



Bernie Buchner, Inc.

"EQUAL OPPORTUNITY EMPLOYER"

224 CAUSEWAY BOULEVARD • LA CROSSE, WISCONSIN 54603 • (608) 784-9000

Safety Manual



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General Safety Manual

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Corporate Safety Policy

The Occupational Safety and Health Act of 1970 clearly states our common goal of safe and healthful working conditions. The safety and health of our employees continues to be the first consideration in the operation of our business.

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

It is the intent of **Bernie Buchner, Inc.** to comply with all laws. To do this we must constantly be aware of conditions in all work areas that can produce injuries. No employee is required to work at a job he or she knows is not safe or healthful. Your cooperation in detecting hazards and, in turn, controlling them is a condition of your employment. Inform your supervisor immediately of any situation beyond your ability or authority to correct.

The personal safety and health of each employee of **Bernie Buchner, Inc.** is of primary importance. The prevention of injuries and illnesses is of such consequence that it will be given precedence over operating productivity whenever necessary. To the greatest degree possible, management will provide all mechanical and physical facilities required for personal safety and health in keeping with the highest standards.

Our objective is a safety and health program that will reduce the number of injuries and illnesses to an absolute minimum. Our goal is always zero accidents and injuries.



_ Signature

Project Manager/Safety Officer

Name and Title

Company Policies and Procedures

1. PROGRAM REQUIREMENTS.

Bernie Buchner, Inc. will ensure that the hazards at our jobsites are evaluated and communicated to its employees and that proper protective measures are provided. Safety is also the responsibility of every employee of this company. The Safety Officer is the sole person authorized to amend these instructions. This program will be maintained in accordance with OSHA Regulations 29 CFR 1910 and 29 CFR 1926. In addition, *Bernie Buchner, Inc.* will review and evaluate this program on an annual basis or when operational changes occur that require a revision of this document.

2. WRITTEN INDIVIDUAL PROGRAMS.

Bernie Buchner, Inc. will maintain written individual procedures for the types of hazards/issues that our employees will or could potentially be exposed to. Each program will be reviewed/revise on an annual basis or as required by the respective governing OSHA Standard. Each written program will be communicated to all personnel that are affected by it. Each will encompass the total workplace, regardless of number of workers employed or the number of work shifts. They will be designed to establish clear goals and objectives.

3. HEALTH AND SAFETY PROGRAM RESPONSIBILITY.

3.1. Company Owner Responsibilities. The Owner of *Bernie Buchner, Inc.* recognizes the importance of safety and has committed to creating a place of employment which is free from recognized hazards. The Owner is ultimately responsible for the safety of all employees of *Bernie Buchner, Inc.*. The Owner will ensure that all levels of management in the company are delegated the necessary authority to cultivate a safe environment and to take the appropriate actions to correct any deviations or deficiencies relating to safety on the job. The Owner will also be responsible for making available the funds necessary to ensure that employees are provided with effective safety equipment to perform their work.

3.2. Safety Officer Responsibilities. The company Safety Officer will be responsible for the day to day management of the company safety program. The Safety Officer will assist the company in remaining in compliance with all applicable health and safety regulations. The Safety Officer will identify and coordinate training sessions to ensure that all employees are equipped with the needed safety skills and knowledge. The Safety Officer will perform inspections of jobsites and facilities and take the appropriate actions to correct any deviations or deficiencies relating to safety on the job. *Ryan Deml SO* has been designated as the Safety Officer for *Bernie Buchner, Inc.*

3.3. Project Manager Responsibilities. Project Managers will be responsible for safety on their respective projects. They will be expected to involve the Safety Officer at the beginning of every project even before work has started. Project Managers will take recommendations from and work with the Safety Officer to ensure the safety of employees on the job.

- 3.4. Supervisor Responsibilities. Company Supervisors are responsible for the daily enforcement of the policies and procedures in the ***Bernie Buchner, Inc.*** safety program. They will be responsible for all aspects of employee safety in their respective areas. They will conduct periodic safety meetings for their employees. Supervisors will monitor the safety of employees on a daily basis and take the appropriate actions to correct any deviations or deficiencies relating to safety on the job. Supervisors will be attentive to employee safety concerns and report them to the Safety Officer. They will keep in communication with the Safety Officer to ensure all employees receive training, refresher training, or retraining as needed.
- 3.5. Employee Responsibilities. Employees are the first lines of defense as it pertains to safety at all ***Bernie Buchner, Inc.*** jobsites. Employees are expected to abide by all of the safety policies and procedures in the company safety program. They will be held responsible for their own safety and are expected to report unsafe conditions to their Supervisors immediately. If the Supervisor is unavailable, they will report safety violations or concerns to the Company Owner or Safety Officer. Employees, if feasible, are also expected to correct safety violations within their immediate areas. They will ensure they report to work in a state of readiness, with the appropriate clothing, and with all issued personal protective equipment. Employees will only operate equipment on which they have been trained and authorized to use. They will report accidents, injuries, and near misses immediately to their Supervisor.

4. JOB SAFETY PLANNING AND ANALYSIS.

- 4.1. Pre-Construction. ***Bernie Buchner, Inc.*** is dedicated to ensuring the safety of all employees. For this reason, safety is considered even before contracts are awarded. The Safety Officer will be involved throughout the bid process to ensure that special tasks or procedures requiring additional safety precautions are identified as soon as practicable. In addition, once the contract has been awarded and before the project begins, a pre-construction safety meeting should be held with the Prime or General Contractor, Subcontractors, and other applicable parties to discuss the following:
 - 4.1.1. Safety Management specifics and controls.
 - 4.1.2. Subcontractor requirements.
 - 4.1.3. Job hazard analysis.
 - 4.1.4. Special safety equipment, tools, hazards, or methods that will help in completing the job efficiently and safely.
 - 4.1.5. Safety Training and Orientation.
 - 4.1.6. Job-site safety inspections.
- 4.2. Job Safety (Hazard) Analysis. Job hazard analysis is to be used to make a habit of safe work practices. It is also beneficial as a guideline to follow during new employee training efforts and for quickly identifying the cause of an accident should one occur. Each analysis should be periodically reviewed for possible improvements. All

supervisors will be familiar with the proper completion of a Job Safety (Hazard) Analysis. The following basic steps should be followed in preparation of a job hazard analysis:

- 4.2.1. Select the jobs or specific tasks for hazard analysis.
- 4.2.2. Consider the task to be performed and inspect the area(s) to identify potential hazards.
- 4.2.3. Break the job or task into individual components or activities.
- 4.2.4. Identify the hazards associated with each component activity (ex. Falls, electric shock, chemical exposure, cuts, etc.).
- 4.2.5. Identify what procedures or equipment are needed to perform each component activity safely (ex. Ladders, scissor lifts, personal protective equipment, etc.).
- 4.2.6. Apply the analysis to the job.

5. ROUTINE SAFETY AND HEALTH INSPECTIONS.

Routine safety and health inspections of all job sites will be conducted as necessary by the Safety Officer or designated individual. The inspection will be conducted to discover conditions and work practices that may lead to job accidents and industrial illnesses, through specific, methodical auditing, checking, or inspection procedures.

5.1. Inspection elements. The following inspection elements will be checked during safety inspections.

- | | |
|-------------------------|---|
| 5.1.1. Floors | Condition, slip, trip, falls |
| 5.1.2. Aisles | Marking, obstructions |
| 5.1.3. Stairs | Condition, railings, obstructions |
| 5.1.4. Ladders | Condition, Metal in electrical areas |
| 5.1.5. Exits | Obstructions, locked, lighted |
| 5.1.6. Ventilation | Adequate, fans guarded, maintained |
| 5.1.7. Hand tools | Grounded, guarded, pressure switches |
| 5.1.8. Chemicals | MSDS's, labels, storage, separated |
| 5.1.9. Compressed gas | Storage, heat sources, labels, training |
| 5.1.10. Guarding | Installed, over, under, around, between |
| 5.1.11. Lockout Tagout | Procedures, training, devices, tags |
| 5.1.12. Eye protection | Used, training, Z-87 rated protectors |
| 5.1.13. Fire protection | Extinguishers, training, locations |
| 5.1.14. First Aid | Kits, OSHA logs, training |

- 5.1.15. Confined Spaces Marked, training, ventilation, equipment
- 5.1.16. Work practices Unsafe work practices observed? (list)
- 5.2. Inspection report. The Safety Officer will provide a safety report based on the inspection items noted during the inspection to the appropriate supervisor.

6. SAFETY MEETINGS.

A well-ordered flow of information is essential to a good safety program. The company, through a program of safety meetings at all levels, intends to accomplish the goals of safety awareness, education, and participation.

- 6.1. We are committed to efficient and quality training that increases safety awareness amongst all employees.
- 6.2. Safety meetings for employees will be held on a regular basis to demonstrate management's commitment to accident prevention. Possible agenda items include but are not limited to the review of accidents, safety education, safety inspections, elimination of workplace hazards, new methods of improving job performance, employee training, personal protective equipment, safety incentives, hazard communication, lockout/tagout, respiratory protection, fall protection, and other safety policies.
- 6.3. It is vital to this Workplace Safety Program that all safety training and meetings be carefully documented. Written records of all safety meetings are the responsibility of the Supervisor(s). Training activities are the responsibility of the Safety Officer.

7. HAZARD REPORTING.

All employees are required to report potential or known hazards immediately upon identification. If possible, the hazard should be eliminated immediately when found. Otherwise, the immediate supervisor must be notified and all work where employees are exposed to the hazard must be discontinued until the hazard has been removed.

8. FIRST AID PROCEDURES.

- 8.1. Serious Injuries. Supervisors will be responsible to ensure all employees report serious accidents or injuries immediately to the Safety Officer. Where employees require professional medical attention, the Supervisor will accompany the employee to the hospital or clinic and observe the employee's condition and status. The supervisor will report directly to the Safety Officer the condition of the employee and ensure that proper accident investigation procedures are followed.
- 8.2. Minor injuries. Minor injuries, such as cuts, scratches, bruises, and burns that do not require a doctor's treatment, may be handled by the employee at the jobsite. Recurring first aid injuries will be reported to the Safety Officer to ensure they do not become serious.

- 8.3. First Aid Kits. First aid kits will be maintained at each jobsite by the Supervisor. All employees will be made aware of the location and availability of the first aid kit. The type of first aid kit to be maintained will be for minor emergencies such as cuts and skin abrasions.

9. ACCIDENT INVESTIGATION.

Accident investigation is primarily a fact-finding procedure; the facts revealed are used to prevent recurrences of similar accidents. The focus of accident investigation will be to prevent future accidents and injuries to increase the safety and health of all our employees.

9.1. Immediate concerns.

9.1.1. Ensure any injured person receives proper care.

9.1.2. Ensure co-workers and personnel working with similar equipment or in similar jobs are aware of the situation. This is to ensure that procedural problems or defects in certain models of equipment do not exist.

9.1.3. Start the investigation promptly.

9.2. Accident Investigation Form. An investigation form which details specific company requirements for investigation will be used to gather data to determine causes and corrective actions. As a minimum the form will contain the following areas of concern.

9.2.1. Accident investigation form data.

- Injured employee's name
- Date and time of injury
- Occupation or task being performed when injured
- Employee's address
- Sex/age/DOB
- Social security number
- Length of service
- Length of time at specific job
- Time shift started
- Overtime length when injury occurred
- Physician's and hospital name (if transported)
- Type of injury
- Resulting fatalities
- Description and analysis of accident
- Action taken to prevent recurrence and person
- Employee's statement
- Witnesses' statement
- Person completing form and date
- Person reviewing form and date

9.3. Supervisors are responsible for ensuring that employees follow safe work practices and receive appropriate training to enable them to do this. Supervisors will be responsible

to fill out accident reporting/investigation requirement forms and to reinforce the *Bernie Buchner, Inc.* safety program.

10. GENERAL SAFETY RULES FOR ALL EMPLOYEES.

The following safety rules are established by this company as general safety rules for all Employees.

- 10.1. Never operate any machine or equipment unless you are authorized and trained to do so.
- 10.2. Do not operate defective equipment. Do not use broken hand tools. Report them to your supervisor immediately.
- 10.3. Never start on any hazardous job without being completely familiar with the safety techniques which apply to it. Check with your supervisor if in doubt.
- 10.4. Make sure all safety attachments are in place and properly adjusted before operating any machine.
- 10.5. Do not operate any machine or equipment at unsafe speeds. Shut off equipment which is not in use.
- 10.6. Wear all protective garments and equipment necessary to be safe on the job. Wear proper shoes. Sandals or other open-toed or thin-soled shoes should not be worn.
- 10.7. Do not wear loose, flowing clothing or long hair while operating moving machinery.
- 10.8. Never repair or adjust any machine or equipment unless you are specifically authorized to do so by your foreman.
- 10.9. Never oil, clean, repair, or adjust any machine while it is in motion.
- 10.10. Never repair or adjust any electrically driven machine without opening and properly tagging the main switch.
- 10.11. Put tools and equipment away when they are not in use.
- 10.12. Do not lift items which are too bulky or too heavy to be handled by one person. Ask for assistance.
- 10.13. Keep all aisles, stairways, and exits clear of skids, boxes, air hoses, equipment, and spillage.
- 10.14. Do not place equipment and materials so as to block emergency exit routes, fire boxes, sprinkler shutoffs, machine or electrical control panels, or fire extinguishers.
- 10.15. Stack all materials neatly and make sure piles are stable.
- 10.16. Keep your work area, machinery and all company facilities which you use clean and neat.
- 10.17. Do not participate in horseplay, or tease or otherwise distract fellow workers.

- 10.18. Power-truck operators must safeguard other workers at all times; workers must show courtesy to power-truck operators.
- 10.19. Floor mounted extension cords should be placed so that they are flush to the ground at all times.
- 10.20. Frayed or damaged electrical cords should be replaced.
- 10.21. Never take chances. If you're unsure, you're unsafe!
- 10.22. Ask for help, if needed.

11. FIRE PREVENTION AND PROTECTION.

Fire and explosion pose a serious risk to our employees during operations involving open flames or high heat sources such as the use of propane or electric torches. Flames can be produced which could quickly become uncontrollable under certain situations. For this reason, all employees will be trained in these procedures:

- 11.1. Basic safety precautions. Heat, open flame, or any operations where sparks may be produced will be permitted only in areas that are or have been made fire safe. When work cannot be moved practically, as in most construction work, the area will be made safe by removing combustibles or protecting combustibles from ignition sources.
- 11.2. Fire extinguishers. Suitable fire extinguishing equipment will be maintained in a state of readiness for instant use. Such equipment may consist of hose or portable extinguishers depending upon the nature and quantity of the combustible material exposed. Employees will not use portable fire extinguishers unless they have been trained.
- 11.3. Housekeeping. All employees will be familiar with the Housekeeping Program and will follow all applicable requirements as stated therein to ensure that flammable or combustible materials do not accumulate in the work area.
- 11.4. Chemical Storage. *Bernie Buchner, Inc.* will ensure that proper storage locations are provided to employees using chemicals. Flammable chemicals will be stored in approved locations or flammable liquids cabinets designed in accordance with 29 CFR 1910.106. Toxic and corrosive chemicals will be stored apart from flammable chemicals and will be further segregated according to acidity and/or alkalinity. All chemical storage location will be approved by the Safety Officer before use.
- 11.5. Authorization. Employees performing heat or open flame operations must obtain authorization from their Supervisor. Where required, employees will fill out a Hot Work permit.

12. EVACUATION PROCEDURES.

All employees upon receipt of an evacuation order will exit the work area via the Nearest Unaffected Exit. They will proceed to the designated evacuation muster point for the area they were in at the time of the evacuation order, quickly and quietly. They will also upon request, aid their supervisor in taking role or by being a runner.

- 12.1. Egress Routes. All employees will become familiar with the location of all posted egress routes of the facility areas that they frequent and will know the primary and secondary egress routes of their work area.
- 12.2. Evacuation Muster Points. All employees will become familiar with the marked evacuation muster points and will know the primary evacuation muster point of the facility areas that they frequent and for their work area. NO ONE WILL LEAVE AN EVACUATION MUSTER POINT WITHOUT THE EXPRESS PERMISSION OF THE SENIOR EMPLOYEE PRESENT.
- 12.3. Severe Weather Safe Spots. All employees will become familiar with posted Severe Weather Safe Spots and will know the location of the nearest Severe Weather Safe Spot for the areas that they frequent and their work area. Upon the announcement of severe weather, proceed to the designated safe spot.
- 12.4. Arrival Actions. Upon arrival at an evacuation muster point, each employee will seek out the senior employee present to assure that they have been accounted for. They will also, upon request, aid area supervisors or managers in taking a role or by being a runner.
- 12.5. Visitor Escorts. Each visitor at the facility must be escorted at all times throughout the facility or jobsite by a company employee. The escort will ensure their visitor is escorted to an evacuation muster point or safe spot as required. Upon arrival at an evacuation muster point, the visitor's name will be forwarded to the employee in charge at the evacuation muster point.

13. RECORDKEEPING REQUIREMENTS.

Bernie Buchner, Inc. fully understands that companies with eleven (11) or more employees at any time during the calendar year immediately preceding the current calendar year must comply with the provisions of 29 CFR 1904. Records will be established on a calendar year basis.

- 13.1. ***Bernie Buchner, Inc.*** will report to OSHA, as required by 29 CFR 1904.39, all fatalities, hospitalizations, amputations, and losses of an eye as a result of work-related incidents. Incidents that will be reported to the nearest OSHA Area Office include:
 - 13.1.1. Fatalities within eight hours after the occurrence to one or more employees, and
 - 13.1.2. Within 24 hours of learning of any incident which results in hospitalization, amputation, or loss of an eye of an employee.
- 13.2. Log and summary of occupational injuries and illnesses. This employer will:
 - 13.2.1. Maintain a log and summary of all recordable occupational injuries and illnesses by calendar year.
 - 13.2.2. Enter each recordable injury and illness on the log and summary as early as practicable but no later than 7 working days after receiving information that a

recordable injury or illness has occurred. For this purpose, form OSHA No. 300 or an equivalent which is as readable and comprehensible to a person not familiar with it will be used. The log and summary will be completed in the detail provided in the form and instructions on form OSHA No. 300.

- 13.3. Supplementary record. In addition to the log of occupational injuries and illnesses (OSHA 300) **Bernie Buchner, Inc.** will have available for inspection at each of our facilities within 7 working days after receiving information that a recordable case has occurred, a supplementary record for each occupational injury or illness for that establishment. The record will be completed in the detail prescribed in the instructions accompanying Occupational Safety and Health Administration Form OSHA No. 301. Workmen's compensation, insurance, or other reports are acceptable alternative records if they contain the information required by Form OSHA No. 301 (according to OSHA). If no acceptable alternative record is maintained for other purposes, Form OSHA No. 301 will be used, or the necessary information will be otherwise maintained.
- 13.4. Annual summary. **Bernie Buchner, Inc.** will post an annual summary of occupational injuries and illnesses for each facility under our control. This summary will consist of a copy of the year's totals from the form OSHA No. 300A and the following information from that form:
 - 13.4.1. Calendar year covered.
 - 13.4.2. Company Name and establishment address.
 - 13.4.3. Certification signature, title, and date.
 - 13.4.4. A form OSHA No. 300A will be used in presenting the summary. If no injuries or illnesses occurred in the year, zeros will be entered on the totals line, and the form posted.
 - 13.4.5. The summary will be completed by February 1 of each calendar year. This company, or the officer or employee of **Bernie Buchner, Inc.** who supervises the preparation of the log and summary of occupational injuries and illnesses, will certify that the annual summary of occupational injuries and illnesses is true and complete. The certification will be accomplished by affixing the signature of the employer, or the officer or employer who supervises the preparation of the annual summary of occupational injuries and illnesses, at the bottom of the last page of the summary.
 - 13.4.6. **Bernie Buchner, Inc.** will post a copy of the establishment's summary in each facility. The summary covering the previous calendar year will be posted no later than February 1 and will remain in place until April 30. For employees who do not primarily report or work at a fixed site belonging to this company, or who do not report to any fixed site on a regular basis, we will satisfy this posting requirement by presenting or mailing a copy of the summary during the month of February of the following year to each such employee who receives pay during that month. (NOTE: For multi-establishment employers

where operations have closed down in some establishments during the calendar year, it will not be necessary to post summaries for those establishments).

- 13.5. Records retention. Records will be retained for 5 years following the end of the year to which they relate.

14. DISCIPLINARY ACTIONS FOR WILLFUL UNSAFE ACTS.

Employee safety is paramount at *Bernie Buchner, Inc.*. The willful commitment of an unsafe act cannot be condoned. Employees who willfully jeopardize their own or coworkers' safety will be disciplined. The type of discipline can range from a verbal warning to dismissal. The Safety Officer, and supervisory personnel in the administrative chain of any employee may give employees a verbal warning for a known unsafe act or procedural, or operational infraction. Disciplinary action other than a release from shift without pay must be reviewed by the company Owner.

14.1. Forms of discipline.

- 14.1.1. Verbal warning. The company Safety Officer, and supervisory personnel in the administrative chain of any employee may give employees a verbal warning for a known unsafe act or procedural, or operational infraction. A second verbal warning in the same shift will be grounds for release from the current work shift without pay. The immediate supervisor will be consulted in all cases and will make the determination for release.
- 14.1.2. Written warning. A written warning will be issued automatically for a second verbal warning for an unsafe act. The written warning will become part of the employee's permanent personnel record.
- 14.1.3. Retraining. It must be considered that the possibility exists that lack of proper training may be a cause of any unsafe act. Supervisors will review the need for employee remedial training in their job skill to enable them to better accomplish their jobs.
- 14.1.4. Dismissal hearing. The employee concerned will be notified of his or her rights in advance of termination. The option of dismissal will be reviewed by the company Owner before termination. The immediate supervisor will be consulted to determine if a lesser form of discipline is warranted. The employees' rebuttal (if provided) will be considered along with the severity of the act, the supervisor's recommendation and any other supporting information provided at the time of the hearing.

Hazard Communication Program

1. PROGRAM REQUIREMENTS.

Bernie Buchner, Inc. will ensure that the hazards of all chemicals used at our job sites are evaluated and that information concerning their hazards is transmitted to all employees. The purpose of this program is to address the issues of evaluating the potential hazards of chemicals, communicating information concerning these hazards, and establishing appropriate protective measures for employees. This program will be maintained in accordance with 29 CFR 1910.1200 and updated annually or as required. *Bernie Buchner, Inc.* will make the written hazard communication program available to all employees, during each work shift. *Bernie Buchner, Inc.* acknowledges that the Hazard Communication requirements have been aligned with the **Globally Harmonized System of Classification (GHS)** and Labeling of Chemicals.

2. RESPONSIBILITY.

The Safety Officer is the program coordinator, acting as the representative of the company owners, who have the ultimate responsibility for all facets of this program. The Safety Officer has full authority to make necessary decisions to ensure success of the program. *Bernie Buchner, Inc.* will submit a copy of this program to any Prime or General Contractor upon request. Supervisors are required to be familiar with the contents of this program, will ensure the program is followed by their subordinates on a daily basis, and will maintain a copy of the program and SDS's available for their subordinates.

