5 to the extent that they do not prevent the effective performance of the responsibilities required by this section.

4.1.4. The ***Rope Access Supervisor*** shall perform any other responsibilities designated in the ***employer's*** rope access program or identified by the ***Rope Access Program Administrator***.

4.1.4.1. Such responsibilities shall remain within that ***Rope Access Supervisor's*** training, skills, experience, and qualifications for conducting safe rope access operations and maintaining a safe worksite.

4.1.4.2. The ***Rope Access Supervisor*** shall notify the ***Rope Access Program Administrator*** if assigned a task or responsibility beyond the ***Rope Access Supervisor's*** training, skills, qualifications, or experience.

4.2. Training, Certification, Experience

4.2.1. The ***Rope Access Supervisor*** shall verify training and certification required of ***rope access technicians*** at the worksite in accordance with Section 6.

4.2.2. The ***Rope Access Supervisor*** shall verify rope access hours of ***rope access technicians*** at the worksite in accordance with Section 7.

4.3. Worksite Requirements

4.3.1. The ***Rope Access Supervisor*** shall communicate and coordinate with clients and their safety representatives, and other personnel.

4.3.2. The ***Rope Access Supervisor*** shall complete or verify the completion of the ***access work plan*** in accordance with Section 9 prior to the commencement of rope access work.

4.3.3. The ***Rope Access Supervisor*** shall direct ***rope access technicians*** to ensure safety and compliance with the rope access program and ***access work plan***.

4.3.4. The ***Rope Access Supervisor*** shall have sufficient knowledge of current regulations that apply to rope access and working at height, so as to verify compliance by the ***rope access technicians*** being supervised.

4.3.5. The ***Rope Access Supervisor*** shall verify that work zones are identified and marked appropriately in accordance with Section 10.

4.3.5.1. The ***Rope Access Supervisor*** shall verify that adequate measures are taken to keep unauthorized persons out of the work zones.

4.3.6. The ***Rope Access Supervisor*** shall direct ***rope access technicians*** to identify hazards and take corrective measures to eliminate or control the risks associated with hazards at the worksite.

4.4. ***Rope Access Systems*** and Equipment

4.4.1. The ***Rope Access Supervisor*** shall specify and verify the selection and installation of ***rope access systems*** in accordance with Section 12.

4.4.2. The ***Rope Access Supervisor*** shall verify the installation of ***anchorage systems*** in accordance with Section 12.1.

4.4.3. The ***Rope Access Supervisor*** shall verify the proper use and maintenance of rope access equipment in accordance with Section 13, removing equipment from service when appropriate.

4.4.4. The ***Rope Access Supervisor*** shall verify proper use and maintenance of tools, work equipment, materials, and personal protective equipment in accordance with Section 14.

4.5. Rescue

4.5.1. The ***Rope Access Supervisor*** shall ensure that prompt rescue can be performed for any access or work location of a member of the work team in accordance with Section 16.

4.5.2. The ***Rope Access Supervisor*** shall verify that the necessary emergency services are available and that the means to summon them are functioning.

4.5.3. The ***Rope Access Supervisor*** shall manage and/or perform any rescue required during rope access work.

4.6. Post-Job Debriefs and Accident Reporting

4.6.1. The ***Rope Access Supervisor*** shall participate in any relevant post-job debriefs or investigations of incidents in accordance with Section 17.

5. Responsibilities of the Rope Access Technician

5.1. General

5.1.1. The ***rope access technician*** is responsible for the completion of the rope access work under the direction of the ***Rope Access Supervisor***.

5.1.2. The ***rope access technician*** shall have a working knowledge and understanding of the ***employer's*** rope access program and all applicable policies and procedures.

5.1.3. The ***rope access technician*** shall perform any other responsibilities designated in the ***employer's*** rope access program or identified by the ***Rope Access Program Administrator*** or ***Rope Access Supervisor***.

5.1.3.1. Such responsibilities shall remain within that ***rope access technician's*** training, skills, qualifications, and experience.

5.1.3.2. The ***rope access technician*** shall notify the ***Rope Access Program Administrator*** or ***Rope Access Supervisor*** if assigned a task or responsibility beyond their training, skills, qualifications, or experience.

