



ALBANELLI CEMENT CONTRACTORS, INC.

Safety and Health Program

2024

Safety and Health Policy

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I. LIST OF EXHIBITS

- A. Subcontractors Safety Violation Notice
- B. Supervisor's Accident Investigation Form
- C. Incident Investigation Form
- D. Jobsite Safety Checklist
- E. Safety Orientation Outline
- F. Safety Orientation Worksheet
- G. Right to Know Outline
- H. Right to Know Worksheet
- I. Traffic Control Signals
- J. Subcontractor's Evaluation Form

II. SAFETY PROGRAM GOALS

The goal of this safety program is the prevention of all accidents. An accident, as referred to in this manual, is any unplanned or unintended event that disrupts the orderly process of performing work. All accidents by this definition may result in personal injury, equipment damage, property, or material damage, or a combination of these factors. Accidents also result in loss due to job disruption and loss of productivity. When an accident occurs, the determining factor in the degree of loss is very often luck. Therefore, prevention of all accidents must be the objective of our safety effort, rather than only those situations where the potential for serious loss is perceived.

The effectiveness of this program will depend upon the participation and cooperation of management and employees in carrying out the following basic procedures:

- a. Planning all work to minimize accidents that may result in personal injury, property damage and loss of productive time.
- b. Maintain a system for promptly detecting and correcting unsafe practices and conditions.
- c. Make available and enforce the use of personal protective equipment and mechanical guards.
- d. Maintain an effective system of equipment and tool inspection and maintenance.
- e. Investigate all accidents and near misses, determine cause, and take the necessary corrective action.
- f. Establish educational programs to maintain interest and cooperation of all levels of employment.

III. RESPONSIBILITIES

Management

It is the primary responsibility of management to see that all work is carried out in the safest manner possible. To insure that this responsibility is met, management must take an active role in all areas of the safety program.

Under the Occupational Safety and Health Act of 1970, "each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."

Management recognizes that there are many humanitarian and economic reasons for keeping accidents at an absolute minimum and is prepared to take any and all necessary steps to insure the safety of our employees.

All safety inspection reports submitted by our safety consultant or insurance carrier are reviewed by management. Superintendents and Project managers are required to respond to safety recommendations and copy management on their response.

All accident and near miss reports are monitored by top management. The project supervisor is required to submit a handwritten report to the project manager, which is reviewed by top management on any accident or near miss. A discussion is then held to determine what caused the accident and how to prevent a reoccurrence.

Project Managers

The project managers shall be responsible for providing the personal knowledge, leadership and guidance necessary to insure the implementation and compliance with the safety program.

Project managers shall review inspection reports, accident reports, near miss reports, injury reports, supervisory safety reports, and other documentation to maintain a working knowledge of the safety activities on their jobsites. It is their responsibility to see

that the program as established by management is carried through on their projects. It is imperative that project managers inform subcontractors of Albanelli Cement Contractors, Inc.'s safety program and that they will be expected to comply with our program.

Project managers will respond to any recommendation submitted by our safety consultant or insurance carrier. A copy of this response will be sent to management.

Superintendents

The superintendent is the supervisor directly in charge of the workers on the project. They are responsible for the education, observation, and control of these employees under their jurisdiction. They should insist on compliance with all applicable federal, state, local rules and regulations, as well as all conditions contained in this manual.

The superintendent shall:

1. Reinforce safety policy by words and actions.
2. Enforce the rules and regulations and require use of all safety and personal protective equipment.
3. Educate his crew on the relationship of safe working habits as they are related to their day-to-day tasks.
4. Educate the employees as to hazards they may encounter on any work prior to their starting this task.
5. Investigate all injuries and near misses and report them on the proper forms to the Project Manager.
6. Attend an OSHA 10 Hour class at least once every two years and maintain a current First Aid/CPR certification.

Employees

The all-important goal of this Safety Program is the protection of employees. To accomplish this goal, it is necessary that the employees become involved in the Safety Program and give it their total cooperation. Some of the general rules that apply to all employees are listed below. For more specific jobsite safety rules see the section titled **Jobsite Safety Procedures**. ***Each employee is primarily responsible for his/her own safety***

1. No employee shall report to work in an intoxicated condition.
2. The introduction, possession, or use of intoxicating beverages, or narcotics on the jobsite is strictly prohibited. (See Substance Abuse Policy/Program)
3. Carrying firearms or explosives on the jobsite without proper company authorization or other violation of any local, state or federal law on company premises is prohibited.
4. Employees must be properly attired for work being performed in accordance with the Occupational Safety and Health Administration requirements. In accordance with this item, shirts must be worn at all times. Sandals or tennis shoes or other inadequate foot protection will not be allowed.
5. No unauthorized person may operate any equipment, including trucks.
6. No person other than the authorized operator is allowed to ride on any piece of equipment.
7. No person may ride in or on any vehicles other than on seats constructed for carrying personnel.
8. Employees may park personal vehicles only in areas designated by the superintendent or foreman.
9. Reckless driving on the site and other acts of indifference and disregard of safety rules will not be tolerated.
10. All employees are required to report all injuries, illnesses and near misses (incidents) to their superintendent or foreman immediately.

11. Striking anyone on the jobsite, with open hand, fist, or object, or engaging in any type of physical altercation with any employee or otherwise threatening intimidation, coercing or interfering with another employee's work is strictly prohibited.
12. Stealing, embezzlement, dishonesty, falsification of records, including but not limited to employment applications or other willful misrepresentation of facts will not be permitted.
13. Gross negligence, gross carelessness or willful acts which result or could result in damage to company property or equipment, and/or injury to other employees will not be tolerated.
14. All employees are required to report any unsafe conditions or practices to their superintendent or foreman.
15. Employees must use all safety devices provided for their protection.
16. Hard hats shall be worn at all times.
17. Good housekeeping depends upon everyone's cooperation. Keep alert for protruding nails, wire, tools, and loose objects under foot. Take a minute to keep your area in safe condition for yourself and for your fellow workers.
18. Harassment in any form (sexual, racial, etc.) on the part of supervisors or employees will not be allowed.

These rules are for your safety and well being on the jobsite, as well as for proper job management. Although the overriding guide to safety on the jobsite is the OSHA 1926 Standards, these rules are included in this program for emphasis. Supervisors are empowered to implement additional safety rules they feel are needed for the protection of workers on their jobsite. Additional safety suggestions will be given full consideration and are encouraged.

IV. PLANNING AND ORGANIZATION

A. Preparation of the Estimate

Include a realistic sum of money for safety requirements in accordance with conditions, safety policies, and owner and regulatory requirements.

B. The Project Manager will provide a copy of this program to all subcontractors bidding on work for us so that they will have a clear understanding of the safety requirements on Albanelli Cement Contractors, Inc. projects

C. Pre-job Planning

Hold planning meeting soon after successful bid to discuss: (The owner representative, general contractor, subcontractors, and their supervisory personnel shall be in attendance at this meeting.)

1. Owner, regulatory agency, and Albanelli Cement Contractors, Inc. safety requirements.
2. Hazards and control measures involving project employees, equipment and materials.
 - a. Personal protective equipment required.
 - b. Equipment safety devices.
 - c. Maintenance procedures.
 - d. Jobsite security
 - e. Material storage, handling and security.
 - f. Ladders, scaffolds, etc.
 - g. First aid and medical requirements including locating nearest clinic or hospital.
 - h. Traffic patterns, road layout and designated parking areas.
 - i. Sanitary requirements.

3. Hazards and control measures involving members of the public and/or their property.
 - a. Public vehicular traffic exposure--need of signs, barricades, flashers, detours, etc.
 - b. Public, pedestrian and children--need for temporary walkways, overhead protection, fencing or other methods of protection and denial of access.
 - c. Utilities--underground and overhead--locating and marking. Ensure that our operations will not expose our workers to energized electric lines.
 - d. Control of water run-off and planning for possible flooding conditions.

D. Job Start up Procedures

1. Planning and Organization
 - a. Have medical facilities been located and coordinated with to provide expeditious treatment of injured workers and provide drug testing.
 - b. Has ordered safety equipment been received?
 - c. Any special conditions that would affect safety requirements.
 - d. Notification utility companies.
 - e. Assure that all pertinent reports, records, federal forms and posters are properly secured.
 - f. Set up employee bulletin board. At a minimum, the board must have all mandated poster required by the Department of Labor and the EEOC.
2. Safety Inspections on Equipment

- a. Verify if equipment has been inspected prior to coming on jobsite. If not, arrange for inspection.
- b. Inspect rented equipment to be sure that it meets Albanelli Cement Contractors, Inc.'s standards.

3. Housekeeping

The first impression that the public will get of Albanelli Cement Contractors, Inc. will probably result from the appearance of our work area. An organized, clean and orderly work area gives the impression of professionalism. Plan storage areas, offices, and parking with orderliness in mind. Instances of disorder are usually the result of following the lines of least resistance and of poor organization. Good housekeeping at all times on all jobs shall be top priority.

E. Visitors

Visitors shall be required to register at the job office prior to entering into the project. Unless visitors have a valid reason for going into the work areas, they should be refused permission. If visitors are allowed on the jobsite, they must be required to wear proper safety equipment.

V. COMPANY FLEET POLICY

1. No company vehicles or equipment will be loaned to anyone including employees of Albanelli Cement Contractors, Inc. without the personal approval of Management.
2. Only Albanelli Cement Contractors, Inc. employees will operate company vehicles and/or equipment.
3. Employees operating company vehicles must have a valid driver's license.
4. The driver is responsible for the safety of passengers and cargo stability.
5. Seat belts will be worn at all times.
6. Obey all speed limits and other traffic signs.
7. Motor must be shut off during refueling.
8. Personnel may not ride in the bed of any truck.
9. A flagman should direct the backing of a vehicle in a congested area.
10. Motor Vehicle Records will be checked on all drivers of company vehicles on an annual basis.
11. M.D.O.T. & MUST – Random Drug testing
12. Any motor vehicle moving violations such as a speeding fine will be at the expense of said violator.

VI. JOBSITE SAFETY PROCEDURES

In order to make our jobsites as safe as possible, the following procedures will be in effect on all projects. These are minimum requirements and supervisors are empowered to implement additional requirements as necessary to ensure the safety of workers on the jobsite. The overall guide to safety rules will be the OSHA 1926 standards. These rules are reinforced here for emphasis.

A.C.C. will appoint “competent persons” to handle certain exposure areas such as excavations, fall protection, and scaffolding. These persons are experienced employees who have had training in these exposures and know how to properly manage these operations. They also have the authority to take prompt corrective action if unexpected hazards arise.

1. GENERAL ITEMS

- a. Consumption of alcoholic beverages during working hours is prohibited. Workers should abstain from consuming alcohol for at least four hours before work. (see substance abuse policy)
- b. No horseplay.
- c. Proper work clothes are required.
- d. Smoking is allowed in the designated areas only.
- e.

2. HOUSEKEEPING

- a. Keep everything in its proper place.
- b. Put scrap, trash and other waste in the right containers, especially flammables.
- c. Do not bring glass containers on the jobsite.
- d. Clean up tools and work area as your job progresses.
- e. Keep all material, tools and equipment in a stable position (tied, stacked or choked) to prevent rolling or falling.

- f. Maintain clear access to all work areas.

3. TOOLS AND EQUIPMENT

a. General

- i. Operate equipment and tools only if you are trained in their use and authorized to do so.
- ii. Tools or guards are not to be altered.
- iii. All equipment, tools, cables, slings, cords, etc. shall be inspected before each day's use and monitored during use. Any found to be defective shall be taken from service immediately and reported to your foreman or superintendent.
- iv. Tools are to be used only for their designated purpose.
- v. Personal tools are subject to inspection at any time. Any found defective or unsafe shall be immediately removed from service. Personal tools lost or stolen from a jobsite will not be replaced by A.C.C.

b. Electric Tools

- i. Electric power operated tools shall either be approved double insulated or be properly grounded and used with ground fault circuit interrupters on all jobsites.
- ii. Electric cords shall not be used for hoisting or lowering tools.
- iii. Tools or extension cords that are frayed or have ground prongs missing shall not be used. Cords must be appropriately rated and insulated.

c. Powder-Actuated Tools

- i. Only employees who have been trained in the operation of the particular tool in use shall be allowed to operate a powder-actuated tool.
- ii. Powder-actuated tools shall be operated in accordance with Section 1926.302(e) of the OSHA Standards.

- iii. Eye protection and hearing protection will be worn by employees operating powder-actuated tools and by other employees working in near proximity to powder-actuated tool operations.

d. Hand Tools

- i. Wrenches shall not be used when the jaws are sprung to the point that slippage occurs.

- ii. Impact tools, such as chisels and drift pins, shall be kept free of mushroomed heads.
- iii. The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight in the tool.
- iv. "Cheaters" shall not be used to increase the tool's capacity.

4. RIGGING

- a. Know capacities and proper use of chain falls, come-alongs, chokers, shackles and clamps.
- b. Cable clamps shall be applied so that the "U" section is in contact with the dead end of the cable.
- c. Stay out from under and in front of loads on cranes, etc. Do not cause or permit a load to be carried over a worker who is unaware of it or cannot get clear.
- d. Know proper hand signals for signaling cranes and be sure only one person is signaling the operator at one time. Anyone signaling the crane or rigging loads must be properly trained.
- e. Crane signal person shall be identified by wearing a reflective vest.

5. FALL PROTECTION

- a) Application – This section applies to all fall exposures except those covered by Subpart L (Scaffolding) and Subpart X (Stairways and Ladders). These exposures have their own standards.
- b) Training
All workers exposed to potential fall hazards must receive training concerning those exposures and the means that will be used to protect them from falls. If they use

personal fall arrest systems, they must be trained in the proper wearing, fitting and maintenance of those systems. This training must be documented.

c) Personal Fall Arrest Systems

Safety harnesses and shock absorbing lanyards shall be used when working on suspended scaffolds, within six feet of the edge of an unguarded flat roof, elevated slab or opening; on sloping roofs; and on any elevated work location 6 feet high or higher from the ground or floor where guardrails are not provided. Safety belts will not be used for fall protection. Anchor points must be capable of supporting 5000 lbs per worker attached.

d) Barricades/Guardrails/Covers

- i. Barricades are needed for excavations, near roof edges, around overhead work and similar areas.
- ii. Hole covers or barricades must be placed at all floor openings. (2" or more)
- iii. Standard guardrails must be installed around any open sided floor 6' or more above the ground or adjacent floor. If you must remove this guardrail for any reason, replace it when you are finished.
- iv. Floor holes or openings must be guarded or covered. If you must remove these guardrails or covers, replace them. Covers must be secured in place and be marked "hole" or other similar warning.
- v. Guardrails will be 42" high (+ or - 3") with a midrail approximately 21" above the floor. If there are workers below that may be exposed to objects falling on them, a toeboard is necessary. The top rail shall be able to support 200 lbs. of pressure in any direction except up.
- vi. If the erection of a guardrail is not practical, the workers must use a personal fall arrest system as outlined in A above.

6. LADDERS

- a. Straight and extension ladders must be tied off at a 4V:1H ratio. The top of the ladder must extend 3' above the landing and the ladder must be secured to the structure.
- b. Stepladders must be fully opened and set level.

- c. Work facing the ladder with both feet on the rungs.
- d. Stay off the top two steps of stepladders.
- e. Never use two stepladders as supports for scaffold boards.
- f. Only one employee at a time will be permitted to work on a ladder.

7. SCAFFOLD REQUIREMENTS

- a. Scaffolds shall be erected on sound, rigid footing, capable of carrying the maximum intended load without settling or displacement. Base plates and mudsills will be used. An appointed "competent person" must supervise the erection. This person will also inspect the scaffold daily to ensure that it is in safe working order.
- b. All workers that use a scaffold must be trained in the proper way to work on the scaffold, including safe means of access and egress. This training must be documented.
- c. Scaffolds and their components shall be capable of supporting, without failure, at least 4 times the maximum intended load.
- d. Guardrails shall be installed on all open sides and ends of platforms more than 10 feet above the ground or floor. Toeboards shall be used on mobile scaffolds and on scaffolds where falling objects present a hazard to workers below the scaffold.
- e. There shall be a screen with maximum 1/2-inch openings between the toeboard and the guardrail, where the persons are required to work or pass under the scaffold.
- f. All planking shall be Scaffold Grade or equivalent as recognized by approved grading rules for the species of wood used.
- g. Scaffold planking shall be overlapped a minimum of 12 inches or secured from movement.
- h. Scaffold planks shall extend over their end supports not less than 6 inches nor more than 12 inches.
- i. All scaffolding and accessories shall have any defective parts immediately replaced or repaired.
- j. An access ladder or equivalent safe access shall be provided.

8. Electrical Safety

- a. All temporary 120-volt circuits will be protected by Ground Fault circuit interrupters.
- b. All extension cords will be at least 14 gauge, grounded, and without splices or insulation damage.
- c. Hot work will be performed only as a last resort. Every effort shall be made to conduct the work in an electrically safe condition (dead). These requirements do not apply to circuits under 50 volts.
- d. Work on energized circuits will only be done by “Qualified Employees”
- e. Hot work permits will be utilized on all non-diagnostic hot work.
- f. The requirements in NFPA 70E will be followed during all hot work.

9. EXCAVATIONS

- a. A competent person shall be assigned to each excavation. Direct all questions to him/her
- b. Shore or slope before entering, except in solid rock.
- c. Keep soil back 2 feet from edge.
- d. Ladders or other safe means of access/egress must be provided in trenches within 25 feet of workers.
- e. Excavation walls shall be inspected daily, after rain and snow storms, after thawing and freezing or any other weather conditions which may cause a change in the excavation.
- f. Do not enter an excavation that does not appear safe.

VII. OFFICE SAFETY

There are many ways that accidents can occur in an office, but the two primary sources are falls and repetitive motion injuries. Falls occur due to numerous reasons, including poor housekeeping, slippery sidewalks, and carrying loads that obstruct your view. Repetitive motions injuries are hard to predict and control, but they can be managed. Designing workstations to fit the user and using proper posture are key elements in the prevention of these injuries. Below are some office safety rules that will make our office environment safer.

General Rules

1. Do not block your view by carrying large or bulky items; use a dolly or hand truck or get assistance from a fellow employee.
2. Store sharp objects, such as pens, pencils, letter openers or scissors in drawers or with the points down in a container.
3. Use a ladder or step stool to retrieve or store items that are located above your head.
Do not climb on chairs
4. Do not store or leave items on stairways or walkways.
5. Sidewalks, parking lots and other walking surfaces should be kept clean and free of slipping hazards. Each office should maintain a bag of ice melt for icy conditions.
6. Do not run on stairs or take more than one step at a time.
7. Use handrails when ascending or descending stairs or ramps.
8. Do not jump from ramps, platforms, ladders or step stools.
9. Obey all posted safety and danger signs.

Workstations

1. Chairs should be adjusted so that the user has both feet on the ground.
2. Chairs that recline should be locked in the upright position while working on computers.
3. Keyboards should be positioned so that they are approximately the same height as your elbows. Wrist pads are helpful.
4. Monitors should be positioned so that the top is just below eye level.
5. Never open more than one file drawer at a time.
6. Put heavy files in the bottom drawers of file cabinets.

Fire Safety

1. Do not use temporary extension cords on a long-term basis.
2. Do not use temporary space heaters unless they are equipped with safety switches that turn the heater off if it is turned over.
3. Do not use extension or power cords that have the ground prong removed or broken off.
4. Remove trash on a regular basis.
5. Do not store flammable materials in the office unless they are in an approved fire cabinet.
6. Every office should have at least one ABC fire extinguisher rated at least 4A 60BC. Extinguishers should be mounted near a major entrance. Travel distance to an extinguisher must not exceed 75'.

VIII. HIRING PROCEDURES

1. Require applicant to complete an application prior to receiving 1st paycheck.
2. Require applicant to show their driver's license, Social Security card and Union Verification (If applicable) to verify information on the application.
3. Discuss the duties of the job being applied for to insure that the applicant knows exactly what will be expected of them and that they are physically qualified for the position.
4. Insist that names and phone numbers of references are provided.
5. If the applicant is unknown to you, call at least one former employer (preferably someone you know) before the worker is hired.
6. If there is a possibility the applicant will be driving a company vehicle, obtain the following from his driver's license:
 - A. full name as it appears on the license
 - B. full address
 - C. date of birth
 - D. license number
 - E. expiration date
7. Completion of the Immigration and Naturalization documentation form (I-9) is necessary.
8. If hired, discuss employee safety manual and the importance of these rules. Discuss the requirements of our substance abuse program. Have them fill out the receipt in the back of booklet and put it in his personnel file.
9. Employee should be furnished with personal protective equipment required for the position for which he was hired.
10. Conduct a new employee orientation using Exhibits E through H.(see next section of manual for training requirements)
11. Contact the office to schedule a formal safety training class for the new hire with our safety consultant.

IX. TRAINING PROGRAMS

1. New Employee Orientations

All new employees will be oriented to their job by their supervisor using the new employee orientation outline (Exhibit E) and the safety orientation worksheet (Exhibit F). They will also be provided with an employee safety manual that can be used as a guide to this training. New employees will also be provided training by our consultant. When a new employee is hired, contact the office to schedule this training as soon as possible.

2. "Right to Know" Program

Each employee should be instructed in the hazards involved in the use of any chemicals prior to his starting work. They should also be informed of the company's "Right to Know" program and it's location.(use Exhibits G and H)

3. Safety Training Meetings

Safety training meetings will be held on a regular basis. These meetings can be a very valuable asset in training employees in safe working procedures. When the superintendent or foreman holds these meetings, the employee understands those individual's feelings toward safety. "Weekly toolbox talks will be conducted by a Project Manager or a Superintendent.

4. Safety and Health Program

This safety and health program should be available to all levels of supervision for their reference. You should also have a copy of either the U.S. Department of Labor, or the Tennessee Department of Labor Occupational Safety and Health Standards 1926. Each employee will be provided an "Employee Safety Manual."

5. Certain types of work require specialized training, such as lockout/tagout, confined spaces and respirator use. This training will be coordinated through our safety consultant and provided before workers are exposed to any unusual hazards.

X. CRISIS MANAGEMENT PLAN

In case of an accident of emergency, follow these policies. The team leader or foreman will comply with the following:

- 1) Call 911 – Give brief description of accident/emergency and location of job site.
- 2) Provide immediate first aid to injured individuals.
- 3) Secure the affected area; resist entry to the job site.
- 4) Do an employee head count to make sure everyone is accounted for.
- 5) Call Safety Director = **Rey Reyna at (248) 417-4817**, who will then call management.
- 6) Shut down entire job (work with site Superintendent/P.M. on site).
****Employee safety is more important than any job schedule****
- 7) Call corporate officers and inform them of accident/emergency.
****Also report if any of our Subcontractors were injured****
- 8) Get written statements from witnesses.
- 9) Set up assembly area and evacuation plan for employees.
- 10) Resist temptation to speculate and talk about what happened until the facts are known.
- 11) Inform everyone that counseling is available, if needed.

XI. ACCIDENT/NEAR MISS INVESTIGATION, REPORTING AND RECORDS

A. Purpose

Accident investigation is carried out to determine the cause of the accident so that appropriate actions can be taken to prevent a reoccurrence and to protect our interest in the case of litigation. Remember, the purpose of accident investigation is FACT FINDING, not fault finding.

B. Responsibility

1. The Project Manager or Superintendent is responsible for investigation of accidents occurring on his jobsite and for corrective measures necessary to prevent reoccurrence.
2. The Project Manager is responsible for reviewing the facts of the person that conducted the investigation and seeing that the corrective measures required are put into effect.

C. General procedures for all accidents:

1. Provide immediate first aid or medical care for the injured.
2. Report all accidents and near misses to the main office by telephone immediately. Follow up with written report and daily logs

D. Employee accidents on the jobsite

1. The foreman should initiate his investigation as soon as possible using Supervisors Accident Investigation Form (Exhibit B). Also, pictures should be taken of the scene.
2. All witnesses and the victim (if possible) should be interviewed as soon as possible. Interviews should be done individually, not as a group. Written statements should be taken if deemed appropriate.
3. Corrective measures should be implemented immediately.

E. Vehicle accidents

1. Contact police if on public road
2. Gather necessary data as required to complete the forms contained in the glove compartment of the vehicle.
3. Ascertain to what doctor or hospital the injured parties may have been taken.
4. Contact main office immediately.
5. Submit the written report as soon as possible (always on the same day as the accident).
6. Never make or allow anyone else to make a statement admitting liability or responsibility. This could compromise your insurance coverage.
7. If employee is at fault they will pay the cost.

F. Public Liability (accidents involving non-employees)

1. Call an ambulance if needed.
2. Call the police.
3. Contact project superintendent and the main office.
4. Get names and phone numbers of witnesses.
5. Draw diagrams, take photos, or gather any other pertinent information.
6. Get written or taped statements from witnesses (facts tend to change if these statements are not taken immediately).
7. MAKE NO STATEMENT TO MEDIA. Refer them to the main office.

XII. SERIOUS/FATAL ACCIDENT PROCEDURES

1. Check conditions at the scene and secure the area. Could more injuries occur?
Rope off area as soon as the ambulance leaves.
2. If the police did not respond with the ambulance, call them. They will have to conduct a homicide investigation if a fatality has occurred.
3. Contact the main office and tell them what happened. Tell them that you're going to refer all calls to them and let them know if you have informed the next of kin.
4. Check with police about notifying next of kin. They may do this for you. Check to see if the deceased has a relative or close friend on the job that might assist with the notification.
5. If the jobsite is fenced, send someone to the gate to prevent media and other spectators from entering the jobsite. Give reporters the main office phone number and tell them to contact the main office for information. Be pleasant but firm!
6. Establish two files, one for your records and one for the OSHA inspector. The files should contain:
 - The victim's application for employment.
 - A copy of all safety meetings conducted on this jobsite.
 - A copy of the company safety program.
 - A copy of your OSHA 300 & 300A form.
 - Inspection/maintenance records on any equipment involved in the accident.
 - Photographs of the entire scene.
 - Handwritten statements from witnesses. (Do not put these in the OSHA file, the inspector will conduct his own interviews.)

7. If the accident was a fatality, or required the hospitalization of three or more employees, notify OSHA or the MIOSHA office. Document the call, noting the time and the name of the person that you spoke with. Remember that this must be done within 8 hours of the time of the accident. The MIOSHA number is 312-353-2220 (Region 5). After work hours or in another state you can call the federal notification number, which is 1-800-321-OSHA.

XIII. FIRE PREVENTION AND CONTROL

A well-planned program of organization and control will drastically reduce the exposure and probability of a fire loss. Proper layout and control of fuel storage areas, parts and material storage, burning and disposal areas, etc., is necessary.