3. TRAINING REQUIREMENTS.

Bernie Buchner, Inc. will provide employees with information and training on hazardous chemicals in their work area at the time of their initial assignment, annually, and whenever a new chemical is introduced into their work area that could present a potential hazard.

3.1. Information. *Bernie Buchner, Inc.* employees will be informed of:

3.1.1. The OSHA standard 29 CFR 1910.1200.

3.1.2. Any operations in the jobsite where hazardous chemicals are present.

3.1.3. The location and availability of the written hazard communication program, including a list(s) of hazardous chemicals used at the jobsite, and the associated safety data sheet (SDS).

3.2. Training. Employee hazard communication training at *Bernie Buchner, Inc.* will be conducted annually by the Safety Officer or an approved training provider. Newly hired personnel will be briefed on the general requirements of the OSHA hazard communication standard, as well as duty specific hazards before they begin any duties at a new jobsite. This training will include at least the following:

3.2.1. Methods that may be used to detect the presence or release of a hazardous chemical in the work area. This will include any monitoring conducted by

Bernie Buchner, Inc., continuous monitoring devices, visual appearance, or odor of hazardous chemicals when being released, etc. **Safety Data Sheets (SDS)** will be used augment this requirement where ever possible.

- 3.2.2. The physical and health hazards of the chemicals present in the work area (e.g., flash point, reactivity, toxicity).
 - 3.2.3. The measures employees can take to protect themselves from these hazards. Specific procedures *Bernie Buchner, Inc.* has implemented to protect employees from exposure to hazardous chemicals, to include; appropriate work practices, programs, emergency procedures, and personal protective equipment.
 - 3.2.4. An explanation of the labeling system used at *Bernie Buchner, Inc.*, the safety data sheet, and how employees can obtain and use the appropriate hazard information.
 - 3.2.5. The chemical (formal) and common name(s) of products used, and all ingredients which have been determined to be health hazards.
 - 3.2.6. The primary route(s) of entry; inhalation, absorption, ingestion, injection, and target organs.
 - 3.2.7. The OSHA permissible exposure limit, ACGIH Threshold Limit Value, including any other exposure limit used or recommended by the chemical manufacturer.
 - 3.2.8. Whether the hazardous chemical has been found to be a potential carcinogen by the International Agency for Research on Cancer (IARC).
 - 3.2.9. Any generally applicable precautions for safe handling and use which are known including appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for clean-up of spills and leaks.
 - 3.2.10. Emergency and first aid procedures.
- 3.3. Documentation. All training will be documented using an attendance roster. Certificates of completion will be issued to attendees by the Safety Officer and a copy of the completed certificate filed.

4. LABELING REQUIREMENTS.

Labeling requirements of containers of chemicals used at *Bernie Buchner, Inc.*, as well as of containers of chemicals and hazardous materials being shipped off site. The following procedures apply:

- 4.1. Unmarked Containers. Employees of *Bernie Buchner, Inc.* will not use unmarked containers containing chemicals.

- 4.2. Container Labeling. *Bernie Buchner, Inc.* will ensure all containers are properly labeled. Employees will ensure that labels on containers of hazardous chemicals are not removed or defaced. Once they are emptied, chemical containers can never be used in the place of any other container (for example, trash receptacles).
- 4.3. Minimum labeling requirements. All container labels will list at least the chemical identity, appropriate hazard warnings, and the name and address of the manufacturer, importer, or other responsible party.

5. SAFETY DATA SHEETS AND HAZARDOUS MATERIALS INVENTORY LIST.

The Safety Officer is responsible for obtaining SDS's for every chemical used by *Bernie Buchner, Inc.*. The Safety Officer will maintain a master copy in the main office. In addition, the Safety Officer will review the SDS's for all chemicals used to determine if additional precautions or special personal protective equipment will be required in order to ensure employee safety.

- 5.1. Supervisors will be responsible to maintain readily accessible copies of the SDS's at the job sites and to ensure that all employees are aware of the location.
- 5.2. SDS requests. A request letter will be forwarded to any vender who does not provide an SDS with a product received by this company.
- 5.3. Hazardous Substances Inventory. The Company maintains an inventory of all known hazardous substances in use on the job site. A chemical inventory list is available from the Safety Officer.
- 5.4. Hazardous substances brought onto the job site by the company will be included on the hazardous chemical inventory list in the SDS Book or in a separate SDS log for specific job information.

6. NON-COMPANY EMPLOYEES PROGRAM.

Visitors, Contract Employees, and Contractor Personnel. The Safety Officer and/or Supervisor will advise visitors, contract employees, and contractor personnel of any chemical hazards that may be encountered in the normal course of their work on the premises, the labeling system in use, the protective measures to be taken, the safe handling procedures to be used, and availability of SDS's. Any contractor bringing chemicals on-site must provide *Bernie Buchner, Inc.* with the appropriate hazard information on these substances, including the labels used and the precautionary measures to be taken in working with these chemicals.

7. TRADE SECRETS.

To protect trade secrets, the chemical manufacturer, importer, or employer may withhold the specific chemical identity, including the chemical name, and other specific identification of a hazardous chemical, from the safety data sheet. To ensure the safety of our employees, *Bernie Buchner, Inc.* will obtain any information not shown on a SDS from a supplier, when such information is needed to determine the hazardous constituents of chemicals used within our facility or by our employees. *Bernie Buchner, Inc.* employees will not use a specific

chemical, if they cannot determine from the SDS (or other approved source) proper protective measures to be used.

8. NON-ROUTINE TASKS.

No employee will be allowed to perform tasks that they are not fully trained to accomplish. Non-routine tasks will be evaluated prior to beginning work and the related hazard assessed to develop protective measures.

9. CHEMICAL STORAGE.

Bernie Buchner, Inc. will ensure that proper storage locations are provided to employees using chemicals. Flammable chemicals will be stored in approved locations or flammable liquids cabinets designed in accordance with 29 CFR 1910.106. Toxic and corrosive chemicals will be stored apart from flammable chemicals and will be further segregated according to acidity and/or alkalinity. All chemical storage location will be approved by the Safety Officer before use.



Bernie Buchner, Inc.

"EQUAL OPPORTUNITY EMPLOYER"

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Lock-out Tag-out Manual

Lockout/Tagout

OSHA 1910.147 The Control of Hazardous Energy (Lockout/Tagout)

Purpose

This OSHA standard covers the servicing and maintenance of machines and equipment in which the unexpected energization or start up of the machines or equipment, or release of stored energy could cause injury to employees.

Who's Covered

Employees responsible for service and maintenance on machinery and equipment. It does not cover normal production operations including repetitive, routine minor adjustments and maintenance which would be covered under OSHA's machine guarding standards. It does not cover work on cord and plug connected electric equipment when it is unplugged, and the employee working on the equipment who has complete control over the plug. It does not cover hot tap operations involving gas, steam, water, or petroleum products when the employer shows that continuity of service is essential; shutdown is impractical and documented procedures are followed to provide proven effective protection for employees. It does not cover construction, agriculture, maritime employment, electrical utilities, and oil and gas well drilling and servicing.

Key Dates

January 2, 1990 - Effective date of the standard. After this date, whenever replacement or major repair, renovation or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices shall be designed to accept a lockout device.

Key Requirements

- * Develop an energy control program.
- * Use locks when equipment can be locked out.
- * Ensure that new equipment or overhauled equipment can accommodate locks.
- * Employ additional means when tags are used instead of locks.
- * Identify and implement specific procedures for the control of hazardous energy in writing.
- * Institute procedures for release of lockout/tagout devices.
- * Obtain standardized locks and tags.
- * Train employees.
- * Adopt procedures to ensure safety when equipment must be tested during servicing, when outside contractors are working at the site, when a multiple lockout is needed for a crew servicing equipment and when shifts or personnel change.

Sample Documents Included

1. Energy Control Plan.
2. Hazardous Energy Source Inventory.
3. Hazardous Energy Training Log.
4. Hazardous Energy Training Program.
5. Sources for Additional Training.

Energy Control Plan

Intended Use of Procedure

This procedure is designed to help prevent injury to employees servicing machinery and equipment. It establishes minimum requirements to keep employees from facing potentially hazardous energy sources. The procedure describes a method called Lockout or Tagout of energy isolating devices. It shall be followed to ensure that the machine or equipment is isolated from all potentially hazardous energy, and locked out or tagged out-of-service before employees perform any servicing or maintenance activities where the unexpected energizing, start-up or release of stored energy could cause injury.

Policy

Personal Lockout Locks, Lockout Devices, and/or Danger Tags shall be installed on products and plant equipment, components, and on items of plant facilities to isolate or warn of unsafe conditions.

Lockout Locks or Lockout Devices, with Danger Tags are the preferred methods of isolating machines or equipment from energy sources and shall be used whenever possible.

Lockout Devices, signs, or suitable physical barriers shall be installed where equipment or conditions present a hazard for which the use of danger tags does not necessarily provide sufficient protection.

Operation of or use of the component or equipment or other violation of the constraints invoked by Danger Tags, signs, physical barriers, or Lockout Devices shall not be permitted until such tags or other devices are removed by persons so authorized.

Violation of this procedure is a serious offense and is grounds for disciplinary action in accordance with our Discipline Policy. Visitors and contract/leased personnel who fail to comply with this procedure will be denied further permission to enter our premises.

Responsibility

It is the responsibility of each employee to Lockout or Tagout unsafe equipment as defined in this procedure prior to performing any servicing or maintenance activity.

It is the responsibility of each employee not to use Locked Out or Tagged Out equipment until the devices or tags are properly removed by the installing employee or authorized personnel.

(Employee Name) is responsible for training and instructing employees on the details and significance of this Lockout or Tagout procedure, documenting when training and retraining has been accomplished and ensuring compliance with this procedure through periodic inspections and annual inspections. Supervisors arranging for contractors or leased personnel are responsible for briefing those people on the requirements of this procedure and the basic rules for using lockout or tagout system.

The **(Maintenance or Facilities)** Department is responsible whenever major replacement, repair, renovation, rearrangement requiring rewiring, or modification of machines or equipment is performed, and whenever new machines or equipment are installed, for ensuring the machines or equipment or the installation is designed to accept a Lockout Device.

Departments which use, service or procure machines or equipment, or have working situations, which by their complex nature create unusual safety hazards to employees are responsible for creating and maintaining detailed procedures for Locking Out or Tagging Out all energy sources and posting those procedures appropriately near the equipment.

The **(Human Resources)** Department is responsible for taking disciplinary action for violations of this procedure in accordance with the Discipline Policy for employees and for not allowing further access to our premises to visitors and contract or leased personnel.

Procedure

1. Installation, Removal and Control of Lockout Devices, Red Danger Tagout Tags, Warning Signs, and Physical Barriers:

Unsafe equipment shall be tagged out of service by installing a Red Danger Tag in the place most likely to warn the operator of the unsafe condition.

The Basic Rules For Using The Lockout or Tagout Procedure are:

All equipment shall be Locked Out or Tagged Out to protect against accidental or inadvertent operation when such operation could cause injury to personnel or damage to equipment. Do not attempt to operate any switch, valve, or other energy isolating device where it is Locked Out with a lock or Tagged Out with a Red Danger Tag.

Caution: Lockout or Tagout Devices shall only be installed by an employee who has received training in the recognition of applicable hazardous energy sources, the methods and means necessary for energy isolation and has control, and been authorized to install such devices.

Sequence of Lockout or Tagout

Notify all Affected Employees that a Lockout or Tagout system is going to be utilized and the reason for doing so. The authorized employee shall know the type and magnitude of energy that the machine or equipment utilizes and shall understand the hazards.

If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open toggle switch, etc.)

Operate the switch, valve, or other energy isolating devices so that the equipment is isolated from its energy sources. Stored energy (such as that in springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as repositioning, blocking, bleeding down, etc.

Lockout and/or Tagout the energy isolating devices in the off or open position with assigned individual Lockout Locks and/or Red Danger Tags. Install warning signs and/or physical barriers if necessary. Locks with Tags are the preferred method of Lockout and shall be used whenever possible. Red Danger Tags should clearly indicate the off or open position or Lockout instructions and be installed at the energy isolating device if possible or as closely as safely possible to be immediately obvious to anyone operating the equipment.

After ensuring that no personnel are exposed, and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate.

Caution: Return operating controls to "neutral" or "off" position after the test. The equipment is now Locked Out or Tagged Out.

Procedure Involving More Than One Person

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

Restoring Machines or Equipment to Normal Production Operations

After the servicing and/or maintenance is complete and equipment is ready for normal production operations, check the area around the machines or equipment to ensure that no one is exposed.

After all tools have been removed from the machine or equipment, guards have been reinstalled and employees are in the clear, remove all Lockout or Tagout Devices. Inform affected employees the Lockout or Tagout Devices have been removed. Check that normal On-Off switches are in the Off position. Operate the energy isolating devices to restore energy to the machine or equipment.

Caution: The Lockout or Tagout Devices must be removed by the employee who applied the device except when that employee is not available the device may be removed under the direction of a Supervisor in accordance with the Safety Manual Lockout/Tagout of Equipment Procedure.

The above "**Basic Rules for Using the Lockout or Tagout Procedure**" may be used when all of the following conditions exist:

- a. The machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger employees.
- b. The machine or equipment has a single energy source which can be readily identified and isolated.

- c. The isolation and locking out of that energy source will completely de-energize and deactivate the machine or equipment.
- d. The machine or equipment is isolated from that energy source and Locked Out during servicing or maintenance.
- e. A single Lockout Device will achieve a locked-out condition.
- f. The Lockout Device is under the exclusive control of the authorized employee performing the servicing or maintenance.
- g. The servicing or maintenance does not create hazards for other employees.
- h. In utilizing this exception there have been no accidental re-energizing of the machine or equipment during servicing or maintenance.

When the complexity of energy sources, machines, equipment or situations necessitate detailed procedures to ensure employee safety, it is the responsibility of the owning or using department to create and maintain a specific Lockout Procedure for that machine, equipment or situation. This procedure shall be approved by **(employee name)**. Locally created Lockout Procedures shall be posted in an appropriate place near the equipment and used to augment this procedure.

All specific Lockout Procedures shall outline the Scope, Purpose, Authorization, Rules and Techniques to be utilized for the control of Hazardous energy. The specific Lockout Procedure shall reference this Procedure for enforcement and be approved in writing by **(employee name)**. The specific Lockout Procedure shall also include as a minimum:

- a. A specific statement of the intended use of the procedure.
- b. Specific procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy.
- c. Specific procedural steps for briefing other affected employees as appropriate.
- d. Specific procedural steps for the placement, removal and transfer of Lockout Devices or Tagout Devices and the responsibility for them.
- e. Specific requirements for testing a machine or equipment to determine and verify the effectiveness of Lockout Devices, Tagout Devices and other energy control measures.

2. Lockout Devices and Red Danger Tags:

Lockout Locks shall be identified with a Red Danger Tag. Multiple Lockout Devices may be used to secure multiple locks. Red Danger Tags shall be appropriately completed to show location of installation, reason for installation, name of the installing employee, Life Number, Department Number, specific clear instructions for Lockout and other pertinent information.

3. Installation of Lockout Devices and Danger Tags:

Only authorized employees who have received appropriate training as described in this procedure shall install Lockout Devices or Tagout Devices.

(Facilities or maintenance) Department employees conducting repairs, service or modification to plant components are responsible for installing Lockout Devices, Danger Tags and when appropriate signs or physical barriers as needed to meet the requirements of the situation.

(Employee name), as part of his assigned duties, regularly observes equipment and conditions for the presence of safety hazards and installs or requires the installation of Lockout Devices, Danger Tags, signs or physical barriers, etc., as appropriate.

Employees in all **(Company name)** Departments are instructed to be aware of unsafe conditions or equipment and to take appropriate measures to minimize the hazards. This includes installing or requiring the installing of Lockout Devices, Danger Tags, signs or physical barriers, etc., as necessary to warn of the hazard, prevent further usage, etc.

The individual requesting or installing the Lockout Device, Danger Tag, etc., is responsible for immediately reporting the situation to the **(facilities or maintenance)** or other responsible department for correction of the unsafe condition.

When more than one employee or crew is involved with locked out equipment each person will affix their personal Lockout or Tagout Device to the energy isolating device or multiple Lockout or Tagout Device (hasp) or lockout box as applicable.

When servicing or maintenance is performed by a crew or multiple crews or other groups, they shall each affix their individual Lockout Device or utilize group lockout as follows:

- a. Primary responsibility is assigned by the area supervisor to one authorized employee for a set number of other employees working under the protection of the group Lockout or Tagout.
- b. The responsible authorized employee makes sure the exposure status of each group member with regard to Lockout or Tagout of the machine or equipment.
- c. When more than one crew or group or department is involved an overall job-associated Lockout or Tagout control responsibility is given to an authorized employee designated to coordinate all affected work forces and ensure continuity of protection.
- d. Each authorized employee shall affix a personal Lockout or Tagout Device to the group Lockout Device or Group Lockout Box or similar mechanism when they start work and shall remove that device when they stop work on the machine or equipment being serviced or maintained.

4. Removal of Lockout Devices:

Lockout Devices, Danger Tags, warning signs and physical barriers shall be removed only by the installing individual except, under certain conditions as outlined in this section.

When the employee who applied the Lockout Device or Tagout Device is completing their shift or being reassigned to another task that employee shall either leave their Lockout Device on the equipment or transfer responsibility for the locked out equipment.

The departing employee shall fully brief the assuming employee and personally remove their Lockout Device in the presence of the employee who is assuming responsibility. The oncoming employee shall, without energizing the equipment, immediately install their own Lockout or Tagout Device and assume responsibility for Lockout.

When the employee who applied the Lockout or Tagout Device is not available to remove it, that Lockout Device may be removed only under the direction of a Supervisor who must follow these steps:

- a. Verify that the employee who installed the Lockout Device is not at the facility.
- b. Make all reasonable efforts to contact that employee to inform them that their Lockout or Tagout Device has been removed.
- c. Ensure that employee has this knowledge before they resume work at the facility.

Lockout Devices installed to secure electrical supply service, equipment or systems shall be removed by the installing individual. Otherwise, specific authorization from a **(Facilities or Maintenance)** Department Supervisor must be obtained in addition to the above procedures.

Lockout Devices, Danger Tags, warning signs and physical barriers installed by **(the Safety Director or person who has responsibility for safety or anyone authorized to tagout unsafe equipment such as a member of a safety committee)** may be removed from the repair activity when authorized by **(person responsible for safety; i.e., safety director)** in addition to the above procedures.

5. Plant Electrically Powered Equipment/Electrical Systems:

Electrically powered equipment and electrical systems present particular hazards. The following requirements apply to installation of Lockout Devices and Red Danger Tags for such equipment and systems in addition to "The Basic Rules For Using The Lockout or Tagout Procedure" and/or Specific Lockout Procedures.

Cranes and Hoists:

- a. Cranes and hoists shall be positioned to cause minimal interference with operations during repairs or servicing.
- b. All controls shall be placed in the "Off" position. A Red Danger Tag shall be affixed to the controls.
- c. The main or emergency electrical control shall be opened and a Lockout Device or Red Danger Tag affixed.
- d. "Warning" or "Out of Order" signs shall be placed on the equipment.

- e. After adjustments and repairs have been made, the crane or hoist shall not be operated until all guards have been reinstalled, safety devices reactivated, and maintenance tools and equipment removed.
- f. Locks and Red Danger Tags shall be removed only after all maintenance work is completed and personnel have cleared the crane or hoist.

Machinery, Machine Tools, Office Equipment:

- a. Controls for this equipment shall be placed in the "Off" position. A Red Danger Tag shall be affixed to the controls.
- b. The main electrical switch controlling the machine shall be placed in the "Open" or "Off" position, and a Lockout Device or Red Danger Tag affixed.
- c. After adjustments and repairs have been made the equipment shall not be operated until all guards have been reinstalled, safety devices reactivated, and maintenance tools and equipment removed.
- d. Locks and Red Danger Tags shall be removed only after all maintenance work is completed and personnel are clear of moving parts.

Electrical Systems:

Prior to maintenance work on any electrical system, the main power source to the system shall be rendered inoperable using Lockout Devices, Red Danger Tags or equivalent positive means to assure the safety of personnel.

Return To Service:

Prior to returning electrically powered equipment to the operating department, all guards and safety devices removed or negated during repair or service shall be replaced or restored.

Lockout Devices and Tags:

The **(Facilities or Maintenance)** Department is normally responsible for the installation and removal of Lockout Devices and Red Danger Tags used to secure equipment for maintenance, service or repairs.

Lockout Devices will normally be secured by key locks. **(Facilities or Maintenance)** Supervision will control their installation and removal.

Equipment Purchases, Repairs, Modifications:

Whenever major replacement, repair, renovation or modification of machines or equipment is performed, and whenever new machines or equipment are installed the **(Facilities or Maintenance)** Department is responsible for ensuring the machines or equipment or the installation is designed to accept a Lockout Device.

6. Training and Communication:

Supervisors shall instruct all new employees, or reassigned employees on the purpose and use of the Lockout/Tagout of Equipment procedure. Specific emphasis shall be made of the prohibition against violating or defeating a Lockout or Tagout Device.

Supervisors are responsible for instruction, training and retraining of all authorized and affected personnel regarding Lockout/Tagout procedures. The employee's name and dates of training and retraining shall be documented.

Supervisors hiring contract or lease personnel are responsible for briefing those people on the requirements of this procedure and of "The Basic Rules For Using The Lockout or Tagout Procedure".

Lockout or Tagout Devices shall only be installed by an authorized employee who has received training in the following areas:

* The recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.

The purpose and use of our lockout procedures.

The following limitations of Red Danger Tags as a Tagout Device:

- a. Red Danger Tags are essentially warning devices and do not provide the same level of physical restraint as is provided by a lock. The preferred method of Lockout is to use a lock.
- b. When a Red Danger Tag is attached to an energy isolating means it is not to be removed except by the installing individual or as authorized in this procedure. Red Danger Tags shall never be bypassed, ignored or otherwise defeated.
- c. In order to be effective, Red Danger Tags must be legible and understandable by all authorized employees, affected employees and all other employees whose work operations are or may be in the area.
- d. Red Danger Tags and their means of attachment are made of materials which withstand the normal environmental conditions encountered at **(your Company's Name)**. When other attachment devices are utilized or extreme conditions are confronted or expected special precautions must be taken to ensure tag preservation and protection for employees.
- e. Red Danger Tags may evoke a false sense of security and their meaning needs to be understood as a part of the overall Lockout/Tagout of Equipment Procedure.
- f. Red Danger Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use. Tags should be attached to the energy isolating device.

Retraining shall be provided to all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard or when there is a change in the Lockout/Tagout of Equipment Procedure.

Additional retraining shall be conducted whenever a periodic inspection (as defined by this procedure) reveals, or **(your Company's name)** has reason to believe that there are deviations from or inadequacies in the employee's use or knowledge of the Lockout/Tagout of Equipment Procedure.

7. Periodic Inspections:

Supervisors and **(safety director or the person responsible for safety)** shall conduct random periodic inspections of the effectiveness of the Lockout/Tagout of Equipment Procedure, at least annually to ensure the procedure and requirements are being followed.