5.2. Training, Certification, Experience

5.2.1. The ***rope access technician*** shall have the appropriate training and certifications to conduct assigned rope access work in accordance with Section 6.

5.2.2. The ***rope access technician*** shall document their training, qualifications, and experience in accordance with Section 7.

5.3. Worksite Requirements

5.3.1. The ***rope access technician*** shall follow requirements of the rope access program and the ***access work plan*** in accordance with Section 9.

5.3.2. The ***rope access technician*** shall follow requirements of the ***presiding regulatory authority*** on the worksite.

5.3.3. The ***rope access technician*** shall be capable of identifying work zones and complying with their requirements in accordance with Section 10.

5.3.4. Under the direction of the ***Rope Access Supervisor***, the ***rope access technician*** shall identify hazards and take corrective measures to eliminate or control the risks associated with hazards at the worksite.

5.3.5. The ***rope access technician*** shall have the authority to stop work immediately if it is unsafe to proceed.

5.4. ***Rope Access Systems*** and Equipment

5.4.1. The ***rope access technician*** shall install, inspect, and analyze ***rope access systems*** in accordance with Section 12.

5.4.2. The ***rope access technician*** shall properly use, inspect, and maintain rope access equipment in accordance with Section 13.

5.4.3. The ***rope access technician*** shall properly use and maintain tools, work equipment, materials, and personal protective equipment in accordance with Section 14.

5.5. Rescue

5.5.1. The ***rope access technician*** shall perform and/or assist rescue under the direction of a ***Rope Access Supervisor*** in accordance with Section 16.

5.6. Post-Job Debriefs and Accident Reporting

5.6.1. ***Rope access technicians*** should participate in any relevant investigations of incidents in accordance with Section 17.

6. Training and Certification

6.1. Rope Access Training

6.1.1. Rope access training shall be provided to all ***rope access technicians*** and prospective personnel, at a minimum, in a manner consistent with *Rope Access Certification Requirements*.

6.1.2. Additional rope access training for specific work environments shall be provided as appropriate.

6.1.2.1. Additional rope access training may be provided at the worksite.

6.1.3. Refresher training should be provided on an annual basis.

6.1.3.1. Refresher training may be provided at the worksite.

6.1.4. ***Rope access technicians*** who have not been engaged in rope access work for six months or more should receive suitable training before returning to work.

6.2. Rope Access Certification

6.2.1. Rope access certifications should be maintained in accordance with *Rope Access Certification Requirements.*

6.3. Additional Training and Certifications

6.3.1. ***Rope access technicians*** shall have training in fall protection systems used during the course of work.

6.3.1.1. Fall protection training shall meet the requirements of the ***presiding regulatory authority*** where work is undertaken.

6.3.2. ***Rope access technicians*** shall have first aid training appropriate to the environment where work is undertaken.

6.3.3. Additional training and certifications for specific work environments shall be provided as required by the ***presiding regulatory authority***, industry, client, or ***employer***.

7. Experience Documentation

7.1. ***Rope access technicians*** shall document their experience, including:

7.1.1. Rope access work experience.

7.1.2. Rope access certification.

7.1.3. Rope access training.

7.2. Additional relevant experience should be documented as required by the ***employer*** or ***presiding regulatory authority***.

7.3. Experience documentation shall provide the following information:

7.3.1. Date(s) of work

7.3.1.1. The date range of an entry shall not exceed two weeks.

7.3.2. Employer name

7.3.3. Work details

7.3.3.1. These details should include the industry, structure, location, and description of work.

7.3.4. Rope access details

7.3.4.1. These details shall include the rope access techniques used to complete the work.

7.3.5. Rope access hours worked

7.3.5.1. These hours shall be the time spent carrying out rope access tasks including establishing ***rope access systems***, training, working ***on-rope***, and worksite safety management.

7.4. Experience Verification

7.4.1. Rope access hours shall be verified by another individual.

7.4.1.1. Rope access hours should be verified by a ***Rope Access Supervisor***, employer, competent trainer, evaluator, or client.

7.4.1.2. A ***Rope Access Supervisor's*** rope access hours may be verified by a ***rope access technician*** from their work team.