Potential losses from fire include damage or total destruction of temporary construction facilities, building materials, equipment and supplies, permanent construction, public property, and human lives. Heavy costs have been incurred when adequate measures for fire prevention and control were not established and maintained. All fire damage, no matter how slight, shall be reported to management immediately.

1. Hazards
 - a. Temporary and permanent heating devices.
 - b. Electrical wiring and equipment.
 - c. Volatile liquids and gas storage.
 - d. Fueling operations.
 - e. Handling flammable roofing compounds.
 - f. Burning refuse.
 - g. Poor housekeeping.
 - h. Welding and burning.
 - i. Spilled grease and oils.
 - j. Spontaneous combustion.
 - k. Explosives, gases and dust.
 - l. Storage of flammable materials.
 - m. Job site trailers
 - n. Outside fuel tanks

2. Methods of Prevention

- a. Stack combustible and noncombustible materials alternately in storage areas.
- b. Separate temporary structures.
- c. Isolate shops, flammable liquids, and gas storage filling stations. Dike around fuel storage tanks.
- d. Use only approved safety cans that meet OSHA requirements.
- e. Do not store gas in shops. Only the amount of oils and grease needed for current work on hand should be kept in the shop.
- f. Do not use gasoline as a cleaning agent.
- g. Store oxygen, acetylene, and LP gas cylinders 20 feet apart. Cylinders not in use shall have protective caps installed, and all cylinders, whether empty or full, shall be secured in an upright position.
- h. Use approved three wire extension cords.

XIV. MEDICAL TREATMENT -- FIRST AID

Medical facilities should be located within close proximity of the jobsite. Whenever possible, one of the clinic-type of facilities should be used. The phone number of the clinic or physician selected must be posted on an emergency phone list located in proximity to the jobsite telephone with directions. Contact should also be made with an ambulance service and this phone number should also be posted on the emergency phone list. When contacting the ambulance service, be sure they understand your location, and if necessary, any special instructions for entering the jobsite should also be given to this service. Also, review the medical card of the injured (If available) and provide pertinent information.

Employees who are taken to medical facilities for treatment of work-related injuries will be accompanied by a supervisor. The supervisor will be responsible for ensuring that the post-accident substance abuse test is conducted. He/she will also be responsible for accurately communicating the Doctors instructions and restrictions to management.

First Aid

If the jobsite is not reasonable accessible in time and distance to a hospital (4 minutes), you are required to have a person trained and certified in first aid/CPR on site.

Every project will have at least one first aid kit with the necessary material for the treatment of minor injuries and the control of blood borne pathogens.

If first aid is provided in the job office, a record shall be made even if the employee does not go on to the doctor.

XV. Heat Exhaustion

As “hot weather” approaches we should be aware of the types, symptoms and factors of Heat Stress Illnesses and proper hydration of our employees. The following information will be used to instruct our employees on potable water consumption and the recognition of heat stress hazards

Portable Water

1. An adequate supply of water shall be provided on all jobsites.
2. A sufficient number of water containers will be kept on each jobsite.
3. Portable water containers shall be capable of being tightly closed.
4. Water shall not be dipped from the containers and the use of a common drinking cup is prohibited.
5. Maintain a supply of new drinking cups, “do not” recycle drinking cups.
6. Provide a cup dispenser at each water station.
7. Provide a trash container in the immediate area of the drinking water to dispose of used cups.
8. Containers shall be inspected and cleaned prior to each workday.
9. The containers should be cleaned with soda, or another approved sanitary cleaner.
10. The jobsite foreman will assign a person to fill the containers at the beginning of each workday and replenish as needed during the course of the workday.
11. Containers lids shall be tightly secured.
12. Discuss with your people the importance of sanitation and cleanliness.

Training

Heat Illness Prevention Training will be provided for supervisors and employees. The content of the training will include, but is not limited to:

- The environmental and personal risk factors for heat illness.
- The employer’s procedures for complying with the required heat illness prevention plan.
- The importance of frequent consumption of small quantities of water.
- The importance of acclimatization.
- The different types of heat illness and the common signs and symptoms of heat illness.
- The importance of employees of immediately reporting to the employer, directly through the employee’s supervisor, symptoms or sign of heat illness in themselves, or in co-workers.
- The employers procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary.
- The employer’s procedures for ensuring that in the event of an emergency, clear and precise location of the work site can and will be provided as need to emergency responders.

Heat Exhaustion – Types, Symptoms and First Aid

Heat exhaustion is the body's response to an excessive loss of the water and salt, usually through excessive sweating. Workers most prone to heat exhaustion are those that are elderly, have high blood pressure, and those working in a hot environment.

Symptoms

Symptoms of heat exhaustion include:

- Heavy sweating / fast and shallow breathing
- Extreme weakness or fatigue
- Dizziness, confusion
- Nausea
- Clammy, moist skin
- Pale or flushed complexion / slightly elevated body temperature
- Muscle cramps

First Aid

Treat a worker suffering from heat exhaustion with the following:

- Have them rest in a cool, shaded air-conditioned area.
- Have them drink plenty of water or other cool, nonalcoholic beverages.
- Have them take a shower, bath, or sponge bath.

Heat Syncope – Types, Symptoms and First Aid

Heat syncope is a fainting (syncope) episode or dizziness that usually occurs with prolonged standing or sudden rising from a sitting or lying position. Factors that may contribute to heat syncope include dehydration and lack of acclimatization.

Symptoms

Symptoms of heat syncope include:

- Light-headedness
- Dizziness
- Fainting

First Aid

Workers with heat syncope should:

- Sit or lie down in a cool place when they begin to feel symptoms.
- Slowly drink water, clear juice, or a sports beverage.

Dehydration – Types, Symptoms and First Aid

Dehydration occurs when the amount of water leaving the body is greater than the amount being taken in.

Symptoms

Symptoms of Dehydration include:

- Fatigue
- Reduce Movement

First Aid

Workers with heat cramps should:

- Increase water intake
- Rest in shade/cool environment

Heat Cramps – Types, Symptoms and First Aid

Heat cramps usually affect workers who sweat a lot during strenuous activity. This sweating depletes the body's salt and moisture levels. Low salt levels in muscle causes painful cramps. Heat cramps may also be a symptom of heat exhaustion.

Symptoms

Muscle pain or spasms usually in the abdomen, arms, or legs.

First Aid

Workers with heat cramps should:

- Stop all activity and sit in a cool place.
- Drink clear juice or a sports beverage.
- Do not return to strenuous work for a few hours after the cramps subside because further exertion may lead to heat exhaustion or heat stroke.
- Seek medical attention if any of the following apply:
 - The worker has heart problems.
 - The worker is on a low sodium diet.
 - The cramps do not subside within one hour.

Heat Stroke – Types, Symptoms and First Aid

Heat stroke is the most serious heat-related disorder. It occurs when the body becomes unable to control its temperature: the body's temperature rises rapidly, the sweating mechanism fails, and the body is unable to cool down. When heat stroke occurs, the body temperature can rise to 106 degrees Fahrenheit or higher within 10 to 15 minutes. Heat stroke can cause death or permanent disability if emergency treatment is not given.

Symptoms

Symptoms of heat stroke include:

- Hot dry skin (no sweating)
- Hallucinations
- Chills
- Throbbing headache
- High body temperature
- Confusion/dizziness
- Slurred speech

First Aid

Take the following steps to treat a work with heat stroke:

- **Call 911** and notify their supervisor / **MEDICAL EMERGENCY.**
- Move the sick worker to a cool shaded area.
- Cool the worker using methods such as:
 - Soaking their clothes with water.
 - Spraying, sponging, or showering them with water.
 - Fanning their body.

Preventative Measures Employees can Take

- Drink small amounts of cool water frequently to prevent dehydration
- Drink throughout the day to relieve thirst and maintain an adequate urine output.
- Plain water is usually adequate without need to take additional salt or minerals beyond those in your diet. A sports beverage can replace the salt and minerals you lose in sweat. (not company provided)
- Wear appropriate clothing.
- During periods of elevated temperature, employees should wear light-colored, lightweight, loose-fitting cotton clothing that allows ventilation of air to the body.
- Protect yourself from the sun by wearing a wide-brimmed hard hat or cap style hard hat, and approved safety glasses.
- Sunscreen – SPF 15 or higher – are also recommended.
- Pace yourself. Start slowly and pick up the pace gradually.
- Stand up or sit down slowly. Flex leg muscle before moving.
- Take time to cool down.
- Rest often in shady areas.
- Take time to acclimate to heat and humidity.

XVI. PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment will be provided to employees for hazards to which they are exposed. The use of this equipment must be consistently enforced in accordance with federal, state, local and company rules. Safety equipment shall never be altered or modified.

A. Hard Hats

Hard hats shall be worn by all employees working on our projects. All hard hats are to be in compliance with federal standards.

B. Safety Glasses

ANSI approved safety glasses with side shields must be worn at all times. Workers with prescription glasses may use these glasses if they are equipped with side shields.

C. Goggles

Goggles shall be worn where there is danger from splashing, chipping, sawing, grinding, cutting, etc., which could result in an eye injury. Face shields: will be worn where full-face protection is required such as working with flying objects produced when cutting or grinding.

D. Welding Helmets

Welding helmets are required for persons doing welding operations.

E. Hearing Protection

To be worn where exposed to high noise levels exceeding 85 dBA over an eight-hour period or short-term exposure to high noise levels such as concrete saws and powder actuated tools. Employees can estimate high noise levels by standing 3' from a fellow employee and trying to communicate without having to raise their voice. If additional volume is necessary, hearing protection should be worn.

F. Respiratory Protection

To be used in accordance with health and safety regulations. Respirators should not be used without consulting with our safety consultant. If employees wish to

voluntarily wear disposable dust masks, they should be provided with a copy of appendix D to the OSHA respiratory standard. A copy is available in the exhibits section of this program.

G. Safety Harnesses, Lanyards and Lifelines

To be worn by persons working at heights where suitable work platforms cannot be provided and as specified under OSHA standards. All harnesses, lanyards, lifelines, etc., must be inspected before each use.

H. Clothing

ASCC issued high visibility clothing: shirts, vests and sweatshirts for construction operations shall be required. Shirts with at least 4" sleeves shall be required at all times, and lightweight canvas shoes shall not be permitted. No shorts, No baggy pants, No sagging, and no inappropriate sayings on shirts (drugs/profanity)

XVII. Job Site Inspection and Auditing

This is to establish a basic inspection/audit program for the elimination of unsafe practices by employees and to establish a hazard free work environment for all employees on the project.

Procedures

Control will be achieved only when trade contractor fulfills their contractual and statutory responsibilities and applies all practical steps to maintain safe and healthful work practices and conditions.

Project Controls

Continued monitoring/audit of the performance of the contractor and their supervision under this section will be made by Albanelli Cement Contractors, inc. Contractors will be notified of any unsafe practices observed.

Supervisory Control Contractor

Each contractor will be responsible for conducting continuous daily surveys of their operations to insure they are aware of the probable sources of potential injury or loss due to unsafe acts of procedures.

Planning

Contractors must extensively plan the procedures followed for each operation using Hazard Analysis procedures.

Personnel chosen to perform any such planned operation shall be thoroughly briefed in all aspects of the procedure, including emergency actions to be taken in the event of a mishap.

Inspections

In addition to inspections performed by the G.C., Insurance representatives, and each contractor, construction activities are subject to periodic inspection by OSHA/MIOSHA Compliance Officers or the Owner's Representative.

Albanelli will forward copies of any and all reports and/or citations received to the G.C. if asked to do so in total confidentiality.

Notification of Hazards

Albanelli will notify the G.C. verbally or in writing of the existence of any hazardous conditions, property, or equipment at the work site, which are not under our control. However, it is our responsibility to take all necessary precautions against injury until corrected by the responsible party.

Equipment and Facilities

All equipment and facilities used shall be inspected and maintained as directed by this manual as dictated by the applicable Federal and State safety regulations. In the event of a conflict, the more stringent requirement will take precedence.

XVIII. EQUIPMENT INSPECTION AND MAINTENANCE

It is of the utmost importance that proper equipment inspection and maintenance programs be conducted on the project to reduce accident exposure.

Inspection and Maintenance Guidelines

1. Planned preventive maintenance and service on equipment shall be performed in accordance with programs and at scheduled intervals.
2. Equipment found to have defects in any critical area which could affect the safe operation of the equipment shall be tagged accordingly and taken out of service until proper repairs have been made.
3. Equipment shall be periodically cleaned to prevent the accumulation of oil, grease, dirt, etc.
4. Maintain records of inspection - use forms provided by manufacturer.
5. Use systems for locking out and tagging equipment that is undergoing maintenance.
6. Require safety equipment and components be maintained in an operative condition (i.e., low air warning devices, back-up alarms, brakes, mirrors, boom stops, etc.). Equipment system safety devices shall not be bypassed or blocked off.
7. Operator complaints on equipment condition shall be investigated and necessary corrective action taken.
8. All hoisting equipment shall be inspected daily and annually. Copies of the inspections shall be maintained in the equipment cab.

XIX. Hazard Communication Program

The Occupational Safety and Health Act (OSHA) requires that each employee potentially exposed to hazardous chemicals be advised of the potential hazards and how to guard against those hazards.

Safety Data Sheets (SDS)

Employees will be allowed access to this information and the specific SDSs for chemicals utilized in their work areas. All questions relating to the program should be directed to the jobsite superintendent or safety representative.

Employee Information and Training

All new and present employees will be given information regarding the requirements of the Chemical Hazard Communication Program the hazardous chemicals present in their workplace, and the physical and health risks of these chemicals. This requirement may be met through orientations sessions provided by the G.C. or owners representative.

Container Labeling

All chemical containers at the site must be clearly labeled as to their contents and the hazards involved. All secondary containers of hazardous chemical are to be clearly labeled with the same information as the original container.

Hazardous Non-Routine and Nearby Work

In the event an employee is assigned to perform or is assigned to work in an area where a hazardous task, non-routine to their work, the employee will be given the additional information and training related to the hazardous chemical which may be encountered in the non-routine task. The information will include the specific chemical hazards of the task, the controls and protective measures required, the nature of the other work being performed in or near their non-routine task, and what emergency procedures are involved with the task.

Chemicals in Unlabeled Pipes, Vessels and Containers

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

Type of chemical in the pipe, vessel or container

Potential hazards

Safety precautions which should be taken

XX. EMERGENCY PROCEDURES

I. Dangerous Weather

A. When conditions are present that could produce dangerous weather, flooding, etc., it will be the supervisor's responsibility to closely monitor the situation and take necessary steps to protect workers, equipment, and materials.

B. Thunderstorms and Tornadoes -- At the first warning of approaching storms preliminary steps shall be taken to secure the jobsite.

1. Loose materials subject to wind damage should be secured.
2. Work on roofs and other elevated surfaces should be discontinued.
3. Equipment such as cranes that are subject to lightening strikes should be secured and evacuated.
4. A protected area should be selected for evacuation should a severe thunderstorm or tornado strike suddenly. This location should be

communicated to all supervisors and employees so that immediate evacuation can take place once the superintendent directs it.

- C. Flooding -- All equipment and materials should be stored in areas that are not subject to flooding. Should the entire project become subject to flooding, the superintendent will use available workers to evacuate equipment and materials from the jobsite as long as he feels it is safe to do so. Salvage efforts shall be discontinued as soon as they become a threat to workers safety.

II. Emergency Spill and Risk Procedures

- A. All hazardous materials should be stored in such a way as to minimize the chance of a leak causing environmental damage. (Covered storage, diking, etc.)
- B. Should a spill occur, the superintendent will direct efforts to temporarily contain and control the leakage, provided those efforts do not jeopardize the safety of the workers involved.
- C. If the spilled materials present an immediate danger to safety or health, work will stop immediately, and the superintendent will contact the local HAZMAT response team to manage the spill. In Metro Detroit, that will be the Metro Fire Department.
- D. Permanent clean up of spills will be done by outside consultants hired by the Main office.

III. Other Emergencies

Any other emergency on the jobsite will be managed through communications between the superintendent and the foremen on the jobsite. If evacuation is necessary the superintendent will direct an assembly point where foremen will be responsible for accounting for their personnel and providing a report to the superintendent.

XXI

Albanelli Cement Contractors, Inc.

Heat-Illness Prevention Plan

This material was produced under grant number SH-05032-SH8 from the Occupational Safety and Health Administration, U.S. Department of Labor. It does not necessarily reflect the views or policies of the U. S. Department of Labor, nor does mention of trade names, commercial products, or organizations imply endorsement by the U. S. Government.

Disclaimers

Occupational Safety and Health Administration (OSHA)

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This heat-illness prevention plan is provided as a resource and not designed to address all work site scenarios and heat stress hazards. It is designed to help employers reduce the development of heat-related illnesses in healthy, physically fit workers. It is not designed to meet state, local or other regulatory requirements on heat stress. It is not designed to protect workers with medical conditions or preexisting conditions that put them at risk of heat-stress. It is recommended that employers medically screen workers prior to work in hot environments, especially when physical exertion is required. It is recommended that employers seek further information on heat stress and prevention using OSHA provided resources and applicable regulations, available both online and via area offices.

Albanelli Cement Contractors, Inc.

Heat-Illness Prevention Plan

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Albanelli Cement Contractors, Inc.

Heat-Illness Prevention Plan

I. INTRODUCTION

The following Heat-illness Prevention Plan was prepared using guidelines provided by the Occupational Safety and Health Administration (OSHA), National Institute for Occupational Safety and Health (NIOSH) and the American Conference of Governmental Industrial Hygienists (ACGIH). This heat-illness prevention plan is provided as a resource and not designed to address all work site scenarios and heat stress hazards. It is designed to help employers reduce the development of heat-related illnesses in healthy, physically fit workers. It is not designed to meet state, local or other regulatory requirements on heat stress. It is not designed to protect workers with medical conditions or preexisting conditions that put them at risk of heat-stress. It is recommended that employers medically screen workers prior to work in hot environments, especially when physical exertion is required. It is recommended that employers seek further information on heat stress and prevention using OSHA provided resources and applicable regulations, available both online and via area offices.

The general approach addresses five (5) key areas of heat-illness prevention, as outlined below.

1. **Training workers and supervisors** on heat-illness prevention strategies, as well as recognizing and reporting the signs and symptoms of heat-related illnesses.
2. **Monitoring weather and workplace conditions.**
3. **Conducting a heat hazard assessment** of common environmental and work-related heat stress factors, when appropriate.
4. **Implementing heat-illness prevention strategies** to reduce heat stress. This includes:
 - a. Reducing worker exposures to heat-stress conditions.
 - b. Establishing an acclimatization program to help workers adapt to working in the heat.
 - c. Ensuring workers are provided adequate water, shade and rest periods.

- d. Monitoring workers for early signs and symptoms of heat stress, including the use of physiological measures of body temperature, recovery heart rate and/or body weight.
5. **Planning for heat-related medical emergencies** and ensuring victims receive prompt medical attention.

II. PURPOSE

This heat-illness prevention plan was developed to provide supervisors and workers with the training and tools to help protect them from heat-related exposures and illnesses.

III. SCOPE

Each work site and job task can be unique and contain a number of heat stress hazards that must be addressed prior to the beginning work and during work activities. Supervisors and workers are responsible for assessing these hazards and taking necessary corrective actions to reduce heat-related illnesses.

IV. DEFINITIONS

Both OSHA and NIOSH provide the following definitions, in their various publications on heat stress and heat stress prevention.

A - G

Acclimatization: The physiological changes that occur in response to a succession of days of exposure to environmental heat stress and reduce the strain caused by the heat stress of the environment; and enable a person to work with greater effectiveness and with less chance of heat injury.

Body Heat Balance: Steady-state equilibrium between body heat production and heat loss to the environment.

Body Heat Balance Equation: Mathematical expression of relation between heat gain and heat loss, expressed as $S = (M - W) \pm C \pm R \pm K - E$

Body Heat Storage (S): The change in heat content (either + or -) of the body.

clo: A unit expression of the insulation value of clothing, $1 \text{ clo} = 5.55 \text{ kcal}\cdot\text{m}^2\cdot\text{h}^{-1}\cdot\text{C}^{-1}$. A clo of 1 is equal to the insulation required to keep a sedentary person comfortable at 21°C ($\sim 70^\circ\text{F}$). It is also sometimes expressed as $1 \text{ clo} = 0.155 \text{ m}^2\cdot\text{C}\cdot\text{W}^{-1}$.

Conductive Heat Transfer (K): The net heat exchange involving the direct transfer of heat via direct contact between two mediums (solid, liquid, or gas) that have a temperature differential.

Convective Heat Transfer (C): The net heat exchange by convection between an individual and the environment.

Evaporative Heat Transfer (E): Rate of heat loss by evaporation of water from the skin or gain from condensation of water on the skin, expressed as $\text{kcal}\cdot\text{h}^{-1}$, $\text{W}\cdot\text{m}^{-2}$, or W .

H to N

Heat Cramp: A heat-related illness characterized by spastic contractions of the voluntary muscles (mainly arms, hands, legs, and feet), usually associated with restricted salt intake and profuse sweating without significant body dehydration.

Heat Exhaustion: A heat-related illness characterized by elevation of core body temperature above 38°C (100.4°F) and abnormal performance of one or more organ systems, without injury to the central nervous system. Heat exhaustion may signal impending heat stroke.

Heat Strain: The physiological response to the heat load (external or internal) experienced by a person, in which the body attempts to increase heat loss to the environment in order to maintain a stable body temperature.

Heat Stress: The net heat load to which a worker is exposed from the combined contributions of metabolic heat, environmental factors, and clothing worn which results in an increase in heat storage in the body.

Heat Stroke: An acute medical emergency caused by exposure to heat from an excessive rise in body temperature [above 41.1°C (106°F)] and failure of the temperature-regulating mechanism. Injury occurs to the central nervous system characterized by a sudden and sustained loss of consciousness preceded by vertigo, nausea, headache, cerebral dysfunction, bizarre behavior, and excessive body temperature.

Heat Syncope: Collapse and/or loss of consciousness during heat exposure without an increase in body temperature or cessation of sweating, similar to vasovagal fainting except that it is heat induced.

Heat Tolerance: The physiological ability to endure heat and regulate body temperature at an average or better rate than others, often affected by the individual's level of acclimatization and physical conditioning.

Humidity, Relative (RH): The ratio of the water vapor present in the ambient air to the water vapor present in saturated air at the same temperature and pressure.

Hyperpyrexia: A body core temperature exceeding 40°C (104°F).

Hyperthermia: A condition where the core temperature of an individual is higher than 37.2°C (99°F). Hyperthermia can be classified as mild (37.2–38.5°C; 99–101.3°F), moderate (i.e., heat exhaustion [38.5–39.5°C; 101.3–103.1°F]), profound (>39.5°C; 103.1°F), or profound clinical hyperthermia (i.e., heat stroke [>40.5°C; 104.9°F]), and death can occur without treatment (>45°C; 113°F).

Metabolism (M): Transformation of chemical energy into free energy that is used to perform work and produce heat.

O to S

Pressure, Atmospheric (Pa): Pressure exerted by the weight of the air, which averages 760 mmHg at sea level and decreases with altitude.

Pressure, Water Vapor (Pa): The pressure exerted by the water vapor in the air.

Qualified Health Care Professional: An individual qualified by education, training, and licensure/regulation and/or facility privileges (when applicable) who performs a professional service within his or her scope of practice in an allied health care discipline, and independently reports that professional service.

Radiant Heat Exchange (R): The net rate of heat exchange by radiation between two radiant surfaces of different temperatures.

Recommended Alert Limit (RAL): The NIOSH-recommended heat stress alert limits for unacclimatized workers.

Recommended Exposure Limit (REL): The NIOSH-recommended heat stress exposure limits for acclimatized workers.

Rhabdomyolysis: A medical condition associated with heat stress and prolonged physical exertion, resulting in the rapid breakdown of muscle and the rupture and necrosis of the affected muscles.

Sweating, Thermal: Response of the sweat glands to thermal stimuli.

T to Z

Temperature, Ambient (t_a): The temperature of the air surrounding a body. Also called air temperature or dry bulb temperature.

Temperature, Core Body (t_{cr}): Temperature of the tissues and organs of the body. Also called Core Temperature.

Temperature, Dew-point (t_{dp}): The temperature at which the water vapor in the air first starts to condense.

Temperature, Globe (t_g): The temperature inside a blackened, hollow, thin copper globe measured by a thermometer whose sensing element is in the center of the sphere.

Temperature, Natural Wet Bulb (t_{nwb}): The wet bulb temperature under conditions of the prevailing air movement.

Temperature, Oral (t_{or}): Temperature measured by placing the sensing element under the tongue for 3 to 5 minutes.

Temperature, Psychrometric Wet Bulb (t_{wb}): The lowest temperature to which the ambient air can be cooled by evaporation of water from the wet temperature-sensing element with forced air movement.

Temperature, Rectal (t_{re}): Temperature measured 10 centimeters (cm) into the rectal canal.

Temperature, Skin (t_{sk}): Temperature measured by placing the sensing element on the skin.

Temperature, Tympanic (t_{ty}): True tympanic temperature is measured by placing the sensing element directly onto the tympanic membrane and recording the temperature. Estimates of tympanic temperature are usually obtained by placing a device into the ear canal close to the tympanic membrane.

Temperature Regulation: The maintenance of body temperature within a restricted range under conditions of positive heat loads (environmental and metabolic) by physiologic and behavioral mechanisms.

Thermal Insulation, Clothing: The insulation value of a clothing ensemble.

Wet Bulb Globe Temperature (WBGT): This is an environmental temperature arrived at by measuring dry air temperature, humidity, and radiant energy (i.e., usually direct sunlight being absorbed by clothing), used to calculate a thermal load on the person.

Work: Physical efforts performed using energy from the metabolic rate of the body.

V. COMPANY POLICY

Albanelli Cement Contractors, Inc. is dedicated to protecting employees from on-the-job illnesses and injuries. All employees have the responsibility to work safely on the job. The purpose of this plan is to supplement our existing safety and health program and to ensure employees recognize heat stress hazards and act appropriately to address those hazards. The general approach addresses five (5) key areas of heat-illness prevention, as outlined below.