The inspection shall be designed to correct any deviations or inadequacies observed, performed by the Supervisor, **(safety director or the person responsible for safety)** or appointed representatives other than the employees utilizing the procedure, and shall include:

- * A review between the inspector and each authorized employee of that employee's responsibilities under this procedure in both Lockout and Tagout.
- * Where Tagout is used a review between the inspector and each affected employee of that employee's responsibilities under this procedure including the limitations of using Tagout listed in this procedure.

The inspection shall be documented with the machine or equipment on which this procedure was being used, the date of the inspection, the employees included in the inspection and inspector.

8. Testing or Operation of Machines with Guards or Safety Devices Disabled

Machines or equipment should not be energized with safety devices or guards removed unless absolutely necessary to test, position or service the equipment and then only when no other method can be utilized to accomplish that task or function.

In situations when machines or equipment must be energized to test, position or service the equipment, Lockout or Tagout devices must be temporarily removed. This sequence of actions shall be followed:

- a. Clear the machine or equipment of tools and materials. Inspect the work area to ensure that nonessential items have been removed and the machine or equipment components are operationally intact.
- b. Remove employees from the machine or equipment area and check to ensure that all employees have been safely positioned, protected or removed.
- c. Each employee shall remove their personal Lockout or Tagout Device.
- d. After ensuring all employees are in a safe position, energize and proceed with testing, positioning, or servicing the equipment. **Do not reach into areas where you cannot see.**
- e. De-energize all systems and reapply all energy control measures in accordance with this procedure before continuing the servicing and/or maintenance.

Exceptions

Servicing and/or maintenance which takes place during normal production operations is not covered by this procedure if:

- An employee is not required to remove or bypass a guard or other safety device or reach into a blind area, or
- An employee is not required to place any part of their body into an area on a machine or piece of equipment where work is actually performed upon the material being processed (point of operation) or where an associated danger zone exists during a machine operating cycle.

This procedure does not apply to the following:

- Minor tool changes and adjustments and other minor servicing activities, which take place during normal production operations if they are routine, repetitive, and integral to the use of the equipment for production, provided that the work is performed using alternative measures which provide effective protection.
- Work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energizing or start up is controlled by the unplugging of the equipment from the energy source and the plug is under exclusive control of the employee performing the servicing or maintenance. At least one of the following criteria must be met:
 - a. The plug is physically in the employee's position or
 - b. The plug is in arm's reach and in the employee's line of sight or
 - c. The employee has affixed a Lockout/Tagout device on the plug.

Glossary

Affected Employee - An employee who uses or operates machines/equipment, or works in an area where servicing or maintenance is performed under lockout/tagout.

Authorized Employee - An employee who locks or tags the machines/equipment to perform servicing or maintenance.

Capable of Being Locked Out - An energy isolating device so designed or where lockout can be achieved without dismantling, rebuilding, replacing, or altering its energy control capability.

Energized - Connected to an energy source or containing residual or stored energy.

Energy Isolating Device - A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following:

- a. A manually operated electrical circuit breaker;
- b. A disconnect switch;
- c. A manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and in addition, no pole can be operated independently;
- d. A line valve;
- e. A block or pin;
- f. Any similar device used to block or isolate energy.

Energy Source - Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Lockout - the placement of a Lockout Device on an energy isolating device in accordance with this procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the Lockout Device is removed.

Lockout Device - A device that utilizes a positive means such as a Master Number 3 Laminated steel padlock, with identification tagout, to hold an energy isolating device in the safe position and prevent the energizing of equipment or a machine.

Normal Production Operations - The utilization of a machine or equipment to perform its intended production function.

Servicing and/or Maintenance - Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machine or equipment. These activities include lubrication, cleaning or un-jamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energizing or start-up of the equipment or release of hazardous energy.

Setting-Up - Any work performed to prepare a machine or equipment to perform its normal production operation.

Tagout - The placement of a Tagout Device on an energy isolating device, in accordance with this procedure, to indicate that the energy isolating device and the equipment being controlled shall not be operated until the Tagout Device is removed. The tagout Device will be affixed to the same location where a Lockout Device would have been attached. The Red Danger Tags are also used to indicate unsafe or defective equipment which could jeopardize the safety of personnel or damaged equipment.

Tagout Device - A Red Danger Tag affixed when ever possible with a Red 50 pound test nylon cable tie securely fastened to an energy isolating device in accordance with this procedure, to indicate that the energy isolating device and the equipment being controlled shall not be operated until the Tagout Device is removed. The Tagout Device will be attached to the Lockout/Tagout Point whenever possible.

Hazardous Energy Source Inventory

Departmental Listing of Machinery and Equipment & Energy Sources

Department Name:.....

Supervisors Name:.....

Date Inventory Completed:.....

Name of No.	Model No. Energy Source	Is There Any Stored Energy?	Machinery/Equipment	Serial
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Hazardous Energy Training Log

Date of Training:.....

Trainer's Name and Title:.....

Employee Name	Department	Employee Signature
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Hazardous Energy Training Program

1. Review the Agenda for the Training:

- Discuss goals of the training
- Discuss losses, including statistics and case studies
- Review the purpose of the procedure
- Review company policy
- Define terms and phrases
- Go through the Energy Control Plan in detail
- Watch a video on lockout/tagout
- Review the Department Inventory List
- Did we meet our goals in this training session
- Employee signatures on Hazardous Energy Training Log

2. Goals of the training session:

Educate you about hazardous energy control to prevent injuries to employees while servicing machinery and equipment.

Identify the location of the written Energy Control Plan and how you can obtain a copy of it.

Go through the Energy Control Plan in detail and answer any questions you may have.

Teach the steps necessary for lockout/tagout.

3. Energy Control Plan - The Energy Control Plan is kept and maintained by **(Employee name)**. If you would like to review the plan or obtain a copy, please contact **(Employee name)** at **(location or phone extension)**. The Energy Control Plan is required as part of the OSHA Regulations on Controlling Hazardous Energy (OSHA Standard 1910.147).

4. Losses

Statistics: According to OSHA data, failure to control energy adequately accounts for nearly 10 percent of the serious accidents in many major industrial groups.

Examples of Losses: The following accidents, taken from the NIOSH report entitled "Guidelines for Controlling Hazardous Energy During Maintenance and Servicing," are typical of these hazards and demonstrate the applicability of the pertinent provisions in a lockout/tagout program.

An employee was removing paper from a waste hogger. The hogger had been shut down, but the conveyor feeding the hogger had not been. The employee climbed onto the machine, fell onto the conveyor, was pulled into the hogger opening, and was fatally crushed. There was no lockout procedure in place.

An employee was partially inside an asphalt mixing machine, changing its paddles. Another employee, while dusting in the control room, accidentally hit a toggle switch which caused the door of the mixer to close, striking the first employee on the head and killing him. Electrical switches to activate the machine were not locked out and air pressure to move the doors was not shut off. Equipment was not isolated from the energy source.

An employee trainee was cleaning a flour batch mixer. The employee leaned the top part of his body into the machine when another worker activated the wrong switch, thereby turning the machine on. The employee cleaning the flour batch mixer suffered fatal crushing injuries to his neck. There was an unwritten company procedure for lockout during all maintenance. The procedure was not followed.

5. Purpose of the Procedure

The Lockout/Tagout Procedure is designed to help prevent injury to employees servicing machinery and equipment. It establishes minimum requirements to keep employees from facing potentially hazardous energy sources. The procedure describes a method called Lockout or Tagout of energy isolating devices. It shall be followed to ensure that the machine or equipment is isolated from all potentially hazardous energy, and locked out or tagged out-of-service before employees perform any servicing or maintenance activities where the unexpected energizing, start-up or release of stored energy could cause injury.

6. **(Company's Name)** Policy

Personal Lockout Locks, Lockout Devices, and/or Danger Tags shall be installed on products and plant equipment, components, and on items of plant facilities to isolate or warn of unsafe conditions.

Lockout Locks or Lockout Devices, with Danger Tags are the preferred methods of isolating machines or equipment from energy sources and shall be used whenever possible.

Lockout Devices, signs, or suitable physical barriers shall be installed where equipment or conditions present a hazard for which the use of danger tags does not necessarily provide sufficient protection.

Operation of or use of the component or equipment or other violation of the constraints invoked by Danger Tags, signs, physical barriers, or Lockout Devices shall not be permitted until such tags or other devices are removed by persons so authorized.

Violation of this procedure is a serious offense and is grounds for disciplinary action in accordance with our Discipline Policy. Visitors and contract/leased personnel who fail to comply with this procedure will be denied further permission to enter our premises.

7. Definitions

Go through the definitions contained in the Energy Control Plan.

8. Energy Control Plan

(Go through section IV (on responsibilities) through section VI (exceptions) in detail, and answer any questions).

9. Video

(Arrange to show a safety video on Lockout/Tagout procedures).

10. Department Inventory List

Each department has put together a list of machinery and equipment along with the energy source for that machinery and equipment. **(Hand out a sample, blank inventory list and then use a completed inventory from one or more departments either as a handout or on an overhead projector.)**

11. Review Training Goals

(You may want to consider asking one or more of the following questions.)

- a. Have you learned about hazardous energy controls and why they are important to help prevent employee injuries?
- b. Do you know where the Energy Control Plan is kept and how you can obtain a copy of the Plan?
- c. Do you have an understanding of the Energy Control Plan, it's purpose and what company policy is?
- d. Do you have the knowledge to safely apply lockout and/or tagout procedures?

12. Hazardous Energy Training Log

(Remember to have each employee or supervisor who has attended the training to sign the training log.)

Sources for Additional Training

General Casualty Insurance Companies

Fall Protection

OSHA 29 CFR 1926.500 Fall Protection

Purpose

This OSHA standard provides instructions for protecting workers where there is a danger of employees or materials falling through floor, roof, or wall openings, or from stairways or runways.

Who's Covered

All employees working on **(Name of Company)** construction sites who may be exposed to fall hazards in the course of their daily activities. This program will also apply to non-site personnel, visitors and any individual on site who may be exposed to a fall hazard within the scope of our work.

Key Dates

January 1, 1998 - Safety Belts no Longer allowed as fall arrest device

January 1, 1998 - Non-locking snaphooks no longer allowed

February 6, 1995 - Subpart M final rule became effective

Sample Documents Included

1. Work Area Analysis Guidelines
2. Jobsite Fall Hazard Inspection Form
3. Inadequate Work Condition Notification Form
4. Controlled Access Zone Design Requirements
5. Warning Line System Design Requirements
6. Fall Protection Plan Requirements
7. Training Guidelines
8. Employee Fall Prevention Training Form
9. Project Fall Protection Review Plan
10. Sample Fall Protection Plan for Residential Construction
11. Sample Plan for Precast Concrete Structures

Fall Protection Program

Intended Use of this Program

This program is intended to reduce and eventually eliminate the occurrences of fall related injuries during the performance of employee work activities. This program will address all fall hazards which can reasonably be expected to be discovered prior to the performance of work and will provide the guidance to control or eliminate those hazards. Through effective administration, enforcement, training and evaluation of related incidents, this program will be modified until all injuries are effectively controlled.

Policy

Fall Prevention/Protection methods, equipment and controls will be in place in all areas where a six (6) foot fall exposure exists.

All fall related hazards will be identified prior to any employee beginning a work activity. Any fall related hazard that is identified will be dealt with in the following manner:

- a. Hazard Eliminated through engineering design.
- b. Hazard Controlled through alternative work methods.
- c. Conventional systems used.
- d. Personal Fall Arrest Equipment/Systems utilized.
- e. Specialized fall protection systems used.

When using personal fall arrest equipment, full body harnesses are required to be used with the exception of body belts allowed to be used during certain work activities as described in this program.

All employees who could reasonably be expected to become exposed to fall hazards will be trained in the identification and control of those hazards and their individual responsibility toward fall prevention on this worksite.

Any employee who knowingly violates fall prevention procedures will be disciplined according to the Discipline Policy. Visitors and contract/lease personnel who fail to comply with this program will be denied further permission to enter our worksite.

Responsibilities

(Employee Name) is responsible for the overall implementation of this fall prevention program and will ensure all employees are complying to the requirements of this program. On those jobsites located offsite and during maintenance operations the **(insert responsible person; i.e., senior on-site supervisor)** will be responsible for the implementation of this program and employee compliance at the project.

(Employee Name) is responsible for the overall training program and will ensure that each employee is trained in the recognition and control of fall hazards prior to beginning work at new tasks or on new projects. They will ensure that proper training documentation is provided by all supervisors and will maintain records of training and fall related incident investigations.

Each foreman will be responsible for the compliance of this program on their work crews, frequent inspections of their work areas for fall hazards, correction of those fall hazards identified, enforcement of program policy and procedures and ensuring employees are working in a safe manner when exposed to any fall hazards.

All company employees are responsible for complying to this fall prevention program. Each employee is responsible for reporting any fall related hazard or deficiency they identify to their field manager and if appropriate correct the hazard or deficiency. Employees are required to participate in the company training programs and are also responsible for the daily inspection of any personal fall arrest equipment they are using or fall prevent systems in their work areas.

Hazard Identification and Elimination

Purpose

To identify and eliminate fall hazards that our employees may encounter on jobsites.

Pre-Planning

Our company will pre-plan for fall prevention by completing the following tasks/procedures when possible:

1. Install stairways with stair rails attached.
2. Have the designer/architect specify proper anchor points for personal fall arrest systems.
3. All floor openings for ductwork, plumbing, piping systems, etc., will not be cut until the material is ready to go through the floor.
4. All open sided floors will have guardrails attached before employees will be allowed to work on the level.
5. Coordination of work activities around other contractor personnel will be used.

To aid in proper pre-planning our company will use the Project Fall Protection Review Plan.

Work Area Analysis

All new work areas will be analyzed by jobsite management for potential fall hazards prior to employees working in them through the review of blueprints, work tasks to be performed, worker activities, equipment to be used to complete the task and the company fall prevention procedures. Guidelines for performing a Work Area Analysis can be found in the sample form section of this program.

Jobsite Inspections

Use jobsite inspection form that is part of this program.

All company jobsites and work areas will be inspected once per day by **(Insert person(s) responsible; i.e., foreman, safety coordinator)**. Daily inspections will focus on:

1. Any area or activity which exposes an employee to a fall hazard.

2. Fall hazards associated with:
 - a. Scaffolds.
 - b. Ladders.
 - c. Steel Erection.
 - d. Roofing.
 - e. Floor Holes.
 - f. Open sided floors.
 - g. Personnel lifts and elevating equipment.
3. Any hazardous fall condition brought to the attention of any management employee will be promptly eliminated. In the event a hazardous condition cannot be promptly eliminated proper controls will be used to prevent employees from exposure to the hazardous condition.
4. In the event a hazardous fall condition exists to which our employees are exposed and the responsibility of correcting the condition is beyond our authority or contract obligation, our employees will be provided with necessary personal protective equipment and training to prevent their exposure to the fall hazard and the responsible contractor will be notified as to the nature and location of the fall hazard. In the event our employees cannot be adequately protected from the hazard, employees will not be permitted to enter the area of the hazard and the **(insert responsible person; i.e., superintendent, foreman, project manager)** will contact the home office for instruction.

Use the contractor notification form of this program.

5. Records of inspections and hazard abatement will be placed in the jobsite file.



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Confined Space Manual

Confined Space Entry Program

Intended Use of Program

Policy

(Name of company) is firmly committed to providing all of its employees with a safe and healthy work environment. It is a matter of company policy to provide employees with education and training whenever they must enter confined spaces. Elements of this Confined Space Entry Program include:

- Hazard identification and control
- Testing and monitoring
- Permit system
- Employee information and prevention of unauthorized entry
- Employee training
- Equipment
- Emergency and rescue procedures
- Duty to outside contractors

It will be **(Name of company)** policy not to enter any confined spaces which:

- Have oxygen levels below 19.5% or more than 23.5%.
- Have flammability greater than 10% LEL (Lower Explosive Limit).
- Contain toxic substances with concentrations that are above the IDLH (immediately dangerous to life and health) concentration.
- Has an energy source that has not been controlled by lockout/tagout procedures.
- Has stored material posing an engulfment hazard.

(Name of company) will allow entry into designated confined spaces listed in the Inventory of Confined Spaces (Appendix A) if all of the following criteria are met:

- The Safety Manager has reviewed and signed the Confined Space Entry Permit.
- No other non-entry procedure can be used to complete the work.
- There is no danger of engulfment.
- The atmosphere cannot become IDLH.
- The atmosphere is tested before entry and continuously during entry.
- Lockout/tagout procedures have been implemented to control all energy sources.
- Forced ventilation is provided at all times during times of entry.

Those spaces designated "No Entry Allowed" on the Inventory of Confined Spaces (Appendix A), will never be entered by **(Name of company)** personnel. These spaces will be posted with a sign indicating:

Danger Confined Space, Do Not Enter

In addition, effective means to prevent personnel from entering these spaces will be taken. This may include special locks, barricades or other means that will adequately secure the openings to the confined space.

Responsibilities

All Employees

All (**Name of company**) employees need to follow company policies and procedures relating to the Confined Space Entry Program. Additional responsibilities include:

- Know the locations of confined spaces in their work areas.
- Do not enter any confined space under any circumstances.
- Do not remove signs, locks or other controls designed to restrict access to confined spaces.
- Contact the Safety Manager whenever an outside contractor is required to work in confined spaces so operations can be coordinated.

Authorized Entrants

Authorized Entrants need to know the specific hazards of each permit space they enter as well as the specific work practices used to control the hazards. Additional responsibilities include:

- Know the space hazards, including information on the mode of exposure, signs or symptoms and consequences of the exposure.
- Use appropriate personal protective equipment properly.
- Maintain communication with attendant at all times during entry.
- Exit from permit space as soon as possible when ordered by an authorized person, when the entrant recognizes the warning signs or symptoms of exposure, when a prohibited condition exists or when an automatic alarm is activated.
- Alert the attendant when a prohibited condition exists or when warning signs or symptoms of exposure exist.

Authorized Attendants

The Authorized Attendant is responsible for monitoring the entrant(s) during permit entry. Additional responsibilities include:

- Remain outside the permit space during entry operations unless relieved by another authorized attendant.
- Perform non-entry rescues when specified by rescue procedure.
- Know existing and potential hazards, including information on the mode of exposure, signs or symptoms, consequences of exposure and their physiological effects.
- Maintain communication with and keep an accurate account of those workers entering the permit space.
- Order evacuation of the permit space when a prohibited condition exists, when a worker shows signs of physiological effects of exposure, when an emergency outside the confined space exists and when the attendant cannot effectively and safely perform required duties.
- Summon rescue and other services during an emergency.
- Ensure that unauthorized persons stay away from permit spaces or exit immediately if they have entered the permit space.
- Inform authorized entrant and entry supervisor of entry by unauthorized persons.
- Perform no other duties that interfere with these primary duties.

Entry Supervisors

Entry Supervisors are responsible for overseeing each permit entry. Other responsibilities include:

- Conduct a briefing with all affected personal to discuss safety issues prior to each permit entry.
- Know confined space hazards including information on the mode of exposure, signs or symptoms and consequences of exposure.
- Verify emergency plans and specified entry conditions such as permits, tests, procedures and equipment before allowing entry.

- Terminate entry and cancel permits when entry operations are completed or if a new condition exists.
- Take appropriate measures to remove unauthorized entrants.
- Ensure that entry operations remain consistent with the entry permit and that acceptable entry conditions are maintained.

Safety Manager

The Safety Manager has overall responsibility for the development and implementation of the **(Name of company)** Confined Space Entry Program. Other responsibilities include:

- Identify and evaluate all **(Name of company)** facilities for locations of confined spaces.
- Ensure all confined spaces are posted with signs and are secured with locks or other means for preventing unauthorized entry.
- Review each work-plan involving confined space entry and authorize entry by completing Part I of the Entry Permit and signing off on the form.
- Review completed confined space entry permits to identify potential problems with the procedures.
- Provide specific confined space entry training to all employees, entrants, attendants and entry supervisors.
- Coordinate confined space entry procedures with contractors.
- Maintain records of training, completed permits and other aspects of the **(Name of company)** Confined Space Entry Program.
- Review and update the **(Name of company)** Confined Space Entry Program annually.

Program Components

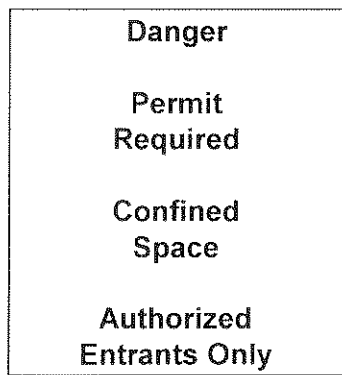
Hazard Identification and Control

The Safety Manager will have overall responsibility for coordinating the confined space program for **(Name of company)**. The Safety Manager will make the written confined space program available, upon request, to employees, their designated representatives, the Assistant Secretary of Labor for Occupational Safety and Health and the Director of the National Institute for Occupational Safety and Health.

The Safety Manager will be responsible for identifying and evaluating all potential confined spaces in the **(Name of company)** workplace. Based upon this evaluation, the Safety Manager will determine if the space is a permit required confined space. If so, they will also ensure that corporate procedures will be followed for the issuance of a written confined space permit. In all cases, whether a space is deemed a permit required or a non-permit required confined space, the Safety Manager will develop procedures to protect workers required to enter these spaces. A listing of all confined spaces within **(Name of company)** facilities is attached to the written program.

Employee Information and Prevention of Unauthorized Entry

It is the policy of **(Name of company)** to ensure that only authorized personnel are permitted in the area of confined spaces. To accomplish this, only those workers who present adequate identification will be allowed to enter any confined space area. Additionally, signs, such as the following must be posted in the confined space area:



Workers not required to enter confined spaces will be trained to recognize these signs and avoid these areas.

Permit System

The cornerstone of the confined space program is a written permit that must include the following elements:

- The identification of the space to be entered;
- The purpose of the entry;
- The date and authorized duration of the entry;
- Description of the hazards of the space;
- Measures to be taken to isolate the space and manage the hazards;
- The acceptable entry conditions;
- Results of initial and periodic tests, including the name or initials of the tester and indication of when tests were made;
- The communications procedures;
- Special equipment required;
- Identity of the authorized entrants and attendant;
- Any additional permits such as those required for hot work;
- The rescue and emergency services that can be summoned and the means for summoning them;
- Any other relevant information
- The entry supervisor's signature.

It is the policy of **(Name of company)** to ensure that all employees required to work in permit required confined spaces do so in such a manner that their health and safety will be protected while performing such work. Therefore, a written permit system has been developed which not only serves as a check of the conditions within the space, but also defines the identity of the permit space, purpose and date of entry, listing of equipment to be used, hazards present, means by which the hazards will be isolated, procedures for rescue, and signature of the person authorizing the entry. (See attached Sample Permit.) Material safety data sheets will be attached to the permit whenever warranted because of the presence of toxic materials within the confined space area. Issuance of written permits is the responsibility of Safety Manager. Permits will be canceled by the Entry Supervisor whenever hazards are present in the space that were not noted on the permit. The Safety Manager will be responsible for evaluating all canceled permits, reviewing the permit system for its effectiveness and maintaining all permits for one year following their issuance.