7.4.2. Individuals verifying rope access hours should provide their:

7.4.2.1. Signature.

7.4.2.2. Printed name.

7.4.2.3. SPRAT number.

7.4.2.4. Work title or role.

7.4.2.5. Contact details.

8. Work Teams and Supervision

8.1. Work Teams

8.1.1. Currently certified ***rope access technicians*** shall be used to conduct all rope access operations.

8.1.2. Work teams shall consist of, at a minimum, the number of members required to ensure prompt rescue.

8.1.2.1. To meet the above requirement, a work team shall consist of a minimum of two ***rope access technicians***.

8.2. Worksite Supervision

8.2.1. At least one member of the work team shall be designated as the ***Rope Access Supervisor***, fulfilling their responsibilities in accordance with Section 4.

8.2.2. A ***Rope Access Supervisor*** should be a ***Level III Technician***.

8.2.3. A ***Level II Technician*** may be designated as the ***Rope Access Supervisor*** if the following criteria are met:

8.2.3.1. Work does not require special permits as described in Section 9.10.

8.2.3.2. Adjacent work does not foreseeably compromise the safety of the rope access work being conducted.

8.2.3.3. Only ascent and descent are required for completing the work.

8.2.3.4. ***Deviations*** are no greater than 20 degrees.

8.2.3.5. No rope-to-rope transfers, knot passing, or negotiating intermediate ***fixed anchorage systems*** is required during planned work.

8.2.3.6. Prompt ***rescue*** shall be effective directly down the ***fall line*** to the ground or platform level.

8.2.4. If a ***presiding regulatory authority***, specific industry, and/or client requires a ***Level III Technician*** to be the designated ***Rope Access Supervisor***, this requirement shall be followed.

9. Access Work Plan

9.1. An ***access work plan*** shall be completed prior to beginning all rope access work.

9.2. The ***access work plan*** shall be maintained at the worksite and available to all affected persons.

9.3. The ***access work plan*** shall be updated as necessary during the course of rope access work.

9.4. A documented review of the ***access work plan*** by ***rope access technicians*** shall be conducted prior to each work shift and after any updates.

9.5. The ***access work plan*** should be reviewed by any person affected by the rope access work.

9.6. For new work, a site survey should be conducted to help determine:

9.6.1. The nature of the work environment.

9.6.2. Feasibility of the means of access.

9.6.3. Foreseeable hazards to ***rope access technicians*** and others.

9.7. The ***access work plan*** shall, at a minimum, consist of the following:

9.7.1. Work method.

9.7.2. Risk assessment.

9.7.3. Special permits.

9.7.4. Rescue plan.

9.8. Work Method

9.8.1. The work method, shall, at a minimum, provide:

9.8.1.1. Members of the work team by name and identify their roles and level of training.

9.8.1.2. The ***hazard*** and ***fall zones*** in accordance with Section 10.

9.8.1.3. The communication plan in accordance with Section 11**.**

9.8.1.4. Required ***rope access systems*** in accordance with Section 12.

9.8.1.5. Required rope access equipment in accordance with Section 13.

9.8.1.6. Required tools and other materials in accordance with Section 14.

9.8.1.7. Required personal protective equipment (PPE).

9.9. Risk Assessment

9.9.1. The work method and work environment shall be reviewed to identify all hazards that ***rope access technicians*** or others may be exposed to during the course of work.

9.9.2. Modifications to the work method and/or controls shall be identified to either eliminate the identified hazards, or to mitigate the associated risks to an acceptable level.

9.9.3. If new hazards arise during the course of work, work shall be stopped until appropriate controls have been identified, documented, and implemented.

9.9.4. The review of the work method, shall consider, at a minimum:

9.9.4.1. The time required for the work at any one location.

9.9.4.2. Whether adjacent work may affect the planned work.

9.9.4.3. Whether providing security to the ***anchorage*** location is warranted.

9.9.4.4. Whether any public safety provisions are required.

9.9.4.5. Hazards associated with the use of tools, work equipment, and materials required for the work.

9.9.5. The review of the work environment shall consider, at a minimum:

9.9.5.1. Adverse weather.

9.9.5.2. The effects of wind on ***rope access systems***, positioning, and work environment.

9.9.5.3. Lock out tag out (LOTO) requirements.

9.9.5.4. Potential loose material.

9.10. Special permits

9.10.1. Special permits shall be determined by the work being conducted.

9.10.2. Special permits include:

9.10.2.1. Confined space.

9.10.2.2. Hot work.

9.10.2.3. Live electrical work.

9.11. ***Rescue*** Plan

9.11.1. The work method and risk assessment shall be reviewed to identify where ***rescue*** could be required.

9.11.2. Modifications to the work method and/or controls should be identified to facilitate prompt rescue.

9.11.3. The ***rescue*** plan shall provide procedures for prompt ***rescue*** from these foreseeable scenarios in accordance with Section 16.