Main Elements of Heat-Illness Prevention Plan

Control	Description
1. Train supervisors and workers	Train supervisors and workers on heat-illness prevention strategies, as well as to recognize and report the signs and symptoms of heat-related illnesses.
2. Monitor weather and workplace conditions	Monitor weather workplace conditions and take preventative measures to protect workers when the temperatures exceed 70 °F (21 °C).
3. Conduct a heat hazard assessment when temperatures exceed 70 °F	Determine an effective wet-bulb globe temperature (WBGT-Effective) and use established recommended alert limits (non-acclimatized workers) and exposure limits (acclimatized workers) to determine the level of risk to heat stress.
4. Implement heat-illness prevention strategies	Implement appropriate heat-illness prevention strategies based on established risk levels for heat stress.
5. Plan for heat-related medical emergencies	Ensure adequate supervision, first aid and medical services are readily available in the event a worker suffers from a heat illness.

VI. TRAINING

To ensure workers are prepared to work safely under hot conditions, all employees and supervisors who may be exposed to heat stress and heat-related illnesses will receive training on the following:

Elements of the Company's Heat-Illness Prevention Plan

1. Training
2. Monitoring
3. Hazard Assessment
4. Heat-Illness Prevention Strategies
5. Emergency Preparedness

Risk Factors for Heat Stress

Environmental risk factors for heat stress

1. Temperature
2. Humidity
3. Air movement
4. Radiant heat (e.g., sun exposure)

Work-related risk factors for heat stress

1. Physical exertion
2. Clothing

Personal risk factors for heat stress

1. Age
2. Physical fitness
3. Acclimatization
4. Medical conditions
5. Medications

6. Alcohol and/or drug use
7. Caffeine

How the Body Handles Heat

1. Increased heart rate
2. Increased blood circulation to skin
3. Evaporative cooling from sweating

The importance of acclimatization.

1. Reduces risks of dehydration and salt loss
 - a. Sweating and evaporative cooling becomes more efficient
 - b. Salt loss becomes more efficient
2. Core body temperature maintained more efficiently
3. Reduces strain on heart
 - a. Blood circulation to skin becomes more efficient
 - b. Recovery heart rate improves
4. Human body needs to acclimate to hot environments, typically 10-14 days
 - a. Gradually increase exposure to hot environment over 7-14 days
 - b. Avoid prolonged exertion during hottest times of day
 - c. Schedule heavy exertion for cooler parts of day
5. Acclimatized workers will need 2-3 days of re-acclimatization if they stop working under heat stress conditions more than a week.

The importance of consuming water throughout the work shift

1. One cup (8 oz.) of cool water or an electrolyte replacement fluid every 15-20 minutes; four cups of water every hour.
2. Increased water intake may be needed to account for increased physical exertion and/or sweating.

3. However, too much water intake can be dangerous and lead to headache, nausea, vomiting and/or mental confusion.
4. Physiological monitoring may be necessary under extreme conditions
 - a. If sweat is not trapped within clothing, then we can monitor body weight, which should not drop below 1.5% of starting body weight.
 - b. Urine color is another indicator of potential dehydration.
 - i. Normal urine should be a pale yellow.
 - ii. Use a urine color chart to help determine if you are properly hydrated. Some diets, medications and illnesses may affect results.

The importance of rest breaks and shade throughout the work shift

1. Prolonged physical exertion and muscle activity increases the body's core temperature and reduces the body's ability to cool itself. Short rest breaks are necessary to allow blood to flow to the skin to be cooled.
2. Rest breaks slow down the buildup of heat in the body from prolonged muscle activity.
3. Rest breaks are also important for the heart and allow your heart rate to recover from sustained heat stress and physical exertion.
4. Rest breaks in the shade help with cooling, especially if there is air movement with cool air.

Heat-Related Illnesses

The following information needs to be covered in training on heat-related illnesses, including cause, preventative measures, signs and symptoms, first aid treatment and reporting requirements.

Heat Rash

1. Cause: Irritation of skin due to excessive sweating

2. Preventative measures:
 - a. Wear loose fitting clothing that allows sweat to dissipate
 - b. Wear freshly laundered clothing each day
 - c. Avoid working in sweat soaked clothing for prolonged periods (e.g., change at breaks as needed)
 - d. Wash sweat-soaked areas with mild soap and water and dry thoroughly at breaks and after your shift ends
3. Signs and symptoms:
 - a. Itchy and painful clusters of red blisters
 - b. Common to the neck, chest, groin, armpits and creases of the elbows and knees
4. First aid treatment:
 - a. Move person to a cool location
 - b. Have person take a cool shower
 - c. Thoroughly dry the skin following shower
 - d. Continue to ensure skin is cleaned and dried frequently, especially before and after shifts
 - e. Seek medical treatment if rash persists for more than two days or if rash becomes infected
5. Reporting: Report to supervisor and safety manager

Heat Cramps

1. Cause: Depletion of salt and water in body due to excessive sweating. This is a precursor to more serious heat exhaustion and/or heat stroke.
2. Preventative measures:
 - a. Acclimatization to heat helps reduce salt and water loss
 - b. Drink adequate amounts of water throughout the day
 - c. Salt your foods to taste
3. Signs and symptoms:
 - a. Muscle cramps, spasms and/or pain

- b. Common to major muscles used for work (e.g., arms, legs, abdominal and back muscles)
- 4. First aid treatment:
 - a. Move person to a cool location
 - b. Provide person with an electrolyte replacement fluid to replace lost salt and water
 - c. Seek medical treatment if cramps persist or other heat-illness symptoms develop (e.g., elevated body temperature, elevated heart rate, headache, dizziness, etc.)
- 5. Reporting: Report to supervisor and safety manager

Heat Syncope

- 1. Cause: Prolonged standing or sudden rising from a sitting or resting (supine) position; dehydration can be a contributing factor
- 2. Preventative measures:
 - a. Acclimatization to heat helps reduce dehydration
 - b. Drink adequate amounts of water throughout the day
 - c. Break up long periods of standing with small rest breaks
 - d. Rise slowly from sitting or resting positions
- 3. Signs and symptoms:
 - a. Light-headedness or dizziness
 - b. Fainting
- 4. First aid treatment:
 - a. If he/she is only slightly dizzy and able to move, have two people assist and carefully move to a cool location and have the person lay down on back with feet elevated above heart level; provide small amounts of water
 - b. If the dizziness persists, request immediate first aid and/or medical attention

- c. If he/she fainted, then secure the area, elevate his/her feet above heart level and request immediate first aid and/or medical attention; do not allow him/her to get up quickly or walk about
5. Reporting: Report to supervisor and safety manager

Heat Exhaustion

1. Cause: The body's inability to cool itself, often due to a combination of several factors (e.g., high temperatures, humidity, physical exertion, dehydration, clothing that blocks sweat evaporation and/or alcohol use). This is a serious condition that can lead to a life-threatening heat stroke.
2. Preventative measures:
 - a. Acclimatization to heat helps reduce dehydration
 - b. Drink adequate amounts of water throughout the day
 - c. Take small rest breaks in shade to allow body to recover from heavy physical exertion and heat exposure
 - d. Protect skin against sunburn, which reduces body's ability to cool itself
 - e. If possible, perform heavier physical labor towards cooler part of the day (e.g., early morning or evening)
3. Signs and symptoms:
 - a. Elevated core body temperature of 100.4 to 102.2 °F (38 to 39 °C); oral temperature 99.6 to 101.4 °F
 - b. Weak, but rapid pulse (elevated heart rate)
 - c. Cool, moist skin (person may appear pale with clammy skin)
 - d. Excessive sweating
 - e. Headache and possible irritability
 - f. Fatigue or weakness
 - g. Dizziness and/or feeling faint
 - h. Nausea and/or vomiting
 - i. Decreased urine output

4. First aid treatment:

- a. Seek immediate medical care (call 911)
- b. Immediately help the person cool off
 - i. Move to a cool location
 - ii. Remove or loosen unnecessary clothing
 - iii. Have them drink small amounts of cool water
 - iv. Spray skin with cool water and fan rapidly to increase evaporation and cooling
 - v. Monitor body temperature and continue cooling efforts until body temperature returns to a normal temperature below 99 °F (37 °C).
 - vi. Implement additional heat stroke treatments if body temperature does not decrease below 100 °F (37.8 °C) after 30 minutes or increases above 102 °F (38.9 °C).

5. Reporting: Report to supervisor and safety manager

Heat Stroke

1. Cause: Body is unable to cool itself and regulate core body temperature. This is a serious and life-threatening condition that requires immediate medical attention (call 911).
2. Preventable measures: Same as for heat exhaustion
3. Signs and symptoms:
 - a. Elevated core body temperature above 104 °F (40 °C); oral temperature above 103.2 °F
 - b. Hot, dry skin or heavy sweating
 - c. Mental confusion, agitation and/or irrational behavior
 - d. Clumsiness
 - e. Slurred speech
 - f. Fainting or a loss of consciousness
 - g. Seizures or convulsions

4. First aid treatment:
 - a. Call 911 and seek immediate medical attention for the victim; do not wait as their life depends on getting immediate medical care.
 - b. Provide immediate and aggressive cooling to their body
 - i. Elevate feet above heart level
 - ii. Remove or loosen unnecessary clothing
 - iii. Pack ice in groin and armpit areas
 - iv. Soak skin with cool water and fan rapidly and vigorously to increase cooling of skin
 - v. As an alternative, immerse them in a tub of cool water or spray body with large amounts of cool water
 - vi. Do not give person fluids to drink, especially if unconscious.
 - vii. Monitor body temperature and continue cooling efforts until body temperature returns to a normal temperature below 99 °F (37 °C).
 - c. Administer CPR as needed, if blood circulation or breathing stops, until emergency medical services arrive
5. Reporting: Report to supervisor and safety manager

Rhabdomyolysis

1. Cause: Sometimes caused by a combination of heat stress and prolonged physical exertion, muscle starts to break down and die, releasing proteins and electrolytes into the bloodstream. This is a potentially life-threatening condition affecting the kidneys that requires immediate medical attention.
2. Preventative measures:
 - a. Same as for heat exhaustion and heat stroke.
 - b. Avoid overexertion, such as lifting objects heavier than you can comfortably lift or straining muscles to a point where they can no longer function properly.
 - c. Those with diabetes, thyroid conditions or muscular dystrophy are at greater risk.

- d. Those with a viral infection, such as flu, HIV or herpes, are at greater risk.
 - e. Use of alcohol and illegal drugs, such as heroin, cocaine and amphetamines can increase the risk.
 - f. Some medications, such as such as antipsychotics or statins, can increase the risk.
3. Signs and symptoms:
- a. Muscle cramps, pain and/or loss of range
 - b. Joint pain and/or stiffness
 - c. Swelling of muscles
 - d. Weakness and a decreased ability to perform physical exertion for even a small amount of time
 - e. Dark urine (similar to tea or cola in color)
 - f. If kidney damage and/or failure occurs the following life-threatening indicators may be observed:
 - i. Shortness of breath
 - ii. Irregular heart beat
 - iii. Swelling in the legs and feet
 - iv. Seizures
 - v. Coma
4. First aid treatment:
- a. Seek immediate medical care for the victim (IV fluids and treatments to combat toxic proteins in blood are needed to prevent kidney failure)
5. Reporting: Report to supervisor and safety manager

Heat-illness prevention strategies

When Risk Level is High Incorporate Physiological Monitoring

1. Oral Temperature

- a. It is important to make sure the thermometer is stored in a cool environment and not exposure to temperatures above 95 °F.
- b. Readings should not be taken within 15-minutes of consuming hot or cool liquids and foods or if breathing heavy (mouth breathing).
- c. Oral temperatures should not exceed 99.5 °F.
- d. As a precautionary measure, when the oral temperature is elevated above 99.1 °F, adjust the work-rest schedule to increase the frequency and duration of rest breaks or take other preventative measures.

2. Heart Rate Recovery

- a. The method involves taking an initial pulse rate reading at the beginning of a scheduled rest break. With the worker sitting and resting, an initial pulse rate reading is collected (P1) and if the pulse rate is above 110 bpm, then pulse rate readings are collected at a two-minute (P2) and four-minute (P3) interval.
- b. If the pulse rate does not drop to below 110 bpm during the test, then this indicates heat stress conditions are above an acceptable level. The resting heart rate is too high, which indicates the work rate is too high for the individual.
- c. With a starting pulse rate above 110 bpm, if the difference between two-minute intervals is less than 10 bpm, then this also indicates heat stress conditions are above an acceptable level. The heart rate is not effectively recovering at rest, which also indicates the work rate is too high for the individual. It could also indicate dehydration.
- d. There can be variation among individuals and some may exhibit much lower or higher resting pulse rates. A qualified medical provider should examine individuals with pre-work pulse rates above 100 bpm when at

normal rest. High resting pulse rates could be indicative of an underlying medical condition.

3. Additional Measures to Help Reduce Dehydration

a. Body Weight

- i. Assume that the worker is wearing clothing that will allow sweat to evaporate from the skin and not be trapped within the clothing (e.g., chemical protective and impermeable suits can trap sweat).
- ii. Use a reliable scale that can read body weight within ± 0.25 lbs.
- iii. If body weight reduces by more than 1.5%, then not likely taking in enough water to replace the water lost due to sweating.

b. Urine Color

- i. Urine color can be a good indicator of potential dehydration, which can lead to heat stress and heat-related illnesses.
- ii. In some cases, underlying diseases, medications or even some foods may affect urine color.
- iii. Check urine color against a color chart.
- iv. Normal urine should be a pale yellow. Darker color indicates potential dehydration.

Engineering Controls

1. Reduce physical exertion and physical demands of work through use of powered tools and equipment, especially for tasks involving heavy lifting.
2. Reduce radiant heat loading from the sun or other sources of radiant heat (e.g., furnaces, combustion engines and compressors, hot surfaces, heated transfer lines, windows receiving intense sun, etc.). One effective method is to place line-of-sight, reflective barriers between the heat source and workers. Another method is to insulate hot surfaces, such as furnaces.
3. If air temperatures are below 95 °F, then increase air speed across skin of workers using fans or air movers, to increase evaporative cooling from skin.

4. If air temperatures are above 95 °F, then reduce air speed across skin of workers, to reduce convective heat transfer from air to skin.
5. If humidity is below 50%, then evaporative coolers and portable fans with water mist systems can be used to effectively cool the air by about 10 to 20 °F.
6. Decrease humidity to below 50% to increase evaporative cooling from sweating.

Administrative Controls

1. Adjust work schedule to ensure workers are acclimated to work in hot conditions.
2. Schedule work or work requiring heavy physical exertion during the coolest parts of the day.
3. Modify the work-rest schedule to shorten heat exposure periods by including frequent rest breaks. Shorter, more frequent breaks are more effective than longer, less frequent rest breaks.
4. Encourage adequate water intake at frequent intervals to prevent dehydration (e.g., one 8-ounce cup of cool water or an electrolyte replacement fluid every 15-20 minutes).
 - a. The supervisor or foreman is responsible for making sure drinking water is provided, plus:
 - i. Ensure that water containers are clean and sanitary prior to filling.
 - ii. Ensure water containers are filled at a sanitary location.
 - iii. Provide sufficient disposable cups and a place for disposing cups.
 - iv. Ensure workers do not share cups and dispose of used cups.
 - v. Prohibit workers from opening the cooler top to fill cups and instead have workers use the provided spigot.
 - b. Pure and cool potable water must be made available to workers at no additional cost.
 - i. Do not use water from irrigation, sprinklers or firefighting systems.
 - ii. Do not use water from a garden hose, as it may contain contaminants from the hose and/or bacteria and other microbes.

- c. Water quantities need to be sufficient and at least 1 quart per worker per hour for the entire shift.
 - d. Locate water containers as close as practicable at all times.
 - e. Encourage workers to frequently drink water and not wait until thirsty.
5. Provide a shaded and/or air-conditioned space nearby for rest and water breaks.
6. Train workers on the recognition of the signs and symptoms of heat-induced illness and on heat-illness prevention strategies.
7. Alert workers to extreme heat events or heat stress conditions and provide a short review of the heat-illness prevention strategies for the day.
8. Work in pairs (buddy system) and monitor each other for signs and symptoms of heat stress or illness.
9. Avoid caffeine and alcohol before and during working in a hot environment.
10. Report illnesses or medical conditions that may put them at risk of heat stress (e.g., diarrhea, fever, infection, etc.)
11. Medically screen for work in hot environments.

Protective Clothing and Equipment Controls

1. Provide clothing designed to keep the body cool, such as air, cooled fluid or ice-cooled conditioned clothing.
2. Provide reflective clothing to reduce radiant heat loading from the sun or hot surfaces radiating heat.
3. If air temperatures are below 95 °F and worker is protected from radiant heat, then decrease clothing coverage or layers (when feasible) to increase evaporative cooling from skin. Caution: Do not remove clothing designed to protect workers from chemical, mechanical or other hazards without conducting a proper evaluation to address those hazards.
4. If air temperatures are above 95 °F, then increase clothing coverage to reduce air speed across skin of workers, which can help reduce convective heat transfer from air to skin.

VII. MONITORING WEATHER AND WORKPLACE CONDITIONS

The Safety Manager and supervisors are responsible for monitoring the daily weather and workplace conditions to determine if workers will be exposed to temperatures greater than 70 °F (21 °C). The National Weather Service (www.weather.gov) should be used to monitor weather conditions. Public weather observation alternatives include Intellicast (www.intellicast.com) and Weather Underground (www.wunderground.com). Use the closest weather station to the worksite location.

If the temperatures will exceed 70 °F (21 °C) for more than an hour during the work shift, then a heat hazard assessment needs to be performed. The following additional weather information is required for the heat hazard assessment.

- Air temperature (°F)
- Humidity (%)
- Wind speed (mph)
- Barometric pressure (inches)
- Longitude and latitude
- Cloud cover

VIII. HEAT HAZARD ASSESSMENT

When weather or workplace conditions will exceed 70 °F (21 °C), a heat hazard assessment must be conducted to take into account for environmental and work factors associated with heat stress and heat-related illnesses. Temperature, humidity, wind speed and solar irradiance are environmental factors that must be taken into account. Work factors include metabolic work rate (physical exertion) and clothing. These factors are all accounted for using an effective wet-bulb globe temperature (WBGT-Effective).

Use of a heat index, which only considers temperature and humidity, is not recommended. The heat index does not consider wind speed, radiant heat,

clothing and metabolic heat from physical exertion, which are all factors that can contribute to heat stress and heat-related illnesses.

Instead, a WBGT-Effective and threshold limits established by NIOSH are used to assess risk and recommend effective heat stress controls. Further details and an example on this method are available in the OSHA Technical Manual, Section III, Chapter 4 on Heat Stress (www.osha.gov) and the NIOSH Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments (www.cdc.gov/niosh). The following heat hazard assessment steps and guidelines are provided here and on the site-specific worksheet (Appendix A).

Step 1: Calculate WBGT Using Weather Data

Argonne National Laboratory (ANL) developed a calculator that uses validated and literature-supported algorithmic equations to determine WBGT from National Weather Service weather data. The calculator uses an outdoor WBGT model described by Dr. James C. Liljegren in the *Journal of Occupational and Environmental Hygiene*, published August 2008. This product includes software produced by UChicago Argonne, LLC under Contract No. DE-AC02-06CH11357 with the Department of Energy. The calculator is available as a downloadable zip file from OSHA at:

http://www.osha.gov/dts/osta/otm/otm_iii/wbgtutil.zip

The calculator uses the following required weather and location information to determine WBGT:

- a. Air Temperature (°F) during hottest hour of the work shift
- b. Barometric Pressure (inches of Hg)
- c. Relative Humidity (%) during hottest hour of the work shift
- d. Wind Speed (mph) during hottest hour of the work shift
- e. Date (MONTH DAY, YEAR; e.g., January 1, 2019)
- f. Time (HH:MM AM/PM; e.g., 12:00 PM) during hottest hour of the work shift

- g. Longitude and latitude (degrees) – input in “Options”
- h. Solar Irradiance (W/m²) based on Table 1 below, plus date, time of day and location (longitude and latitude)

Table 1. Estimated Solar Irradiance Based on Cloud Cover

Reported Cloud Cover	Irradiance (W/m ²)
Sunny	990
Mostly Sunny, Partly Sunny/Cloudy Scattered Clouds	980
Mostly Cloudy	710
Cloudy	250

Source: OSHA as adapted from A. Ben Jemaa, et al. (2013) *Energy Procedia*, Volume 42, Pages 406-415.

The data entered into the calculator needs to be accurate to produce an accurate WBGT estimate. This includes time, date, longitude, latitude and barometric pressure, as these are used to adjust irradiance before calculating the WBGT.

The end-result output that will be used in the next steps is the “Wet Bulb Globe Temperature” in units of °F. Record the WBGT and proceed to step two.

Step 2. Add Clothing Adjustment Factor

As recommended by OSHA, the ACGIH Clothing Adjustment Factor (CAF) can be determined from Table 2 below and added to the previous WBGT to produce an effective WBGT value, termed WBGT-Effective. The formula for determining the effective WBGT is:

$$WBGT_{Effective} = WBGT + CAF$$

Table 2. Clothing Adjustment Factors (CAF)

Clothing Worn	CAF (°F)
Work clothes (long sleeves and pants). Examples: Standard cotton shirt/pants.	0
Coveralls (w/only underwear underneath). Examples: Cotton or light polyester material.	0
Double-layer woven clothing.	5.4
SMS (spunbond/meltblown/spunbond) Polypropylene Coveralls	0.9
Polyolefin coveralls. Examples: Micro-porous fabric (e.g., Tyvek™).	1.8
Limited-use vapor-barrier coveralls. Examples: Encapsulating suits, whole-body chemical protective suites, firefighter turn-out gear.	19.8

Source: OSHA Technical Manual as adopted from ACGIH "2017 TLVs and BEIs" and converted to °F.

Step 3. Determine the Metabolic Heat

Select a work category in Table 3 that best represents the workload using the provided examples as a guide. Select the heaviest workload activity to account for the highest metabolic heat for use in the next step, which will help ensure proper controls are in place to protect workers.

Using guidelines provided by OSHA, the formula below was used to adjust estimated metabolic heat (MH) for body weight.

$$MH = \frac{7. \quad \text{Metabolic heat (in WWatts)} \times \text{WWorker body wweight (in lbs.)}}{11111 \text{ lbs.}}$$

Table 3. Work Category Based on Metabolic Work Rates

Work Category	Examples	Estimated Metabolic Heat (Watts) for 154 lb. Person	Estimated Metabolic Rate (Watts) for 200 lb. Person	Estimated Metabolic Heat (Watts) for 250 lb. Person	Estimated Metabolic Heat (Watts) for 300 lb. Person
Light	Sitting, standing, light arm/hand work and occasional walking	233	303	377	454
Moderate	Normal walking, moderate lifting	349	454	565	681*
Heavy	Heavy material handling, walking at a fast pace	465	605*	753*	907*
Very Heavy	Pick and shovel work	580	754*	940*	1131*

Adapted from OSHA Technical Manual, NIOSH Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments, and ACGIH "2017 TLVs and BEIs"

*** These activities are not recommended for persons of this body weight working under heat stress conditions. Special precautionary measures must be taken to reduce physical exertion and continually monitor workers for physiological signs of heat stress (e.g., body temperature and/or heart rate).**

Step 4. Determine Exposure Threshold Limit

A NIOSH recommended exposure limit (REL) is used to establish the exposure threshold for implementation of workplace controls for heat stress in healthy workers already acclimated to work in hot environments. The NIOSH recommended alert level (RAL) is an exposure threshold for use with unacclimatized workers. Use the provided tables and/or formulas to determine the appropriate threshold for later comparison to the WBGT-Effective. If the WBGT-Effective exceeds the REL or RAL temperature, then controls must be implemented to protect workers from heat stress and heat-related illnesses.

Acclimated Workers: Recommended Exposure Limit (REL)

The formula for the calculating the NIOSH REL in °F for acclimated workers working continuously without prolonged rest breaks, where MH is the metabolic heat in Watts, is:

$$8. \quad REL = 1.88 \times (1166.77 - 11.11 \log_{111} MH) + 3333$$

When working for shorter intervals, workers may be able to work in higher temperatures without adverse heat-related health effects. The NIOSH REL is designed to take work/rest schedules into consideration, which are provided below. Use Tables 4 to 7 to determine the REL for different work/rest schedules, work categories and body weights.

Table 4. Recommended Exposure Limit (REL) for Continuous Work

Work Category	Example	REL for 154 lb. Person	REL for 200 lb. Person	REL for 250 lb. Person	REL for 300 lb. Person
Light	Sitting, standing, light arm/hand work and occasional walking	85 °F	83 °F	81 °F	79 °F
Moderate	Normal walking, moderate lifting	81 °F	79 °F	77 °F	75 °F *
Heavy	Heavy material handling, walking at a fast pace	79 °F	76 °F *	74 °F *	73 °F *
Very Heavy	Pick and shovel work	77 °F	74 °F *	72 °F *	71 °F *

Adapted from NIOSH Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments and ACGIH "2017 TLVs and BEIs"

*** These activities are not recommended for persons of this body weight working under heat stress conditions. Special precautionary measures must be taken to reduce physical exertion and continually monitor workers for physiological signs of heat stress (e.g., body temperature and/or heart rate).**

Table 5. Recommended Exposure Limit (REL) for 75% Work & 25% Rest Each Hour

Work Category	Example	REL for 154 lb. Person	REL for 200 lb. Person	REL for 250 lb. Person	REL for 300 lb. Person
Light	Sitting, standing, light arm/hand work and occasional walking	87 °F	84 °F	82 °F	81 °F
Moderate	Normal walking, moderate lifting	84 °F	81 °F	79 °F	78 °F *
Heavy	Heavy material handling, walking at a fast pace	82 °F	79 °F *	77 °F *	76 °F *
Very Heavy	Pick and shovel work	79 °F	77 °F *	75 °F *	73 °F *

Adapted from NIOSH Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments and ACGIH "2017 TLVs and BEIs"

*** These activities are not recommended for persons of this body weight working under heat stress conditions. Special precautionary measures must be taken to reduce physical exertion and continually monitor workers for physiological signs of heat stress (e.g., body temperature and/or heart rate).**

Table 6. Recommended Exposure Limit (REL) for 50% Work & 50% Rest Each Hour

Work Category	Example	REL for 154 lb. Person	REL for 200 lb. Person	REL for 250 lb. Person	REL for 300 lb. Person
Light	Sitting, standing, light arm/hand work and occasional walking	89 °F	86 °F	84 °F	83 °F
Moderate	Normal walking, moderate lifting	86 °F	83 °F	81 °F	80 °F *
Heavy	Heavy material handling, walking at a fast pace	84 °F	81 °F *	79 °F *	78 °F *
Very Heavy	Pick and shovel work	81 °F	79 °F *	77 °F *	75 °F *

Adapted from NIOSH Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments and ACGIH "2017 TLVs and BEIs"

*** These activities are not recommended for persons of this body weight working under heat stress conditions. Special precautionary measures must be taken to reduce physical exertion and continually monitor workers for physiological signs of heat stress (e.g., body temperature and/or heart rate).**

Table 7. Recommended Exposure Limit (REL) for 25% Work & 75% Rest Each Hour

Work Category	Example	REL for 154 lb. Person	REL for 200 lb. Person	REL for 250 lb. Person	REL for 300 lb. Person
Light	Sitting, standing, light arm/hand work and occasional walking	90 °F	88 °F	86 °F	84 °F
Moderate	Normal walking, moderate lifting	88 °F	86 °F	84 °F	82 °F *
Heavy	Heavy material handling, walking at a fast pace	86 °F	84 °F *	82 °F *	80 °F *
Very Heavy	Pick and shovel work	84 °F	82 °F *	80 °F *	78 °F *

Adapted from NIOSH Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments and ACGIH "2017 TLVs and BEIs"

*** These activities are not recommended for persons of this body weight working under heat stress conditions. Special precautionary measures must be taken to reduce physical exertion and continually monitor workers for physiological signs of heat stress (e.g., body temperature and/or heart rate).**

Unacclimated Workers: Recommended Alert Limit (RAL)

The formula for the calculating the NIOSH RAL in °F for unacclimated workers working continuously without prolonged rest breaks, where MH is the metabolic heat in Watts, is:

$$9. \quad RAL = 1.88 \times (1155.55 - 111.1 \log_{111} MH) + 3333$$

When working for shorter intervals, workers may be able to work in higher temperatures without adverse heat-related health effects. The NIOSH RAL is designed to take work/rest schedules into consideration, which are provided below. Use Tables 8 to 11 to determine the RAL for different work/rest schedules and body weights.