Testing and Monitoring

It is the policy of this company that each and every time a confined space is to be entered, Part I of the Confined Space Entry Permit will be completed by Safety Manager to evaluate the conditions present in the space (see attached Confined Space Entry Permit). Air testing will be conducted to determine oxygen levels, explosive gas levels and for the presence of any toxic materials. All potential mechanical hazards will also be isolated at this time. Once the conditions within the space have been evaluated, the Safety Manager will determine the level of employee safety procedures necessary to safely enter the space.

In addition, air monitoring will be conducted throughout the entire period workers are in the confined space to insure the detection of unexpected hazardous conditions. This testing will occur at least every one hour or more frequently, if necessary. If unexpected hazardous conditions do become present, an evacuation of the space will be conducted immediately. All continuous monitoring results will be logged on the permit and will serve as a permanent record of the conditions within the space during entry.

Employee Training

Before initial work assignment begins, proper training must be provided for all workers who are required to work in or around permit spaces. Upon completing this training, the Safety Manager must ensure that employees have acquired the understanding, knowledge and skills necessary for the safe performance of their duties. Additional training is required when (1) the job duties change, (2) the operation presents a new hazard, or (3) when an employee's job performance shows deficiencies. Training is also required for rescue team members, including cardiopulmonary resuscitation (CPR) and first-aid training. The Safety Manager will certify that training has been accomplished.

All employees required to work in and around confined spaces are to receive training prior to their initial work assignment. Four classes of workers will be trained during these sessions. They are as follows:

Entrant Work Class Training Requirements

- Hazard recognition
 - Types of hazards likely to be encountered.
 - Signs and symptoms of overexposure to hazards.
 - Health effects of overexposure.
 - Precautions needed for protection from hazards.
- Communication Procedures
 - The methods used to communicate with attendants.
 - Methods attendants use to order evacuations.
- Equipment Use
 - Air monitoring instruments;
 - Low-voltage, explosion-proof lighting;
 - Blowers and duct work;
 - Portable fire extinguishers;
 - Communications equipment;
 - Rescue and retrieval devices;
 - Respirators and air supplies;
 - Chemical protective clothing.
- Evacuation
 - When to evacuate.
 - Notify attendant if dangerous conditions, prohibited activities or experience with warning signs of overexposure occur.

Attendant Work Class Training Requirements

- Hazard Recognition
- Communication Procedures
 - Methods attendants use to communicate with entrants.
 - Methods for determining the number of entrants and maintaining an accurate count of entrants in the space.
 - Method used to notify emergency responders.
- Emergency Procedures
 - Responsibility to remain outside the space unless relieved by another attendant.
 - Non-entry rescue procedures, including emergency communications and use of retrieval equipment.
 - Limits of their responsibility, i.e., not to enter space unless they are trained as rescuer and relieved by another attendant.
- Evacuation Orders
 - Conditions under which attendants order evacuation.

Entry Supervisor Training Requirements

- Training equal to that of Entrant and Attendant.
- Methods to evaluate conditions in and around space to determine if entry can safely be made.
- Methods to issue written permit.
- Methods to oversee entry operations to ensure conditions remain acceptable for entry.
- Methods to prohibit entry, order entrants out of the space, and cancel permit whenever conditions are not suitable for entry.

Rescue Team (Inside team) Training Requirements

- Training equal to Entrants.
- Equipment knowledge.
- Basic CPR and First Aid.
- Annual retraining and practice drills.

Rescue Team (Outside team) Training Requirements

- Hazard evaluation.
- Practice drills.

Upon completion of training, all attendees will receive an identification tag stating the employee's name, date of training and signature of the trainer. This tag must be presented to attendants each and every time an employee is assigned to work in a confined space area. (See attached identification tag.)

Additional training will be conducted whenever job duties change, a new hazard is present in a confined space or when a worker's job performance shows deficiencies. The Safety Manager is responsible for determining the need for additional training.

Equipment

It is company policy to ensure that all employees required to work in confined spaces have available all equipment necessary to safely perform the work they have been assigned to do. The proper equipment includes:

- Personal protective equipment;
- Testing/measuring/monitoring equipment;
- Ventilation;

- Barriers;
- Rescue Equipment;
- Lighting and
- Communication equipment.

The Entry Supervisor will be responsible for ensuring that each time a confined space is entered, the proper equipment is present. This individual will also be responsible for ensuring that all equipment is maintained and used properly.

Emergency and Rescue Procedures

It is the policy of **(Name of company)** to ensure effective rescue procedures are implemented in the event of an emergency in a confined space. It is the purpose of the rescue team to respond quickly to emergency situations and be knowledgeable of the potential hazards specific to the confined space. Coordination of all rescue operations, both inside and outside the plant, including at least annual practice drills, is the responsibility of the Safety Manager. In addition, in accordance with **(Company Name)** Hazard Communication Program, material safety data sheets (MSDS's) will be available to all rescue personnel as well outside medical facilities treating injured workers. It is the responsibility of the Safety Manager to ensure that MSDS's are available.

Duty to Outside Contractors

To ensure that the employees of contractors working in confined spaces in our workplace have available to them any and all pertinent information regarding the hazards associated with the confined space, it is the responsibility of Safety Manager to provide contractors with the following information:

- Why the space is a permit space.
- Location of permit-required confined spaces.
- Identity hazards present in the space.
- Any applicable MSDS's.
- Information concerning our experience with the space.
- Contractor's responsibility to have a confined space program that complies with the standard.
- Any special precautions taken, i.e., draining, flushing, testing, isolation, ventilating, etc., prior to a contractor entering space.
- Precautions/procedures to be followed when in or near permit spaces.
- Coordination of entry operations when employees of one or more employer are working in the space simultaneously.
- The time and place of a debriefing session at the end of the job to discuss any problems encountered during the entry.

Program Review. Note any problems encountered during the entry on the permit. Review the canceled permits at least annually to determine if there is a need to modify existing procedures to ensure continued employee protection.

_____ □ □ □ □

Confined Space Entry Permit

Permit # _____

Part I (To be completed by the Safety Manager)

Confined space to be Entered: _____ Location: _____

Entry Date/Time: _____ Permit Good Until Date/Time: _____
 (Cannot be issued for more than one shift.)

Conditions requiring new permit: _____

Description of confined space: _____

Description of work: _____

Name of Entry Supervisor: _____

Names of Authorized Entrants _____

Name of Authorized Attendants _____

Personnel trained and certified? Yes No

Existing Hazards

	Yes	No
Engulfment	<input type="checkbox"/>	<input type="checkbox"/>
Mechanical hazard	<input type="checkbox"/>	<input type="checkbox"/>
Electrical hazard	<input type="checkbox"/>	<input type="checkbox"/>
Pneumatic hazard	<input type="checkbox"/>	<input type="checkbox"/>
Hydraulic hazard	<input type="checkbox"/>	<input type="checkbox"/>
Steam	<input type="checkbox"/>	<input type="checkbox"/>
Other hazards:	_____	

Environmental Hazards

	Yes	No
Oxygen deficiency	<input type="checkbox"/>	<input type="checkbox"/>
Flammable atmosphere	<input type="checkbox"/>	<input type="checkbox"/>
Toxic atmosphere	<input type="checkbox"/>	<input type="checkbox"/>
List toxics:	_____	

Introduced Hazards

	Yes	No
Hot work	<input type="checkbox"/>	<input type="checkbox"/>
Painting	<input type="checkbox"/>	<input type="checkbox"/>
Cleaning	<input type="checkbox"/>	<input type="checkbox"/>
Residue removal	<input type="checkbox"/>	<input type="checkbox"/>
Use of chemicals	<input type="checkbox"/>	<input type="checkbox"/>

Required Controls

	Yes	No
Empty contents of space	<input type="checkbox"/>	<input type="checkbox"/>
Clean space	<input type="checkbox"/>	<input type="checkbox"/>
Purge space	<input type="checkbox"/>	<input type="checkbox"/>
Hot work permit	<input type="checkbox"/>	<input type="checkbox"/>
Blanking/bleeding lines	<input type="checkbox"/>	<input type="checkbox"/>
Lockout/tagout	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>		
Continuous ventilation	<input type="checkbox"/>	<input type="checkbox"/>
Other controls:	_____	

Environmental Monitoring

	Yes	No
Oxygen monitoring	<input type="checkbox"/>	<input type="checkbox"/>
LEL monitoring	<input type="checkbox"/>	<input type="checkbox"/>
Toxic monitoring	<input type="checkbox"/>	<input type="checkbox"/>
List toxics to monitor:	_____	

Additional Controls

	Yes	No
Non-sparking tools	<input type="checkbox"/>	<input type="checkbox"/>
Explosion proof lighting	<input type="checkbox"/>	<input type="checkbox"/>
Communication devices	<input type="checkbox"/>	<input type="checkbox"/>
Lifeline	<input type="checkbox"/>	<input type="checkbox"/>
Body harness	<input type="checkbox"/>	<input type="checkbox"/>
Retrieval winch	<input type="checkbox"/>	<input type="checkbox"/>
Fire extinguisher	<input type="checkbox"/>	<input type="checkbox"/>

Describe PPE required

Protective clothing: _____ Gloves: _____ Hearing protection: _____

Foot protection: _____ Head protection: _____

Respiratory protection: _____

Other PPE: _____

Rescue/Emergency

Rescue procedures: _____

In-plant Rescue Personnel:

Names	Phone
_____	_____
_____	_____
_____	_____

Outside Emergency Resources:

Source	Phone
Fire Department	_____
Ambulance	_____
Hospital	_____
Other	_____

I have reviewed the scope of operations and potential hazards for this permit required work activity. The permit required activity is permitted if the controls identified above are implemented.

Safety Manager: _____

Date: _____

Print

Safety Manager: _____
 Sign

Part II (To be completed by the Entry Supervisor)

(Initial each completed or "NA" if not applicable)

	Completed	Initial
Space contents emptied	<input type="checkbox"/>	_____
Space cleaned	<input type="checkbox"/>	_____
Space purged	<input type="checkbox"/>	_____
Continuous ventilation	<input type="checkbox"/>	_____
Zero-energy state within space	<input type="checkbox"/>	_____
All electrical circuits locked out	<input type="checkbox"/>	_____
Line(s) broken/capped/blanked	<input type="checkbox"/>	_____
All pneumatic circuits locked out and discharged	<input type="checkbox"/>	_____
All hydraulic circuits locked out and discharged	<input type="checkbox"/>	_____
All steam lines locked out and discharged	<input type="checkbox"/>	_____
Hot work permit completed	<input type="checkbox"/>	_____
Specified PPE obtained	<input type="checkbox"/>	_____
Specified emergency rescue equipment obtained	<input type="checkbox"/>	_____
Specified tools and equipment obtained	<input type="checkbox"/>	_____

Note: Before entry into the space, air will be monitored from the outside to ensure conditions are safe for the entry. Testing is to be conducted every 4 feet vertically within the space.

Air Monitoring*

Parameter	Allowable Limits	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time
Oxygen	19.5to 23.5%								
LEL	Less than 10%								
Other	TLV _____								
Other	TLV _____								
Other	TLV _____								

* Monitoring will be conducted continuously. Monitoring results must be recorded at least every 1 hour.

Test performed by: _____ Instrument ID#: _____

Note: Your signature indicated that you have verified the above information and you concur with the decision to proceed with the permit work.

Signatures: Entry Supervisor: _____ Date: _____

Entry Personnel Supervisor: _____ Date: _____

Send completed forms to the Safety Manger.

Confined Space Identification Tag

Front

<p style="text-align: center;">Confined Space</p> <p style="text-align: center;">I.D.</p> <p style="text-align: center;">Job Title</p> <p>Entry Supervisor must review certification on back before permitting me to assume "on-duty" responsibility</p> <p>Name:.....</p> <p>Dept:.....</p> <p>Phone:.....</p>

Back

<p style="text-align: center;">Job Title</p> <p>Understands duties and practices required by Company Procedures & OSHA 29 CFR 1910.146</p> <p>Trainer/Date:.....</p> <p>Knows hazards of entry & modes, symptoms, behavioral effects & consequences of exposure.</p> <p>Trainer/Date:.....</p> <p>Proficient in use of equipment for personal protection, emergency entry & rescue, including devices for communicating with Attendants.</p> <p>Trainer/Date:.....</p> <p>Proficient in First Aid & CPR Red Cross certified in First Aid & CPR</p> <p>Trainer/Date:.....</p> <p>Has technical knowledge/skills appropriate for this responsibility</p> <p>Trainer/Date:.....</p> <p>Has management skills/knowledge to appraise emergencies & respond.</p> <p>Limitations:</p> <p>Certified By:.....</p> <p>Certification Expires:.....</p>

Glossary

A

Acceptable Environmental Conditions - Confined space workplace conditions in which uncontrolled hazardous atmospheres are not present and which include any additional environmental criteria the employer may require for employee entry into a Permit Required Confined Space.

Acid - A fundamental category of chemicals characterized by having available reactive hydrogen and requiring an alkali to neutralize them. Acids turn litmus paper red and have pH values of 0 to 6. They may cause severe burns.

Action Level - The exposure level or concentration in air at which OSHA regulations to protect employees take effect. Exposure at or above this level is termed "occupational exposure". Exposure below this level can also be harmful. This level is generally one half the TLV.

Aerobic - Having oxygen as part of the environment; growing only in the presence of oxygen.

Alkali - A substance capable of combining with hydrogen ions. They are also called bases, and may cause severe burns to the skin. Alkalis turn litmus paper blue and have pH values from 8 to 14.

Ambient - Usual or surrounding conditions.

Anaerobic - Life or processes that occur in the absence of molecular oxygen; growing only in the absence of oxygen.

Anhydride - An oxide or compound which when combined with water produces an acid or base.

Anhydrous - Does not contain water.

Anoxia - A lack of oxygen from inspired air.

Asphyxia - Lack of oxygen and interference with the oxygenation of the blood. Can lead to unconsciousness.

Asphyxiant - A vapor or gas that can cause unconsciousness or death by suffocation (lack of oxygen). Most simple asphyxiants are harmful to the body only when they become so concentrated that they reduce oxygen in the air (normally about 21%) to dangerous levels (18% or lower). Asphyxiation is one of the principle potential hazards of working in confined and enclosed spaces.

Asphyxiation - A condition that causes asphyxia or suffocation. Asphyxiation is one of the principal potential hazards of working in confined spaces.

Attendant - An individual stationed outside the Permit Required Confined Space who is trained to monitor the authorized entrants inside the Permit Confined Space. An attendant may not monitor more entrants or permit spaces than the Entry Permit specifically authorizes.

Authorized Entrant - An employee who is authorized by the employer to enter a Permit Required Confined Space. Authorized entrants may rotate duties, serving as attendants if the Permit program and the entry permit so state. Any properly trained person who authorizes entry by other persons may enter the permit space during the term of the permit as long as the attendant is informed of the entry.

B

Base - See Alkali.

Blanking or Blinding - The absolute closure of a pipe, line or duct, by fastening across its bore a solid plate or cap which completely covers the bore; extends at least to the outer edge of the flange at which it is attached; and is capable of withstanding the maximum upstream pressure.

Boiling Point - The temperature at which a liquid changes to a vapor state at a given pressure. The boiling point is usually expressed in degrees Fahrenheit at sea level pressure (760 mmHg or one atmosphere). For mixtures, the initial boiling point or the boiling point range may be given. Flammable materials with low boiling points generally present special fire hazards.

C

Ceiling Limit, "C" - The maximum allowable human exposure limit for an airborne substance which is not to be exceeded, even momentarily. See also TLV.

Chemical Cartridge Respirator - A respirator that uses chemicals to remove specific gases and vapors from the air or that uses a mechanical filter to remove particulate matter. An air purifying respirator must only be used when there is sufficient oxygen to sustain life and the air contaminant level is below the concentration limits of the device.

Combustible - A term used by NFPA, DOT and others to classify certain liquids that will burn, on the basis of flash points. Both NFPA and DOT generally define "combustible liquids" as having a flash point of 100° F (37.8° C) or higher but below 200° F (93.3° C). Also see Flammable. Non-liquid substances such as wood and paper are classified as "ordinary combustibles" by NFPA.

Compressed Gas - Any material contained under pressure, i.e., dissolved gas or liquefied by compression or refrigeration.

D

Decontamination - The process of making any person, object or area safe by absorbing, destroying, neutralizing, or making harmless by removing biological or chemical agents.

Double Block and Bleed - The closure of a line, duct or pipe locking and tagging a drain or vent which is open to the atmosphere in the line between two locked-closed valves.

E

Emergency - Any occurrence (including failure of hazard control or monitoring equipment) or event, internal or external to the confined space, which could endanger entrants.

Engineering Control - Engineering control systems reduce potential hazards by isolating the worker from the hazard or by removing the hazard from the work environment. Methods include ventilation, isolation and enclosure. This is preferred over personal protective equipment.

Engulfment - The surrounding and effective capture of a person by a liquid or finely divided solid substance.

Entry - The act by which a person intentionally passes through an opening into a permit required confined space and includes ensuing work activities in that space. The entrant is considered to have entered as soon as any part of the entrant's face breaks the plane of an opening into the space.

Entry Permit - The written or printed document established by the employer, the consent of which is based on the employer's hazard identification and evacuation for that confined space (or class or family of confined spaces if a number of spaces may contain similar hazards), and is the instrument by which the employer authorizes his employees to enter the permit required confined space. The entry permit defines the conditions under which the permit space may be entered; states the reasons for entering the space; the anticipated hazards of the entry; for entries where the individual authorizing the entry does not assume direct charge of the entry, lists the eligible attendants, entrants and individuals who may be in charge of the entry; and establishes the length of time (not to exceed one year) for which the permit may remain valid.

Entry Permit System - The employer's written procedures for preparing and issuing permits for entry and returning the permit space to service following termination of entry and designating by name or title the individuals who may authorize entry.

Exposure Limits - The concentration in workplace air of a chemical thought acceptable. This means that most workers can be exposed at the given levels or lower without harmful effects. The exposure limits in common use are:

(a) Time Weighted Average (TLV-TWA) - This is the time weighted average concentration for a normal 8 hour workday or 40 hour work week, to which all workers may normally be exposed day after day, without adverse affect.

(b) Short Term Exposure Limit (TLV-STEL) - This is the maximum concentration to which workers can be exposed for a period up to 15 minutes continuously without suffering from (1) irritation, (2) chronic or irreversible tissue change, or (3) narcosis of sufficient degree to impair self-rescue or reduce work efficiency. No more than four 15 minute exposure periods per day are permitted with at least 60 minutes between those exposure periods.

(c) Ceiling (TLV-C) - The concentration that should not be exceeded even momentarily.

Note: If any of the above TLVs is exceeded, a potential hazard from that substance is presumed to exist.

F

Flammable - A chemical that includes one of the following categories:

(a) "*Aerosol, Flammable*". An aerosol that yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening.

(b) "*Gas, flammable*". (1) A gas that at ambient temperature and pressure, forms a flammable mixture with air at a concentration of 13% by volume or less; or (2) A gas that at ambient temperature and pressure, forms a range of flammable mixtures with air wider than 12% by volume, regardless of the lower limit;

(c) "*Liquid, Flammable*". Any liquid having a flash point below 100^o F (37.8^o C), except any mixture having components with flashpoints of 100^o F (37.8^o C) or higher, the total of which make up 99% or more of

the total volume of the mixture.

- (d) *"Solid, Flammable"*. A solid, other than a blasting agent or explosive that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited, burns so vigorously and persistently as to create a serious hazard. A solid is a flammable solid if it ignites and burns with a self-sustained flame at a rate greater than one tenth of an inch per second along its major axis.

Flammable Limits (Flammability Limits, Explosive Limits) - The minimum and maximum concentrations of a flammable gas or vapor between which ignition can occur. Concentrations below the lower flammable limit (LFL) are too lean to burn, while concentrations above the upper flammable limit (UFL) are too rich. All concentrations between LFL and UFL are in the flammable range, and special precautions are needed to prevent ignition or explosion.

Fume - An airborne dispersion consisting of minute solid particles arising from the heating of a solid (such as molten metal, welding). This heating is often accompanied by a chemical reaction where the particles react with oxygen to form an oxide.

H

Hazardous Atmosphere - An atmosphere which exposes employees to a risk of death, incapacitation, injury or acute illness from one or more of the following causes:

- (1) A flammable gas, vapor, or mist in excess of 10% of its lower flammable limit (LFL).
- (2) An airborne combustible dust at a concentration that obscures vision at a distance of five feet or less.
- (3) An atmospheric oxygen concentration below 19.5% or above 22%.
- (4) An atmospheric concentration of any substance for which a permissible exposure limit is published in Subpart Z of 29 CFR Part 1910 and could result in employee exposure in excess of its permissible limits. When an air contaminant for which OSHA has not determined a permissible exposure limit may be present in a confined space atmosphere, OSHA recommends employers consult other sources of information, such as material safety data sheets (MSDS) which comply with the Hazard Communication Standard for guidance in establishing the acceptable environmental conditions for entry by their employees.
- (5) Any atmospheric condition recognized as Immediately Dangerous to Life or Health.

Hot Work Permit - The employer's written authorization to perform operations which could provide a source of ignition, such as riveting, welding, cutting, burning or heating.

Hypoxia - Insufficient oxygen, especially applied to body cells. See Anoxia.

I

Immediately Dangerous to Life and Health (IDLH) - This is the maximum concentration of a material for which one could escape within 30 minutes without any "escape impairing" symptoms or irreversible health effects. IDLH concentrations are expressed in parts per million or milligrams per cubic meter. Environments which exceed IDLH concentrations can only be entered using self-contained breathing apparatus and appropriate skin protection.

Immediate-Severe Health Effects - Any acute clinical sign(s) of a serious, exposure-related reaction manifested within 72 hours after exposure.

Inerting - Rendering the atmosphere of a permit space non-flammable, non-explosive or otherwise chemically non-reactive by such means as displacing or diluting the original atmosphere with steam or a gas that is non-reactive with respect to that space.

In-Plant Rescue Team - A group of two or more employees designated and trained to perform rescues in permit spaces in their plant.

Isolation - Separation of a permit space from unwanted forms of energy which could be a serious hazard to permit space entrants. Isolation is usually accomplished by such means as blanking or blinding; removal or misalignment of pipe sections or spool pieces; double block and bleed; or lock-out and/or tagout.

L

LC50 - Median Lethal Concentration is the statistical estimate of the concentration of a substance in air or water necessary to kill 50% of test organisms within a specified time under standardized conditions.

LD50 - Median Lethal Dose is the statistical estimate of the dosage of substances necessary to kill 50% of an infinite population of test animals as determined from exposure to the substance, by any route other than inhalation within a specified time under standardized conditions.

Line Breaking - The intentional opening of a pipe, line or duct that is or has been carrying flammable, corrosive, or toxic material, and inert gas, or any fluid at a pressure or temperature capable of causing injury.

Low-Hazard Permit Space (LHPS) - A permit space where there is extremely low likelihood that an IDLH or engulfment hazard could be present and where all other serious hazards have been controlled.

Lower Explosive Limit, Lower Flammable Limit (LEL, LFL) - Refers to the lowest concentration of gas or vapor (% by volume in air) that burns or explodes if an ignition source is present at ambient temperatures. The LEL is constant up to 250^o F. Decrease it by 0.7% at temperatures above 250^o F because explosibility increases with higher temperatures. See Flammable Limits.