10. Work Zones

10.1. ***Hazard Zone***

10.1.1. A ***hazard zone*** shall be identified, established, and maintained.

10.1.2. A ***hazard zone*** should be marked or blockaded to warn ***rope access technicians*** and others, including the public, of hazards associated with the work being performed.

10.1.3. Appropriate personal protective equipment, including helmets, shall be used by anyone in the ***hazard zone***.

10.2. ***Fall Zone***

10.2.1. ***Fall zones*** shall be identified and established.

10.2.1.1. The ***fall zone*** extends a minimum distance of 2 m (6.6 ft) from any unprotected edge.

10.2.2. A ***fall zone*** should be marked or blockaded to warn ***rope access technicians*** and others, including the public, of the risk of a fall.

10.2.3. No one shall enter the ***fall zone*** without appropriate fall protection.

10.2.3.1. Fall protection shall be used in a ***fall zone*** when not ***on-rope***.

10.2.3.2. Fall protection shall meet the requirements of any ***presiding regulatory authority*** where work is conducted.

10.2.3.3. ***Anchorage systems*** should be established outside the ***fall zone*** so that the ***rope access technicians*** can establish their ***rope access systems*** before entering the ***fall zone***.

11. Communication Plan

11.1. An effective communication plan shall be established prior to beginning work and shall remain effective for all the time that work is actively taking place.

11.2. Electronic communication systems should be utilized.

11.2.1. These communication systems shall be compatible with the work environment.

11.3. Hand or whistle signals shall be reviewed prior to beginning work to ensure understanding by all members of the work team.

12. Rope Access Systems

12.1. ***Anchorage Systems***

12.1.1. ***Anchorage systems*** used as the primary support within a ***main*** or ***backup system*** shall have a minimum strength of either 12 kN (2700 lbf), or two times the maximum arrest force of the ***backup system*** when used in accordance with manufacturer specifications, whichever is greater.

12.1.2. A minimum of two ***anchorage systems*** shall be used to establish the ***main*** and ***backup systems***.

12.1.2.1. One ***anchorage*** may be used to establish multiple ***anchorage systems***.

12.1.2.2. ***Main*** and ***backup systems*** should utilize independent ***anchorage systems***.

12.1.3. ***Anchorage systems*** shall accommodate the range of direction of pull.

12.1.4. ***Anchorage systems*** shall be protected appropriately.

12.1.5. Load-sharing ***Anchorage Systems***

12.1.5.1. Load-sharing ***anchorage systems*** may be used to:

12.1.5.1.1. Utilize multiple ***anchorages*** to achieve the required ***anchorage system*** strength.

12.1.5.1.2. Achieve a desired direction of pull or ***fall line***.

12.1.5.2. Load-sharing ***anchorage systems*** should distribute forces appropriately between the anchorages.

12.1.5.3. A table of loads applied to ***anchorage systems*** where the forces are distributed equally based on the interior angle is provided in Table 1.

12.1.6. ***Directional Anchorage Systems***

12.1.6.1. The minimum strength of a ***directional anchorage system*** is determined by:

12.1.6.1.1. The interior angle created by the rope passing through the ***directional anchorage system***.

12.1.6.1.2. The anticipated load.

12.1.6.2. A table of loads applied to a ***directional anchorage system*** based on the interior angle is provided in Table 2.

12.2. ***Two-Rope Systems***

12.2.1. ***Two-rope systems*** should be installed in a manner that minimizes lateral movement along sharp and/or abrasive surfaces.

12.2.2. ***Two-rope systems*** shall be installed in a manner that if a component of one system were to fail, there would be minimum pendulum swing.

12.2.3. Rope and/or edge protection shall be used when appropriate.

12.2.3.1. Consideration should be given to protect each rope individually from any potential damage.

12.3. ***Backup Systems***

12.3.1. A ***backup system*** shall be used with any ***main system***, with the exception of dual ***main systems***, discussed in Section 12.4.