Table 8. Recommended Alert Limit (RAL) for Continuous Work

Work Category	Example	REL for 154 lb. Person	REL for 200 lb. Person	REL for 250 lb. Person	REL for 300 lb. Person
Light	Sitting, standing, light arm/hand work and occasional walking	80 °F	77 °F	74 °F	72 °F
Moderate	Normal walking, moderate lifting	75 °F	72 °F	70 °F	68 °F *
Heavy	Heavy material handling, walking at a fast pace	72 °F	69 °F *	67 °F *	65 °F *
Very Heavy	Pick and shovel work	70 °F	67 °F *	64 °F *	62 °F *

Adapted from NIOSH Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments and ACGIH "2017 TLVs and BEIs"

*** These activities are not recommended for persons of this body weight working under heat stress conditions. Special precautionary measures must be taken to reduce physical exertion and continually monitor workers for physiological signs of heat stress (e.g., body temperature and/or heart rate).**

Table 9. Recommended Alert Limit (RAL) for 75% Work & 25% Rest Each Hour

Work Category	Example	REL for 154 lb. Person	REL for 200 lb. Person	REL for 250 lb. Person	REL for 300 lb. Person
Light	Sitting, standing, light arm/hand work and occasional walking	82 °F	79 °F	77 °F	75 °F
Moderate	Normal walking, moderate lifting	78 °F	75 °F	73 °F	71 °F *
Heavy	Heavy material handling, walking at a fast pace	76 °F	73 °F *	70 °F *	68 °F *
Very Heavy	Pick and shovel work	73 °F	70 °F *	68 °F *	66 °F *

Adapted from NIOSH Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments and ACGIH "2017 TLVs and BEIs"

*** These activities are not recommended for persons of this body weight working under heat stress conditions. Special precautionary measures must be taken to reduce physical exertion and continually monitor workers for physiological signs of heat stress (e.g., body temperature and/or heart rate).**

Table 10. Recommended Alert Limit (RAL) for 50% Work & 50% Rest Each Hour

Work Category	Example	REL for 154 lb. Person	REL for 200 lb. Person	REL for 250 lb. Person	REL for 300 lb. Person
Light	Sitting, standing, light arm/hand work and occasional walking	84 °F	81 °F	79 °F	77 °F
Moderate	Normal walking, moderate lifting	81 °F	78 °F	76 °F	73 °F *
Heavy	Heavy material handling, walking at a fast pace	78 °F	76 °F *	73 °F *	71 °F *
Very Heavy	Pick and shovel work	77 °F	74 °F *	72 °F *	69 °F *

Adapted from NIOSH Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments and ACGIH "2017 TLVs and BEIs"

*** These activities are not recommended for persons of this body weight working under heat stress conditions. Special precautionary measures must be taken to reduce physical exertion and continually monitor workers for physiological signs of heat stress (e.g., body temperature and/or heart rate).**

Table 11. Recommended Alert Limit (RAL) for 25% Work & 75% Rest Each Hour

Work Category	Example	REL for 154 lb. Person	REL for 200 lb. Person	REL for 250 lb. Person	REL for 300 lb. Person
Light	Sitting, standing, light arm/hand work and occasional walking	86 °F	83 °F	80 °F	78 °F
Moderate	Normal walking, moderate lifting	83 °F	80 °F	78 °F	76 °F *
Heavy	Heavy material handling, walking at a fast pace	81 °F	78 °F *	76 °F *	74 °F *
Very Heavy	Pick and shovel work	80 °F	77 °F *	75 °F *	73 °F *

Adapted from NIOSH Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments and ACGIH "2017 TLVs and BEIs"

*** These activities are not recommended for people of this body weight working under heat stress conditions. Special precautionary measures must be taken to reduce physical exertion and continually monitor workers for physiological signs of heat stress (e.g., body temperature and/or heart rate).**

Step 5. Determine Risk Level

The risk level is assessed by comparing the WBGT-Effective to the REL for acclimated workers or RAL for unacclimated workers. If the WBGT-Effective exceeds the respective REL or RAL, then additional workplace controls are required to protect workers from heat stress and heat-related illnesses.

Acclimated Workers: Hazard Quotient

A hazard quotient (HQ) is used to evaluate the risk level for acclimated workers. The formula for HQ-Acclimated for use with acclimated workers is:

$$HQ\text{-Acclimated} = \frac{WWBGT\text{-Effective}}{REL}$$

Interpretation of the HQ-Acclimated

If the HQ-Acclimated is below 1.0, then no heat stress hazard is anticipated and workers should be able to perform duties without additional control measures.

However, if the HQ-Acclimated exceeds 1.0, then it is anticipated that workers will be at risk of heat stress and heat-related illnesses. In these cases, multiple heat-illness prevention strategies (controls) must be implemented to adequately protect workers.

The risk level, determined in Table 12 can aid in the implementation of controls.

Unacclimated Workers: Hazard Quotient

A hazard quotient (HQ) is used to evaluate the risk level for unacclimated workers. The formula for HQ-Unacclimated for use with unacclimated workers is:

$$HQ\text{-Unacclimated} = \frac{WWBGT\text{-Effective}}{RAL}$$

Interpretation of the HQ-Unacclimated

If the HQ-Unacclimated is below 1.0, then no heat stress hazard is anticipated and workers should be able to perform duties without additional control measures. However, if the HQ-Unacclimated exceeds 1.0, then it is anticipated that workers will be at risk of heat stress and heat-related illnesses. In these cases, multiple heat-illness prevention strategies (controls) must be implemented to adequately protect workers. The risk level, determined in Table 12 can aid in the implementation of controls.

Risk Level

Table 12 is a general guideline for use in determining the risk level for heat stress for both acclimated and unacclimated workers. The risk levels can be used to determine the adequacy of controls needed to protect workers.

Table 12. Risk Level for Acclimated and Unacclimated Workers

HQ	< 1.0	1.0-1.02	1.03-1.04	1.04-1.07	> 1.07
Risk Level	Low	Moderate	High	Very High	Severe

IX. HEAT-ILLNESS PREVENTION STRATEGIES

When the HQ is above 1.0, heat-illness prevention controls need to be implemented to protect workers. The heat-illness prevention strategies are broken down into five (5) steps:

1. First, implement controls aimed at reducing the hazard quotient (HQ).
2. Second, when the risk level is high, very high or severe, then incorporate physiological monitoring (e.g., body temperature and/or heart rate) as a precautionary measure to identify heat stress before a more serious condition or illness arises.
3. Third, implement engineering controls to reduce heat stress conditions.
4. Fourth, implement administrative controls to address acclimatization issues and/or reduce heat stress conditions.
5. Fifth, provide workers personal protective clothing and equipment to reduce heat stress conditions.

The heat-illness prevention strategies vary slightly for unacclimated workers. If workers have not worked in a hot environment within the previous week, then those workers must be placed in an acclimatization program designed to gradually acclimate them to work in a hot environment.

Step 1. Implement Controls to Reduce Hazard Quotient and Risk Level

The first step in the heat-illness prevention strategy is to evaluate those factors used in the heat hazard assessment and determine what changes could be made to reduce the hazard quotient (HQ) to a value below 1.0, a low risk level. Examples of effective controls include:

1. Suspend activities during the hottest part of the day and change to work schedule to cooler times of the day. [HIGHLY EFFECTIVE]
2. Provide shade or shelter from the sun and eliminate solar irradiance to 0 Watts/m². [HIGHLY EFFECTIVE]

3. When feasible, eliminate use of chemical vapor-barrier coveralls, such as encapsulating suits and whole-body chemical protective suits during hottest parts of day. [HIGHLY EFFECTIVE]
4. When feasible, eliminate double clothing layers. [HIGHLY EFFECTIVE]
5. When feasible, use mechanical and powered equipment to reduce worker physical exertion, especially heavy physical exertion. This includes the use of forklifts, hoists, earthmoving equipment (backhoes, loaders and excavators), conveyers, portable power tools (e.g., rotary auger in place of hand shoveling), etc. [HIGHLY EFFECTIVE]
6. When feasible, change the work-rest schedule to ensure workers receive adequate rest breaks, which will decrease accumulation of body heat. [MODERATELY TO HIGHLY EFFECTIVE]
7. If air temperatures are below 95 °F (skin temperature) and air velocities are less than 1-2 mph, then increasing the air velocity at workers using portable fans can be an effective control to increase cooling. Caution: If air temperatures are above 95 °F, then heat will be added to workers by convection, which puts them at risk of heat stress. [MODERATELY EFFECTIVE]
8. When feasible, adjust work clothing to lighter, more breathable cotton fabrics or change coveralls to a more breathable material. [SLIGHTLY EFFECTIVE]

Step 2. When Risk Level is High Incorporate Physiological Monitoring

When the risk level is high, very high or severe, then it is important to incorporate physiological monitoring (e.g., body temperature and/or heart rate) as a measure to identify heat stress before a more serious condition or illness arises. At a minimum, either body temperature or recovery heart rate should be monitored. Body weight is recommended to ensure workers are properly hydrated.

Oral Body Temperature

Oral temperature is inexpensive, reliable and easy to obtain in the field. It is important to use a reliable and accurate clinical thermometer and to use the thermometer

according to the manufacturer's instructions. Disposable oral thermometers are available and can be an inexpensive solution; however, readings will take longer (e.g., 3-4 minutes). Some digital oral thermometers can deliver an accurate reading in as little as 30 seconds. It is important to make sure the thermometer is stored in a cool environment and not exposure to temperatures above 95 °F. In addition, readings should not be taken within 15-minutes of consuming hot or cool liquids and foods or if the worker is breathing heavy (mouth breathing).

The generally accepted and recommended guideline is that worker oral temperatures should not exceed 99.5 °F. As a precautionary measure, when the oral temperature is elevated above 99.1 °F, adjust the work-rest schedule to increase the frequency and duration of rest breaks or take other preventative measures.

Follow the guidelines in Table 13 for collecting and interpreting oral temperatures.

Table 13. Collection and Interpretation of Oral Temperatures

STEP	Instructions
Schedule times for collection of oral temperature	During the hottest times of the workday, collect oral temperatures at least every hour. Under severe conditions, the cycle should be at least every 30 minutes.
Collect oral temperature	<p>If worker is not breathing heavily (mouth breathing), then collect oral temperature at a scheduled rest breaks, before consumption of water or fluids.</p> <p>If worker is breathing heavily, then have him/her first drink fluids and collect temperature at end of rest break, 15-minutes after drinking fluids.</p>
Thermometer reading less than 99.1 °F	If thermometer reading is less than 99.1 °F, then resume normal work activities and work-rest schedule.
Thermometer reading 99.2 to 99.5 °F	If thermometer reading is 99.2 to 99.5 °F, then take precautionary measures to reduce heat stress (e.g., adjust work- rest schedule or implement additional controls)
Thermometer reading above 99.5 °F	If thermometer reading is above 99.5 °F, then suspend work and physical exertion within the hot environment and take immediate actions to cool body temperature (e.g., relocate to a cool environment with air movement and provide cool fluids). Monitor body temperature and continue cooling efforts until body temperature returns to a normal temperature below 99 °F. Seek medical attention if worker exhibits additional signs of heat exhaustion or temperature does not drop or continues to elevate at rest.
Thermometer reading above 101.2 °F	If thermometer reading is above 101.2 °F, then seek immediate medical attention and take immediate actions to cool his/her body temperature assuming potential heat stroke conditions (e.g., relocate to a cool environment with air movement, remove excess clothing, spray his/her body with cool water and fan vigorously, and pack ice in armpits and groin area).

Recovery Heart Rate (Pulse Rate)

If done properly, the recovery heart rate, as a pulse rate, is a good indicator of body temperature and heat stress. In addition, when a worker becomes dehydrated the volume of blood reduces and the heart rate can increase significantly. For simplicity, a modified Brouha method as described by NIOSH is recommended. The method involves taking an initial pulse rate reading at the beginning of a scheduled rest break. With the worker sitting and resting, an initial pulse rate reading is collected (P1) and if the pulse rate is above 110 bpm, then pulse rate readings are collected at a two-minute (P2) and four-minute (P3) interval. The general guidelines for interpretation are:

1. If the pulse rate does not drop to below 110 bpm (beats per minute) during the test, then this indicates heat stress conditions are above an acceptable level. The resting heart rate is too high, which indicates the work rate is too high for the individual.
2. With a starting pulse rate above 110 bpm, if the difference between two-minute intervals is less than 10 bpm, then this also indicates heat stress conditions are above an acceptable level. The heart rate is not effectively recovering at rest, which also indicates the work rate is too high for the individual. It could also indicate dehydration.

There can be variation among individuals and some may exhibit much lower or higher resting pulse rates. The heart rate recovery evaluation is designed to account for this. However, a qualified medical provider should examine individuals with pre-work pulse rates above 100 bpm when at normal rest. High resting pulse rates could be indicative of an underlying medical condition.

Methods for Collecting Pulse Rate

Use of a reliable and accurate clinical pulse rate device for the finger, wrist or chest is recommended. As the pulse rate will change with time, it is important to collect the

pulse rate within a consistent and short interval (e.g., 5 to 10 seconds). Use the guidelines provided by the device manufacture when collecting pulse rates.

The pulse rate can be collected manually by counting the pulses at the inner wrist just below the palm on the thumb or neck to the side of the windpipe over a 30 second timed interval (e.g., using a stopwatch). Use the index and middle fingers to detect a pulse and do not start counting until a reliable pulse can be detected. A slight amount of pressure may be necessary. The number of pulses is then multiplied by 2 to give the pulse rate in bpm.

Follow the guidelines in Table 14 for collecting and interpreting pulse rate and heart rate recovery.

Table 14. Collection and Interpretation of Pulse Rates

STEP	Instructions
Schedule times for collection of pulse rates	During the hottest times of the workday, collect pulse rates at least every hour. Under severe conditions, the cycle should be at least every 30 minutes. The pulse rate needs to be collected at the start of the rest break, within the first few minutes.
Collect initial pulse rate (P1)	Have the work sit on a stool or chair and rest. Collect the initial pulse rate within a few minutes after the worker has stopped working, at the start of the rest break.
If the pulse rate is below 110 bpm	If the pulse rate is below 110 bpm, then resume normal work activities and work-rest schedule.
If the pulse rate is above 110 bpm	If the pulse rate is above 110 bpm, then evaluate heart rate recovery by collecting two additional pulse rate measurements at two-minute intervals.
If differences between 2-minute intervals is <u>greater</u> than 10 bpm and the pulse rate drops below 110 bpm	If differences between 2-minute intervals is <u>greater than 10 bpm and the pulse rate drops below 110 bpm</u> , then resume normal work activities and work-rest schedule.
If differences between 2-minute intervals is <u>less</u> than 10 bpm	If differences between 2-minute intervals is <u>less than 10 bpm</u> , then suspend work and physical exertion within the hot environment and take immediate actions to cool his/her body temperature (e.g., relocate to a cool environment with air movement and provide cool fluids). Monitor pulse rate and/or body temperature and continue cooling efforts until pulse rate drops below 90 bpm or body temperature returns to a normal temperature below 99 °F. Seek medical attention if worker exhibits additional signs of heat exhaustion or pulse rate and/or temperature do not drop or continue to elevate at rest.
Re-check pulse rate after 10 minutes	If the resting pulse rate remains above 110 bpm after 10 minutes of rest, then seek immediate medical attention and take immediate actions to cool his/her body temperature assuming potential heat stroke conditions (e.g., relocate to a cool environment with air movement, remove excess clothing, spray his/her body with cool water and fan vigorously, and pack ice in armpits and groin area).

Monitoring Weight Loss – In Addition to Body Temperature or Heart Rate Recovery

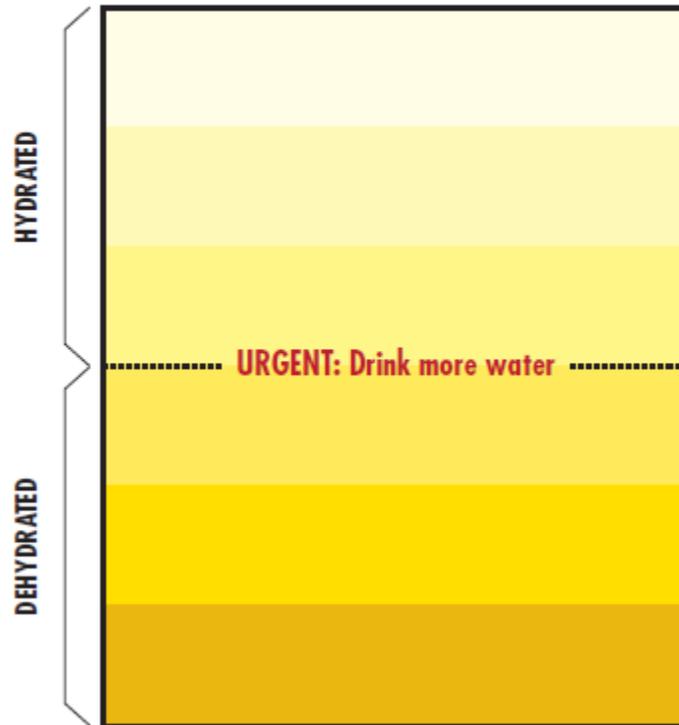
Weight loss is a good indicator of potential dehydration, which can lead to heat stress and heat-related illnesses. However, it is not a good indicator of heat stress or illness in itself. Having workers check their body weight during rest breaks can be an effective way for them to monitor water intake during work that involves physical exertion. As a general rule when using a reliable scale that can read body weight within ± 0.25 lbs., if a worker loses more than 1.5% of their body weight then he/she is likely not taking in enough water to replace the water lost due to sweating. This assumes that the worker is wearing clothing that will allow sweat to evaporate from the skin and not be trapped within the clothing (e.g., chemical protective and impermeable suits can trap sweat).

Monitoring Urine Color – In Addition to Body Temperature or Heart Rate Recovery

Urine color can be a good indicator of potential dehydration, which can lead to heat stress and heat-related illnesses. However, it is not a good indicator of heat stress or illness in itself. In some cases underlying diseases, medications or even some foods may affect urine color. Having workers check their urine color against a color chart can help them to monitor water intake during work that involves physical exertion. Normal urine should be a pale yellow. The below urine color chart can be used to help a worker determine if he/she is properly hydrated. Some diets, medications and illnesses may affect results.

Urine Color Chart

Are you hydrated?



Source: NIOSH Occupational Exposure to Heat and Hot Environments (2016)

Step 3. Implement Engineering Controls

When the risk level is moderate or above, then implementation of effective engineering controls are recommended over administrative or protective clothing controls. The following are examples of effective engineering controls.

7. Reduce physical exertion and physical demands of work through use of powered tools and equipment, especially for tasks involving heavy lifting.
8. Reduce radiant heat loading from the sun or other sources of radiant heat (e.g., furnaces, combustion engines and compressors, hot surfaces, heated transfer lines, windows receiving intense sun, etc.). One effective method is to place line-

of-sight, reflective barriers between the heat source and workers. Another method is to insulate hot surfaces, such as furnaces.

9. If air temperatures are below 95 °F, then increase air speed across skin of workers using fans or air movers, to increase evaporative cooling from skin.
10. If air temperatures are above 95 °F, then reduce air speed across skin of workers, to reduce convective heat transfer from air to skin.
11. If humidity is below 50%, then evaporative coolers and portable fans with water mist systems can be used to effectively cool the air by about 10 to 20 °F.
12. Decrease humidity to below 50% to increase evaporative cooling from sweating.

Implement Administrative Controls

When the risk level is moderate or above, then implementation of effective administrative controls are recommended when effective engineering controls are not feasible.

Additionally, unacclimated workers must be placed in an acclimatization program designed to gradually acclimate them to work in a hot environment. This includes workers that have not previously worked in a hot environment within the previous week.

Acclimatization Program

The goal of an acclimatization program is to gradually increase exposure time under hot environmental conditions over 7 to 14 days. This allows the body to adjust to the hot conditions, which will result in more efficient evaporative cooling, a more efficient heart rate recovery and less stress on the heart. Use the following guidelines for acclimating workers to work under hot conditions.

1. For new workers, on day one schedule less than 20% of the work duration in the hot environment and then increase that no more than 20% each day. As an example, for an 8-hour work shift:
 - a. On day one, schedule no more than 1.6 hours under hot conditions.
 - b. On day two, schedule no more than 3.2 hours under hot conditions.

- c. On day three, schedule no more than 4.8 hours under hot conditions.
 - d. On day four, schedule no more than 6.4 hours under hot conditions.
 - e. On day five, schedule no more than 8 hours under hot conditions.
2. For workers with experience on the job, on day one schedule less than 50% of the work duration in the hot environment, 60% on day two, 80% on day three and 100% on day four. As an example, for an 8-hour work shift:
- a. On day one, schedule no more than 4 hours under hot conditions.
 - b. On day two, schedule no more than 4.8 hours under hot conditions.
 - c. On day three, schedule no more than 6.4 hours under hot conditions.
 - d. On day four, schedule no more than 8 hours under hot conditions.

Administrative Controls

The following are examples of effective administrative controls.

- 12. Schedule work or work requiring heavy physical exertion during the coolest parts of the day.
- 13. Modify the work-rest schedule to shorten heat exposure periods by including frequent rest breaks. Shorter, more frequent breaks are more effective than longer, less frequent rest breaks.
- 14. Encourage adequate water intake at frequent intervals to prevent dehydration (e.g., one 8-ounce cup of cool water or an electrolyte replacement fluid every 15-20 minutes).
 - a. The supervisor or foreman is responsible for making sure drinking water is provided, plus:
 - i. Ensure that water containers are clean and sanitary prior to filling.
 - ii. Ensure water containers are filled at a sanitary location.
 - iii. Provide sufficient disposable cups and a place for disposing cups.
 - iv. Ensure workers do not share cups and dispose of used cups.
 - v. Prohibit workers from opening the cooler top to fill cups and instead have workers use the provided spigot.

- b. Pure and cool potable water must be made available to workers at no additional cost.
 - i. Do not use water from irrigation, sprinklers or firefighting systems.
 - ii. Do not use water from a garden hose, as it may contain contaminants from the hose and/or bacteria and other microbes.
 - c. Water quantities need to be sufficient and at least 1 quart per worker per hour for the entire shift.
 - d. Locate water containers as close as practicable at all times.
 - e. Encourage workers to frequently drink water and not wait until thirsty.
15. Provide a shaded and/or air-conditioned space nearby for rest and water breaks.
16. Train workers on the recognition of the signs and symptoms of heat-induced illness and on heat-illness prevention strategies.
17. Alert workers to extreme heat events or heat stress conditions and provide a short review of the heat-illness prevention strategies for the day.
18. Have worker work in pairs (buddy system) and monitor each other for signs and symptoms of heat stress or illness.
19. Instruct workers to avoid caffeine and alcohol before and during working in a hot environment.
20. Instruct workers to report illnesses or medical conditions that may put them at risk of heat stress (e.g., diarrhea, fever, infection, etc.)
21. Medically screen workers for work in hot environments.

Implement Personal Protective Clothing and Equipment Controls

If engineering and/or administrative controls are not feasible, then personal protective clothing and equipment should be used to reduce heat stress conditions. The following are examples of effective personal protective clothing and equipment controls.

- 5. Provide clothing designed to keep the body cool, such as air, cooled fluid or ice-cooled conditioned clothing.

6. Provide reflective clothing to reduce radiant heat loading from the sun or hot surfaces radiating heat.
7. If air temperatures are below 95 °F and worker is protected from radiant heat, then decrease clothing coverage or layers (when feasible) to increase evaporative cooling from skin. Caution: Do not remove clothing designed to protect workers from chemical, mechanical or other hazards without conducting a proper evaluation to address those hazards.
8. If air temperatures are above 95 °F, then increase clothing coverage to reduce air speed across skin of workers, which can help reduce convective heat transfer from air to skin.

X. MEDICAL EMERGENCIES

When workers are exposed to heat stress conditions, it is critical to ensure adequate supervision, first aid and medical services are readily available in the event a worker suffers from a heat illness. This includes ensuring adequate first aid supplies are available and supervisors and workers are trained on what to do if a co-worker suffers from a heat-related illness.

First Aid Supplies

The following first aid supplies for heat-induced illnesses need to be on hand.

1. Reliable oral thermometer for checking body temperature.
2. Reliable instrument or timer for checking heart rate.
3. Cool water or electrolyte replacement fluids.
4. Cold packs or ice packs for treatment of heat stroke.
5. Spray bottles with water or an available water source for treating heat stroke.

First Aid Providers

Each work site should have at least one person trained to administer first aid, with two or more preferred. The location, physical address and phone number of the nearest

hospital or emergency medical services must be obtained prior to the beginning of work activities under hot conditions. The following emergency response information must be obtained prior to the beginning of work activities.

1. Names, locations and phone numbers of all first aid trained supervisors or key personnel on site.
2. Phone numbers for on-site or local medical emergency services.
3. Address, phone number and directions from site to closest emergency medical services (e.g., hospital).
4. Physical address and detailed directions for emergency medical services. If the site is a remote location, then check with emergency medical services to ensure they can find the location. Some providers may require GPS coordinates.