M

Mist - Suspended liquid droplets in the air generated by condensation from the gaseous to the liquid state or by mechanically breaking up a liquid by splashing or atomizing.

N

Not-Permitted Condition - Any condition or set of conditions whose hazard potential exceeds the limits stated in the Entry Permit.

O

Oxygen Deficient Atmosphere - An atmosphere containing less than 19.5% oxygen by volume.

Oxygen Enriched Atmosphere - An atmosphere containing more than 22% oxygen by volume.

P

pH - Numerical designation of relative acidity and alkalinity. A pH indicates precise neutrality; higher values indicate increasing alkalinity; lower values indicate increasing acidity.

Permissible Exposure Limit (PEL) - Established by OSHA. This may be expressed as a time-weighted average (TWA) limit or as a ceiling exposure limit that legally must never be exceeded instantaneously even if the TWA exposure limit is not violated. OSHA PELs have the force of law. Note that ACGIH TLVs and NIOSH RELs are recommended exposure limits that may or may not be enacted into law by OSHA.

Personal Protective Equipment (PPE) - Devices or clothing worn to help insulate a worker from direct exposure to hazardous materials. Examples include gloves and respirators.

ppm - Parts per million. Parts of vapor or gas per million parts of contaminated air by volume at 25^o C and 1 torr pressure.

Permit Required Confined Spaces (PRCS) - Permit space. An enclosed space which:

- (1) Is large enough and configured so that an employee can enter bodily and perform assigned work;
- (2) Has limited or restricted means of entry or exit (examples include tanks, vessels, silos, storage bins, hoppers vaults, pits and diked areas);
- (3) Is not designed for continuous employee occupancy;
- (4) Has one or more of the following characteristics:
 - (a) Contains a known potential to contain a hazardous atmosphere;
 - (b) Contains a material with the potential for engulfment of an entrant;
 - (c) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or a floor which slopes downward and tapers to a smaller cross-section;
 - (d) Contains any other recognized serious safety or health hazard.

Permit Required Confined Space Program - The employer's program for preventing unauthorized employee entry and for ensuring safe entry into and work within permit spaces by authorized employees.

R

Retrieval Line - A line or rope secured at one end to the worker by a chest-waist or full-body harness, or wristlets, and with the other end secured to either a lifting (or other retrieval) device, or to an anchor point located outside the entry portal.

S

"Skin" - Notation indicating possible significant contribution to overall exposure to a material by way of absorption through the skin, mucous membranes and eyes by direct or airborne contact.

T

Threshold Limit Value (TLV) - A term used by ACGIH to express the airborne concentration of a material to which nearly all workers can be exposed day after day without adverse effects. "Workers" means healthy individuals. The young, old, ill, or naturally susceptible will have lower tolerances and need to take additional precautions. ACGIH expresses TLVs in three ways:

- (1) TLV -TWA, the allowable time-weighted average concentration for a normal 8 hour workday or 40 hour work week.
- (2) TLV-STEL, the short-term exposure limit or maximum concentration for a continuous exposure period of 15 minutes (with a maximum of 4 such periods per day, with at least 60 minutes between exposure periods, and provided that the daily TLV-TWA is not exceeded).
- (3) Ceiling (C), the concentration that should not be exceeded at any time.

U

Upper Explosive Limit, Upper Flammable Limit (UEL, UFL) - The highest concentration of a material in air that produces an explosion in fire or ignites when it contacts an ignition source (high heat, electric arc, spark or flame). A higher concentration of the material in a smaller percentage of concentration of air may be too rich to be ignited. See Flammable Limits.

V

Vapor - The gaseous form of a solid or liquid substance as it evaporates.

Vapor Density - The weight of a vapor or gas compared to the weight of an equal volume of air is an expression of the density of the vapor or gas. Materials lighter than air have vapor densities less than 1.0 (examples: acetylene, methane, hydrogen). Materials heavier than air (examples: propane, hydrogen sulfide, ethane, butane, chlorine, sulfur dioxide) have vapor densities greater than 1.0. All vapors and gases will mix with air, but the lighter materials will tend to rise and dissipate (unless confined). Heavier vapors and gases are likely to concentrate in low places; i.e., along floors, in sumps, sewers and manholes, in trenches and ditches where they may create fire or health hazards.

Vapor Pressure - The pressure exerted by a saturated vapor above its own liquid in a closed container. When qualifying control tests are performed on products, the test temperature is usually 100° F, and the vapor pressure is expressed as pounds per square inch (psig or psia), but vapor pressures reported on MSDS's are in millimeters of Mercury (mmHg) at 68° F, unless stated otherwise. Three facts are important to remember:

- (1) Vapor pressure of a substance at 100° F will always be higher than the vapor pressure of the substance at 68° F.
- (2) Vapor pressure reported on MSDS's in mmHg are usually very low

pressure; 760 mmHg is equivalent to 14.7 pounds per square inch.

- (3) The lower the boiling point of a substance, the higher the vapor pressure.

Volatile - Evaporating readily at normal temperature and pressure.

Z

Z-List - OSHA's Toxic and Hazardous Substances Tables Z-1, Z-2, and Z-3 of air contaminants, found in 29 CFR 1910.1000. These tables record PELs, TWAs and ceiling concentrations for the materials listed. Any material found on these tables is considered hazardous.

Confined Space Training Program

Introduction

Our employee training program is designed to address the hazards of working in confined spaces and the procedures and precautions that will allow employees to work safely in these spaces. The training program will cover:

1. An overview of the Permit Required Confined Space Standard.
2. Written Confined Space Program.
3. Hazard Identification and Control.
4. The Permit System.
5. Testing and Monitoring.
6. Employee Information and Prevention of Unauthorized Entry.
7. Duty-Specific Employee Training and Certification.
8. Equipment.
9. Emergency and Rescue Procedures.
10. Outside Contractor Responsibilities.

Overview of the Permit Required Confined Space Program

The Confined Space Standard is intended to ensure that both employers and employees are aware of the potential hazards associated with working in non-permitted and permitted confined spaces.

Written Confined Space Program

We have a written confined space program that outlines how we will provide you with the information necessary to safely enter confined spaces. It is our company policy on confined spaces and must be followed. Our company's Confined Space Program is located (Location) and includes samples of the pre-entry checklist and the Entry Permit as well as a glossary of terms for reference. Among other things, it includes:

- A list of confined spaces in our workplace;
- Our company procedures for identifying and controlling the hazards in those confined spaces;
- Our procedures for testing and monitoring the environment in the confined space;
- Our procedures for issuing and using confined space permits;
- Our employee training program;
- The equipment commonly used to ensure safety while working in confined spaces;
- Our emergency and rescue procedures; and
- Our procedures for working with outside contractors in confined spaces.

Hazard Identification and Control

Confined spaces can potentially pose many hazards to workers required to enter them. We will discuss the confined spaces present in our workplace and the methods we will employ to detect the three classes of hazards (i.e., engulfment, mechanical and atmospheric hazards) associated with those spaces. You will also learn how we will control these hazards through the use of engineering and administrative controls, as well as through the use of personal protective equipment. A listing of all the confined spaces, their associated hazards and whether they are permit required spaces is attached to our written confined space program.

The Permit System

To ensure that all actions and conditions necessary for the protection of workers have been performed, a written permit system has been developed. In all confined spaces designated as "permit required" spaces, our company's policy and procedures regarding the permit system will be followed.

Prior to the entrance of any worker into a confined space, a confined space pre-entry checklist list will be completed. This checklist defines:

- The location and description of work in the confined space;
- The names and training certifications of all workers participating in the space entry;
- The methods taken to isolate mechanical hazards;
- The methods employed to test atmospheric conditions within the space;
- The methods employed to purge and/or ventilate the space of contaminants;
- A listing of the equipment needed to safely work in the space;
- A listing of any task specific hazards that are being conducted in the space and their controls;
- Procedures for emergency/rescue operations; and
- Verification that all actions and conditions necessary for safe entry have been performed.

Once the checklist has been completed, **(Name of person or position)** will determine if the space is permit required. If it is, a written Entry Permit will be issued for a specific period of time. The Entry Permit defines:

- Who the permit is issued to;
- The location and purpose of the entry;
- The duration of the permit;
- A required preparations checklist;
- A record of the initial testing and continuous monitoring conducted within the space;
- Signatures of the Entry Supervisor, Entry Personnel Supervisor and Person Issuing the Permit to certify the safety of the operation.

Testing and Monitoring

One of the most important aspects of safely working in confined spaces is knowing what atmospheric hazards may be present in the confined space. Therefore, you will be trained in the methods we will employ to test and monitor the environment within the confined space. This training will include:

- A description of the common atmospheric contaminants found in our confined spaces;
- A description of the equipment used to detect hazardous conditions;
- The physical and health effects of exposure to atmospheric contaminants;
- The measures you can take to protect yourself from the hazards;
- Our company procedures that provide you with protection, such as work practices, engineering controls and personal protective equipment;
- Use of the Confined Space Pre-entry and Entry Permit System.

Employee Information and Prevention of Unauthorized Entry

All employees of **(Company Name)** will be trained in some basic information regarding confined safety as part of our continuing safety awareness program. Workers will be trained to recognize the warning signs that are posted in confined space areas and to avoid these areas. All employees will be shown what the warning signs look like at that time. They will also be trained so that only those people authorized through specific training and certification classes will be allowed to enter these areas.

Duty Specific Employee Training and Certification

All employees required to work in or around confined spaces will receive training specific to what their duties will be while working in the confined space area. The specific training requirements for each level of responsibility is defined in our written program.

The confined space standard is very comprehensive in nature and can involve the incorporation of training requirements from several other OSHA mandated programs. Because of this, you will receive additional training in hazard communication, respiratory protection and lockout/tagout if it is deemed necessary because of the hazards identified in the confined space.

After all necessary training has been conducted, you will receive a Confined Space Identification and Certification Tag. This tag will clarify:

- The type(s) of work in or around confined spaces you have been certified to perform;
- Who certified your training and when this occurred; and
- When your certification will expired.

Additional training will be conducted whenever your job duties change, a new hazard is present in the confined space or if your job performance indicates some deficiencies.

This identification tag must be presented each and every time you are assigned to work in a confined space area.

Equipment

It is our company policy to ensure that you are familiar with all the different types of equipment necessary for you to safely perform your duties in a confined space. Therefore, you must become acquainted and knowledgeable in the operation of the following types of equipment:

- Personal protective equipment;
- Testing/measuring/monitoring equipment;
- Ventilating and purging equipment;
- Warning signs and barriers;
- Emergency and rescue equipment;
- Lighting; and
- Communication equipment.

If you should have any questions regarding the operation of equipment you will need to use during your confined space work, ask the entry Supervisor prior to starting the work. **(Name of person or position)** will ensure that all the equipment necessary to perform your confined space work safely is present at the worksite prior to the work commencing.

Emergency and Rescue Procedures

Emergencies happen regardless of how well an operation is planned and executed. Therefore, we have developed a very specific emergency and rescue plan in the event that an emergency occurs while you are working in a confined space that is designed to ensure your safety in an emergency situation. All those charged with rescue duties, from our own company's attendants and first responders to outside services such as the fire department and medical responders have been specifically trained in their roles. You too will be trained in these procedures and at least annually the entire team will conduct a drill to ensure that the procedures we have developed actually work in an emergency situation. It is during those drills that we will be evaluating our process and making changes to ensure the most efficient and safest procedures are being followed. If at any time during the training or drills you have suggestions on ways to improve our procedure, refer those suggestions to **(Name of person or position)**, who is in charge of our emergency/rescue team.

Outside Contractor Responsibility

Occasionally, we may ask an outside contractor to perform some work within our confined space. In this situation, we will provide the contractor with all the necessary information regarding the space they will need to safely work within the space. If you are assigned to work in a confined space that an outside contractor is also required to work in, prior to the commencement of the job, both you and the contract employees will be trained in the working relationships and duties of the work to be performed within the space.

Employee Training Record

Confined Space Entry Training for employees of (Company Name) was conducted at:

Address of Training: _____

Date & Time of Training: _____

Description of Training: _____

I certify that I attended the above Confined Space Entry Training:

Employee Name (printed)

Employee Signature

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

I certify that the above described training was provided to employees as listed above and that each employee personally signed the attendance record.

Confined Space Coordinator _____
(Signature)

Sample Letter to Contractors

Initial Request for Information

(Place on company letterhead)

Date

Name of Contractor

Address

City, State Zip

Dear,

Employees of your company will be working in our confined space(s). To ensure that your employees have available to them any and all pertinent information regarding the hazards associated with those space(s), we have enclosed the following information:

1. The location(s) of the confined space(s) you will be working in or around;
2. The identity of hazards present in the space;
3. Any applicable MSDSs;
4. A summary of our past experience with the space;
5. Any special precautions that will be taken prior to your employees entry into the space;
6. Written policies and procedures that must be followed when workers are in or near confined spaces;
7. Coordination policies when employees of one or more employer are working in the space at the same time;
8. Our emergency and rescue plan; and
9. The time and place of the closing debriefing session when the job has ended.

Please provide to us a copy of your written confined space entry program, any applicable MSDSs for the processes you will be conducting and certification that the employees you intend to work in our confined space have been adequately trained according to the Confined Space Standard. All correspondence should be directed to the address above.

Thank you for your timely response to this request. If you have any questions concerning this matter, please contact **(Name)** at **(Telephone number, including area code)**.

Sincerely,

Name

Title (if appropriate)

Follow-up Letter to Contractor

(Place on company letterhead)

Date

Name of Contractor

Address

City, State Zip

Dear,

Recently we requested that you provide for us specific information regarding your program for employee confined space entry. We requested three items; (1) your written Confined Space Program; (2) a copy of any applicable MSDSs for hazardous substances you may be using while in our space; and (3) training certificates of the workers who will be required to enter our confined space. To date, we have not received this information.

In order for both our firms to be in compliance with the OSHA Confined Space Standard, we must receive the requested information. Your prompt attention to this matter would be appreciated.

Sincerely,

Name

Title (if appropriate)



Bernie Buchner, Inc.

"EQUAL OPPORTUNITY EMPLOYER"

224 CAUSEWAY BOULEVARD • LA CROSSE, WISCONSIN 54603 • (608) 784-9000

CONFINED SPACE ENTRY FORM

Certification: The entrant and attendant certify by their signature in the space(s) below that they have read, understand and will follow the protocol, on the reverse, side for entering permit required confined spaces.

General Description of Space(s) to entered		Work to be Performed	
sampling equipment/entry equipment	authorized entrants	authorized attendants	

Location	Tester	Atmospheric Testing Data				Other (Specify)
		Date/Time	Oxygen	LEL	H2S	

Additional Comments _____

Entry Supervisor

Note: Sampling must be performed prior to each entry
Only trained personnel are to enter confined spaces or use sampling equipment.

KEEP POSTED ON JOB UNTIL WORK IS COMPLETED

CONFINED SPACE ENTRY PROCEDURE PERMIT REQUIRED SPACE ENTRY **ONLY**

This procedure is an outline only. It does not include all required information for confined space entry. **All persons** entering confined spaces or monitoring entrants in confined spaces must be trained and follow the procedures on this document and sign the certification on the other side of this form. **If any conditions identified on this list are not met, a permit is required to enter. See your supervisor or contact EH&S at x2553.**

DEFINITION: A no permit required confined space is a space in which there are no existing or potential atmospheric or physical hazards which could incapacitate an entrant.

1. Entry teams shall consist of a minimum of two people, an attendant and the entrant. Attendants and entrants must be trained on confined space entry.
2. Hazards assessment and testing must be performed by an individual familiar with the hazards of the space. This person becomes the entry supervisor and must sign the entry form on the lower left.
3. Emergency procedures must be understood by the entrant and attendant.
4. Communication equipment to contact the rescue service must be on site. The designated rescue agency on the main campus is the UCSC fire department.
5. An instrument capable of measuring oxygen, explosive gas levels (LEL), hydrogen sulfide and any other toxic substance to which the entrant might be exposed must be on site. The instrument must be calibrated frequently enough to ensure proper function.
6. If possible, atmospheric testing must be done prior to removing manhole cover. If this is not possible, move the manhole cover the minimum distance needed to insert the monitoring probe.
7. Atmospheric testing shall be continuous and readings recorded every two hours on the reverse side. Space shall be evacuated immediately if any monitor alarm is activated.
8. The oxygen level must be measured first and be at least 20% for **entry** to be allowed. The entrant(s) must exit the confined space if the oxygen level drops to 19.5% (**Alarm Level**).
9. The LEL (lower explosive limit) is measured second and cannot exceed 5% for entry to be allowed.
10. The hydrogen sulfide reading is measured last and cannot exceed 5 ppm for entry to be allowed.
11. The space must be free of physical or mechanical hazards such as entrapment, engulfment or other recognized hazard which could incapacitate an entrant.
12. Lockout/tagout procedures must be performed on all pipes which could discharge into the confined space and all forms of exposed hazardous energy.
13. The material safety data sheet must be on site for any chemicals used and appropriate monitoring equipment used to monitor the atmosphere.
14. Work using flame or generating sparks is defined as hot work and a **permit is mandatory** when performing this type of work in a confined space. See your supervisor or EH&S.



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Fall Protection Manual

Fall Prevention Methods

Purpose

To provide our employees with protection from fall hazards.

Engineering Controls

When practical engineering controls will be used to eliminate fall hazards during the erection of building components. These controls will be used to eliminate the need for temporary controls such as guardrails, hole covers and personal fall arrest equipment. The project team will to the extent possible erect permanent fall protection; i.e., guardrails, stair rails and flooring, prior to final placement in a building or like structure. Use of blueprints and engineering staff will be essential to the successful use of engineering controls.

Alternative Work Methods

When practical, alternative work methods will be incorporated to minimize exposure of fall related hazards to company employees. Alternative work methods include:

- a. Scissor lifts and articulating boom platforms.
- b. Ladders.
- c. Scaffolds.

Use of this equipment will be determined by the project management team and coordination of delivery to the jobsite will be the responsibility of **(insert responsible person; i.e., the senior on-site supervisor)**.

Fall Protection Systems

Conventional Fall Protection Systems

Conventional fall protection systems will be required when engineering or alternative controls cannot eliminate fall hazards after six (6) feet in height.

Guardrails

All guardrails used on projects will be made of wood, wire rope, pipe, angle iron or be manufactured for use as a guardrail system. Guardrails will be placed when possible:

- a. On all stair systems.
- b. On all open sided floors.
- c. Around floor and roof openings which are too large for hole covers.
- d. On all elevator shaft openings.
- e. On all lookouts or other material handling systems.
- f. On all interior lifting shafts.

Guardrails designed to be removable will be replaced immediately after material handling operations are completed. In all areas where removable guardrails are used adequate personal fall arrest systems will be in place prior to removal of the guardrail.

Guardrails will be designed according to the following criteria:

- a. A standard guardrail will consist of a top rail located 42 inches, plus or minus 3 inches, above the walking/working surface. Midrails installed between the top rail and walking/working surface. Toeboards, when required, will be installed as flush as possible with the walking/working surface.
- b. When a 200 pound force is applied to the top rail in an outward or downward direction the guardrail will not deflect more than 39 inches above the walking/working surface.
- c. All midrails, screens, mesh, intermediate vertical members or panels must be able to withstand a 150 pound force in a downward or outward direction.
- d. All guardrail systems must be smooth surfaced.
- e. Steel or plastic banding is prohibited as guardrail material
- f. Wire rope guardrails will be 1/4 inch diameter or greater and will be flagged each six feet with a visible material.
- g. Guardrails will be inspected and any deficiencies corrected immediately.

Guardrail Material Specifications

- a. Wood railings, top rails will be at least 2" x 4" construction grade material. All posts will be placed 8 foot on center. Midrails will be at least 1" x 6" material.
- b. Pipe railings will be at least 1 1/2" nominal diameter schedule 40 pipe with posts spaced no more than 8 feet on center.
- c. Structural steel railing will be at least 2" x 2" x 3/8" angle iron with posts spaced no more than 8 feet on center.
- d. Manufactured systems will be erected and maintained according to manufacturer specifications with a copy of the specification placed in the jobsite file.

Hole Covers

All holes in walking/working surfaces including skylights that are greater than 2 inches in dimension will be fitted with a cover according to the following specifications:

- a. Designed to withstand twice the weight of any employee, equipment or material imposed on the cover at one time.
- b. Covers subjected to vehicle traffic must be designed to withstand twice the axle load of the heaviest vehicle expected to cross.
- c. Covers must be secured to prevent movement.
- d. All covers must be marked with the word "Hole" or "Cover" written on them. For smaller covers not able to be written on colored paint will be applied identifying the cover as a hole cover.

- e. Plywood must be at least 3/4" material.
- f. Covers must not create a tripping hazard.

Safety Nets

If safety nets are used as fall protection the following specification will be followed:

- a. Safety nets must be placed as close to the walking/working surface as possible with no net creating a fall distance of more than 30 feet.
- b. Safety nets when used as exterior fall protection must be placed according to the following specifications:
 - If 5 feet or less below the outer edge, extended at least 8 feet from the vertical surface.
 - If 10 feet or less from the outer edge, extended at least 10 feet from the vertical surface.
 - If more than 10 feet up to 30 feet below the outer edge, extended at least 13 feet from the vertical surface.
- c. Installed in a manner where no employee falling into the net will strike any surface below.
- d. Must be tested with a 400 pound bag of sand in accordance with 1926.502(c)(4)(i) of this standard.
- e. Inspected for wear, damage and deterioration.
- f. Inspected after any fall into the net of employees or heavy materials.
- g. Debris must be removed from nets as soon as possible and no later than one work shift.
- h. Design and connections must comply with 1926.502(c)(7), (8), (9).

Personal Fall Arrest Equipment

Special Instructions

When fall hazards cannot be eliminated or controlled by guardrails, covers, safety nets or engineering design, and unless working with an approved specialized system, employees will be issued and must use personal fall arrest equipment.

Only personal fall arrest equipment purchased from a manufacturer or supplier of such equipment will be used.

When specified, special systems including horizontal lifelines will be constructed under the supervision and direction of qualified engineers only.

Personal Fall Arrest Equipment Requirements

Employees will use personal fall arrest equipment when other means for fall prevention are removed, not feasible to use or a part of an fall protection plan. Employees will be instructed in the use, maintenance and inspection of all personal fall arrest equipment prior to use.

Body Belts - After January 1, 1998 body belts will be prohibited for use by employees as fall arresting equipment.

- a. The D-ring of the body belt must be worn directly in back of the employee at all times.
- b. Body belts will be required to be used with shock absorbing lanyards only.
- c. Body belts are prohibited for use during entry into confined spaces.
- d. Employees will inspect their body belt prior to use for any defects or damage and replace the belt if any defects or damage is found.

Full Body Harnesses - After January 1, 1998 only full body harness will be allowed for use as fall arresting equipment.

- a. Employees will inspect their own full body harness prior to use for any defects or damage and replace the harness if any defects or damage is found.
- b. All straps must be drawn snugly on the employees body.

Lanyards - After January 1, 1998 only locking snaphooks will be allowed for use.