12.3.2. ***Backup systems*** shall be designed and implemented to:

12.3.2.1. Minimize free fall distance and clearance requirements.

12.3.2.1.1. Free fall distance refers to the distance fallen before the engagement of the ***backup system***.

12.3.2.1.2. Clearance requirements are determined from the total fall distance including free fall, deceleration distance of the ***backup system***, rope stretch, and harness stretch.

12.3.2.2. Limit the arrest force on the user.

12.3.2.2.1. Both maximum and average arrest force should be considered.

12.3.3. ***Backup systems*** shall be separately fixed to an appropriate harness attachment point.

12.3.4. The ***backup system*** may be attached to the same harness attachment point as the ***main system***.

12.3.5. ***Fixed backup systems*** shall be attached to ***anchorages*** meeting the requirements of Section 12.1.

12.4. Dual ***Main Systems***

12.4.1. Utilizing dual ***main systems***, where two systems are used to share the load, is an acceptable technique when the ***anchorage systems*** for each ***main system*** are separated horizontally by no more than 1 m (3.2 ft), and the interior angle from the load to the ***anchorage systems*** is less than 90 degrees.

12.4.2. Dual ***main systems*** are typically used in:

12.4.2.1. ***Aid climbing***.

12.4.2.2. Interchanging the ropes within a ***two-rope system*** as ***main*** and ***backup systems***.

12.4.2.3. Long descents.

12.4.2.4. Long lowering or raising applications.

12.4.3. If a single piece of equipment is used to support the load in this scenario, a ***backup system*** shall be incorporated within the ***two-rope system***.

13. Rope Access Equipment

13.1. General:

13.1.1. Rope access equipment used in any system shall be compatible.

13.1.2. Rope access equipment should be utilized according to the manufacturer's instructions and recommendations.

13.1.3. Rope access equipment shall not be utilized in ways that are expressly prohibited by the manufacturer.

13.1.4. Rope access equipment shall be suitable and functional in the environment in which it is used.

13.1.5. Rope access equipment shall have features that prevent inadvertent detachment or removal from the rope under normal use.

13.1.6. Rope access equipment shall have features that minimize damage to the rope under normal use.

13.2. Standards:

13.2.1. Rope access equipment shall satisfy the requirements of the ***presiding regulatory authority*** where work is conducted.

13.2.2. If rope access is not directly regulated by a ***presiding regulatory authority***, rope access equipment should conform to standards relevant to the intended use.

13.3. Rope Access Equipment Management:

13.3.1. Documentation provided with rope access equipment by a manufacturer should be retained.

13.3.2. Rope access equipment shall be inspected, maintained, and retired in accordance with manufacturer's specifications.

13.3.3. Rope access equipment inspection history should be documented from purchase to retirement.

13.3.4. Inspection of rope access equipment in service shall be documented, at a minimum, annually.

13.3.5. A functional inspection of rope access equipment shall be performed before each use to confirm serviceability.

13.3.6. Rope access equipment on the worksite shall be protected from damage and maintained in a safe condition throughout the course of work.

13.3.7. Rope access equipment that does not pass inspection, or has potentially sustained damage, shall be removed from service until it can be established that such equipment is safe for use or is permanently removed from service.

13.4. Backup Devices:

13.4.1. Backup devices shall be intended for rope access use.

13.4.2. A backup device shall be maintained in a position as high as practical.

13.4.3. A backup device should be maintained in a position of ***limited free fall potential***.

13.4.4. A backup device should be suitable for use in rescue.

13.5. Harnesses:

13.5.1. Harnesses shall be of the full body type.

13.5.1.1. If a two-piece full body harness is used, it should be certified as a full body harness.

13.5.2. Harness attachment points should have a ***minimum breaking strength*** of at least 16 kN (3600 lbf).

13.5.3. Rope access harnesses should have, at a minimum, two attachment points:

13.5.3.1. Sternal: Upper frontal attachment point typically used for establishing a ***backup system***.

13.5.3.2. Ventral: Lower frontal attachment point typically used for establishing a ***main system***.

13.5.4. Harnesses should be intended for prolonged suspension use while allowing unhindered operation of other equipment and tools.