First Aid Guidelines

See Section VI Training for the general first aid guidelines for heat-related illnesses, for supervisors and workers. It is important that all supervisors and workers know how to recognize the signs and symptoms of heat stress, when to call for emergency medical assistance and what steps they need to take to help the victim of heat stress until emergency services arrive.

XI. ENFORCEMENT

Constant awareness of and respect for heat stress hazards, and compliance with all safety rules are considered conditions of employment. The supervisor, as well as individuals responsible for safety and personnel, reserve the right to issue disciplinary warnings to employees, up to and including termination, for failure to follow the guidelines of this program.

XII. INCIDENT INVESTIGATIONS

All incidents that result in a worker suffering from a heat-related illness, regardless of their nature, shall be investigated and reported to management. It is an integral part of any safety program that documentation take place as soon as possible so that the cause and means of prevention can be identified to prevent a reoccurrence. A Worksite

Incident Form is provided in the Appendix. The form is to be completed and used to initiate an incident investigation with the goal of taking corrective actions to prevent future occurrences.

In the event that an employee suffers from a heat-related illness or some other related, serious incident occurs, this plan shall be reviewed to determine if additional practices, procedures, or training need to be implemented to prevent similar types of incidents from occurring.

VIII. CHANGES TO PLAN

The Safety Manager will review and approve any changes to the plan. The Safety Manager shall review this plan at least annually to determine if additional practices, procedures or training needs to be implemented to improve heat-illness prevention measures. Workers shall be notified and trained, if necessary, in the new procedures. A copy of this plan and all approved changes shall be maintained at the jobsite.

APPENDIX A: JOB SPECIFIC HEAT-ILLNESS PREVENTION PLAN

This plan is specific to the following project, in accordance with company policies and procedures as outlined in the Heat-Illness Prevention Plan:

Description	Details
1. Location of Job and Address (attach detailed directions as needed)	
2. Date Prepared or Modified	
3. Plan Prepared By	Name: Phone:
4. Plan Approved By	Name:
5. Plan Supervised By	Name: Phone:
6. First Aid and Emergency Medical Services Contacts	First Aid Name(s): Phone: Alternate Phone: Emergency Medical Services: Phone: Local Hospital: Phone:

Identified Heat Stress Hazards (Check those that apply)

- 1. Outside work with sun exposure and temperatures above 70 ° _____
- 2. Work around hot processes and/or radiant heat sources _____
- 3. Workers will wear vapor barrier chemical protective suits _____
- 4. Work under high relative humidity conditions (e.g., greater than 50%) _____
- 5. Low wind speeds or lack of air movement _____
- 6. Manual labor and tasks requiring physical exertion _____
- 7. Workers not acclimated to work in hot environments _____
- 8. Workers wearing multiple layers of clothing _____
- 9. Other: _____
- 10. Other: _____
- 11. Other: _____

Does a Heat Hazard Evaluation Need to be Conducted?

Conduct a Heat Hazard Assessment if the answer is “YES” to any of the following:

Condition	NO	YES
Items 1, 2 or 3 were checked above.		
More than two of the above items were checked.		
There is a valid concern regarding heat stress. Concern:		

Heat Hazard Assessment

Use the National Weather Service data and Argonne Heat Stress Calculator to determine the WBGT for the hottest 1-2 hours of work.

Parameter (Units of Measure)	Initial Value	After Controls Have Been Initiated to Reduce HQ
Air temperature (°F)		
Relative Humidity (%)		
Barometric Pressure (inches Hg)		
Wind speed (mph)		
Cloud Cover & Resulting Solar Irradiance (Watts/m ²)		
Date (Month, Day and Year)		
Hottest Time of Day (Hour, Minute and AM/PM)		
Latitude (°N)		
Longitude (°W)		
Resulting WBGT (°F)		
Clothing Adjustment Factor (CAF)		
WBGT-Effective (°F) = WBGT + CAF		
Determine Work Demands and Metabolic Heat		
Relevant REL or RAL (°F)		
Hazard Quotient (HQ)		
Risk Level		

Corrective Actions that will be taken to Prevent Heat Stress

1. Step 1: Implement Controls to Reduce Hazard Quotient and Reduce Risk Level

a. Action: _____

b. Action: _____

c. Action: _____

d. Revised Risk Level: _____

2. Step 2: Implement Physiological Monitoring for High Risk Levels

a. _____ Oral Body Temperature

b. _____ Heart Rate Recovery

c. Added _____ Body Weight or _____ Urine Color Monitoring for Dehydration

3. Step 3: Implement Engineering Controls

a. Action: _____

b. Action: _____

c. Action: _____

4. Step 4: Implement Administrative Controls

a. Action: _____

b. Action: _____

c. Action: _____

5. Step 4: Implement Protective Clothing or Equipment Controls

a. Action: _____

b. Action: _____

c. Action: _____

APPENDIX B: WORKSITE INCIDENT FORM

This Worksite Incident Form is to be completed and turned into the employer following any cases of heat-related illness. No matter how serious the illness (e.g., heat cramps or increased resting heart rate), it should be reported to facilitate an investigation and ensure a more serious incident does not occur later. The goal of the incident investigation is to take necessary corrective actions to prevent further occurrences.

Worker Name: _____ Date: _____

Worker Job Title: _____ Time: _____

Job Location: _____

Location of incident: _____

WBGT-Effective _____ °F and (circle one) REL / RAL _____ °F

HQ _____ and Risk Level _____

Were you able to interview the worker? ___ Yes ___ No

How many witnesses did you interview? _____

Names and titles of all witnesses interviewed: _____

Provide a detailed description of the incident. Include relevant events leading up to, during and after the incident.

Identify and describe any of the below factors that contributed to the incident:

1. Failure to follow safety procedures
2. Faulty equipment, machinery or tools
3. An unidentified heat stress hazard(s)
4. The work environment and conditions
5. Environmental conditions (e.g., weather)
6. Improper work procedures
7. Lack of proper training

Recommend corrective actions that should be initiated to prevent future incidents

Preparer Name: _____

Preparer signature: _____

Date: _____

ALBANELLI CEMENT CONTRACTORS, INC.

XXI. Employee Disciplinary Action Plan

Albanelli Cement Contractors, Inc.'s disciplinary policy for minor behavior problems, (i.e., excessive absenteeism, tardiness, minor safety violations) is as follows:

- 1) Verbal warning, with follow up
- 2) Written warning, with follow up
- 3) Final Written warning, with follow up
- 4) Termination

Disciplinary Action for Gross Misconduct will be termination. All areas of gross misconduct cannot be listed in this policy, but some examples are as follows:

- 1) Violation of safety policies that could result in serious injury or property damage
- 2) Theft
- 3) Deliberate damage to or misuse of property belonging to Albanelli Cement Contractors, Inc. and/or its parent
- 4) Fraud, falsifying records
- 5) Working/driving under the influence of alcohol or illegal drugs
- 6) Fighting or physical assault
- 7) Threatening behavior
- 8) Insubordination
- 9) Conduct endangering any person
- 10) Gross negligence causing damage, loss or injury
- 11) Breach of data protection, e.g., unauthorized access to computer or manual records
- 12) Harassment or bullying or any type

The form on the following page will be used to document our progressive discipline program.

ALBANELLI CEMENT CONTRACTORS, INC.

DISCIPLINE FORM

Violations of company and safety polices will not be tolerated. Failure to comply with stated policies and procedures would subject the employee to disciplinary procedures. The following are guidelines only for disciplinary action, if the offense is of a serious enough nature immediate termination of employment may take place:

- | | |
|--------------------------------|--|
| 1st Offense: | Verbal warning, with follow up |
| 2nd Offense: | Written warning, with follow up |
| 3rd Offense: | Final Written warning, with follow up |
| 4th Offense: | Termination |

Employee Name: _____

Employee's Position: _____

Job Site: _____

Date of Infraction: _____

Describe the action that has caused this counseling and your correction taken. Include date by which improvement is expected:

Employee's Signature: _____

(Note if employee refuses to sign)

Supervisors Signature: _____

Distribution:

- Employee's jobsite file
- Main office personnel file
- Employee

ADDENDUM NO. 1

CONFINED SPACE SAFETY

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ADDENDUM NO. 1

CONFINED SPACE SAFETY

1.0 INTRODUCTION

Over 1 ½ million workers enter confined spaces on an annual basis. Roughly six fatalities and 812 injuries occur annually in construction work in confined spaces. 60% of those who died were attempting to rescue those in the space. 65% of all confined space fatalities are due to hazardous atmosphere, One-third of all deaths are supervisors. Serious injury or death in a confined space can be the result of asphyxiation, engulfment, electric shock, falls, and/or heat stress. This poses a serious problem for exposed workers and their employers. The Occupational Safety and Health Administration (OSHA) estimates that 85 percent of these accidents could be prevented if proper safety precautions are initiated.

There are two primary reasons why ALBANELLI CEMENT CONTRACTORS, INC. must implement a confined space program. It's a requirement for ALBANELLI CEMENT CONTRACTORS, INC. to comply with the OSHA confined space standard found in Federal OSHA 29 CFR 1926 Subpart AA. Additionally, this program will assist ALBANELLI CEMENT CONTRACTORS, INC. in achieving the goal of a safer workplace for your employees. This standard practice instruction is intended to comprehensively address the issues of: evaluating and identifying potential permit required and confined spaces; evaluating the associated potential hazards; communicating information concerning these hazards; and establishing appropriate procedures and protective measures for employees. By following this program and all applicable regulatory standards help ensure that ALBANELLI CEMENT CONTRACTORS, INC. meets the minimum standards set forth by the statutes referenced in this program.

Regulatory Statute

29 CFR 1926 Subpart A; 29 CFR Part 1910.146; 29 CFR Part 1926.21; Cal/OSHA Title 8 CCR 5157; ANSI Z 117.1

2.0 WRITTEN PROGRAM

The Executive Committee of ALBANELLI CEMENT CONTRACTORS, INC. should review and evaluate this standard practice instruction on an annual basis, or when changes prompt revision of this document. This written program will be communicated to all required personnel. Additionally, ALBANELLI CEMENT CONTRACTORS, INC. will review the permit-required confined space program, using the cancelled permits retained within 1 year after each entry and revise the program as necessary, to ensure that employees participating in entry operations are protected from permit space hazards.

3.0 DEFINITIONS

Acceptable entry conditions means the conditions that shall exist in a permit space, before an employee may enter that space, to ensure that employees can safely enter into, and safely work within, the space.

Attendant means an individual stationed outside one or more permit spaces who assesses the status of authorized entrants and who shall perform the duties specified in Section 1958.

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

Confined space means a space that:

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

Controlling contractor - See Section 336.10(c), Controlling employer. **NOTE:** If the controlling contractor owns or manages the property, then it is both a controlling employer and a host employer.

Host employer means the employer that owns or manages the property where the construction work is taking place. **NOTE:** If the owner of the property on which the construction activity occurs has contracted with an entity for the general management of that property and has transferred to that entity the information specified in Section 1952(h)(1), the Division will treat the contracted management entity as the host employer for as long as that entity manages the property. Otherwise, the Division will treat the owner of the property as the host employer. In no case will there be more than one host employer.

Entry employer means any employer who decides that an employee it directs will enter a permit space. **NOTE:** An employer cannot avoid the duties of the standard merely by refusing to decide whether its employees will enter a permit space, and the Division will consider the failure to so decide to be an implicit decision to allow employees to enter those spaces if they are working in the proximity of the space.

Entry supervisor means the qualified person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this standard. **NOTE:** An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required by this standard for each role he or she fills. Also, the duties of Entry Supervisor may be passed from one individual to another during the course of an entry operation.

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 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 recognized serious safety or health hazard.

Permit-required confined space program (permit 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.

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

4.0 RISK ASSESSMENT

Pre-start risk assessment must be carried out for all operations and should be completed prior to contract start to assess hazards arising from existing or changed activities and any new hazards by the relevant supervisory staff. The pre-start risk assessment should identify site and job specific hazards and actions required to control risks including using the information obtained from the "Site Survey Safety Checklist" and review of "Risk Assessment for Confined Space Working". Copies of all site surveys and risk assessments should be held in the relevant job file.

5.0 GENERAL REQUIREMENTS

ALBANELLI CEMENT CONTRACTORS, INC. will establish confined space operational procedures through the use of this document.

After facility evaluation, spaces that meet the following criteria will be designated as a confined space:

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

6.0 CONFINED SPACE EVALUATION AND IDENTIFICATION

- Before ALBANELLI CEMENT CONTRACTORS, INC. begins work at a worksite, this employer must ensure that a competent person identifies all confined spaces in which one or more of its employees may work in, shall identify each space that is a permit space, through consideration and evaluation of the elements of that space, including testing, as necessary.
- If the workplace contains one or more permit spaces, the employer who identifies, or receives notice of a permit space must:
 - ◆ Inform exposed employees by posting danger signs or by any other effective means, of the existence and location of, and danger posed by, each permit space and; Note to paragraph 1926.1203 (b)(1). A sign reading "DANGER PERMIT REQUIRED CONFINED SPACE, DO NOT ENTER" or using other similar language that would satisfy the requirement for a sign.
 - ◆ Inform, in a timely manner and in a manner other than posting, this company's employees, authorized representatives and the controlling contractor the existence and location of, and the danger posed by, each permit space.
- Permit-required confined spaces – Those spaces meeting the criteria delineated in this section and having a known potential to contain hazardous atmospheres will be designated as permit-required confined spaces. All spaces shall be considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise.
- Non-permit confined spaces – Those spaces meeting the criteria designated in this section that do not have a known potential to contain a hazardous atmosphere will be designated as non-permit confined spaces.

- ◆ If ALBANELLI CEMENT CONTRACTORS, INC. decides that only – trained and authorized employees will enter permitted spaces, authorized personnel shall take effective measures to prevent non-trained employees from entering the permit-required confined spaces.
- ◆ For employees required to perform work in permit-required confined spaces. ALBANELLI CEMENT CONTRACTORS, INC. shall implement the permit-required

confined space entry program that complies with 1926.1204 and as designated within this instruction. This written program will be available for inspection by employees, their authorized representatives, and authorized government inspectors.

- Non-permit Required Confined Spaces – Non-permit required confined spaces will be designated where the atmosphere and safety conditions can be controlled. Confined spaces may be entered without the need for a written permit or attendant provided that: (1) the space is determined not to be a permit- required confined space and (2) the space can be maintained in a safe condition for entry by mechanical ventilation alone. All spaces shall be considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise. ALBANELLI CEMENT CONTRACTORS, INC. will ensure that any employee required or permitted to pre-check or enter a confined space shall have successfully completed the training as required by this instruction. A written copy of operating and rescue procedures as required by this instruction shall be at the work site for the duration of the job. A site-specific Confined Space Pre-Entry Checklist must be completed by the supervisor or lead worker before entry into a confined space. This list will verify completion of the items required to verify safe entry. This checklist shall be kept at the job site for the duration of the job. If circumstances dictate an interruption in the work, the permit-required confined space must be re-evaluated, and a new checklist must be completed. Assuming the conditions set forth in the paragraphs listed below can be met, the following elements of the permit required confined space program need not be complied with if (1) it can be demonstrated that the only hazard posed by the permitted space is an actual or potentially hazardous atmosphere and (2) it can be demonstrated that continuous forced air ventilation alone is sufficient to maintain the space safe for entry.
- Permit required confined space program
- Permit system
- Entry permit
- Duties of authorized entrants
- Duties of attendants
- Duties of entry supervisors
- Rescue and emergency services

If an initial entry of the permit space is necessary to obtain monitoring and inspection data, worst case will be assumed, and the full provisions of permit-required confined space entry procedures will be implemented.

Entry can be performed by ALBANELLI CEMENT CONTRACTORS, INC. personnel, once determinations and supporting data required are documented, and are made available to each employee who enters the permit space.

Reclassification of a Permit Space after all Hazards within the Space have been Eliminated

The following requirements apply to entry into permit spaces that meet the conditions set forth in previously stated paragraphs. No company personnel will enter the confined space unless:

- Conditions making it unsafe to remove an entrance cover are eliminated before the cover is removed.
- The opening at entrance covers is guarded by a railing, temporary cover, or other temporary barrier that will prevent accidental fall-through and will protect each employee working in the space from foreign objects entering the space.
- The internal atmosphere has been tested, with a calibrated direct-reading instrument, for the following conditions in the order given:
 - ◆ Oxygen content (19.5% - 23.5%) OSHA Mandated
 - ◆ Flammable gases and vapors OSHA Mandated
 - ◆ Potential toxic air contaminants OSHA Mandated
 - ◆ Airborne combustible dusts Site Specific
 - ◆ Other potential contaminants Site Specific

There may be no hazardous atmosphere within the space whenever any employee is inside the space unless proper respiratory protection equipment is worn.

Continuous forced air ventilation shall be used, as follows:

- No employee may enter the space until testing confirms that the forced air ventilation has eliminated any hazardous atmosphere.
- The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space.
- The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.
- The atmosphere within the space must be continuously monitored unless the entry employer can demonstrate that equipment for continuous monitoring is not commercially available or periodic testing is sufficient. If continuous monitoring is used, ALBANELLI CEMENT CONTRACTORS, INC. must ensure that the monitoring equipment has an alarm that will notify all entrants if a specific atmospheric threshold is achieved, or that an employee will check the monitor with sufficient frequency to ensure that entrants have adequate time to escape. If continuous monitoring is not used, periodic monitoring is required. All monitoring must ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. Any employee who enters the space, or that employee's authorized representative, must be provided with an opportunity to observe the testing required by this paragraph.

- If a hazardous atmosphere is detected during entry:
 - ◆ All employees will evacuate.
 - ◆ The space shall be evaluated to determine how the hazardous atmosphere developed.
 - ◆ Measures shall be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.

Permit Required Confined Space Certification – The Employer must verify that the space is safe for entry and that the pre-entry measures required by paragraph 1926.1203 e (2) have been met. This written certification will contain as a minimum the date, location of the space, and the signature of the person providing the certification. The certification shall be made before entry and, shall be made available to each employee entering the space or to that employees authorized representative.

The following personnel are qualified to certify safe entry for ALBANELLI CEMENT CONTRACTORS, INC. personnel entering confined spaces:

- Safety Manager
- Safety Specialist
- Trained Supervisor

Non-Permit Required Confined Space Certification – When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrants, or some indication that the initial evaluation of the space may not have been adequate the entry supervisor or this employer’s competent person shall re-evaluate that space and, if necessary, reclassify it as a permit-required confined space.

Permit to Non-Permit Reclassification – A space classified by this employer as a permit-required confined space will be reclassified as a non-permit confined space under the following conditions as required by paragraphs 1926.1203 (g)(1) through (g) (4):

- If the 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 under the assumption that a hazard exists. 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 alone does not constitute elimination of the hazards. Periodic monitoring will be conducted to ensure forced air ventilation maintains a safe worker environment for reclassification to a non-permit confined space.
- The entry supervisor shall document the basis for determining that all hazards in a permit space have been eliminated, through a certification that contains as a minimum the date, 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 space, each employee in the space shall immediately exit the space and notify their supervisor. ALBANELLI CEMENT CONTRACTORS, INC. shall then reevaluate the space and determine whether it must be reclassified as a permit space, in accordance with other applicable provisions of this instruction.

ALBANELLI CEMENT CONTRACTORS, INC. Responsibilities Regarding Contractor Operations in Permitted Confined Spaces

When ALBANELLI CEMENT CONTRACTORS, INC. arranges to have employees of another employer (contractor) perform work that involves permit space entry, then ALBANELLI CEMENT CONTRACTORS, INC. shall:

- Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with the [YOUR COMPANY'S] permit space program meeting the requirements of this instruction.
- Apprise the contractor of the elements, including the hazards identified and the host employer's experience with the space, which make the space in question a permit space.
- Apprise the contractor of any precautions or procedures that ALBANELLI CEMENT CONTRACTORS, INC. has implemented for the protection of employees in or near permit spaces where contractor personnel will be working.
- Coordinate entry operations with the contractor, when both ALBANELLI CEMENT CONTRACTORS, INC. personnel and contractor personnel will be working in or near permit spaces.
- Debrief the contractor at the conclusion of the entry operation regarding the ALBANELLI CEMENT CONTRACTORS, INC. permit space program, and any hazards confronted or created in the concerned permit spaces during entry operations.

Contractor Responsibilities Regarding Contractor Operations in Customer Permitted Confined Spaces

In addition to complying with the permit space requirements that apply to all employees of this company, whenever ALBANELLI CEMENT CONTRACTORS, INC. is retained to perform permit space entry operations in a customer's confined space, ALBANELLI CEMENT CONTRACTORS, INC. shall:

- Obtain any available information regarding permit space hazards and entry operations from the customer.
- Coordinate entry operations with the customer, when both ALBANELLI CEMENT CONTRACTORS, INC. personnel and customer personnel will be working in or near permit spaces.
- Inform the customer of the permit space program that ALBANELLI CEMENT CONTRACTORS, INC. will follow and of any hazards confronted or created in permit spaces within the facility or others belonging to the customer, either through a debriefing or during the entry operation.

7.0 PERMIT- REQUIRED CONFINED SPACE PROGRAM

Under the permit-required confined space program required by 29 CFR 1296.1204 -, ALBANELLI CEMENT CONTRACTORS, INC. shall (where not supplied by the customer):

- Implement the measures necessary to prevent unauthorized entry.
- Identify and evaluate the hazards of permit spaces before employees enter them.
- Develop and implement the means, procedures, and practices necessary for safe permit space entry operations, including, but not limited to:
 - ◆ Specifying acceptable entry conditions
 - ◆ Isolating the permit space
 - ◆ Purging, inerting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards
 - ◆ Provide pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards
 - ◆ Verify that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry
 - ◆ Develop and utilize checklists based on this standard practice instruction and 29 CFR 1926 Subpart aa.
- Provide the following equipment to employees, maintain that equipment properly, and ensure that employees are trained in the proper use of the equipment (where not supplied by customer):
 - ◆ Testing and monitoring equipment needed to determine if hazardous conditions exist or to verify that they do not exist
 - ◆ Ventilating equipment needed to obtain acceptable air quality entry conditions
 - ◆ Communications equipment necessary for communication between personnel involved in the entry operation
 - ◆ Personal Protective Equipment insofar as feasible engineering and work practice controls do not adequately protect employees
 - ◆ Lighting equipment needed to enable employees to see well enough to work safely and to exit the space quickly in an emergency
 - ◆ Barriers and shields as required to protect workers from pedestrian and vehicular traffic
 - ◆ Ladders, needed for safe ingress and egress by authorized entrants
 - ◆ Rescue, retrieval, and emergency equipment needed to extract or treat injured personnel, except to the extent that the equipment and or service is provided by rescue services that are immediately available
 - ◆ All other equipment necessary for safe entry into and rescue from permitted spaces

- ◆ Principal equipment needed to conduct confined space operations – The intrinsically safe equipment listed below may be required for confined space operations:
 - Multi-gas monitors - calibrated
 - Ventilation equipment
 - Rescue tripod/davit arm and winch system
 - Body harnesses
 - Extraction cable and lanyards
 - Air compressors (as required)
 - Supplied air respirators (as required)
 - Air purifying respirators (as required)
 - SCBA equipment (as required)
 - Emergency escape breathing app. (as required)
 - Radio communication system (as required)
 - Signage (as required)
 - LockOut / TagOut equipment (as required)
 - Intrinsically safe lighting equipment
 - Personal Protective Equipment
 - First Aid kits
 - Time keeping equipment
 - Hand tools
 - Escape ladders for depths of four feet or shoulder height

Evaluation of Permitted Space Conditions. ALBANELLI CEMENT CONTRACTORS, INC. will evaluate permit space conditions as follows when entry operations are conducted:

- Test conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized to begin. If isolation of the space is infeasible, because the space is large or is part of a continuous system (such as a sewer), pre-entry testing shall be performed to the extent feasible before entry is authorized, and, if entry is authorized, entry conditions shall be continuously monitored in the areas where authorized entrants are working.
- Test or monitor the permit space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations.
- When testing for atmospheric hazards, use the following protocol: first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.

NOTE: Atmospheric testing conducted in accordance with the "procedures for atmospheric testing" section of this instruction or Appendix B to 29 CFR 1910.146 will be used to satisfy

this requirement. This appendix can also be used to develop procedures for permit space operations in sewers and other job sites, when supplemented by Appendix C to 29 CFR 1910.146.

NOTE: Attendants may be assigned to monitor more than one permit space provided their duties can be effectively performed for each space that is monitored. Likewise, attendants may be stationed at any location outside the permit space to be monitored as long as their duties can be effectively performed for each permit space that is monitored.

- If multiple spaces are assigned a single attendant, the permit will be annotated to provide the means and procedures by which the attendant is to respond to an emergency affecting one or more of the permit spaces being monitored.
- When a confined space entry is to take place, ALBANELLI CEMENT CONTRACTORS, INC. as part of the preplanning process, will designate in advance the persons who are to have active roles in the entry operation. Additionally, the duties of each such employee will be identified, and provided with the training required by the training section of this instruction. The confined space entry team will include, but is not limited to the following:
 - ◆ Authorized entrants
 - ◆ Attendants
 - ◆ Entry supervisors
 - ◆ Atmospheric monitoring personnel
 - ◆ Certifying personnel
 - ◆ Rescue/Emergency services personnel

ALBANELLI CEMENT CONTRACTORS, INC. will develop procedures prior to the commencement of confined space operations for the following:

- Summoning rescue and emergency services
- Rescuing entrants from permit spaces
- Providing necessary emergency services for rescue
- Preventing unauthorized personnel from attempting a rescue

Development and implementation for the preparation, issuance, use, and cancellation of entry permits will be as follows:

- When employees of contractor personnel or non-ALBANELLI CEMENT CONTRACTORS, INC. employees are working simultaneously as authorized entrants in a permit space, the certifying official of the permit (or predesignated representative) will ensure that all concerned parties are aware of the accepted entry procedures for the specific operation. This will ensure entry operations are properly coordinated so the employees of one employer do not endanger the employees of another employer.
- The certifying official of the permit (or predesignated representative) will ensure that all parties concerned are aware of the accepted procedures necessary for concluding the entry after entry operations have been completed (such as closing off a permit space and canceling the permit entry.)