- a. No steel lanyards will be allowed to be used without a shock absorbing device.
- b. All lanyards must be inspected by employees prior to use.
- c. Lanyards must not be tied around sharp edges or corners where breakage could occur.
- d. Shock absorbing lanyards must be removed from use following manufacturers guidelines.
- e. Lanyards are prohibited from use as tie-downs or material straps.
- f. At no time will two separate lanyards be attached to create a longer lanyard.

Special Consideration During Hot Work

Where employees are performing work which creates large amounts of molten material, slag or sparks, steel cable lanyards may be issued. Only steel cable lanyards with built-in shock absorbing devices will be allowed for this use. Steel cable lanyards will be returned to storage upon completion of the hot work activity.

Retractable Lifelines

When using retractable lifelines the following requirements will apply:

- a. Retractable lifelines will be inspected prior to use
- b. Retractable lifelines will be removed from use after arresting a fall, inspected and if necessary returned to the manufacturer for recertification.
- c. Retractable lifelines will be located to avoid swing fall hazards as much as practical.
- d. Employees will be trained in the use of retractable lifelines prior to using them.
- e. Shock absorbing lanyards must not be attached to retractable lifelines

Anchorage Points - All anchorage points used to attach lanyards and lifelines for fall arrest systems must comply with the following specifications:

- a. Anchorages must support an impact load of 5000 pounds.
- b. Anchorages designed by a qualified person must support at least twice the maximum expected impact load.
- c. Anchorages used with positioning systems must support 3000 pounds.
- d. When practical, anchorage points will be color coded to allow for easy identification by employees.
- e. Anchorages should be located eye level or higher and at no time will an employee be allowed to free fall more than six feet.
- f. Anchorages should be located to minimize the possibility of a swing fall hazard.

Prohibited Anchor Points

At no time will any employee attach any fall arresting equipment to the following material unless a qualified person has first determined the material is suitable as a anchorage point:

- a. Guardrails;
- b. Ladders/rungs;
- c. Conduit or plumbing;
- d. Scaffolding;
- e. Roof stacks/vents or fans;
- f. C-clamps;
- g. Ductwork or pipe vents;
- h. Any point which does not meet the structural requirements.

Special Purpose Fall Arrest Systems

During work activities that require the use of special purpose systems the following requirements will apply:

Positioning Systems

- a. Free fall will be limited to a maximum of two feet.
- b. Anchorages must support 3000 pounds.
- c. Employees must tie off at their working point.

Restraining Systems

- a. Rope or cable must not allow employee to fall over an edge.
- b. Anchorage must withstand 200 pounds of force.

Horizontal Lifelines

- a. Only horizontal lifelines that are designed by a manufacturer or qualified person will be allowed for use.
- b. All horizontal lifelines must be erected under the supervision of a qualified person.
- c. Manufacturer requirements will be followed during erection and use and a copy of the requirements will be placed in the job file.

Vertical Lifelines

When using vertical lifelines the following requirements apply:

- a. Lifelines must withstand 5000 pounds impact force.
- b. Only one employee attached to a single lifeline.
- c. Only equipment designed for use with a vertical lifeline will be used.
- d. Vertical lifelines will be inspected daily for defects and/or damage.

Specialized Fall Protection Systems

During the course of work where conventional systems cannot be used and only when approved by **(insert person responsible; i.e., the senior site supervisor)** specialized fall protection systems the following guidelines will apply:

Controlled Access Zones (CAZ)- CAZ will be allowed for overhand bricklaying operations only unless being used as part of a Fall Protection Plan.

Before using a controlled access zone the **(insert person responsible; i.e., foreman for the crew to be working in the CAZ)**, will review the section of this program for proper CAZ design. Additionally, CAZ will require:

- Only those employees necessary for the work to be completed will be allowed within the CAZ.
- Each Employee within the CAZ will be trained on CAZ guidelines before working in the CAZ.
- Notification will be given to all other non-company personnel that a CAZ has been established and entry into the CAZ by non-company personnel is prohibited. A copy of the notification will be placed in the job file.
- An employee properly trained in the CAZ procedures will be designated as the CAZ safety monitor.

Warning Line Systems - Warning Line Systems will be allowed for Roofing operations only unless being used in conjunction with a Fall Protection Plan.

Before using a Warning Line System the **(insert person responsible; i.e., foreman for the crew performing the work within the Warning Line System)** will refer to proper Warning Line System design procedures of this program. Additionally, Warning Line Systems will require:

- Only those employee necessary to perform the work will be allowed within the Warning Line area.
- Notification will be given to all other non-company personnel that a Warning Line System has been established and entry into the Warning Line area by non-company personnel is prohibited. A copy on the notification will be placed in the job file.
- An employee properly trained in the Warning Line procedure will be designated as the Warning Line safety Monitor.

Safety Monitoring System

The Safety Monitoring System will only be allowed for Overhand Bricklaying operations within established CAZ, warning line systems for roofing work and while using a Fall Protection Plan. All designated safety monitors will be properly trained in the use of the system they are monitoring, (refer to training requirements of this program), be visibly identified as Safety Monitors and have authority to immediately remove any employee who may be exposed to a fall hazard.

Fall Protection Plans

Fall Protection Plans will only be allowed in residential operations or precast concrete construction and only under the approval of **(insert person responsible; i.e., the Senior Site Manager)**. All Fall Protection Plans will follow the requirements of this program.

Fall Protection Plans will only be allowed for use after it is determined that no other feasible methods for Fall Protection can be utilized or there is a greater hazard in using other methods for Fall Protection in the specific area where the plan is proposed to be used. This will be documented and placed in the job file. Additionally, Fall Protection Plans will require:

- Only those employees necessary for the work to be completed will be allowed within the area identified as using the Fall Protection Plan.
- Each employee working within the area designated as using a Fall Protection Plan will be properly trained in the use of the plan.
- Notification will be given to all other non-company personnel that a Fall Protection Plan is being used entry into the established area by non-company personnel is prohibited. A copy of the notification will be placed in the job file.
- A copy of the plan will be placed in the job file.
- An employee properly trained in the use of the Fall Protection Plan will be designed as the Safety Monitor.

Inspection, Storage and Maintenance of Fall Protection Equipment and Systems

Purpose

To maintain the proper function of fall protection systems in use by company employees.

Personnel designated **by (insert person responsible; i.e., the Senior Site Manager)** will perform inspections as indicated in this section. Responsibility for inspections will be documented with the form found in Sample Form section of this program and a copy of the form will be placed in the job file.

In the event deficiencies are found in fall protection systems or equipment in areas that our employees are working that are not under our control to correct will be addressed in the following manner:

- The employer who has responsibility to correct the deficiency will be verbally made aware of the deficiency by our company and will be requested to correct the deficiency.
- If the employer responsible for the fall protection system does not immediately correct the deficiency our employees will be instructed to remain out of the area until the deficiency is corrected or in the event our employees must remain in the area to complete work, alternative fall protection systems will be provided to them to prevent them from becoming exposed to the hazard. Alternative methods include Personal Fall Arrest equipment and Restraining systems.
- In the event the deficiency is not corrected in one work shift, the **(insert responsible person; i.e., Senior Site Manager)** will issue the responsible employer a notification of hazard form found in the Sample Form section of this program. A copy of the notification will be placed in the job file.

- If the deficiency continues to be ignored by the responsible employer the **(insert responsible person; i.e., Senior Site Manager)** will notify the home office for instruction.

Guidelines for Inspections

All Fall Protection Systems and Equipment that are used for the protection of our employees or in work areas located where our employees are working will be inspected using the following guidelines whether erected or purchased by our company or not.

- Deficiencies will be corrected immediately.

Guardrails/hole covers

- Daily, a visual inspection of all guardrails, Safety Nets, Anchorages and Hole Covers erected by our company and in areas protecting our employees.
- Weekly, an inspection of any Safety Nets used for employee protection will be made by a qualified person using manufacturer guidelines.

Personal Fall Arrest Equipment

- Daily, a visual inspection by each employee of their fall protection equipment.
- Twice Daily, a visual inspection will be made by each employee using Personal Fall Arrest equipment in areas where hot work is being performed or caustic/acids are being used.

Fall Arrest Systems

- Daily, a visual inspection of all Fall Arrest Systems including Horizontal Lifelines and vertical Lifelines.
- Weekly, an inspection by a qualified person of any systems engineered for use as a Fall Protection System.

Specialized Systems

- Daily, a visual inspection will be made of all Specialized Systems Components.
- Maintenance of Fall Protection Equipment and Systems.
- Maintenance of all company owned equipment will follow recommended manufacturer guidelines. Company employees are required to alert their **(insert responsible person; i.e., foreman)** of any defective personal fall arrest equipment they are issued for correction.

At the completion of each project all Fall Protection Equipment or Systems will be brought to the company supply department for inspection prior to being re-issued to another project for use.

(Employee Name) is responsible for the inspection of all returned Fall Protection Equipment and Systems prior to the Equipment or Systems being re-issued. The maintenance inspection form will be completed and filed in the home office.

Storage of Fall Protection Equipment and Systems

Proper storage procedures will be followed on all of our projects to assure Fall Protection Equipment and Systems maintain effective use. The following guidelines will be used for storage on all of our projects:

- No Personal Fall Arrest Equipment or Systems will be stored near solvents, paint, grease, oil, acid or any substance which could deteriorate synthetic fiber.
- Personal Fall Arrest Equipment will be returned after each shift to a place designed by the Senior Site Manager.
- No Personal Fall Arrest Equipment will placed in the bottom of gang boxes used for storage of other tools or equipment.

Training

Purpose

To provide our employees with the knowledge to identify fall hazards and manage exposure to them.

Each employee who will be working on any of our jobsites including all management employees will be instructed in fall prevention by **(Name of Employee)** who is our designated trainer or an employee appointed at the jobsite prior to their starting work on a project. Employees will be trained in the fall protection systems and equipment that will be used on the project, how to identify fall hazards and special fall hazards specific to each jobsite. Training guidelines will be followed as found in Training section of this program.

Employees who have been trained on fall protection by another source will submit the name and phone number of the company or source of the training for verification. The source will be contacted and an outline of the covered material requested as well as documentation that the employee attended and completed all requirements of the training session. Any employee not able to identify the source will be required to attend our company fall protection training.

In the event an employee does not understand the procedures or fall hazards the employee will be required to be retrained on the fall prevention program.

Training Documentation

All employees trained in fall prevention will be documented in the following manner:

- a. The date of the training.
- b. The employees printed name.
- c. The signature of the employee.
- d. The name of the trainer.
- e. The specific subjects covered in the training session.

The training form provided with this program will be filed in the job file.

Rescue Procedures

Purpose

To provide our employees with a fast response to a fall.

All employees will be rescued by on site personnel trained in rescue procedure with the use of scissor lifts/boom lifts, ladders or man baskets. Rescue personnel will decide which method is most effective in each situation.

In the event of a fall the following personnel will be notified as soon as possible:

- a. Trained rescue personnel.
- b. Fire department or emergency medical services.
- c. Senior Site Manager.

Emergency Rescue Communications

At the beginning of each project local emergency services personnel will be contacted and rescue consideration will be discussed. Recommendations by emergency services personnel will be requested and those recommendations will be filed as an amendment to the jobsite specific procedures.

Accident/Incident Investigation

Purpose

To learn how to prevent future falls.

In the event a fall occurs at any jobsite an accident/incident investigation will be conducted by **(Name of Employee)**. Procedures for the investigation will follow those found in the company safety manual. Any recommendations to prevent future occurrences related to falls will be added to the fall prevention training program.

Fall Prevention Program Review

Purpose

To continuously improve our fall protection program.

In an effort to continually improve upon the performance of the company fall prevention program an annual review of this program will be conducted by **(Name of Employee)**. Recommendations for improvement will be made to the president of the company and formal inclusion made to this program upon acceptance.

Glossary

Anchorage means a secure point of attachment for lifelines, lanyards or deceleration devices.

Arresting force - the amount of force on a worker or test weight resulting from the fall protection system stopping the fall. This usually expresses the peak force experienced during the fall arrest (see maximum arrest force).

Body belt (safety belt) means a strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline or deceleration device.

Body Harness means straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system.

Competent Person - an individual knowledgeable of manufacturer's recommendations, instructions and manufactured components who is capable of identifying existing and predictable hazards in surrounding areas and the proper use, selection and maintenance of fall protection.

Connector means a device which is used to couple (connect) parts of the personal fall arrest system and positioning system together. It may be an independent component of the system or it may be an integral component of part of the system (such as a buckle or D-ring sewn into a body belt or body harness, or a snap-hook spliced or sewn into a body belt or body harness, or a snap-hook spliced or sewn to a lanyard or self-retracting lanyard).

Controlled Access Zone (CAZ) means an area in which certain work (e.g., overhand bricklaying) may take place without the use of guardrail systems, personal fall arrest systems, or safety net systems and access to the zone is controlled.

D-ring - an attachment point(s) on the belt or harness for a device or lanyard.

Dangerous Equipment means equipment (such as pickling or galvanizing tanks, degreasing units, machinery, electrical equipment and other units) which, as a result of form or function, may be hazardous to employees who fall onto or into such equipment.

Deceleration Device means any mechanism, such as a rope grab, rip-stitch lanyard, specially woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.

Fall Arrest System - a tested device and any necessary components that function together to arrest a free fall in such a way as to minimize the potential for compounding injury.

Fall Distance - the physical distance from the location of the workers anchor point prior to the fall and the place at which the person finally comes to a complete stop.

Fall Hazard - any position from which an accidental fall may reasonably produce injury or any material, equipment or other object that could fall onto a worker below.

Fall Restraint System -a lanyard or device that is designed to restrain a worker in such a manner as to prevent a fall from occurring.

Guardrail System means a barrier erected to prevent an employee from falling to lower levels.

Hazard - the potential to incur harm; an agent, energy or characteristic that can cause physical damage to personnel or property.

Hole means a gap or void two inches or more in its least dimension, in a floor, roof, or other walking/working surface.

Horizontal Lifeline - a rail, wire or synthetic cable that is installed in a horizontal plane and used for attachment of a workers lanyard or lifeline device while moving horizontally; used to control dangerous pendulum-like swings.

Independent Lifeline - a lifeline that is not attached to the work surface; one lifeline per person.

Infeasible means that it is impossible to perform the construction work using a conventional fall protection system (i.e., guardrail system, safety net system, or personal fall arrest system) or that is technologically impossible to use any on of these systems to provide fall protection.

Lanyard means a flexible line or rope, wire rope or strap which generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline or anchorage.

Leading Edge means the edge of a floor, roof or form work for a floor or other walking/working surface (such as the deck) which changes location as additional floor, roof, decking or form work sections are placed, formed or constructed. A leading edge is considered an "unprotected side and edge" during periods when it is not actively and continuously under construction.

Locking Snap-Hook - a connection snap-hook that requires two separate forces to open the gate; one to deactivate the gate keeper and a second to depress and open the gate which automatically closes when released; used to minimize roll-out or accidental disengagement.

Mechanical Equipment means all motor or human propelled wheeled equipment used for roofing work, except wheelbarrows and mopcars.

Opening means a gap or void 30 inches or more high and 18 inches or more wide, in a wall or partition which employees can fall through to a lower level.

Overhand Bricklaying and related work means the process of laying bricks and masonry units such that the surface of the wall to be jointed is on the opposite side of the wall from the mason, requiring the mason to lean over the wall to complete the work. Related work includes mason tending and electrical installation incorporated into the brick wall during the overhand bricklaying process.

Personal Fall Arrest System means a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt or harness and may include a lanyard, deceleration device, lifeline or suitable combination of these. As of January 1, 1998, the use of a body belt for personal fall arrest is prohibited.

Positioning Belt - a single or multiple strap that can be secured around the workers body to hold the user in a work position; for example, a linemen belt, a rebar belt, a widow cleaner and a saddle belt.

Positioning Device System - a system employing a bosun chair or saddle belt used in conjunction with a loadline to descend to a work position.

Qualified Engineer - an individual with a degree from an accredited institution or professional certificate who is capable of design, analysis, evaluation, specification and system safety planning in the areas needed for fall hazard control.

Qualified Person - an individual with an appropriate degree from an accredited institution or professional certificate who has special knowledge, training or experience in the areas needed for fall hazard control.

Retractable Lifeline - a fall arresting device whose integral line extends as a worker moves downward and automatically retracts as the worker moves upward toward the unit, eliminating slack. Retractable lifelines can have a centrifugal locking mechanism or alternatively centrifugal braking mechanism for controlled descent.

Rope Grab means a deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking or both.

Roof means the exterior surface on the top of a building. This does not include floors or form work which, because a building has not been completed temporarily become the top of the building.

Roofing Work means the hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheet metal, and vapor barrier work, but not including the construction of the roof deck.

Safety Monitoring System means a safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.

Shock Absorbing Lanyard - a flexible line of webbing, cable or rope used to secure a body belt or harness to a lifeline or anchorage point that has an integral shock absorber.

Swing Fall - a pendulum-like motion that can result from moving horizontally away from a fixed anchorage and falling. Swing falls generate the same amount of energy as a fall through the same distance vertically but with the additional hazard of colliding with an obstruction or the ground.

Tie-Off - the act of a worker securing the end of a lanyard to an anchorage point.

Toeboard means a low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.

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

Walking/Working Surface means any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, form work and concrete reinforcing steel but not including ladders, vehicles, or trailers on which employees must be located in order to perform their job duties.

Warning Line System means a barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge and which designates an area in which roofing work may take place without the use of guardrail, personal fall arrest or safety nets to protect employees in the area.

Work Area means that portion of a walking/working surface where job duties are being performed.

Fall Protection Options List

The following list is designed to be used as a reference in preparing fall protection on construction jobsites.

Employees working over dangerous equipment:

- Guardrail system
- Safety net system
- Personal fall arrest system

Excavations:

- Guardrail system
- Fence
- Barricades

Form work and Rebar:

- Safety net system
- Personal fall arrest system
- Positioning system

Hoist/Material Handling Areas:

- Guardrail system
- Safety net system
- Personal fall arrest system
- Fall restraining system

Holes (floor and roof):

- Covers
- Guardrail system
- Safety net system
- Personal fall arrest system
- Fall restraining system

Leading Edges:

- Guardrail system
- Safety net system
- Personal fall arrest system
- Fall restraining system

Overhand Bricklaying:

- Guardrail system
- Safety net system
- Personal fall arrest system
- Controlled access zone

Precast Concrete Erection:

- Guardrail system
- Safety net system
- Personal fall arrest system

Roofing (low-slope):

- Guardrail system
- Safety net system
- Personal fall arrest system
- Safety monitoring system (roofs less than 50 ft minimum width)
- Warning line/safety monitoring system
- Warning line/guardrail system
- Warning line/safety net system
- Warning line/personal fall arrest system
- Warning line/fall restraining system

Fall Protection Options List (continued)

Roofing (steep slope):

- Guardrail system
- Safety net system
- Personal fall arrest system

Unprotected Sides and Edges:

- Guardrail system
- Safety net system
- Personal fall arrest system
- Fall restraining system

Ramps, runways and other walkways:

- Guardrail system
- Personal fall arrest system
- Fall restraining system

Work Area Analysis Guidelines

Define the activity and the trades involved:.....

.....
.....

Define the actions involved in this activity and the hazards:.....

.....
.....

Define the tools, equipment and materials to be used in conjunction with this activity:.....

.....
.....

Define the various places on the site where this activity will be performed in the module of construction being analyzed:.....

.....
.....

Define the other work adjacent to this activity being performed concurrently which could cause interactions or interferences and analyze any additional hazards:.....

.....
.....

Define the protections and procedures that can be used to eliminate both the existing and the predictable hazards:.....

.....
.....

Look at the critical path activities on the project schedule. Look for simultaneous phases which result in simultaneous activities.

Define those simultaneous activities: Where, when, and how will they occur?

.....
.....

Combine all these activities and consider all the existing and potential predictable hazards in their worst case.

Use office, site management, corporate or safety personnel to help define previous similar work and preventative actions. Obtain historical data of activities and accident reporting of frequencies, types and severities.

Specify all the possible protections available.

Analyze and evaluate all protections, and enumerate all practical protections.

Arrange necessary discussions, make necessary adjustments to the program and prepare for the execution of preventative measures.

File and distribute the data for future use.

Jobsite Fall Hazard Inspection Form

Job No:.....

Location:.....

Date of Inspection:.....

Inspection by:.....

Fall Protection In Use Adequate Inadequate N/A Comments

Open Sided Floors
 Guardrails
 Restraining Systems
 Safety Nets
 Personal Fall Arrest
 Other

Floor holes
 Covers
 Safety Nets
 Guardrails
 Personal Fall Arrest
 Other

Leading Edges
 Personal Fall Arrest
 Guardrails
 Safety Nets
 Fall Plan
 Safety Monitor
 Other

Hoist Areas
 Guardrails
 Personal Fall Arrest
 Safety Nets
 Other

Formwork
 Positioning Systems
 Personal Fall Arrest
 Other

Ramps/Runways
 Guardrails

Stairways
 Stair rails
 Guardrails

Roofing Work
 Guardrails
 Warning Lines
 Safety Monitor
 Skylights

Wall Openings

Guardrails
 Personal Fall Arrest
 Safety Nets
Fall Protection In Use Adequate Inadequate N/A Comments

Excavations
 Guardrails
 Barricades

Falling Objects
 Toeboards
 Debris Nets
 Canopy
 Area Barricaded

Employees
 Proper Use of
 Fall Equipment

Elevated Surfaces
 Proper Access
 Fall Protection
 Provided

Public Exposures
 Barricaded Area
 Canopy
 Enclosed Areas

Inadequate Work Condition Notification Form

Job No:.....

Job Location:.....

Date of Notification:.....

Notification to:.....(Contractor Name)

Received by:.....(Contractor Manager Name)

Issued by:(Company Senior Site Manager Name)

This notification is provided to you in the interest of all employees at this jobsite. An inadequate working condition has been noted in the work area(s) listed below which may cause an employee injury. Our employees have been notified to only enter the area if required by work and have been issued an alternative form of fall protection. We are requesting that you correct the condition immediately to prevent any possible employee injuries or work delays.

Location of inadequate work condition:.....

.....
.....

Description of condition:.....

.....
.....

Location of inadequate work condition:.....

.....
.....

Description of condition:.....

.....
.....

Location of inadequate work condition:.....

.....
.....

Description of condition:.....

.....
.....

Date inadequate work condition corrected:.....

Controlled Access Zone (CAZ) Design Requirements

Controlled Access Zones are only to be used during overhand bricklaying, Leading Edge work, Precast Concrete Construction or Residential Construction.

Procedure

- a. Identify the type of CAZ required based on the work to be performed.
- b. Identify CAZ line distance from the work area.
- c. Place the appropriate line in the proper location.
- d. Place CAZ signs in the area.
- e. Restrict access to all but trained employees performing work.
- f. Identify Safety Monitor.

Control Line Specifications

Use ropes, tape or equivalent material.

- a. Each line must be flagged with visible material at six (6) foot intervals.
- b. Each line must be rigged and supported so at no point does line sag closer than 39 inches from top of work surface or higher than 45 inches from top of work surface.
- c. Each line must have a minimum breaking strength of 200 pounds.