13.5.5. Harnesses should be compatible with a work seat.

13.6. Connectors:

13.6.1. ***Carabiners*** used to support human loads shall be of a locking type (e.g. screw-gate or auto-locking gate).

13.6.2. Connectors should have a ***minimum breaking strength*** in the designed direction of loading of at least 22.2 kN (5000 lbf).

13.7. ***Descenders***:

13.7.1. ***Descenders*** shall allow for controlled descent and braking.

13.7.2. ***Descenders*** should be appropriate for the length of the descent.

13.7.3. ***Descenders*** should enable the user to stop and work hands-free.

13.7.4. For long descents, consideration should be given to the effects of rope-weight and heat dissipation on ***descender*** performance.

13.7.5. Consideration should also be given to reducing cumulative twisting of the rope.

13.8. ***Ascenders***:

13.8.1. ***Ascenders*** shall require two or more deliberate actions by the user to be removed from the rope.

13.8.2. ***Ascenders*** shall not slip under normal use.

13.8.3. ***Ascenders*** should be easily adjustable when moving up and down the ***main rope***.

13.8.4. ***Ascenders*** should be suitable for specific use (e.g. mounted sternally).

13.8.5. ***Ascenders*** should have attachment points for device lanyards and other devices.

13.9. Ropes:

13.9.1. Ropes shall be made from synthetic fibers.

13.9.1.1. Examples of synthetic fibers include nylon, polyester, and aramid fibers.

13.9.2. Rope should have a ***minimum breaking strength*** of at least 22.2 kN (5000 lbf).

13.9.3. Ropes should be selected which have an outer sheath that resists undue wear from edges and system components and tight enough to resist the ingress of dirt and grit.

13.9.4. Ropes should be ***Static*** or ***Low Stretch***.

13.9.4.1. In special circumstances, it may be appropriate to use ***dynamic rope*** in place of ***static*** or ***low stretch rope***.

13.10. Lanyards:

13.10.1. Lanyards should have sewn terminations or be terminated with an appropriate knot.

13.10.2. Lanyards should be as short as practical in order to minimize free fall potential.

13.10.2.1. The length of a lanyard used within a ***backup system*** should be no longer than 1.0 m (3.2 ft).

13.10.3. The ***minimum breaking strength*** of a lanyard should be at least 18 kN (4047 lbf).

13.10.3.1. If knots are used in a lanyard, the ***minimum breaking strength*** of at least 18 kN (4047 lbf) should be maintained after knots are tied.

13.11. Helmets:

13.11.1. Helmets shall have a chinstrap or other retention system to prevent the helmet from coming off the head, whether the user is upright or inverted.

13.11.2. Helmets shall properly fit the user.

13.11.3. Helmets should allow unrestricted vision.

13.11.4. Helmets should have features to mount accessories such as a visor or headlamp.

13.12. Pulleys

13.12.1. Pulleys should be specifically intended for use within ***rope access systems***.

14. Tools, Work Equipment

14.1. All tools and work equipment shall be suitable for the rope access work intended and compatible with the ***rope access systems***.

14.2. Tools and work equipment attached to the ***rope access technician*** or ***rope systems*** shall not impair the function of the ***main*** or ***backup systems***.

14.3. Appropriate steps shall be taken to prevent tools and work equipment from being dropped or falling.

14.3.1. Tool tethers shall be used when possible.

14.4. Tools and equipment more than 10 kg (22.1 lb) in mass should be suspended with a separate ***rope system*** secured to an independent ***anchorage system***.

14.4.1. ***Anchorage*** and ***rope systems*** used for equipment should be clearly identified to avoid confusion with those used to support persons.

14.4.2. When significant risk of harm to personnel or property from component failure of a ***rope system*** suspending or transporting tools, work equipment, and/or materials exists, a ***backup system*** should be considered.

14.5. Moving parts of tools should be kept clear of the ***rope access technician***, the ***rope access systems***, and power cables.

14.6. Power tools that could cause injury to the ***rope access technician*** or ***rope access systems*** shall be fitted with an automatic shut off switch.

14.7. Appropriate grounding and ground fault circuit interruption shall be provided for as necessary.

14.8. Power cables shall be adequately supported and secured.

15. Use of Suspended Work Platforms in Conjunction with Rope Access

15.1. A suspended temporary work platform should be utilized if a ***rope access technician*** may be suspended at work for an extended period of time.