- The supervisor will immediately review, halt and revise entry operations when there is reason to believe that the measures taken under the permit space program may not protect employees. Attention will be directed at the correction of deficiencies found to exist before subsequent entries are authorized. Examples of circumstances requiring the review of the permit-required confined space program are as a minimum:
 - ◆ Any unauthorized entry of a permit space
 - ◆ The detection of a permit space hazard not covered by the permit
 - ◆ The detection of a condition prohibited by the permit
 - ◆ The occurrence of an injury or near-miss during entry
 - ◆ A change in the use or configuration of a permit space
 - ◆ Employee complaints about the effectiveness of the program

- Review of the permit-required confined space program, using the cancelled permits retained, will be accomplished within one year after each entry and the program revised as necessary, to ensure that employees participating in entry operations are protected from permit space hazards.

NOTE: Single annual reviews covering all ALBANELLI CEMENT CONTRACTORS, INC. facility entries performed during a 12-month period will be conducted. If no entry is performed during a 12-month period, no review is necessary.

8.0 PERMIT SYSTEM

To comply with the permit-system required by 29 CFR 1926.1205, - ALBANELLI CEMENT CONTRACTORS, INC. shall implement the measures necessary to control unauthorized entry, identify and evaluate hazards of permit spaces before employees enter them and develop the means, procedures and practices necessary for safe permit space entry operations, including but not limited to the following:

- Before entry is authorized, document the completion of the following measures:
 - ◆ Specifying acceptable entry conditions
 - ◆ Isolating the permit space
 - ◆ Purging, inerting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards. **NOTE:** per paragraph 1926(c)(4) When an employer is unable to reduce the atmosphere below 10 percent of the LFL, the employer inertes the space so as to render the entire atmosphere in the space non-combustible, and the employees use PPE to address any other atmospheric hazards (such as oxygen deficiency), and the employer eliminates or isolates all physical hazards in place.
 - ◆ Determine that in the event the ventilation system stops working, the monitoring procedures will detect an increase in atmospheric hazard levels in sufficient time for entrants to safely exit the space.
 - ◆ Provide pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards
 - ◆ Verify that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry and ensure that employees are not allowed to enter into, or remain in, a permit space with a hazardous atmosphere unless it can be demonstrated that Personal Protective Equipment (PPE) will provide effective protection for each employee in the permit space and each employee is provided the appropriate PPE.
 - ◆ Develop and utilize checklists based on this standard practice instruction and 29 CFR 1926.1204 and 1910.146.

- Before entry begins, the entry supervisor identified on the permit shall sign the entry permit to authorize entry.
- The completed permit shall be made available at the time of entry to all authorized entrants, by posting it at the entry portal or by any other equally effective means, so that the entrants can confirm that pre-entry preparations have been completed.
- In addition, any applicable SDS should accompany the permit at the entry site in the event of exposure.
- The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit.
- The entry supervisor shall terminate entry and cancel the entry permit when:
 - ◆ The entry operations covered by the entry permit have been completed.
 - ◆ A condition that is not allowed under the entry permit arises in or near the permit space.
- ALBANELLI CEMENT CONTRACTORS, INC. shall retain each canceled entry permit for at least one 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.

9.0 ENTRY PERMIT

ALBANELLI CEMENT CONTRACTORS, INC. has developed a standardized entry permit form that documents compliance with this section and authorizes entry to a permit space. As a minimum the permit in use shall identify the following:

- The permit space to be entered
- The purpose of the entry
- The date and the authorized duration of the entry permit
- The authorized entrants within the permit space, by name or by such other means (for example, through the use of rosters or tracking systems) as will enable the attendant to determine quickly and accurately, for the duration of the permit, which authorized entrants are inside the permit space. If a tracking system is used for certain entries this requirement may be met by inserting a reference on the entry permit as to the means used, such as a roster or tracking system, to keep track of the authorized entrants within the permit space.
- The personnel, by name, currently serving as attendants
- The individual, by name, currently serving as entry supervisor, with a space for the signature or initials of the entry supervisor who originally authorized entry
- The hazards of the permit space to be entered
- The measures used to isolate the permit space and to eliminate or control permit space hazards before entry such as the lockout or tagging of equipment and procedures for purging, inerting, ventilating, and flushing permit spaces
- The acceptable entry conditions

- The results of initial and periodic atmospheric tests performed, accompanied by the names or initials of the testers and by an indication of when the tests were performed
- Means of detecting an increase in atmospheric hazard levels in the event the ventilation system stops working.
- The rescue and emergency services that can be summoned and the means (such as the equipment to use and the numbers to call) for summoning those services
- The communication procedures used by authorized entrants and attendants to maintain contact during the entry
- Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment, to be provided for compliance with the permit requirement
- Any other necessary information, given the circumstances of the particular confined space, in order to ensure employee safety
- Any additional permits, such as for hot work, that have been issued to authorize work in the permit space
- ALBANELLI CEMENT CONTRACTORS, INC. 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 under this section.

10.0 TRAINING

ALBANELLI CEMENT CONTRACTORS, INC. shall develop a standardized training format to meet the requirements for a safe confined space entry.

Training shall be provided to each affected employee:

- Before the employee is first assigned duties that require a confined space entry
- Before the employee is first assigned confined space duties or 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 this employer has reason to believe that there are deviations from the permit space entry procedures required by this instruction or inadequacies in the employee's knowledge or use of these procedures
- In a language and vocabulary, the worker understands.
- To establish employee proficiency in the duties required by this instruction and shall introduce new or revised procedures, as necessary, for compliance with this instruction or when future revisions occur.

The entry supervisor shall certify that the training required by this section 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, for the period of time that this employer employs the employee.

11.0 DUTIES OF AUTHORIZED ENTRANTS

The entry Employer shall ensure that all authorized entrants:

- Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure
- Properly use equipment as required by paragraph 29 CFR 1926.1204(d). of this section
- Communicate with the attendant as necessary to enable the attendant to assess entrant status and to enable the attendant to alert entrants of the need to evacuate the space as required by paragraph 1926.1209(f) of this section.
- Alert the attendant whenever:
 - ◆ The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
 - ◆ The entrant detects a prohibited condition.
- Exit from the permit space as quickly as possible whenever:
 - ◆ An order to evacuate is given by the attendant or the entry supervisor.
 - ◆ The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
 - ◆ The entrant detects a prohibited condition.
 - ◆ An evacuation alarm is activated.

12.0 DUTIES OF AUTHORIZED ATTENDANTS

The entry Employer shall ensure that each attendant:

- Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure
- Is aware of possible behavioral effects of hazard exposure in authorized entrants
- Continuously maintains an accurate count of authorized entrants in the permit space and ensures that the means used to identify authorized entrants under this section accurately identifies who is in the permit space
- Remains in a predesignated location outside the permit space during entry operations until relieved by another attendant

NOTE: When ALBANELLI CEMENT CONTRACTORS, INC. permit entry program allows attendant entry for rescue (once relieved by another attendant), attendants may enter a permit space to attempt a rescue if they have been trained and equipped for rescue operations as required by the "rescue and emergency services" section of this instruction and if they have been relieved as required by paragraph 1926.1209(d) of this section.

- Communicates with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space

- Assesses activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions:
 - ◆ If the attendant detects a prohibited condition
 - ◆ If the attendant detects the behavioral effects of hazard exposure in an entrant
 - ◆ If the attendant detects a situation outside the space that could endanger the entrants
 - ◆ If the attendant cannot effectively and safely perform all the duties required under this section
- Summon rescue and other emergency services as soon as the attendant determines that entrants may need assistance to escape from permit space hazards
- Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:
 - ◆ Warn the unauthorized persons that they must stay away from the permit space.
 - ◆ Advise the unauthorized persons that they must exit immediately if they have entered the permit space.
 - ◆ Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.
- Performs non-entry rescues as specified by ALBANELLI CEMENT CONTRACTORS, INC. rescue procedure
- Performs no duties that might interfere with the attendant's primary duty to assess and protect the entrant

13.0 DUTIES OF ENTRY SUPERVISORS

ALBANELLI CEMENT CONTRACTORS, INC. shall ensure that each entry supervisor:

- Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure
- Verifies, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin
- Terminates the entry and cancels or suspends the permit as required in accordance with the "permit section" in this instruction
- Verifies that rescue services are available and that the means for summoning them are operable, and that the employer will be notified as soon as the services become unavailable
- Ensures removal of unauthorized individuals who enter or who attempt to enter the permit space during entry operations
- Determines, whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space, that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained

14.0 RESCUE AND EMERGENCY SERVICES

The following requirements apply to ALBANELLI CEMENT CONTRACTORS, INC. personnel who are designated to enter permit spaces to perform rescue and emergency services:

- The entry supervisor shall ensure that each member of the rescue service is provided with, and is trained to use properly, the Personal Protective Equipment and rescue equipment necessary and is efficient in the use of the equipment for making rescues from permit spaces.
- Each member of the rescue service shall be trained to perform the assigned rescue duties. Each member of the rescue service shall also receive the training required of authorized entrants under the "duties of authorized entrants" section of this instruction 1926.1207 and 1926.1208.
- Each member of the rescue service shall practice making permit space rescues before attempting an actual rescue, and at least once every 12 months, by means of simulated rescue operations in which they remove dummies, mannequins, or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces shall, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which ALBANELLI CEMENT CONTRACTORS, INC. anticipates rescue is to be performed.
- Each member of the rescue service shall be trained in basic first aid and in cardiopulmonary resuscitation (CPR). At least one member of the rescue service holding current certification in first aid and in CPR shall be available.
- Non-ALBANELLI CEMENT CONTRACTORS, INC. rescue personnel – When non-[YOUR COMPANY] rescue personnel are designated to perform permit space rescue, ALBANELLI CEMENT CONTRACTORS, INC. as required by paragraph 1926.1211 shall:
 - ◆ Evaluate the prospective rescuers ability to respond to a rescue summons in a timely manner, considering the hazard(s) identified
 - ◆ Evaluate the prospective rescuers ability, in terms of proficiency with rescue related tasks and equipment, to function appropriately while rescuing entrants from the particular permit space or types of permit spaces identified
 - ◆ Select a rescue team from those evaluated that have the capability to reach the victim within a timeframe that is appropriate for the permit space hazards identified
 - ◆ Is equipped for and proficient in performing the needed rescue services
 - ◆ Agrees to notify the employer immediately in the event that the rescue services become unavailable, in which case confined space operations must cease until rescue services become available
 - ◆ Inform the rescue service of the hazards they may confront when called on to perform rescue
 - ◆ Provide the rescue service with access to all permit spaces from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations
 - ◆ Require non-[YOUR COMPANY] rescue personnel to be on site during IDLH conditions
- To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. Retrieval systems used by ALBANELLI CEMENT CONTRACTORS, INC. shall meet the following requirements:
 - ◆ Each authorized entrant shall use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, above the entrant's head, or at another point which the employer can establish presents a profile small enough for the successful removal of the entrant. Wristlets may be used in lieu of the chest or full body harness if it is demonstrated 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.

- ◆ 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.
- 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.

15.0 RESPONSIBILITY AND EMPLOYEE PARTICIPATION

The Safety Manager is responsible for overseeing all facets of this program in order to ensure the program's success. The Safety Manager may amend these instructions and is expressly authorized to halt any operation of the company where there is danger of serious personal injury.

Directors will:

Make arrangements to ensure that the procedure is adhered to by active monitoring and provide adequate resources to carry out monitoring activities.

Managers will:

Ensure that all project managers, supervisors, and foremen are implementing these procedures.

Ensure that employees receive training in these procedures.

Ensure that risk assessments take account of the information in this procedure, as necessary.

Site services managers, supervisors and foremen will:

Ensure that this procedure is followed.

Ensure that employees receive a toolbox talk on these procedures.

Employees will:

Follow the instructions given in the toolbox talk(s).

Properly use safety and access equipment provided.

Health and safety advisers will:

Actively assist managers, supervisors, and employees in implementing this procedure and monitoring its effectiveness.

16.0 PROCEDURES FOR ATMOSPHERIC TESTING

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

Any forced ventilation requires that the space be shut down prior to atmospheric testing in order to get a clear indication of the true contaminate concentration and oxygen deficiency inside the space.

- **Evaluation testing.** The entry supervisor will ensure that the atmosphere of a confined space is analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmospheres that may exist or arise. This is required to ensure that appropriate permit entry procedures specific to the operation can be developed and acceptable entry conditions stipulated for that specific space. Evaluation and interpretation of this data, and development of the entry procedure, will be done by, or reviewed based on evaluation of all serious hazards. The internal atmosphere will be tested, with a calibrated direct-reading instrument, for the following conditions in the order given:
 - ◆ Oxygen content (19.5% - 23.5%) OSHA Mandated
 - ◆ Flammable gases and vapors OSHA Mandated
 - ◆ Potential toxic air contaminants OSHA Mandated
 - ◆ Airborne combustible dusts Site Specific
- **Verification testing.** The atmosphere of a permit space that may contain a hazardous atmosphere will be tested for residues of all contaminants identified by evaluation testing using permit specified equipment to determine that residual concentrations at the time of testing and entry are within the range of acceptable entry conditions. Results of testing (i.e., actual concentration, etc.) will be recorded on the permit in the space provided adjacent to the stipulated acceptable entry condition. The atmosphere will be verified, with a calibrated direct-reading instrument, for the following conditions in the order given:
 - ◆ Oxygen content (19.5% - 23.5%) OSHA Mandated
 - ◆ Flammable gases and vapors OSHA Mandated
 - ◆ Potential toxic air contaminants OSHA Mandated
 - ◆ Airborne combustible dusts Site Specific
- **Duration of testing.** Measurement of values for each atmospheric parameter will be made for at least the minimum response time of the test instrument specified by the manufacturer.
- **Testing stratified atmospheres.** When monitoring for entries involving a descent into atmospheres that may be stratified, the atmospheric envelope will be tested a distance of approximately 4 feet (1.22 m) in the direction of travel and to each side. If a sampling probe is used, the entrant's rate of progress will be slowed to accommodate the sampling speed and detector response. The stratified atmosphere will be tested, with a calibrated direct-reading instrument, for the following conditions in the order given:
 - ◆ Oxygen content (19.5% - 23.5%) OSHA Mandated
 - ◆ Flammable gases and vapors OSHA Mandated
 - ◆ Potential toxic air contaminants OSHA Mandated
 - ◆ Airborne combustible dusts Site Specific

CONFINED SPACE SURVEY FORM

(SAMPLE)

Date of Survey	Confined Space #	Permit Required Yes: _____ No: _____
Location of Space:		
Description of Space:		
Possible Atmospheric Hazards:		
Possible Content Hazards:		
Configuration of Space:		
Unusual hazards:		

	Yes	No		Yes	No
Can be bodily entered?	<input type="checkbox"/>	<input type="checkbox"/>	Hazardous atmosphere?	<input type="checkbox"/>	<input type="checkbox"/>
Limited or restricted entry?	<input type="checkbox"/>	<input type="checkbox"/>	Potential for engulfment?	<input type="checkbox"/>	<input type="checkbox"/>
Not designed for continuous human occupancy?	<input type="checkbox"/>	<input type="checkbox"/>	Internal configuration hazard?	<input type="checkbox"/>	<input type="checkbox"/>
Other serious safety hazards:	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Reasons for entering space and typical activities:		
Who usually enters space?		
Frequency of entry:		
Number of entry points:		
External connections to space:		
Survey completed by:	Print Name:	Signature:

CONFINED SPACE ENTRY LOG & PERIODIC AIR TESTING

(SAMPLE)

Authorized Attendant:	On Duty	Off Duty

Authorized Entrants:	In / Out				
	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/
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	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/

Air Test Within Confined Space: <input checked="" type="checkbox"/> if required		Results					
Test	Acceptable						
Oxygen	>19.5 – 22.0%						
Flammables	<10% LEL						
Temperature	WBGT <77° F (25 C)						
Toxics	N.D. by qualitative test						
CO	35 ppm						
H ₂ S	10 ppm						
SO ₂	2 ppm						
CO ₂	<50 ppm						
Date:	Time:						
Initialed by air tester:							

CONFINED SPACE PRE-ENTRY CHECKLIST (SAMPLE)	Yes	No
1. Did you check the surrounding area for any signs of drifting vapors from tanks, piping or sewers?		
2. Is it likely to remain clear of dangerous air contaminants while occupied?		
3. Are you trained in the operation of the gas monitor being used?		
4. Has the gas monitor been calibrated within the last month?		
5. Is all other safety equipment on hand and in working order and the radio checked by establishing contact with a foreman?		
6. Did you test the atmosphere in the confined space prior to opening the lid?		
7. Did the atmosphere check as acceptable (no alarms)?		
8. If alarm sounded, did you ventilate for 1 hour and retest prior to entry?		
9. Will the atmosphere inside the confined space be continuously monitored while the space is occupied?		
10. Have all personnel involved been trained on the emergency procedures and is it on their Safety and Health Training Record?		
11. Has proper contact and notification to all involved parties been established and documented?		

NOTICE

If any of the above questions are answered "NO", do not enter the space. Contact the Safety Director and your supervisor immediately.

Job location / work to be done: _____

Signature: _____ Date: _____ Time: _____

CONFINED SPACE ENTRY PERMIT

(SAMPLE, Page 1)

Permit expires	Date & time:	Confined Space #:	Duration of entry:	Date & time finished:
Location:				
Description:				
Purpose of entry:				
Entrants / Attendants:				
Entry Supervisor	Work Crew Supervisor	Area Supervisor	Atmospheric Monitor	
Hot work permit #	Type of hot work			
Safety Approval		Industrial Hygiene Approval		
Alarm device	Nearest phone	In-plant rescue	Off-site rescue	
Training qualifications	Pre-entry briefing	Return permit to safety department when completed.		

ATMOSPHERIC MONITORING							
Prior to Entry				Retest			
Oxygen: 19.5 – 23.5%		Flammable: 10% LEL or Less		Oxygen: 19.5 – 23.5%		Flammable: 10% LEL or Less	
Chemical name	SDS	PEL	Detected	Chemical Name	SDS	PEL	Detected

ISOLATION OF SPACE					
Electrical	Lockout	Tagout	Mechanical	Block Linkage	Disconnect
Piping	Lockout	Tagout	Hydraulic	Lockout	Tagout
	Blank	Block & Bleed		Disc. Lines	Lock Comp. & Bleed
Pneumatic	Lockout	Tagout	Other		
	Disc. Lines	Lock Comp. & Bleed			

HAZARDS IN SPACE		
Previous contents		Other
Contents (circle all that apply)	Configuration (circle all that apply)	Nature of Work (circle all that apply)
Flammable, Irritant, Corrosive, Toxic, Dust, Asbestos, Solid, Liquid, Gas	Slippery surfaces, Vertical drop, Sharp surfaces, Temp. high or low, Low overhead, Slope of interior	Welding, Cutting, Grinding, Chipping, Scraping, Spray cleaning

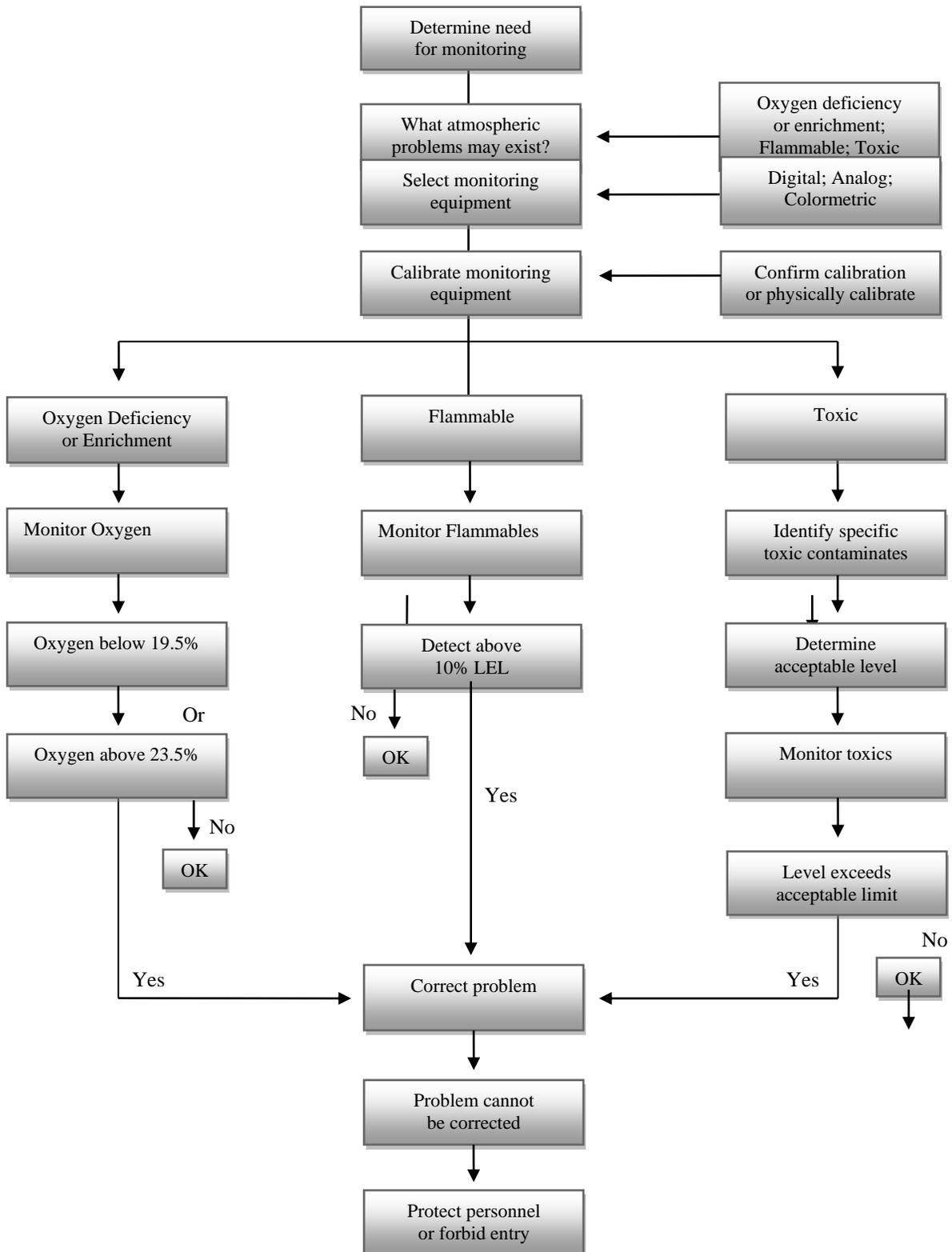
EQUIPMENT REQUIRED											
Respiratory protection	SCBC	Sup. Air	Cartridge resp.			Cartridge	Organic Vapor	Acid Gas	Organic Vapor / Acid Gas		
	ABA	PAPR	Full		Half		Ammonia	HEPA	Dust / Mist		
PPE	Coveralls	Hardhat	Safety Glasses		Safety Shoes	Leather Gloves	Ear plugs /muffs	Goggles			
	Splash Hood	Welding Hood	Welding Jacket		Chemical Gloves	Chemical Boots	Face shield				
Lighting*	Flashlight	Hand light	Light stick			Cord Lights	Cords	Portable Lights	Generator		
Ventilation*	Ventilator	10' Sections of Duct			20' Sections of Duct		Saddle Vent	CFM Required			
Entry Equipment	Body Harness		Retrieval Device			Tripod		Anchor Point			
	Access Ladder		Personal Alert Device			Emergency Signal		Communications			
Rescue Equipment	Body Harness		Retrieval Device	Tripod		Anchor Point	Access Ladder	Rescue Harness	Emergency Signal		
	Communications		SCBA	ABA		Escape Mask	Wristlets	Personal Alert System			
Other:											

** All equipment should be explosion-proof and equipped with GFCI*

Entry Supervisor (signature)

ATMOSPHERIC MONITORING

SAMPLE



COMPANY NAME:	COMPETENT PERSON FOR CONFINED SPACE:
CLIENT (if applicable):	SITE ADDRESS (if applicable):
ASSESSMENT MADE BY:	POSITION:
DATE OF ASSESSMENT:	DATE OF REVIEW:

RISK ASSESSMENT FOR CONFINED SPACE WORK

ACTIVITY OR OPERATION	HAZARD	AT RISK	CONTROLS
-----------------------	--------	---------	----------

A. MANAGEMENT ACTIONS

Controls to be in place and the toolbox talk must be given before work starts

<ul style="list-style-type: none"> Working in confined spaces, e.g., closed vessels and tanks, large ducts, enclosed effluent drains and process vessels 	<p>Oxygen deficiency toxic atmosphere</p> <p>Explosive atmosphere leading to asphyxiation, poisoning, explosion</p>	<p>All operatives working in a confined space</p>	<ul style="list-style-type: none"> Site survey checklist to be carried out Closed vessels and tanks, large ducts, enclosed effluent drains and process vessels are readily recognizable as confined spaces but any workplace in which gases and vapors accumulate, or where there is a shortage of oxygen, may be hazardous. This may include open topped tanks and vats, large diameter open ended pipe work, fabrications where heavier than air gases may be used, closed and unventilated rooms and enclosed work areas when welding or applying or using paints or solvents. The proximity of diesel-powered equipment could also create confined space conditions Carry out risk assessment/method statement and ensure workforce understand and comply with safe system of work identified Ensure all site personnel (including foreman/supervisor) are trained formally in confined space work and hold valid training certificates If in doubt seek advice from the safety department Emergency arrangements including rescue plan to be in place and discussed before work starts Where required by 'permit to work' risk assessments monitoring equipment must be in place and used by a trained person Ensure an effective communication system is operational Ensure an effective system is in place to account for personnel Ensure adequate ventilation and PPE are in use
---	---	---	--

I CONFIRM THAT THE APPROPRIATE CONTROLS ARE IN PLACE. I HAVE INCLUDED ONLY ACTIVITIES AND CONTROLS THAT ARE RELEVANT TO THIS ASSESSMENT.

SIGNATURE OF MANAGER/SUPERVISOR:

PRINT NAME: DATE:

SITE SURVEY SAFETY CHECKLIST

(Sample only, Page1)

SITE:				DATE:
SURVEY COMPLETED BY:				
SITE SURVEY FINDINGS	YES	NO	ACTION REQUIRED BY WHOM AND WHEN	
1. Is there safe access to roof areas (are edges guard railed and are fragile materials covered)?				
2. Are ground conditions safe and stable?				
3. Are arrangements for vehicle movements safe, especially for reversing under trained banksmen?				
4. Is any demolition work safely planned?				
5. Is there sufficient lighting in work areas?				
6. Are overhead power cables isolated or at safe distance from operations?				
7. Are general electrical installations safe?				
8. Are shared work areas properly controlled?				
9. Are there safe arrangements to work over water ?				
10. Is there a permit to work for confined spaces ?				
11. Is work on public roadways safe for public and employees?				