CAZ Specifications for type of work to be performed

Overhand Bricklaying

- a. CAZ must be defined by placing the Control Line not less than 10 feet nor more than 15 feet from the working edge.
- b. Control Lines must enclose all employees performing overhand bricklaying.
- c. Control Lines must be as parallel as possible to the working edge.
- d. Any employee who must reach below the working edge more than 10 inches must use personal fall arrest equipment.
- e. Do not remove existing guardrail systems until it is necessary to progress the work.
- f. Only remove as much existing guardrail as block can be installed in one (1) work shift.

Leading Edge Work

- a. CAZ must be defined by placing the Control Line not less than six (6) feet or more than 25 feet from the unprotected or leading edge.
- b. The control line must extend along the entire length of the unprotected or leading edge.
- c. The control line must be as parallel as possible to the unprotected or leading edge.
- d. The control line must be connected to each side to a guardrail system or wall.

Precast Concrete Erection

- a. CAZ must be defined by placing the Control Line not less than six (6) feet or more than 60 feet or half the length that the member being erected, whichever is less, from the leading edge.
- b. The control line must extend along the entire length of the unprotected or leading edge.
- c. The control line must be as parallel as possible to the unprotected or leading edge.
- d. The control line must be connected to each side to a guardrail system or wall.

Warning Line System Design Requirements

These requirements will be followed when erecting and using a warning line system during construction operations. All Warning Line Systems will require an employee designated as a Safety Monitor who has been trained in the following procedures.

1. The warning line will be erected around all sides of the roof work area.
 - a. When mechanical equipment is not being used, the warning line will be erected not less than six (6) feet from the roof edge.
 - b. When mechanical equipment is being used, the warning line will be erected not less than six (6) feet from the roof edge which is parallel to the direction of the mechanical equipment operation and not less than 10 feet from the roof edge which is perpendicular to the direction of mechanical equipment operation.
 - c. Points of access to the roof, material handling areas, storage areas and ground to roof hoisting areas will be connected to the work area by a path created by two warning lines.
 - d. When the path to a point of access is not in use, a rope, wire, chain or other barricade that equals the height and strength of the warning line will be used to prevent employees from unknowingly walking into the path.
2. Warning lines shall consist of ropes, wire or chains and supporting stanchions erected as follows.
 - a. The rope, wire or chain will be flagged each 6 feet with high visibility material.
 - b. The rope, wire or chain will be rigged and supported so that no point will be below 34 inches or above 39 inches from the walking/working surface.
 - c. After being erected with the warning line attached, the stanchions will be able to support at least 16 pounds of force. Apply the force 30 inches above the working surface and horizontally towards the floor, platform or roof edge.
 - d. The rope, wire or chain will have a minimum tensile strength of 500 pounds
 - e. Attach the rope, wire or chain to each stanchion in a positive way.
3. No employee will be allowed in the area between a roof edge and a warning line unless the employee is performing roofing work in that area.
4. Mechanical equipment on roofs will be used and stored only in areas where employees are protected by a warning line system, guardrail system or personal fall arrest system.

Fall Protection Plan Requirements

Use of a Fall Protection Plan will only be allowed under the approval of the Senior Site Manager.

All Fall Protection Plans, when used, will conform to the following requirements:

- a. The fall protection plan will be prepared by a qualified company employee designated by the company and must be specific for the site where the leading edge work, precast concrete work, or residential construction work is being performed.
- b. The plan must be maintained up-to-date.
- c. Any changes in the fall protection plan must be approved by the designated qualified person.
- d. A copy of the fall protection plan with all approved changes must be maintained at the jobsite.
- e. The fall protection plan must be implemented under the supervision of the jobsite competent person designated by the company.
- f. The fall protection plan must document the reasons why the use of conventional fall protection systems (guardrail systems, personal fall arrest systems or safety nets) are not feasible or why their use would create a greater hazard to employees performing the work.
- g. The fall protection plan must include a written discussion of the other measures that will be taken to reduce or eliminate the fall hazards to employees who will not be provided protection from conventional systems. These include the extent at which ladders, scaffolds or vehicle mounted work platforms will be used in conjunction with the fall protection plan to reduce employee exposures to fall hazards.
- h. The fall protection plan will identify each location where conventional fall protection systems cannot be used. These locations will then be classified as controlled access zones and the requirements for Controlled Access Zone Design will be followed.
- i. The fall protection plan will include a statement which provides the name or other identification for each employee who is designated to work in the CAZ. No other company or non-company employees will be allowed to enter the CAZ.
- j. In the event an employee falls or some other related serious incident occurs, the company will investigate the circumstances of the fall or incident to determine to what extent the fall protection plan needs to be changed and these changes will be implemented to prevent future occurrences.

Refer to the sample Fall Protection Plan of this program for use by the designated qualified person in preparation of a fall protection plan.

Training Guidelines

Training program sections for **(Company Name)** employees.

Company Fall Protection Policy

All **(Company Name)** employees have the right to be protected from fall hazards when working on company projects. Fall hazards will be identified before employees begin work on a project and as the project progresses towards completion. Each and every employee that works for **(Company Name)** is expected to report any hazardous conditions immediately, if hazards can be easily corrected in the field employees are expected to do so.

Hazards on this project include:

- Falling off of open-sided floors.
- Falling into floor openings.
- Falling materials from above.
- Tripping on debris and materials.
- Using defective ladders and incomplete scaffolds.
- Working on boom lifts.
- Using Personal Fall Arrest equipment incorrectly.
- **(Add other site specific fall hazards).**

Our company uses various types of fall prevention systems to protect our employees from falls. Each system has different requirements for use and inspection. The different types of fall protection systems include:

Conventional Systems which include Guardrails, hole covers, personal fall arrest equipment and safety nets.

Conventional Fall Protection will be provided and used in the following areas after six (6) feet of potential fall distance:

- Open-sided floors.
- Floor openings.
- Elevator shafts/pits.
- Below grade pits.
- Work platforms not including scaffolds.
- Any other working/walking surface unless otherwise protected.
- Stairways/ramps.

Personal Fall Arrest Systems will be required to be used by employees:

- In all areas six (6) feet or higher where conventional fall prevention systems are removed or not feasible to erect, or employee is working outside of the system; i.e., guardrails.
- On extensible boom platforms (JLG's, snorkel lifts).
- On all scaffolds over 10 feet in height where guardrails cannot be installed.
- On all suspended scaffolds.
- When specified as part of a fall protection plan.
- When specified as part of a Controlled Access Zone.
- When specified by the owner or General Contractor.

Use of Personal Fall Arrest Systems

Inspections

Each employee issued a personal fall arrest system (full body harness with lanyard) will be required to inspect the equipment each day. Inspection points include:

- All stitching, webbing, grommets and hardware. Look for deformed parts, cuts, burns, tears, stiff webbing or any other imperfections.

Report any defects to your field manager.

Use

- Make sure all straps are snug.
- D-ring is in the middle of the back.
- Only tie-off to attachment points that are capable of stopping a fall.

Do not tie off to:

- Guardrails, conduit, ladders, scaffolds, roof stacks/vents, ductwork, C-clamps. If in doubt talk to the field manager for assistance.
- Always look for attachment points that are located eye level or higher when possible.
- Always consider the potential for a swing fall. This can happen when the attachment point is off to one side of the work area and in the event of a fall your body will swing toward the attachment point.
- If the personal fall arrest system is loaded due to a fall, return to the field manager for inspection.
- Prior to tie-off, determine the potential fall distance and make sure no structures, surfaces or other dangerous projections are close enough where they will be impacted in the event of a fall. Total fall distances can be anywhere from 12 - 19 feet when using a shock-absorbing lanyard.

Guardrails

Guardrails will typically be installed before work begins in an area. When working near guardrails:

- Do not lean on guardrail.
- Do not use guardrails for tie-offs with personal fall arrest equipment.
- Do not climb on guardrails.
- If you need to remove guardrails to perform work you must use a personal fall arrest system.
- Always replace any guardrail system that has been removed immediately upon completion of your work.
- Report any loose, broken or otherwise damaged guardrails to your field manager.

Hole Covers

Hole covers will typically be installed before work begins in an area. When working near hole covers:

- Do not store material on top of hole covers.
- Make sure hole covers are secured.
- If you remove a hole cover personal fall arrest equipment will be required to be used if your body can fit through the hole.
- Always replace and secure hole covers if removed.
- Report any damaged hole covers to your field manager immediately.

Safety Nets

When safety nets are used they are typically installed before work begins. If you are in an area where safety nets are used for fall protection:

- Do not weld, cut or burn over safety nets without using welding blanket to prevent burning the net.
- Do not enter the net unless authorized to do so.
- Report any defects, detached hardware or other imperfections to your field manager.

Specialized Systems

Our projects may use special systems for fall protection. These systems include: Controlled Access Zones, Warning Lines, Safety Monitors and Fall Protection Plans. If your work area will be using any of these specialized systems you will receive additional training on how to work in these systems safely. Only employees who are authorized and trained by our company are allowed to use specialized systems. If any other employers on this project are using specialized systems you are not allowed to enter into them.

Housekeeping/Storage

A clean project is not only important to our client but is also necessary for the safety of our employees. Each employee is expected to clean their work areas of any debris on a daily basis. Containers for removal of debris are located **(insert location)**.

Do not store materials close to open-sided floors, floor holes or any area where material could fall over or into an opening and onto workers below.

Enforcement

Any employee working for **(Company Name)** who does not comply to the fall protection requirements during the performance of their work will:

(Outline company disciplinary program.)

Trainer Supplement

The following is a suggested agenda for fall prevention training. This can be modified to fit the needs of the company or jobsite on which the training is provided.

1. Training outline
 - A. Review company fall protection policy.
 - B. Review fall hazards.
 - C. Review conventional fall protection systems that employees will use or see on the project.
 - (1) Use.
 - (2) Inspections.
 - D. Review requirements of specialized systems that are being used on the project.
 - (1) Use.
 - (2) Special hazards.
 - E. Review housekeeping/storage requirements
 - F. Review enforcement guidelines in use on the project
 - G. Document the training. (Use the document found in forms section.)

2. Training resources

- A. Have available any personal fall arrest equipment that will be used on the project. Show employees how to properly inspect the equipment. Any employee that has not used the equipment (and there will be some) should be given the opportunity to put the equipment on.
- B. Videotape programs and other training materials are available from your General Casualty Account Specialist.
- C. Make your own videotape of the equipment in use on one of your projects. This is especially effective when training new employees who will be working in Controlled Access Zone areas as to their responsibilities.
- D. Use a slide program created from pictures taken at company jobsites of systems in use.
- E. Use your fall protection vendor. They can get manufacturer supplements, training materials, videos, etc., which can be used as part of training.
- F. Contact an association your company may be a member of. For example; Associated General Contractors of America, American Subcontractors Association, National Erectors Association, National Constructors Association, American Society of Safety Engineers. Most, if not all have local chapters and typically have training resources for your use.
- G. Contact the Construction Safety Council, 800-552-7744. They have a Fall Protection Program that can be purchased and used as well as classes on Fall Protection.
- H. Contact your local OSHA area office or regional office [Region 5 is (312)353-2220] for information regarding local emphasis programs.

Project Fall Protection Review Plan

Job Number:..... Job Name:.....

Location:..... Date:.....

Home office Manager:.....

Senior Site Manager:.....

This plan is designed to identify potential jobsite fall hazards and properly manage or eliminate them.
(Identify each item as applicable or not applicable to this jobsite.)

- | | Applicable | Not Applicable |
|---|------------|----------------|
| 1. Personal Protective Equipment | | |
| A. Hard hats are required from start to completion of job. All employees who refuse to wear hard-hats will removed from the jobsite. | | |
| B. Personal Fall Arrest Equipment will be used for all Employees beyond the fall protection provided in Section 2 below. | | |
| 2. Perimeter Fall Protection | | |
| A. Floor Perimeter Protection | | |
| 1) This project will use (Check method) for perimeter protection: | | |
| 2 X 4 wood rails and posts | | |
| Steel Cable and welded column clips | | |
| Steel Cable and steel stanchions | | |
| Cable attached to or passed thru concrete columns | | |
| Other (Specify)..... | | |
| 2) This project will require work outside of perimeter Protection without the use of scaffolding. All employees doing this type of work will wear a full body harness and be tied off to a secure, structural member of the building. | | |
| B. Roof Perimeter Protection | | |
| 1) This project has low sloped roofs (less than 4 to 12) and less than 16 feet in height ground to eaves. Employees performing roofing workareare not required to use fall protection systems. | | |

Applicable Not Applicable

2) The project has low sloped roofs
over 16 feet in ground to eaves
height or are required to use a fall
protection system. This project will
use the following systems for roofing work:

-Warning Line with Safety Monitor
-Warning Line with Guardrails
-Warning Line with Personal Fall Arrest
-Warning Line with Fall Restraint
-Fall Arrest Systems
-Guardrail Systems
-Safety Monitor only (Only if roof is 50 feet or less in width)

3) This project has a steep sloped
roof (4 to 12 or greater) that is
greater than 16 ft ground to eaves
or requires the use of fall protection.
All employees will be provided with a
safety harness which will attach to a
lifeline with rope grab system.

C. Roof and Floor Openings

1) The project has no unprotected
floor or roof opening.

2) The project has openings that will
be protected according to the
following chart. (Check all that apply.)

Wood	Manufactured	Steel Stanchions	Other	
Guardrails	Covers	Guardrails	And Cable	(Specify)

Floor Openings

- Duct Shafts
- Elevator Shafts.....
- Escalators
- Stair Openings
- Atriums
- Pipe Openings.....
- U-Drains
- Machine Pits

Roof Openings

- Duct Shafts
- Skylights
- Elevator Shaft.....
- Stairwell

Applicable Not Applicable

3. Ladders and Stairs

- A. The side rails of all job made and
other ladders will extend 36" beyond
the top of the access level or platform.

- B. All ladders will be secured to
structures so that no movement of ladder
will occur.

- C. All step ladders will have slip
resistant feet suitable for the working
surface.

- D. The condition of all ladders on the
jobsite will be periodically reviewed by
the Senior Site Manager.

- E. The project will use a temporary stair
tower:

Location
Supplier
Erector
Height

- F. Concrete pan filled metal stairs will
be installed in the building. These stairs
will be expedited for use during building
construction. Temporary handrails will be
installed until permanent ones are in place.
Pans will be filled with lumber until being
filled with concrete.

4. Scaffolds

- A. The project requires exterior scaffolds.

Condition of earth
Weather considerations
Competent person
Type of scaffold
Tie-in to structure

- B. The project requires interior scaffolds
over 10 feet.

Guardrails installed
Type of scaffold
Tie-in to structure

- C. Narrow frame scaffolds will be used.
Guardrails installed
No higher than 8 feet

Applicable Not Applicable

D. One or two point suspended scaffolds
will be used.

Location
Adequate tie-back & lifeline anchorages.

5. Special Fall Hazard Considerations

A. Employees will work over dangerous
equipment.

Use of guardrails, personal fall arrest,
safety nets mandatory.

B. Employees will be working off of rebar
walls or formwork.

Positioning system will be used.

Personal fall arrest will be used.

C. Employees will be performing overhead
bricklaying.

Personal Fall Arrest will be used.

A Controlled Access Zone will be used.

Name of CAZ Designer.....

Name of CAZ Safety Monitor.....

D. Employees will be erecting Precast Panels.

Personal Fall Arrest will be used.

A Controlled Access Zone will be used.

Name of CAZ Designer.....

Name of CAZ Safety Monitor.....

Sample Fall Protection Plan for Residential Construction

(Insert Company Name)

This Fall Protection Plan is specific for the following project:

Location of Job

Date Plan Prepared or Modified.....

Plan Prepared By.....

Plan Approved By.....

Plan Supervised By.....

The following Fall Protection Plan is a sample program prepared for the prevention of injuries associated with falls. A Fall Protection Plan must be developed and evaluated on a site by site basis. It is recommended that builders discuss the written Fall Protection Plan with their OSHA Area Office prior to going on a jobsite.

Statement of Company Policy

(Your company name here) is dedicated to the protection of its employees from on-the-job injuries. All employees of **(Your company name here)** have the responsibility to work safely on the job. The purpose of the plan is to supplement our existing safety and health program and to ensure that every employee who works for **(Your company name here)** recognizes workplace fall hazards and takes the appropriate measures to address those hazards.

This Fall Protection Plan addresses the use of conventional fall protection at a number of areas on the project, as well as identifies specific activities that require non-conventional means of fall protection. During the construction of residential buildings under 48 feet in height, it is sometimes infeasible or it creates a greater hazard to use conventional fall protection systems at specific areas or for specific tasks. The areas or tasks may include, but are not limited to:

- a. Setting and bracing of roof trusses and rafters;
- b. Installation of floor sheathing and joists;
- c. Roof sheathing operations; and
- d. Erecting exterior walls.

In these cases, conventional fall protection systems may not be the safest choice for builders. This plan is designed to enable employers and employees to recognize the fall hazards associated with this job and to establish the safest procedures that are to be followed in order to prevent falls to lower levels or through holes and openings in walking/working surfaces.

Each employee will be trained in these procedures and will strictly adhere to them except when doing so would expose the employee to a greater hazard. If, in the employee's opinion, this is the case, the employee is to notify the competent person of their concern and have the concern addressed before proceeding.

It is the responsibility of **(name of competent person)** to implement this Fall Protection Plan. Continual observational safety checks of work operations and the enforcement of the safety policy and procedures shall be regularly enforced. The crew supervisor or foreman **(insert name)** is responsible for correcting any unsafe practices or conditions immediately.

It is the responsibility of the employer to ensure that all employees understand and adhere to the procedures of this plan and to follow the instructions of the crew supervisor. It is also the responsibility of the employee to bring to management's attention any unsafe or hazardous conditions or practices that may cause injury to either themselves or any other employees. Any changes to the Fall Protection Plan must be approved by **(name of qualified person)**.

Fall Protection Systems to be Used on This Job

Installation of roof trusses/rafters, exterior wall erection, roof sheathing, floor sheathing and joist/truss activities will be conducted by employees who are specifically trained to do this type of work and are trained to recognize the fall hazards. The nature of such work normally exposes the employee to the fall hazard for a short period of time. This Plan details how **(Your company name here)** will minimize these hazards.

Controlled Access Zones

When using the Plan to implement the fall protection options available, workers must be protected through limited access to high hazard locations. Before any non-conventional fall protection systems are used as part of the work plan, a controlled access zone (CAZ) shall be clearly defined by the competent person as an area where a recognized hazard exists. The demarcation of the CAZ shall be communicated by the competent person in a recognized manner, either through signs, wires, tapes, ropes or chains. **(Your company name here)** shall take the following steps to ensure that the CAZ is clearly marked or controlled by the competent person:

- All access to the CAZ must be restricted to authorized entrants;
- All workers who are permitted in the CAZ shall be listed in the appropriate sections of the Plan (or be visibly identifiable by the competent person) prior to implementation;
- The competent person shall ensure that all protective elements of the CAZ be implemented prior to the beginning of work.

Installation Procedures for Roof Truss and Rafter Erection

During the erection and bracing of roof trusses/rafters, conventional fall protection may present a greater hazard to workers. On this job, safety nets, guardrails and personal fall arrest systems will not provide adequate fall protection because the nets will cause the walls to collapse, while there are no suitable attachment or anchorage points for guardrails or personal fall arrest systems.

On this job, requiring workers to use a ladder for the entire installation process will cause a greater hazard because the worker must stand on the ladder with his back or side to the front of the ladder. While erecting the truss or rafter the worker will need both hands to maneuver the truss and therefore cannot hold onto the ladder. In addition, ladders cannot be adequately protected from movement while trusses are being maneuvered into place. Many workers may experience additional fatigue because of the increase in overhead work with heavy materials, which can also lead to a greater hazard.

Exterior scaffolds cannot be utilized on this job because the ground, after recent backfilling, cannot support the scaffolding. In most cases, the erection and dismantling of the scaffold would expose workers to a greater fall hazard than erection of the trusses/rafters.

On all walls eight feet or less, workers will install interior scaffolds along the interior wall below the location where the trusses/rafters will be erected. "Sawhorse" scaffolds constructed of 46 inch sawhorses and 2x10 planks will often allow workers to be elevated high enough to allow for the erection of trusses and rafters without working on the top plate of the wall.

In structures that have walls higher than eight feet and where the use of scaffolds and ladders would create a greater hazard, safe working procedures will be utilized when working on the top plate and will be monitored by the crew supervisor. During all stages of truss/rafter erection the stability of the trusses/rafters will be ensured at all times.

(Your company name here) shall take the following steps to protect workers who are exposed to fall hazards while working from the top plate installing trusses/rafters:

- Only the following trained workers will be allowed to work on the top plate during roof truss or rafter installation:

.....
.....
.....
.....
.....

- Workers shall have no other duties to perform during truss/rafter erection procedures;
- All trusses/rafters will be adequately braced before any worker can use the truss/rafter as a support;
- Workers will remain on the top plate using the previously stabilized truss/rafter as a support while other trusses/rafter are being erected;
- Workers will leave the area of the secured trusses only when it is necessary to secure another truss/rafter;
- The first two trusses/rafters will be set from ladders leaning on side walls at points where the walls can support the weight of the ladder; and
- A worker will climb onto the interior top plate via a ladder to secure the peaks of the first two trusses/rafters being set.

The workers responsible for detaching trusses from cranes and/or securing trusses at the peaks traditionally are positioned at the peak of the trusses/rafters. There are also situations where workers securing rafters to ridge beams will be positioned on top of the ridge beam.

(Your company name here) shall take the following steps to protect workers who are exposed to fall hazards while securing trusses/rafters at the peak of the trusses/ridge beam:

- Only the following trained workers will be allowed to work at the peak during roof truss or rafter installation:

.....
.....
.....

- Once truss or rafter installation begins, workers not involved in that activity shall not stand or walk below adjacent to the roof opening or exterior walls in any area where they could be struck by falling objects;
- Workers shall have no other duties than securing/bracing the trusses/ridge beam;
- Workers positioned at the peaks or in the webs of trusses or on top of the ridge beam shall work from a stable position, either by sitting on a "ridge seat" or other equivalent surface that provides additional stability or by positioning themselves in previously stabilized trusses/rafters and leaning into and reaching through the trusses/rafters;
- Workers shall not remain on or in the peak/ridge any longer than necessary to safely complete the task.

Roof Sheathing Operations

Workers typically install roof sheathing after all trusses/rafters and any permanent truss bracing is in place. Roof structures are unstable until some sheathing is installed, so workers installing roof sheathing cannot be protected from fall hazards by conventional fall protection systems until it is determined that the roofing system can be used as an anchorage point. At that point, employees shall be protected by a personal fall arrest system.

Trusses/rafters are subject to collapse if a worker falls while attached to a single truss with a belt/harness. Nets could also cause collapse, and there is no place to attach guardrails.

All workers will ensure that they have secure footing before they attempt to walk on the sheathing, including cleaning shoes/boots of mud or other slip hazards.

To minimize the time workers must be exposed to a fall hazard, materials will be staged to allow for the quickest installation of sheathing.