15.2. When such platforms are used in conjunction with rope access methods, the ***anchorage systems*** for the platform should be independent of those used for the ***main*** or ***backup systems***.

15.3. If a work seat is used, it shall be fitted in a manner that does not interfere with the harness' connections to the ***main*** or ***backup systems***.

16. Rescue and Emergency Services

16.1. Rescue procedures shall include, at a minimum:

16.1.1. Personnel requirements.

16.1.2. Contact information of appropriate emergency services.

16.1.3. Provision to ensure arrival of emergency services at the appropriate location.

16.1.4. Required equipment and its location.

16.1.5. Method(s) to ensure prompt rescue.

16.2. Rescue procedures shall consider the level and experience of members of the work team.

16.3. Rescue procedures should utilize ***remote rescue systems***.

16.4. Rescue procedures should utilize ***rope systems*** with an appropriate ***backup system***.

16.4.1. In extenuating circumstances where a ***backup system*** impedes the ability to perform prompt rescue, single ***main systems*** may be utilized.

16.5. Rescue procedures, including self-rescue, should be practiced at regular intervals and before the start of any work in situations that are unfamiliar to the work team.

16.6. Rescues should be performed by ***rope access technicians***.

16.6.1. While a ***rescue service*** may be utilized, ***rope access technicians*** at the worksite are best suited for ensuring prompt rescue.

16.7. Work team members shall perform or manage initial emergency care within the scope of their training.

17. Post-Job Debriefs and Accident Reporting

17.1. Post-Job Debriefs

17.1.1. A documented post-job debrief should be conducted to retain any efficiencies or deficiencies from a rope access job.

17.2. Accident Reporting

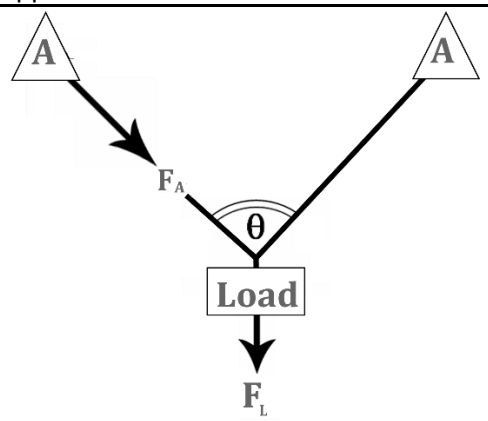
17.2.1. All incidents related to significant injuries to ***rope access technicians*** or damage to property shall be investigated and documented.

17.2.2. Corrective action shall be taken to eliminate the causes of such incidents.

17.2.3. All affected persons shall be informed of the root cause of the incident and of corrective actions taken.

TABLE 1

Forces on a single anchorage in an equally distributed, load-sharing ***anchorage system*** as a function of the applied load.

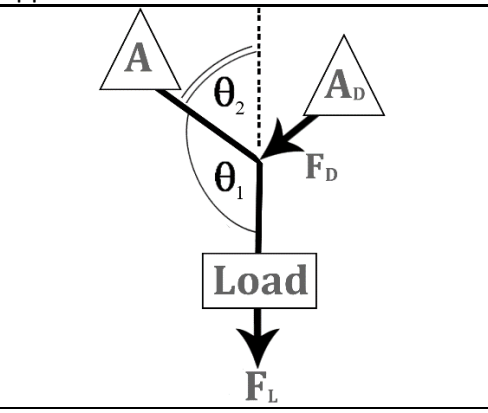


θ	$\%F_A/F_L$
0	50%
30	52%
60	58%
65	59%
90	71%
120	100%
150	193%
160	288%
170	574%

θ: Interior angle at ***anchorage connector***
F_A: Force at ***anchorage***
F_L: Force from applied load

TABLE 2

Forces on a ***directional anchorage system*** as a function of the applied load.



θ_1	θ_2	$\%F_D/F_L$
0	180	200%
30	150	193%
60	120	173%
90	90	141%
120	60	100%
150	30	52%
160	20	35%
165	15	26%
180	0	0%

θ_1: Interior angle at ***anchorage connector***
θ_2: Angle of ***fall line*** displacement
F_D: Force at ***anchorage***
F_L: Force from applied load