SITE SURVEY SAFETY CHECKLIST

(Sample only, Page 2)

SITE SURVEY FINDINGS (cont.)	YES	NO	ACTION REQUIRED BY WHOM AND WHEN
12. Are safe systems in place for work close to railway lines ?			
13. Are there arrangements for control of health risks in sewage plants ?			
14. Is ALBANELLI CEMENT CONTRACTORS, INC. procedure for asbestos being followed if applicable?			
15. Are hazardous substances safely controlled?			
16. Are permits to work required for specialized work areas?			
17. Does the structure require specialist designers input?			
18. Are there other safety issues not referred to above?			

ADDITIONAL EQUIPMENT REQUIRED FOR SAFETY
1.
2.
3.
4.
5.
6.
7.
8.

**ALBANELLI CEMENT CONTRACTORS, INC.
SUPERINTENDENT'S WRITTEN NOTICE TO SUBCONTRACTOR OF
KNOWN SAFETY VIOLATIONS**

CONTRACTOR'S NAME: _____ DATE: _____

ADDRESS: _____

JOB NAME: _____ JOB #: _____

Albanelli Cement Contractors, Inc. expects all contractors/subcontractors to comply with O.S.H.A. safety regulations. This is your notice that our supervisor finds the following items to be unsafe and needing immediate attention:

The above list is not necessarily complete, and you should make an immediate inspection for other items needing correction. It is your responsibility to comply with all federal, state, and local safety and health regulations applicable to this construction project. Our company disclaims any responsibility for said Contractor/Subcontractor.

Please help us make this a safe place to work.

Job Supervisor

INSTRUCTIONS: This form is to be filled out with the following disposition:

- 1. Original given to foreman or superintendent representing named contractor. A response must be provided within 24 hours.
- 2. Mail one copy to home office of contractor.
- 3. File one copy at the office in properly identified file.

Contractors Response/Corrective Action

Contractor's Representative

**ALBANELLI CEMENT CONTRACTORS, INC.
SUPERVISORS ACCIDENT INVESTIGATION**

INJURED _____ JOB # _____ JOB _____

INJURY DATE _____ TIME _____ AGE _____ SS# _____

OCCUPATION _____ MARRIED _____

DATE EMPLOYED _____

DESCRIPTION OF ACCIDENT (include nature of injury and material damage, if any):

WITNESSES _____

TIME INJURED LEFT WORK _____ TIME & DATE RETURNED _____

DESCRIBE ANY UNSAFE ACTS OR CONDITIONS _____

WHAT CAN BE DONE TO PREVENT SIMILAR ACCIDENTS (must be filled out):

MEDICAL FACILITY USED _____

Supervisor's signature

Date

I was offered medical treatment but elected not to accept it.

Employee's signature

Witness signature

**ALBANELLI CEMENT CONTRACTORS, INC.
SUPERVISORS INCIDENT INVESTIGATION**

EMPLOYEE INVOLVED _____ JOB # _____

EMPLOYEE'S POSITION _____

INCIDENT DATE _____ TIME _____

DESCRIPTION OF INCIDENT:

WITNESSES _____

DESCRIBE ANY UNSAFE ACTS OR CONDITIONS _____

WHAT CAN BE DONE TO PREVENT SIMILAR INCIDENTS (must be filled out):

CORRECTIVE ACTION TAKEN

Supervisor's signature

Date

ALBANELLI CEMENT CONTRACTORS, INC. JOBSITE SAFETY CHECKLIST

Superintendent _____ Date _____

MARK \checkmark FOR NO CORRECTION NEEDED;" NA " FOR NOT APPLICABLE; AND " C " FOR CORRECTION NEEDED.

- ____ 1. ARE WALKWAYS AND JOB SECURITY ADEQUATE?
- ____ 2. ARE LADDERS PROPERLY CONSTRUCTED AND SECURED?
- ____ 3. IS HOUSEKEEPING GOOD, ALL UNNECESSARY DEBRIS CLEANED UP?
- ____ 4. ARE GUARD RAILS ERECTED AROUND FLOOR OPENINGS AND OTHER CRITICAL AREAS? PERIMETER PROTECTION IN PLACE?
- ____ 5. IS ILLUMINATION ADEQUATE?
- ____ 6. ARE HARD HATS AND OTHER PERSONAL PROTECTIVE EQUIPMENT WORN BY OUR WORKERS AND SUBS?
- ____ 7. ARE CRANES AND HOISTS PROPERLY MAINTAINED AND SAFEGUARDED? HAS TODAY'S MATERIAL HANDLING BEEN PROPERLY PLANNED?
- ____ 8. ARE ALL ELECTRICAL TOOLS GUARDED AND GROUNDED?
- ____ 9. IS JOB TRAFFIC PLAN WORKING, INCLUDING WORKSITE TRAFFIC CONTROL PLAN?
- ____ 10. ARE FIRST AID SUPPLIES ADEQUATE? FIRST AIDERS AVAILABLE?
- ____ 11. ARE FIRE HAZARDS CONTROLLED?
- ____ 12. SAFETY BULLETIN BOARD POSTED?
- ____ 13. ARE EXCAVATIONS IN COMPLIANCE WITH THE OSHA EXCAVATION STANDARD?
- ____ 14. ARE WORKERS PROTECTED FROM FALLING OBJECTS?
- ____ 15. ARE HAZARDOUS MATERIALS BEING SAFELY HANDLED?

DESCRIPTIONS OF "C" ITEMS _____

OTHER UNSAFE ACTS/CONDITIONS NOTED? _____

SUPERINTENDENT/SUPERVISOR _____

**ALBANELLI CEMENT CONTRACTORS, INC.
SAFETY ORIENTATION OUTLINE**

1. Provide new employee a copy of employee safety manual. Use the manual as the outline for the orientation.
2. Review requirements for clothing and personal protective equipment. (hard hats, safety glasses, hard sole shoes, gloves, etc.).
3. Discuss weekly safety meetings and the need to attend and participate.
4. Inform new employee of the requirement to report all accidents and near misses, no matter how minor to their supervisor. Tell them where first aid can be obtained.
5. Discuss the employee's responsibility to ensure that all tools and equipment must be in good, safe working order before they are used. Unsafe equipment shall be reported to their supervisor.
6. Drug & Alcohol Policy: Discuss policy (allow them to read it) and stress that they will be subject to drug testing on this jobsite. Have them sign Acknowledgment form which indicates that they have been informed of the Policy.
7. Fall Protection: Stress the need for and proper techniques for fall protection. Stress that some type of fall protection must be utilized when working within 6' of any edge that could result in a fall of 6' or more. This includes floor holes through which employees could fall.
8. Electrical Safety: All electrical circuits must be grounded and protected by GFCIs. Electrical tools must be inspected before use.
9. Excavation Safety: Instruct new employee that all excavations that workers may enter will be monitored by a "Competent Person" and that any questions or concerns about the safety of an excavation should be directed to the "Competent Person."
10. Right-to-Know Law: Explain the "Right to Know" law and how it is being implemented on this jobsite. Use the "Right to Know" training outline and have them complete and sign the "Right to Know" worksheet.
11. Finish orientation by summarizing the company's dedication to safety and urging them to discuss any safety problems he observes with their supervisor. Ask key questions concerning the safety rules to ensure that he has absorbed the material covered.
12. Have new employee complete the safety orientation worksheet.

**ALBANELLI CEMENT CONTRACTORS, INC.
SAFETY ORIENTATION WORKSHEET**

Name: _____

Date: _____

1. How often will safety meetings be held and where? _____
 2. Is attendance at safety meetings required? _____
 3. To whom do you report accidents? _____
 4. Should near-misses be reported? _____
 5. Where are first aid facilities located? _____
 6. What personal protective equipment must be worn at all times on this project?

 7. Who is the "Competent Person" that will oversee excavations on this project?

 8. What is the company's policy concerning the use of alcohol and illegal drugs on the job?

 9. The proper vertical to horizontal ratio for erecting a ladder is: _____
 10. Where can fire extinguishers be found on this project? _____
 11. What is the maximum depth of excavation that a person can be in without the sides being sloped back or stepped back? _____
 12. What happens when wet concrete is left on your unprotected skin?

-

ALBANELLI CEMENT CONTRACTORS, INC.
Training Outline
Right-to-Know/Hazcom Law

HAZARDOUS CHEMICAL

Any chemical which poses a threat to your body.

COMPLIANCE

Any company which uses hazardous chemicals must comply with the Right-to-Know Law.

FIVE CATEGORIES OF RIGHT TO KNOW LAW

1. Hazard Evaluation
2. Written Program
3. Labels and Warning Signs
4. Collect Safety Data Sheets
5. Conduct Employee Training

TYPES OF HAZARDS

1. Physical Hazard: Flammable, Combustible, Explosive
(Occurs outside the body)
2. Health Hazard: Skin irritation, Carcinogens, Toxic
(Occurs inside the body)

TYPES OF HEALTH HAZARDS

1. Acute: immediate reaction
2. Chronic: may take years to show symptoms

METHODS OF ENTRY TO THE BODY BY TOXIC CHEMICALS

1. Inhalation: breathing in vapors or fumes
2. Absorption: getting material on skin or in eyes
3. Ingestion: eating or drinking the material

SAFETY DATA SHEETS

A Safety Data Sheet (SDS) is printed material concerning the hazards of a product.
SDSs for all hazardous chemicals used on the job must be reviewed.
SDSs must be kept on the jobsite.(GC'S jobsite trailer)

FIRST AID

Inhalation exposure: Fresh Air
Absorption exposure: Fresh Water

**ALBANELLI CEMENT CONTRACTORS, INC.
RIGHT-TO-KNOW/HAZCOM
WORKSHEET**

NAME _____ DATE _____

1. What companies are required to comply with the Right-to-Know Law?

2. What is a hazardous chemical?

3. What is a Safety Data Sheet and where will they be kept?

4. What are three ways a chemical can enter your body?

5. What is the most common first aid for overexposure to hazardous chemicals?

6. What hazardous chemicals are you exposed to and how can you determine overexposure?

Flagging Procedures



Properly Trained Flaggers

- clear message to drivers as shown
- allows distance for drivers to react
- coordinate with other flaggers

Properly Equipped Flaggers

- approved sign paddles
- approved safety vest and hat
- retroreflective night equipment

Proper Flagging Stations

- good approach sight distance
- highly visible to traffic
- never stand in moving traffic lane

Proper Advance Warning Signs

- always use warning signs
- allow reaction distance from signs
- remove signs if not flagging

Flags should only be used in emergency situations. Flags used for signaling shall be a minimum of 24" x 24", red in color and mounted on a staff, about 3' long.

Subcontractor Evaluation Form

Subcontractor's Name: _____ Date Submitted _____

Safety Contact: _____ Phone Number: _____

It is the policy of Albanelli Cement Contractors, Inc. to only work with subcontractors that share our vision of an accident-free workplace. The information provided here will help us determine if you are qualified to be a part of our team. Our safety consultant may contact you with additional questions. Your cooperation with this process will be appreciated.

Experience Modifier for the past three policy years: 20____
20____
20____

Recordable Incident Rate for the past three years: 20____
of OSHA recordable accidents X 200,000 divided by the man hours worked 20____
20____

Do you conduct substance abuse testing? _____
If so, please describe required testing and the applicable disciplinary procedures for positive tests. _____

Describe your employee safety training program, including new hire orientation, fall protection and other applicable safety exposures. _____

Proof of training will be checked if you are a successful bidder.

Does the supervisor of the crew that will be on our project have an OSHA 10- or 30-Hour card that shows completion of the course within the past two years? _____

Does your company have a full-time safety director? Name _____
Does your company have a part time safety director? Name _____
Does your company use a safety consultant, and if so describe their duties.

HAZCOM PROGRAM

ALBANELLI CEMENT CONTRACTORS, INC.



2024

Hazcom Program

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SECTION I

INTRODUCTION

This introduction is designed to meet the requirements of the "Federal Hazard Communication" Standard. Outlined in the program are the steps that this company will follow in meeting the training and informational requirements of the law. The management of this company will provide employees with all the information they need to safely perform their jobs. If any additional information is needed, employees are encouraged to request the information through their supervisors.

Our Operations Manager has been assigned the responsibility of insuring that the provisions of the Hazardous Chemical Right to Know Law have been complied with, and any questions concerning this program should be directed to him.

Wayne Albanelli
Vice President

SECTION II

TRAINING PROGRAM

A. Administrator and Designated Trainers

The administrator of this program will be our Operations Manager. He will oversee both the initial training and our ongoing training program. A roster of the employees trained under this program will be kept in our corporate offices. Training of new employees will be conducted by their supervisor.

B. Annual Refresher Training

Our company will annually dedicate a safety meeting to the subject of hazardous materials. During this meeting, the SDS on all hazardous materials regularly used by our employees will be discussed. In addition, proper handling procedures, container labeling, and first aid procedures will be reviewed. Prior to this meeting, the Hazardous Chemical List will be reviewed and updated as needed.

C. Hazard Determination Program

Chemicals used or produced in this facility will be evaluated by the following program to determine if they are hazardous or not:

Person responsible for program: Our Operations Manager

Person assigned to hazardous chemical evaluation: Our Operations Manager

For Chemicals Used:

Safety Data Sheets (SDS) are used to evaluate whether or not supplied chemicals are hazardous. Chemicals which are health hazards will be designated as such by having ingredients that are listed in the hazardous ingredients section.

For Chemicals Produced: (such as intermediate products, welding fumes, carbon monoxide and wood dust)

SDSs or equivalents are produced internally or obtained from the Tennessee Department of Labor. Chemicals for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water reactive are considered hazardous and defined as physical hazards.

Additional Information:

Chemicals found in the following publications will automatically be considered as health hazards:

1. 29 CFR 1910, Subpart Z, "Toxic and Hazardous Substances", (OSHA);
2. "Threshold Limit Values and Biological Exposure Indices", latest edition), American Conference of Governmental Industrial Hygienists (ACGIH); and, for chemicals that are carcinogens or potential carcinogens;
3. a. National Toxicology Program (NTP), "Annual Report on Carcinogens", (latest edition);
b. International Agency for Research on Cancer (IARC), "Monographs", (latest edition);
c. 29 CFR 1910, Subpart Z, "Toxic and Hazardous Substances", Occupational Safety and Health Administration.

D. Silica Exposure Plan

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Purpose

The purpose of the silica exposure control plan (ECP) is to set out our approach to protecting workers from harmful exposure to respirable crystalline silica.

A combination of control measures will be required to achieve this objective. We commit to being diligent in our efforts to select the most effective control technologies available, and to ensure that the best practices, as described in this Exposure Control Plan (ECP), are followed at our worksites.

The work procedures we establish will protect not only our workers but all workers on our worksites.

Key Responsibilities

Due to the significant risk posed by respirable crystalline silica, it is critical that all personnel involved in operations that could potentially create silica dust take specific action to ensure that, as much as possible, a hazard is not created.

COMPANY is responsible for:

- Substitution of less hazardous products for those that contain crystalline silica is required.
- Ensuring that the materials (e.g., tools, equipment, personal protective equipment) and other resources (i.e., worker training materials) required to fully implement and maintain this exposure control plan (ECP) are readily available where and when they are required.
- Providing a job-specific ECP for each project, which outlines in detail the work methods and practices that will be followed on each site. Considerations will include
 - Availability and delivery of all required tools/equipment
 - Scope and nature of grinding work to be conducted
 - Control methods to be used and level of respiratory protection required
 - Coordination plan
- Conducting a periodic review of the effectiveness of the ECP. This would include a review of the available dust-control technologies to ensure these are selected and used when practical.
- Initiating sampling of worker exposure to concrete dust when there are non-standard work practices for which the control methods to be used have not been proven to be adequately protective.
- Ensuring that all required tools, equipment, and personal protective equipment are readily available and used as required by the ECP.
- Ensuring supervisors and workers are educated and trained to an acceptable level of competency.

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- Maintaining records of training, fit-test results, crew talks, and inspections (equipment, PPE, work methods/practices).
- Coordinating the work with the prime contractor and other employers to ensure a safe work environment.
- Ensuring that a copy of the written exposure control plan is available to all employees. The written exposure control plan must be available for examination and copying by each employee. Copies may be available electronically or physically, depending on location needs and requirements.

The supervisor (foreman and lead hand) is responsible for:

- Obtaining a copy of the ECP from COMPANY and making it available at the worksite
- Selecting, implementing, and documenting the appropriate site-specific control measures
- Providing adequate instruction to workers on the hazards of working with silica-containing materials (e.g., concrete) and on the precautions specified in the job-specific plan covering hazards at the location
- Ensuring that workers are using the proper respirators and have been fit-tested, and that the results are recorded
- Directing the work in a manner that ensures the risk to workers is minimized and adequately controlled
- Communicating with the prime contractor and other sub-contractors to ensure a safe work environment

The worker is responsible for:

- Knowing the hazards of silica dust exposure
- Using the assigned protective equipment in an effective and safe manner
- Setting up the operation in accordance with the site-specific plan
- Following established work procedures as directed by the supervisor
- Reporting any unsafe conditions or acts to the supervisor
- Knowing how and when to report exposure incidents

Crystalline Silica Properties

Crystalline silica is a common mineral found in many naturally occurring materials and used in many industrial products and at construction sites. Materials like sand, concrete, stone and mortar contain crystalline silica. Crystalline silica is also used to make products such as glass, pottery, ceramics, bricks, concrete and artificial stone. Industrial sand used in certain operations, such as foundry work and hydraulic fracturing (fracking), is also a source of crystalline silica exposure. Amorphous silica, such as silica gel, is not crystalline silica.

Inhaling very small (“respirable”) crystalline silica particles, causes multiple diseases, including silicosis, an incurable lung disease that can lead to disability and death. Respirable crystalline silica also causes lung cancer, chronic obstructive pulmonary disease (COPD), and kidney disease.

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List of Tasks That Expose Employees to Respirable Crystalline Silica

A list or description of tasks in the workplace that expose employees to respirable crystalline silica must be in place. Tasks include activities like the below and anything else that is likely to expose employees to respirable crystalline silica:

- Sawing
- Drilling
- Grinding
- Abrasive blasting (e.g., of concrete structures)
- Jackhammering, chipping, or drilling rock or concrete
- Cutting brick or tiles
- Sawing or grinding concrete
- Tuck point grinding
- Road construction
- Loading, hauling, and dumping gravel
- Demolition of structures containing concrete
- Sweeping concrete dust

The list of tasks shall be included in the job hazard assessment or any other form of prework hazard assessment.

Health Hazards

Exposure to respirable crystalline silica has been shown to cause silicosis, lung cancer, pulmonary tuberculosis, and other airway diseases. Crystalline silica dust can cause a disabling, sometimes fatal disease called silicosis. The fine particles are deposited in the lungs, causing thickening, and scarring of the lung tissue. The scar tissue restricts the lungs' ability to extract oxygen from the air. This damage is permanent, but symptoms of the disease may not appear for many years.

A worker may develop any of three types of silicosis, depending on the concentrations of silica dust and the duration of exposure:

- Chronic silicosis—develops after 10 or more years of exposure to crystalline silica at relatively low concentrations
- Accelerated silicosis—develops 5 to 10 years after initial exposure to crystalline silica at high concentrations
- Acute silicosis—develops within a few weeks, or 4 to 5 years, after exposure to very high concentrations of crystalline silica

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Initially, workers with silicosis may have no symptoms; however, as the disease progresses, a worker may experience:

- Shortness of breath
- Severe cough
- Weakness

These symptoms can worsen over time and lead to death. Exposure to silica has also been linked to other diseases, including bronchitis, tuberculosis, and lung cancer.

Exposure Assessments

Exposure assessments must be conducted for those employees who are expected to be exposed to respirable crystalline silica at or above the action level. The exposure of each employee who is or is expected to be exposed to respirable crystalline silica at or above the action level (8-hour TWA of 25µg/m³) must be assessed. This assessment can be performed by monitoring employees individually or taking a representative sample from employees.

The key step in developing a silica exposure control plan is to identify the work activities that would put workers at risk of exposure.:

- Work activities — that may generate airborne silica dust—for silica, the route of exposure is through the inhalation of airborne dust. The employer should have a qualified person review the planned work activities to identify those that may generate airborne silica.
- Identify workers at risk of exposure—For example, workers who finish concrete would be at greater risk of exposure than plumbers or electrical workers.
- Amount of exposure—some work activities generate more dust than others, and the amount of exposure should be estimated. Published resources are available that provide air sampling data and compare silica dust levels from various construction activities.
- Duration of exposure—Workers who grind concrete for a full shift would be at greater risk than workers jackhammering for an hour.

Engineering and Work Practice Controls

Engineering and work practice controls shall be used to reduce and maintain employee exposure to respirable crystalline silica to the lowest feasible level and maintain it at that level when required.

The following hierarchy of control measures must be followed:

- Elimination/substitution (e.g., using products with less silica or using work methods that would eliminate the need for surface grinding)
- Engineering controls (e.g., water, local exhaust ventilation, enclosure)

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- Administrative controls (e.g., coordination of tasks with subcontractors, signage)
- The use of proper PPE such as gloves, coveralls and eye protection when exposed to silica. Personal protective equipment such as gloves, coveralls and eye protection will be used to control silica exposures.

Our firm commits to developing knowledge and expertise about these controls, and to establishing policies/procedures to protect workers from harmful exposure and to minimize reliance on respirators. Effective engineering controls such as HEPA vacuum attachments and wetting methods, which control silica dust at its source, are readily available. These controls have been proven to reduce airborne dust levels significantly when selected and operated in accordance with best practices. We know that engineering controls alone do not reduce airborne silica to safe levels; so, in most cases other control measures, including respiratory protection, will be necessary.

If we take on a job that could release an unusually high amount of dust, and we are unsure of the adequacy of our control measures, we will conduct air sampling to ensure that control methods are protective.

We will reduce or eliminate worker exposure to silica dust by selecting a combination of the following controls listed in order of preference:

- Elimination and substitution - Engineering
- Administrative - Personal protective equipment

Elimination and Substitution

We recognize the importance of planning the work to minimize the amount of silica dust generated. During the project planning phase, we will advocate for the use of methods that reduce the need for cutting, grinding, or drilling of concrete surfaces (e.g., formwork planning). Whenever possible, we will schedule work when concrete is still wet, because we know that much less dust is released at that time.

Engineering Control of Dust

Selecting an appropriate control measure depends on the specifics of the operation. In some cases, local exhaust ventilation (LEV) is more effective at controlling exposure (e.g., during grinding operations) than wetting methods. In a different application, wetting may be more effective (e.g., during cutting operations) than LEV. However, using LEV may reduce the amount of final cleaning required, as the silica dust is captured.

Our dust control systems may employ three well-established techniques:

- Local exhaust ventilation (LEV)
- Wet dust suppression (WDS)
- Restricting or isolating the work activity with barriers or full enclosures (this may be the only option where LEV or WDS is not practical or effective)

Local Exhaust Ventilation (LEV)

When LEV is used in our work, we will employ the following systems and safe work practices:

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- Vacuum attachment systems to capture and control the dust at its source whenever possible.
- Dust control systems (used regularly and well maintained).
- Grinding wheels operated at the manufacturers' recommended rpm (operating more than this can generate significantly higher airborne dust levels).
- Retrofit shrouds or exhaust cowlings for corner grinding; use manufacturer-specified rpm speeds and a well-maintained HEPA vacuum.
- Diamond stone grinders, which allow for the use of a more efficient suction casing on the grinder, whenever practicable.
- HEPA or good quality, multi-stage vacuum units approved for use with silica dust. [The vacuum units should can create a target airflow of at least 70 cfm. This should achieve a face velocity at the shroud of about 1.3 m/s (260 fpm)—the higher the face velocity, the more dust captured at source.]
- Work planning, so that concrete grinding can be completed when wet (dust release can be significantly reduced).
- Train workers and supervisors on how to properly use and maintain the equipment.

Wet methods for Dust Control

When water spray systems are used in our work, we will follow these safe work practices:

- Pneumatic grinders will be used instead of electric-powered grinders if water is the method of control.
- Pressure and flow rate of water will be controlled in accordance with tool manufacturers' specifications (for cutting saws, a minimum of 0.5 liters of water per minute should be used).
- When sawing concrete or masonry, we will use only saws that provide water to the blade.
- Wet slurry will be cleaned from work surfaces when the work is completed, using a wet vacuum or wet sweeping.

Barriers and Enclosures - When barriers or enclosures are used in our work the site foreman will determine the type and design of barrier or enclosure (based on the work activity and the work area) and ensure it is constructed in accordance with the work plan. Barriers may be simple hazard-flagging ribbon or more restrictive barriers.

Administrative Controls

We will follow these safe work practices:

- Exposure control plans and the site risk assessment/work plan will be submitted to the general contractor prior to the start of work.
- Housekeeping Measures Put in Place to Limit Employee Exposure to Respirable Crystalline Silica – A description of housekeeping measures used to limit exposure to respirable crystalline silica must be in place (and included in the prework hazard assessment). This can include vacuuming, sweeping, wetting and other techniques used to limit the amount of respirable crystalline silica exposure during housekeeping activities. Vacuums with high-efficiency particulate air (HEPA) filters are required.

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- We will establish procedures for housekeeping, restricting work areas, personal hygiene, worker training, and supervision.
- As part of our project planning, we will assess when silica dust may be generated and plan to eliminate or control the dust at the source. We recognize that awareness and planning are key factors in the prevention of silicosis.
- Warning signs will be posted to warn workers about the hazards of silica and to specify any protective equipment required (for example, respirators).
- Work schedules will be posted at the boundaries of work areas contaminated with silica dust.
- Work that generates silica dust will be conducted after hours, when access to other unprotected workers cannot be restricted.
- We will develop a site-specific exposure control plan to cover project-specific issues (e.g., scope of work, project location and site-specific hazards) and to be kept available at the worksite.

Personal Protective Equipment

Respiratory Protection

- When required, respirators must be provided to employees that are exposed to respirable crystalline silica.
- Respirators must be provided to employees who are or will be exposed to actionable levels of respirable crystalline silica. If an employee is performing a task listed in Table 1 of 1926.1153 (c) that does not require the use of a respirator then they are not required. All other tasks not covered by Table 1 must be accounted for by providing respirators if necessary.
- Link for Table 1 [https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=1270#1926.1153\(c\)](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=1270#1926.1153(c))
- All workers who wear respirators will do so in adherence with our respiratory protection program.
- Respirators must be selected based upon measured exposure levels and the assigned protection factor of respirators.
- Only approved respirators will be used.
- Workers who wear respirators will be clean-shaven. Filtering face piece respirators give little or no protection to workers with beards, and even a minor growth of stubble can severely reduce the effectiveness of respiratory protection.
- All workers who wear respirators will be fit-tested.
- Workers will be properly trained in the use of respirators, and a high standard of supervision, inspection, and maintenance will be followed.

Protective clothing

COMPANY will provide workers in a restricted area with protective clothing that protects other clothing worn by the worker from silica contamination, ensure that silica does not contaminate workers' street clothing, and ensure that a worker does not leave a restricted area until the worker has been decontaminated.

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Documentation

Records must be kept of the following:

- All workers who are exposed to respirable silica dust while on the job
- Worker education and training sessions
- Respirator fit-testing
- Equipment maintenance and repair
- Worksite inspections
- Medical surveillance when required

Annual Assessment

The written program's effectiveness must be reviewed at least annually. The written exposure control plan must be evaluated at least once per year and as necessary. Situations where reevaluation may be necessary include regulatory updates, changes in equipment and exposure incidents.

Medical Surveillance

A medical surveillance program for all employees whose exposure is equal to or exceeds the action level for 30 or more days per year is required every three (3) years. A medical surveillance program must be established for employees who are exposed to the action level of 8-hour TWA of 25µg/m³ of respirable crystalline silica. A baseline medical assessment must be available to exposed employees within 30 days of initial assignment unless they have previously received a suitable medical examination in the past three years. This applies to employees who would be required to wear a respirator more than 30 days per year or who are exposed to action level respirable crystalline silica for more than 30 days per year. A suitable prescreen that meets the same requirements is also acceptable.

The basics of the medical examination include:

COMPANY must bear the cost. The employee needs to go to a qualified health care professional, have an exam, and obtain a written medical opinion which is shared with COMPANY. This written opinion needs to contain:

- The date of the exam
- A statement that the exam has specifically checked for silica exposure per the requirements of the standard.
- Any recommended limitations on the employee's exposure to respirable crystalline silica as a result of the exam's findings

The employee may learn other medical information from his or her physician during the visit, but this is private and not required to be shared with COMPANY.

The exam conducted by the qualified healthcare provider must include the following:

- A review of the patient's medical and work history.

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- A physical examination with special emphasis on the respiratory system.
- A chest x-ray.
- A pulmonary function test administered by a certified spirometry.
- Testing for latent tuberculosis.
- Any other tests deemed appropriate by the healthcare provider.

Information required to be given to the healthcare provider:

- A copy of the OSHA respirable crystalline silica rule.
- Construction Standard - <https://www.osha.gov/silica/SilicaConstructionRegText.pdf>
- Construction Medical - <https://www.osha.gov/silica/AppendixBtosect1926.1153.pdf>
- General Industry/Maritime Standard <https://www.osha.gov/silica/SilicaGeneralIndustryRegText.pdf>
- General Industry/Maritime Medical <https://www.osha.gov/silica/AppendixBtosect1910.1053.pdf>
- 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 used or to be used by the employee, including when and for how long the employee has used or will use that equipment.
- Information from records of employment-related medical examinations previously provided to the employee and currently within the control of COMPANY.

Records

Applicable records must be kept. Accurate records of all air monitoring data, objective data, and medical surveillance shall be maintained as required by the regulation.

Training

Employees must be provided with training.

A training program shall be provided for all employees who are exposed to action level respirable crystalline silica. The training shall ensure that employees covered by the written exposure control plan can demonstrate knowledge and understanding of the health hazards associated with respirable crystalline silica, the specific tasks in the workplace that could result in exposure to respirable crystalline silica, the specific measures taken to protect employees from exposure to crystalline silica, the contents of the respirable crystalline silica rule, and the purpose of the medical surveillance program.

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CONTROL PLAN

Date control plan completed:		
Prime contractor:		Superintendent:
Project manager:		CSO/First aid attendant:
Project:	Address:	
Company completing work:		
Address:		Contact:
Contact phone:		Contact fax:
On-site supervisor(s):		
Worker(s):		
Scope of work to be completed:		
Work start date:		Duration: <input type="checkbox"/> Days <input type="checkbox"/> Months <input type="checkbox"/> Years
Employer responsible for:		
Supervisor responsible for:		
Worker responsible for:		
HAZARDS IDENTIFIED (other than silica dust)	CONTROL MEASURE(S)	
<input type="checkbox"/> Falls		
<input type="checkbox"/> Slipping		

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<input type="checkbox"/> Confined space	
<input type="checkbox"/> Workers above	
<input type="checkbox"/> Workers below	
<input type="checkbox"/> Noise	
<input type="checkbox"/> Electrical	
Overview of work procedure (How are you going to work safely?):	
Workers trained in (training records must be available for review):	
Proper use of grinding equipment	Y <input type="checkbox"/> N <input type="checkbox"/>
Proper use of engineering controls	Y <input type="checkbox"/> N <input type="checkbox"/>

Proper use of admin controls	Y <input type="checkbox"/> N <input type="checkbox"/>	Proper use of PPE	Y <input type="checkbox"/> N <input type="checkbox"/>
Proper disposal methods	Y <input type="checkbox"/> N <input type="checkbox"/>	Other (fall protection, swing stages, etc.)	Y <input type="checkbox"/> N <input type="checkbox"/>
Respirators (Refer to ECP for respirator requirements)			
Required: Y <input type="checkbox"/> N <input type="checkbox"/>	Available: Y <input type="checkbox"/> N <input type="checkbox"/>	Fit-tested: Y <input type="checkbox"/> N <input type="checkbox"/>	
PPE required for scope of work (other than respirator)			
<input type="checkbox"/> Coveralls <input type="checkbox"/> Gloves <input type="checkbox"/> Rubber boots <input type="checkbox"/> Eye protection <input type="checkbox"/> Reflective vest <input type="checkbox"/> Hearing protection			
Documents to be attached to control plan (<input checked="" type="checkbox"/> if present)			
<input type="checkbox"/> Exposure control program <input type="checkbox"/> Respiratory protection program <input type="checkbox"/> Training records <input type="checkbox"/> SWP (tools and equipment)			
Project management signature		Position:	Date:
Contractor supervisor signature		Position:	Date:

Task/risk management matrix (relating to silica dust) use table 1 for codes, separate with a comma (,)

#	Date/Duration	Task	Controls		PPE	Supplies/ Equipment
			Engineering	Administrative		

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Notes (For task/risk management matrix above. Use # to indicate which task the note relates to.)

SITE INSPECTION CHECKLIST (complete pre-work & periodically during project)

Engineering controls	Problem noted (DETAIL)	Problem corrected (DETAIL)
Available at site <input type="checkbox"/> Y <input type="checkbox"/> N		
Operating correctly <input type="checkbox"/> Y <input type="checkbox"/> N		
Used appropriately <input type="checkbox"/> Y <input type="checkbox"/> N		
Effective in dust control <input type="checkbox"/> Y <input type="checkbox"/> N		
Administrative controls		
Available at site <input type="checkbox"/> Y <input type="checkbox"/> N		
Used appropriately <input type="checkbox"/> Y <input type="checkbox"/> N		
In place before work start <input type="checkbox"/> Y <input type="checkbox"/> N		
Effective <input type="checkbox"/> Y <input type="checkbox"/> N		
Cleanup		
Vacuum used properly <input type="checkbox"/> Y <input type="checkbox"/> N		
Large pieces picked up <input type="checkbox"/> Y <input type="checkbox"/> N		
Vacuum capacity maintained <input type="checkbox"/> Y <input type="checkbox"/> N		
Pre-filters in place <input type="checkbox"/> Y <input type="checkbox"/> N		
Vacuum attachments used <input type="checkbox"/> Y <input type="checkbox"/> N		
Collection bags in place <input type="checkbox"/> Y <input type="checkbox"/> N		

	ALBANELLI CEMENT CONTRACTORS, INC. Safety Management System	Doc No: SILICAEXPCNT
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		Revision Date: 04/15/2022 Review Date: 04/15/2023 Review Date: 04/15/2024
		Revision No. 3
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Waste properly disposed of	Y <input type="checkbox"/> N <input type="checkbox"/>	
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TABLE 1 (Codes for task/risk management matrix)							
Engineering controls		Administrative controls		PPE		Supplies/Equipment	
1	Exhaust fan	1	Signage	1	Respirator	1	Hand grinder
2	LEV	2	After hours work	2	Gloves	2	Ceiling grinder
3	Wetting	3	Scheduling	3	Coveralls	3	Floor grinder
4	Partial enclosure			4	Hearing protection	4	Disposal bags
5	Full enclosure			5	Eye protection	5	HEPA filter (vacuum)
6	Shroud			6	Reflective vest	6	HEPA filter (respirator)
7	Barriers			7	Rubber boots (CSA)	7	Shovel
				8	Fall arrest	8	Lifeline

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SITE-SPECIFIC SILICA EXPOSURE CONTROL PLAN

Location: _____

Date: _____

Work description:

Primary silica control options (check those options used and explain use if needed)

Substitution controls (using procedures or products that do not create silica; must review MSDSs)

Other means of _____
demo: Different _____
products: Other _____
substitutions: _____

Engineering controls (when using ventilation, draw air out and don't expose others to exhaust dusts)

Vacuuming: _____
Wetting: _____
Ventilation: _____
Isolation: _____
Other means: _____

Administration controls (reducing exposure by work schedules, timing, or planning options)

Control points: _____
Work _____
schedule: _____
Other means: _____

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Secondary silica control options (check those options used and explain use if needed)

Personal protective equipment

Half-mask

respirators: _____ Cartridge type: _____ Fit tests confirmed: _____

Full-face respirators: _____ Cartridge type: _____ Fit tests confirmed: _____

Supplied air units: _____

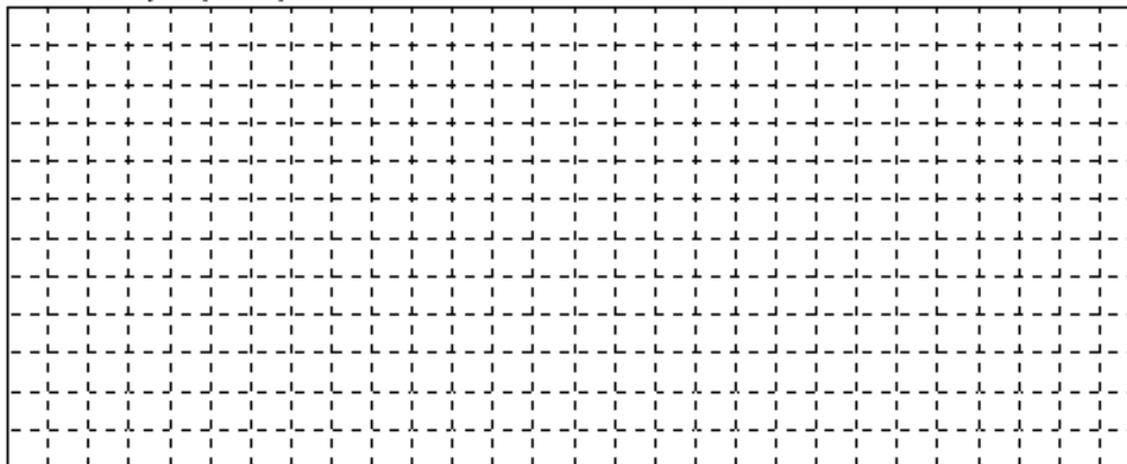
Coveralls required: _____

Hygiene and decontamination options (reducing exposures after work has stopped or during breaks) **Water or washing facilities on site:** _____

Vacuuming clothing/self: _____

Safe work procedures and other details:

Ventilation plan (sketch)





ALBANELLI CEMENT CONTRACTORS, INC.

Safety Management System

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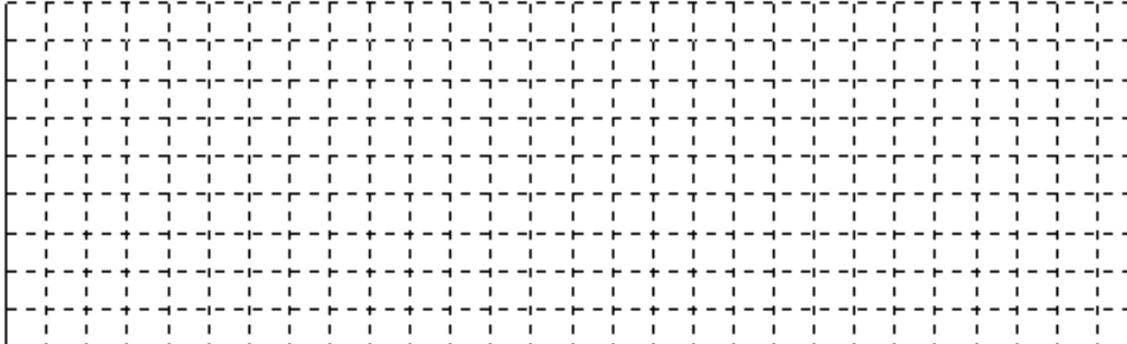
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← Show direction of airflow including makeup air locations and discharge air outlets

Area or location in building of ventilation plan (e.g., floor #, wing)

Date plan was reviewed by workers and posted for workers to see

Types of neg. air fans & no.'s *

* Indicate on plan by number the location of the negative air fans

Ventilation safety checklist

- Makeup air free of possible contaminants
- Exhaust fan operation has failure warning
- Dilution fans not stirring up dust
- Workers not placed between contaminants created and exhaust inlet ports
- Discharge air not affecting others
- All workers equipped with approved respirators
- Wetting of materials used to keep dust down

Note: Attach additional sheets if needed or other documents if required due to hazards or work conditions.

Print supervisor's name

Supervisor's signature

E. Location of Safety Data Sheets

SDSs will be kept in an open file located in the main office and/or jobsite trailer. Supervisors will also carry a copy of the SDSs in their truck. Employees are encouraged to review these sheets as often as they feel necessary. Anyone wishing to copy a SDS for their own use is encouraged to do so, but the original must not be removed from the file.

F. Warning Labels

Containers that have hazardous chemicals inside will be marked with warning labels. Since we do not produce or re-package any hazardous chemicals, our responsibilities are limited to insuring that hazardous chemicals are properly labeled when they arrive. Improperly marked containers will not be accepted.

G. Location of Employee Rights Poster

A poster that outlines employee rights under this law will be posted on the employee bulletin board. Employees who have any questions that cannot be answered by the supervisor will be directed to our office.

H. Training of New Employees

Any new employee will be thoroughly trained in the elements of the "Right to Know Law" prior to entering a workplace where he may be exposed to hazardous materials. This training will be done by their supervisor and consist of reviewing the elements of the law and pertinent parts of the Safety Data Sheets in the "Right to Know" file. Particular emphasis will be placed on employee recall. The training outline contained in Section III will be used as a guide to insure the quality of this training. Workers will fill out the Hazard Communication worksheet as they undergo training.

I. Methods Used to Inform Employees of the Hazards of Non-Routine Tasks

Employees involved in non-routine tasks (such as tank cleaning and maintenance) will be informed of the hazards involved and trained at specific training sessions so as to insure awareness of required information.

J. Methods Used to Inform Contractor Employers

Subcontractors who may be exposed to hazardous chemicals will be informed both verbally and by means of an information sheet, as to hazards involved at a meeting before any work is accomplished.

K. Hazards of Unlabeled Piping

If work must be done on unlabeled piping the contents of that piping must be identified and communicated to the workers that will be performing the work. Under no circumstances will non-qualified or non-trained workers open unlabeled piping.

SECTION III
TRAINING OUTLINE
"Right to Know" Program

Introduction

The concept of the Hazard Communication Program was born in 1974 when the Standards Advisory Committee was formed to develop guidelines to implement Section 6 (B) 7 of the Occupational Safety and Health Act. This rule became law in 1984 and became known as 29 CFR Section 1910.1200. This law was designed to provide employees with the training necessary to safely deal with hazardous chemicals in the workplace. Its original intent was to provide information to employees in SIC Codes 20-39 which are manufacturing industries which use large quantities of hazardous materials. The scope has since been expanded to include all companies.

I. Basic Elements of the Right to Know Program

- A. The Program is directed at two general groups: chemical manufacturers and chemical users.
- B. There are five basic categories of the federal law.

They are:

- 1. Evaluate chemical hazards.
- 2. Affix warning labels.
- 3. Provide Safety Data Sheets
- 4. Conduct chemical handling training.
- 5. Develop a written program.

C. A detailed explanation of each of these requirements is as follows:

1. Evaluate chemical hazards.

Each employer is required to inventory all of the materials used by his employees and determine if they are hazardous materials and should fall under this program. Any chemicals listed by the following sources are directly applicable to the Hazard Communication Standard.

- a. Occupational Safety and Health Administration
- b. American Conference of Governmental Industrial Hygienists (ACGIH)
- c. National Toxicology Program
- d. International Agency for Research on Cancer

The materials covered by this program are any materials that constitute a physical, toxicological or carcinogenic hazard to the worker.

2. Affix warning labels.

Manufacturers of hazardous materials are required to label all shipping containers holding their products. These labels must be on the box holding individual containers and on the individual containers. The labels may show the chemical name or its common name designation, and the label must contain a warning describing the primary health and physical hazards of the chemical. As an end user who does not manufacture or re-package hazardous chemicals, our responsibilities are limited to insuring that proper warning labels are on all hazardous chemical containers when they arrive at our office. Shipments of hazardous chemicals that arrive without proper warning labels will not be accepted.

3. Provide Safety Data Sheets (SDS).

SDSs must be obtained on all hazardous materials falling under the program. These sheets must be kept in a file that is accessible by all employees. These sheets contain the information that is necessary to determine the hazards involved with working with these chemicals. In addition, these sheets outline the protective measures that must be taken to prevent exposure to the chemicals and first aid procedures that should be implemented if an employee becomes exposed. The location of these sheets will be outlined in the written program.

Manufacturers of these materials are required to provide the consumer with Material Safety Data Sheets. If these sheets are not provided with the first shipment, they can be requested from the manufacturer.

4. Conduct chemical handling training.

Employee training sessions must highlight the following five areas:

- a. Review the purpose of the Hazard Communication Standard.
- b. Describe the Safety Data Sheet's use and cataloging system.
- c. Review the hazards of the chemicals used by employees.
- d. Describe the safety measures for controlling the hazard.
- e. Summarize the particular hazardous materials used by the employer.

Training is required for all employees who are exposed to hazardous chemicals in the workplace. The Right to Know Law is a performance-oriented standard, meaning that the effectiveness of the program will be evaluated by how well the employees have been informed about the hazardous work environment.

II. Review of Hazardous Materials

The Safety Data Sheets of all the hazardous materials used in this company will be reviewed one by one with the important points being explained to the employees. The most important points on the SDS are the following items:

1. The nature of the hazard that the chemical presents, i.e., flammable, carcinogenic, reactive, etc.
2. Method of entry into the body, i.e., inhalation, absorption, or ingestion.
3. Protective measures needed to prevent overexposure.
4. First aid to be implemented if overexposure occurs.

Appendix A

WORKPLACE CHEMICAL LIST

EMPLOYER NAME: ALBANELLI CEMENT CONTRACTORS, INC. FEDERAL I.D.# _____ - _____

ADDRESS: _____

WORKPLACE LOCATION: Various job sites
 (Not P.O. Box),
 IDENTIFICATION (if any), AND COUNTY: _____

PRIMARY SIC CODE _____ SECONDARY SIC CODE _____
 (optional)

TERTIARY SIC CODE _____ NUMBER EMPLOYEES _____
 (optional)

DESCRIPTION OF PROCESS OR OPERATION Construction

CHEMICAL/SUBSTANCE NAME	CHEMICAL ABSTRACTS Services (CAS.) No.	COMMON OR TRADE NAME(S) (Label Identify)	WORK AREA WHERE CHEMICAL IS NORMALLY USED OR STORED
<u>oxygen</u>	<u>7782-44-7</u>	<u>oxygen</u>	<u>jobsites</u>
<u>acetylene</u>	<u>74-86-2</u>	<u>acetylene</u>	<u>jobsites</u>
<u>petroleum lubricant</u>	<u>8042-47-5</u>	<u>motor oil</u>	<u>jobsites</u>
<u>diesel fuel</u>	<u>68476-30-2</u>	<u>diesel</u>	<u>jobsites</u>
<u>toluene</u>	<u>108-88-3</u>	<u>diesel additive</u>	<u>jobsites</u>
<u>naphthalene</u>	<u>91-20-3</u>	<u>diesel additive</u>	<u>jobsites</u>
<u>unleaded gasoline</u>	<u>64741-47-5</u>	<u>gas</u>	<u>jobsites</u>
<u>benzene</u>	<u>71-43-2</u>	<u>gas</u>	_____
<u>H2S</u>	<u>7783-06-4</u>	<u>gas</u>	_____
<u>carbon monoxide</u>	<u>630-08-0</u>	<u>carbon monoxide</u>	<u>jobsites</u>
_____	_____	_____	_____
_____	_____	_____	_____

BLOODBORNE PATHOGENS AND BODILY FLUIDS EXPOSURE CONTROL POLICY

Albanelli Cement Contractors, Inc. is committed to providing a safe and healthful work environment for our entire staff. In pursuit of this goal, the following exposure control plan (ECP) is provided to eliminate or minimize occupational exposure to bloodborne pathogens in accordance with OSHA standard 29 *CFR* 1910.1030, "Occupational Exposure to Bloodborne Pathogens."

1. Purpose

The purpose of this exposure control plan is to eliminate or minimize employee occupational exposure to blood or other potentially infectious materials as detailed in the Bloodborne Pathogens standard.

2. Exposure Determination

OSHA requires employers to perform an exposure determination concerning which employees may incur occupational exposure to blood or other potentially infectious materials. The exposure determination is made without regard to the use of personal protective equipment (i.e., employees are considered to be exposed even if they wear personal protective equipment.) This exposure determination is required to list all job classifications (e.g., maintenance crew, janitorial services, first aid responders, etc.) are in this category:

In this company no employees have been given job descriptions that include occupational exposure to blood or other body fluids. However, due to the nature of the work performed by this company, all employees have a potential exposure to bloodborne pathogens that may result from accidents on the job. For this reason, this plan is being implemented.

3. Implementation Schedule and Methodology

OSHA also requires that this plan also include a schedule and method of implementation for the various requirements of the standard. The following complies with this requirement:

A. Compliance Methods

Universal precautions will be observed in order to prevent contact with blood or other potentially infectious materials. All blood or other potentially infectious material will be considered infectious regardless of the perceived status of the source individual.

Protective gloves and spill clean up materials are available in all company first aid kits.

Hand washing facilities are also available to the employees who incur exposure to blood or other potentially infectious materials. OSHA requires that these facilities be readily

accessible after incurring exposure. Hand washing facilities are located at the office restrooms.

After removal of personal protective gloves, employees shall wash hands and any other potentially contaminated skin area immediately or as soon as feasible with soap and water.

If employees incur exposure to their skin or mucous membranes then those areas shall be washed or flushed with water as appropriate as soon as feasible following contact.

B. Work Practices

All procedures will be conducted in a manner that will minimize splashing, spraying, splattering and generation of droplets of blood or other potentially infectious materials. Methods that will be employed in this company to accomplish this goal are:

- All first aid kits will be equipped with Bloodborne Pathogens kits that will include gloves and protective eyewear.
- Annual training will be conducted to train workers on the principles of universal precautions.

C. Personal Protective Equipment

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

All garments that are penetrated by blood shall be removed immediately or as soon as feasible. All personal protective equipment will be removed prior to leaving the work area.

Gloves will be worn where it is reasonably anticipated that employees will have hand contact with blood, other potentially infectious materials, non-intact skin, and mucous membranes. Gloves will be available from first aid kits.

4. Evaluation of Circumstances Surrounding Exposure Incidents

When the employee incurs an exposure incident, it should be reported to their supervisor who will then notify the Company Safety Director.

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

This follow-up will include the following:

- Documentation of the route of exposure and the circumstances related to the incident
- If possible, the identification of the source individual and, if possible, the status of the source individual. The blood of the source individual will be tested (after consent is obtained) for HIV/HBV infectivity.
- The results of testing of the source individual will be made available to the exposed employee with the exposed employee informed about the applicable laws and regulations concerning disclosure of the identity and infectivity of the source individual
- The employee will be offered the option of having their blood collected for testing of the employee's HIV/HBV serological status. The blood sample will be preserved for at least 90 days to allow the employee to decide if the blood should be tested for HIV serological status. However, if the employee decides prior to that time that testing will be conducted then the appropriate action can be taken, and the blood sample discarded.
- The employee will be offered post exposure prophylaxis in accordance with the current recommendations of the U.S. Public Health Service.
- The employee will be given appropriate counseling concerning precautions to take during the period after the exposure incident. The employee will also be given information on what potential illnesses to be alert for and to report any related experiences to appropriate personnel.

5. Interaction with Health Care Professionals

Certain information is required to be provided to the health care professional responsible for providing an employee with the Hepatitis B vaccine and also certain information is required to be provided to the health care professional who conducts an evaluation of an employee following an exposure incident. This informational requirement is listed in paragraph (f) (4) of the standard.

A written opinion shall be obtained from the health care professional that evaluate employees of this facility. Written opinions will be obtained in the following instances:

- 1) When the employee is sent to obtain the Hepatitis B vaccine.
- 2) Whenever the employee is sent to a health care professional following an exposure incident.

Health care professionals shall be instructed to limit their opinions to:

- 1) Whether the Hepatitis B vaccine is indicated and if the employee has received the vaccine, or for evaluation following an incident

- 2) That the employee has been informed of the results of the evaluation, and
- 3) That the employee has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials. (Note that the written opinion to the employer is not to reference any personal medical information)

6. Training

Training for all employees will be conducted prior to initial assignment to tasks where occupational exposure may occur. Training will be conducted in the following manner:

Training for employees will include an explanation of the following:

- 1) The OSHA standard for Bloodborne Pathogens
- 2) Epidemiology and symptomology of bloodborne diseases
- 3) Modes of transmission of bloodborne pathogens
- 4) This Exposure Control Plan, i.e., points of this plan, lines of responsibility, how the plan will be implemented, etc.)
- 5) Procedures which might cause exposure to blood or other potentially infectious materials on this project
- 6) Control methods that will be used at the facility to control exposure to blood or other potentially infectious materials.
- 7) Personal protective equipment available on this project and who should be contacted concerning
- 8) Post exposure evaluation and follow-up
- 9) Signs and labels used at the facility
- 10) Hepatitis B vaccine program at the facility

All employees will receive annual refresher training. (Note that this training is to be conducted within one year of the employee's previous training.)

7. Recordkeeping

All records required by the OSHA standard will be maintained by the Main Office

HEPATITIS B VACCINE DECLINATION (MANDATORY)

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

Signed: _____ Date: _____

(Employee Signature)