(Your company name here) shall take the following steps to protect workers who are exposed to fall hazards while installing roof sheathing:

- Once roof sheathing installation begins, workers not involved in that activity shall not stand or walk below or adjacent to the roof opening or exterior walls in any area where they could be struck by falling objects;
- The competent person shall determine the limits of this area, which shall be clearly communicated to workers prior to placement of the first piece of roof sheathing;
- The competent person may order work on the roof to be suspended for brief periods as necessary to allow other workers to pass through such areas when this would not create a greater hazard;
- Only qualified workers shall install roof sheathing;
- The bottom row of roof sheathing may be installed by workers standing in truss webs;
- After the bottom row of roof sheathing is installed, a slide guard extending the width of the roof shall be securely attached to the roof. Slide guards are to be constructed of no less than nominal 4" height capable of limiting the uncontrolled slide of workers. Workers should install the slide guard while standing in truss webs and leaning over the sheathing;

- Additional rows of roof sheathing may be installed by workers positioned on previously installed rows of sheathing. A slide guard can be used to assist workers in retaining their footing during successive sheathing operations; and
- Additional slide guards shall be securely attached to the roof at intervals not to exceed 13 feet as successive rows of sheathing are installed. For roofs with pitches in excess of 9-in-12, slide guards will be installed at four-foot intervals.
- When wet weather (rain, snow, or sleet) are present, roof sheathing operations shall be suspended unless safe footing can be assured for those workers installing sheathing.
- When strong winds (above 40 miles per hour) are present, roof sheathing operations are to be suspended unless wind breakers are erected.

Installation of Floor Joists and Sheathing

During the installation of floor sheathing/joists (leading edge construction), the following steps shall be taken to protect workers:

- Only the following trained workers will be allowed to install floor joists or sheathing:

- Materials for the operations shall be conveniently staged to allow for easy access to workers;
- The first floor joists or trusses will be rolled into position and secured either from the ground, ladders or sawhorse scaffolds;
- Each successive floor joist or truss will be rolled into place and secured from a platform created from a sheet of plywood laid over the previously secured floor joists or trusses;
- Except for the first row of sheathing which will be installed from ladders or the ground, workers shall work from the established deck; and
- Any workers not assisting in the leading edge construction while leading edges still exist (e.g., cutting the decking for the installers) shall not be permitted within six feet of the leading edge under construction.

Erection of Exterior Walls

During the construction and erection of exterior walls, employers shall take the following steps to protect workers:

- Only the following trained workers will be allowed to erect exterior walls:

- A painted line six feet from the perimeter will be clearly marked prior to any wall erection activities to warn of the approaching unprotected edge;
- Materials for operations shall be conveniently staged to minimize fall hazards; and
- Workers constructing exterior walls shall complete as much cutting of materials and other preparation as possible away from the edge of the deck.

Enforcement

Constant awareness of and respect for fall hazards, and compliance with all safety rules are considered conditions of employment. The crew supervisor or foreman, as well as individuals in the Safety and Personnel Department, reserve the right to issue disciplinary warnings to employees, up to and including termination, for failure to follow the guidelines of this program.

Accident Investigations

All accidents that result in injury to workers, regardless of their nature, shall be investigated and reported. 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.

In the event that an employee falls or there is some other related, serious incident occurring, this plan shall be reviewed to determine if additional practices, procedures, or training need to be implemented to prevent similar types of falls or incidents from occurring.

Changes to Plan

Any changes to the plan will be approved by **(name of the qualified person)**. This plan shall be reviewed by a qualified person as the job progresses to determine if additional practices, procedures or training needs to be implemented by the competent person to improve or provide additional fall protection. 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.

Sample Plan for Precast Concrete Structures

This Fall Protection Plan is specific for the following project:

Location of Job

Erecting Company.....

Date Plan Prepared or Modified.....

Plan Prepared By.....

Plan Approved By.....

Plan Supervised By.....

The following Fall Protection Plan is a sample program prepared for the prevention of injuries associated with falls. A Fall Protection Plan must be developed and evaluated on a site by site basis. It is recommended that erectors discuss the written Fall Protection Plan with their OSHA Area Office prior to going on a jobsite.

Statement of Company Policy

(Company Name) is dedicated to the protection of its employees from on-the-job injuries. All employees of **(Company Name)** have the responsibility to work safely on the job. The purpose of this plan is: (a) to supplement our standard safety policy by providing safety standards specifically designed to cover fall protection on this job and; (b) to ensure that each employee is trained and made aware of the safety provisions which are to be implemented by this plan prior to the start of erection.

This Fall Protection Plan addresses the use of other than conventional fall protection at a number of areas on the project, as well as identifying specific activities that require non-conventional means of fall protection. These areas include:

- a. Connecting activity (point of erection);
- b. Leading edge work;
- c. Unprotected sides or edge;
- d. Grouting.

This plan is designed to enable employers and employees to recognize the fall hazards on this job and to establish the procedures that are to be followed in order to prevent falls to lower levels or through holes and openings in walking/working surfaces. Each employee will be trained in these procedures and strictly adhere to them except when doing so would expose the employee to a greater hazard. If, in the employee's opinion, this is the case, the employee is to notify the foreman of the concern and the concern addressed before proceeding.

Safety policy and procedure on any one project cannot be administered, implemented, monitored and enforced by any one individual. The total objective of a safe, accident free work environment can only be accomplished by a dedicated, concerted effort by every individual involved with the project from management down to the last employee. Each employee must understand their value to the company; the costs of accidents, both monetary, physical, and emotional; the objective of the safety policy and procedures; the safety rules that apply to the safety policy and procedures; and what their individual role is in administering, implementing, monitoring, and compliance of their safety policy and procedures. This allows for a more personal approach to compliance through planning, training, understanding and cooperative effort, rather than by strict enforcement. If for any reason an unsafe act persists, strict enforcement will be implemented.

It is the responsibility of **(Name of Competent Person)** to implement this Fall Protection Plan. **(Name of Competent Person)** is responsible for continual observational safety checks of their work operations and to enforce the safety policy and procedures. The foreman also is responsible to correct any unsafe acts or conditions immediately. It is the responsibility of the employee to understand and adhere to the procedures of this plan and to follow the instructions of the foreman. It is also the responsibility of the employee to bring to management's attention any unsafe or hazardous conditions or acts that may cause injury to either themselves or any other employees. Any changes to this Fall Protection Plan must be approved by **(Name of Qualified Person)**.

Fall Protection Systems to be Used on This Project

Where conventional fall protection is infeasible or creates a greater hazard at the leading edge and during initial connecting activity, we plan to do this work using a safety monitoring system and expose only a minimum number of employees for the time necessary to actually accomplish the job. The maximum number of workers to be monitored by one safety monitor is six (6). We are designating the following trained employees as designated erectors and they are permitted to enter the controlled access zones and work without the use of conventional fall protection.

Safety monitor:.....

Designated erector:.....

Designated erector:.....

Designated erector:.....

Designated erector:.....

Designated erector:.....

Designated erector:.....

The safety monitor shall be identified by wearing an orange hard hat. The designated erectors will be identified by one of the following methods:

1. They will wear a blue colored arm band, or
2. They will wear a blue colored hard hat, or
3. They will wear a blue colored vest.

Only individuals with the appropriate experience, skills, and training will be authorized as designated erectors. All employees that will be working as designated erectors under the safety monitoring system shall have been trained and instructed in the following areas:

1. Recognition of the fall hazards in the work area (at the leading edge and when making initial connections __ point of erection).
2. Avoidance of fall hazards using established work practices which have been made known to the employees.
3. Recognition of unsafe practices or working conditions that could lead to a fall, such as windy conditions.
4. The function, use, and operation of safety monitoring systems, guardrail systems, body belt/harness systems, control zones and other protection to be used.
5. The correct procedure for erecting, maintaining, disassembling and inspecting the system(s) to be used.
6. Knowledge of construction sequence or the erection plan.

A conference will take place prior to starting work involving all members of the erection crew, crane crew and supervisors of any other concerned contractors. This conference will be conducted by the precast concrete erection supervisor in charge of the project. During the pre-work conference, erection procedures and sequences pertinent to this job will be thoroughly discussed and safety practices to be used throughout the project will be specified. Further, all personnel will be informed that the controlled access zones are off limits to all personnel other than those designated erectors specifically trained to work in that area.

Safety Monitoring System

A safety monitoring system means a fall protection system in which a competent person is responsible for recognizing and warning employees of fall hazards. The duties of the safety monitor are to:

1. Warn by voice when approaching the open edge in an unsafe manner.
2. Warn by voice if there is a dangerous situation developing which cannot be seen by another person involved with product placement, such as a member getting out of control.
3. Make the designated erectors aware they are in a dangerous area.
4. Be competent in recognizing fall hazards.
5. Warn employees when they appear to be unaware of a fall hazard or are acting in an unsafe manner.
6. Be on the same walking/working surface as the monitored employees and within visual sighting distance of the monitored employees.
7. Be close enough to communicate orally with the employees.
8. Not allow other responsibilities to encumber monitoring. If the safety monitor becomes too encumbered with other responsibilities, the monitor shall (1) stop the erection process; and (2) turn over other responsibilities to a designated erector; or (3) turn over the safety monitoring function to another designated, competent person.

The safety monitoring system shall not be used when the wind is strong enough to cause loads with large surface areas to swing out of radius, or result in loss of control of the load, or when weather conditions cause the walking-working surfaces to become icy or slippery.

Control Zone System

A controlled access zone means an area designated and clearly marked, in which leading edge work may take place without the use of guardrail, safety net or personal fall arrest systems to protect the employees in the area.

Control zone systems shall comply with the following provisions:

1. When used to control access to areas where leading edge and other operations are taking place the controlled access zone shall be defined by a control line or by any other means that restricts access.

When control lines are used, they shall be erected not less than 6 feet (1.8 m) nor more than 60 feet (18 m) or half the length of the member being erected, whichever is less, from the leading edge.

2. The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge.
3. The control line shall be connected on each side to a guardrail system or wall.
4. Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:
 - Each line shall be flagged or otherwise clearly marked at not more than 6-foot (1.8 m) intervals with high-visibility material.
 - Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches (1 m) from the walking/working surface and its highest point is not more than 45 inches (1.3 m) from the walking/working surface.
 - Each line shall have a minimum breaking strength of 200 pounds (.88 kN).

Holes

All openings greater than 12 in. x 12 in. will have perimeter guarding or covering. All predetermined holes will have the plywood covers made in the precasters' yard and shipped with the member to the jobsite. Prior to cutting holes on the job, proper protection for the hole must be provided to protect the workers. Perimeter guarding or covers will not be removed without the approval of the erection foreman.

Precast concrete column erection through the existing deck requires that many holes be provided through this deck. These are to be covered and protected. Except for the opening being currently used to erect a column, all opening protection is to be left undisturbed. The opening being uncovered to erect a column will become part of the point of erection and will be addressed as part of this Fall Protection Plan. This uncovering is to be done at the erection foreman's direction and will only occur immediately prior to "feeding" the column through the opening. Once the end of the column is through the slab opening, there will no longer exist a fall hazard at this location.

Implementation of Fall Protection Plan

The structure being erected is a multistory total precast concrete building consisting of columns, beams, wall panels and hollow core slabs and double tee floor and roof members.

The following is a list of the products and erection situations on this job:

Columns: For columns 10 feet to 36 feet long, employees disconnecting crane hooks from columns will work from a ladder and wear a body belt/harness with lanyard and be tied off when both hands are needed to disconnect. For tying off, a vertical lifeline will be connected to the lifting eye at the top of the column, prior to lifting, to be used with a manually operated or mobile rope grab. For columns too high for the use of a ladder, 36 feet and higher, an added cable will be used to reduce the height of the disconnecting point so that a ladder can be used. This cable will be left in place until a point in erection that it can be removed safely. In some cases, columns will be unhooked from the crane by using an erection tube or shackle with a pull pin which is released from the ground after the column is stabilized.

The column will be adequately connected and/or braced to safely support the weight of a ladder with an employee on it.

Inverted Tee Beams: Employees erecting inverted tee beams, at a height of 6 to 40 feet, will erect the beam, make initial connections, and final alignment from a ladder. If the employee needs to reach over the side of the beam to bar or make an adjustment to the alignment of the beam, they will mount the beam and be tied off to the lifting device in the beam after ensuring the load has been stabilized on its bearing. To disconnect the crane from the beam an employee will stand a ladder against the beam. Because the use of ladders is not practical at heights above 40 feet, beams will be initially placed with the use of tag lines and their final alignment made by a person on a manlift or similar employee positioning systems.

Spandrel Beams: Spandrel beams at the exterior of the building will be aligned as closely as possible with the use of tag lines with the final placement of the spandrel beam made from a ladder at the open end of the structure. A ladder will be used to make the initial connections and a ladder will be used to disconnect the crane. The other end of the beam will be placed by the designated erector from the double tee deck under the observation of the safety monitor.

The beams will be adequately connected and/or braced to safely support the weight of a ladder with an employee on it.

Floor and Roof Members: During installation of the precast concrete floor and/or roof members, the work deck continuously increases in area as more and more units are being erected and positioned. Thus, the unprotected floor/roof perimeter is constantly modified with the leading edge changing location as each member is installed. The fall protection for workers at the leading edge shall be assured by properly constructed and maintained control zone lines not more than 60 feet away from the leading edge supplemented by a safety monitoring system to ensure the safety of all designated erectors working within the area defined by the control zone lines.

The hollow core slabs erected on the masonry portion of the building will be erected and grouted using the safety monitoring system. Grout will be placed in the space between the end of the slab and face shell of the concrete masonry by dumping from a wheelbarrow. The grout in the keyways between the slabs will be dumped from a wheelbarrow and then spread with long handled tools, allowing the worker to stand erect facing toward the unprotected edge and back from any work deck edge.

Whenever possible, the designated erectors will approach the incoming member at the leading edge only after it is below waist height so that the member itself provides protection against falls.

Except for the situations described below, when the arriving floor or roof member is within 2 to 3 inches of its final position, the designated erectors can then proceed to their position of erection at each end of the member under the control of the safety monitor. Crane hooks will be unhooked from double tee members by designated erectors under the direction and supervision of the safety monitor.

Designated erectors, while waiting for the next floor or roof member, will be constantly under the control of the safety monitor for fall protection and are directed to stay a minimum of six (6) feet from the edge. In the event a designated erector must move from one end of a member, which has just been placed at the leading edge, they must first move away from the leading edge a minimum of six (6) feet and then progress to the other end while maintaining the minimum distance of six (6) feet at all times.

Erection of double tees, where conditions require bearing of one end into a closed pocket and the other end on a beam ledge, restricting the tee legs from going directly into the pockets, require special considerations. The tee legs that are to bear in the closed pocket must hang lower than those at the beam bearing. The double tee will be "two-lined" in order to elevate one end higher than the other to allow for the low end to be ducked into the closed pocket using the following procedure.

The double tee will be rigged with a standard four-way spreader off of the main load line. An additional choker will be attached to the married point of the two-legged spreader at the end of the tee that is to be elevated. The double tee will be hoisted with the main load line and swung into a position as close as possible to the tee's final bearing elevation. When the tee is in this position and stabilized, the whip line load block will be lowered to just above the tee deck. At this time, two erectors will walk out on the suspended tee deck at midspan of the tee member and pull the load block to the end of the tee to be elevated and attach the additional choker to the load block. The possibility of entanglement with the crane lines and other obstacles during this two lining process while raising and lowering the crane block on that second line could be hazardous to an encumbered employee. Therefore, the designated erectors will not tie off during any part of this process. While the designated erectors are on the double tee, the safety monitoring system will be used. After attaching the choker, the two erectors then step back on the previously erected tee deck and signal the crane operator to hoist the load with the whip line to the elevation that will allow for enough clearance to let the low end tee legs slide into the pockets when the main load line is lowered. The erector, who is handling the lowered end of the tee at the closed pocket bearing, will step out on the suspended tee. An erection bar will then be placed between the end of the tee leg and the inside face of the pocketed spandrel member. The tee is barred away from the pocketed member to reduce the friction and lateral force against the pocketed member. As the tee is being lowered, the other erector remains on the tee which was previously erected to handle the other end. At this point the tee is slowly lowered by the crane to a point where the tee legs can freely slide into the pockets. The erector working the lowered end of the tee must keep pressure on the bar between the tee and the face of the pocketed spandrel member to very gradually let the tee legs slide into the pocket to its proper bearing dimension. The tee is then slowly lowered into its final erected position.

The designated erector should be allowed onto the suspended double tee, otherwise there is no control over the horizontal movement of the double tee and this movement could knock the spandrel off of its bearing or the column out of plumb. The control necessary to prevent hitting the spandrel can only be done safely from the top of the double tee being erected.

Loadbearing Wall Panels: The erection of the loadbearing wall panels on the elevated decks requires the use of a safety monitor and a controlled access zone that is a minimum of 25 feet and a maximum of 1/2 the length of the wall panels away from the unprotected edge, so that designated erectors can move freely and unencumbered when receiving the panels. Bracing, if required for stability, will be installed by ladder. After the braces are secured, the crane will be disconnected from the wall by using a ladder. The wall to wall connections will also be performed from a ladder.

Non-Loadbearing Panels (Cladding): The locating of survey lines, panel layout and other installation prerequisites (prewelding, etc.) for non-loadbearing panels (cladding) will not commence until floor perimeter and floor openings have been protected. In some areas, it is necessary because of panel configuration to remove the perimeter protection as the cladding is being installed. Removal of perimeter protection will be performed on a bay to bay basis, just ahead of cladding erection to minimize temporarily unprotected floor edges. Those workers within 6 feet of the edge, receiving and positioning the cladding when the perimeter protection is removed shall be tied off.

Detailing: Employees exposed to falls of six (6) feet or more to lower levels, who are not actively engaged in leading edge work or connecting activity, such as welding, bolting, cutting, bracing, guying, patching, painting or other operations, and who are working less than six (6) feet from an unprotected edge will be tied off at all times or guardrails will be installed. Employees engaged in these activities but who are more than six (6) ft from an unprotected edge as defined by the control zone lines, do not require fall protection but a warning line or control lines must be erected to remind employees they are approaching an area where fall protection is required.

Conventional Fall Protection Considered for the Point of Erection or Leading Edge Erection Operations

Personal Fall Arrest Systems

In this particular erection sequence and procedure, personal fall arrest systems requiring body belt/harness systems, lifelines and lanyards will not reduce possible hazards to workers and will create offsetting hazards during their usage at the leading edge of precast/prestressed concrete construction.

Leading edge erection and initial connections are conducted by employees who are specifically trained to do this type of work and are trained to recognize the fall hazards. The nature of such work normally exposes the employee to the fall hazard for a short period of time and installation of fall protection systems for a short duration is not feasible because it exposes the installers of the system to the same fall hazard, but for a longer period of time.

1. It is necessary that the employee be able to move freely without encumbrance in order to guide the sections of precast concrete into their final position without having lifelines attached which will restrict the employee's ability to move about at the point of erection.

2. A typical procedure requires two or more workers to maneuver around each other as a concrete member is positioned to fit into the structure. If they are each attached to a lifeline, part of their attention must be diverted from their main task of positioning a member weighing several tons to the task of avoiding entanglements of their lifelines or avoiding tripping over lanyards. Therefore, if these workers are attached to lanyards, more fall potential would result than from not using such a device.

In this specific erection sequence and procedure, retractable lifelines do not solve the problem of two workers becoming tangled. In fact, such a tangle could prevent the lifeline from retracting as the worker moved, thus potentially exposing the worker to a fall greater than 6 feet. Also, a worker crossing over the lifeline of another worker can create a hazard because the movement of one person can unbalance the other. In the event of a fall by one person there is a likelihood that the other person will be caused to fall as well. In addition, if contamination such as grout (during hollow core grouting) enters the retractable housing it can cause excessive wear and damage to the device and could clog the retracting mechanism as the lanyard is dragged across the deck. Obstructing the cable orifice can defeat the device's shock absorbing function, produce cable slack and damage, and adversely affect cable extraction and retraction.

3. Employees tied to a lifeline can be trapped and crushed by moving structural members if the employee becomes restrained by the lanyard or retractable lifeline and cannot get out of the path of the moving load.

The sudden movement of a precast concrete member being raised by a crane can be caused by a number of factors. When this happens, a connector may immediately have to move a considerable distance to avoid injury. If a tied off body belt/harness is being used, the connector could be trapped. Therefore, there is a greater risk of injury if the connector is tied to the structure for this specific erection sequence and procedure.

When necessary to move away from a retractable device, the worker cannot move at a rate greater than the device locking speed typically 3.5 to 4.5 feet/second. When moving toward the device it is necessary to move at a rate which does not permit cable slack to build up. This slack may cause cable retraction acceleration and cause a worker to lose their balance by applying a higher than normal jerking force on the body when the cable suddenly becomes taut after building up momentum. This slack can also cause damage to the internal spring-loaded drum, uneven coiling of cable on the drum, and possible cable damage.

The factors causing sudden movements for this location include:

- A. Cranes
 - (1) Operator error
 - (2) Site conditions (soft or unstable ground)
 - (3) Mechanical failure
 - (4) Structural failure
 - (5) Rigging failure
 - (6) Crane signal/radio communication failure

B. Weather conditions

- (1) Wind (strong wind/sudden gusting) __ particularly a problem with the large surface areas of precast concrete members
- (2) Snow/rain (visibility)
- (3) Fog (visibility)
- (4) Cold causing slowed reactions or mechanical problems

C. Structure/product conditions

- (1) Lifting eye failure
- (2) Bearing failure or slippage
- (3) Structure shifting
- (4) Bracing failure
- (5) Product failure

D. Human error

- (1) Incorrect tag line procedure
- (2) Tag line hang-up
- (3) Incorrect or misunderstood crane signals
- (4) Misjudged elevation of member
- (5) Misjudged speed of member
- (6) Misjudged angle of member

4. Anchorages or special attachment points could be cast into the precast concrete members if sufficient preplanning and consideration of erectors' position is done before the members are cast. Any hole or other attachment must be approved by the engineer who designed the member. It is possible that some design restrictions will not allow a member to be weakened by an additional hole; however, it is anticipated that such situations would be the exception, not the rule. Attachment points, other than on the deck surface, will require removal and/or patching. In order to remove and/or patch these points, requires the employee to be exposed to an additional fall hazard at an unprotected perimeter. The fact that attachment points could be available anywhere on the structure does not eliminate the hazards of using these points for tying off as discussed above. A logical point for tying off on double tees would be using the lifting loops, except that they must be cut off to eliminate a tripping hazard at an appropriate time.
5. Providing attachment at a point above the walking/working surface would also create fall exposures for employees installing their devices. Final positioning of a precast concrete member requires it to be moved in such a way that it must pass through the area that would be occupied by the lifeline and the lanyards attached to the point above. Resulting entanglements of lifelines and lanyards on a moving member could pull employees from the work surface. Also, the structure is being created and, in most cases, there is no structure above the members being placed.
 - (a) Temporary structural supports, installed to provide attaching points for lifelines limit the space which is essential for orderly positioning, alignment and placement of the precast concrete members. To keep the lanyards a reasonable and manageable length, lifeline supports would necessarily need to be in proximity to the positioning process. A sudden shift of the precast concrete member being positioned because of wind pressure or crane movement could make it strike the temporary supporting structure, moving it suddenly and causing tied off employees to fall.

(b) The time in man-hours which would be expended in placing and maintaining temporary structural supports for lifeline attaching points could exceed the expended man-hours involved in placing the precast concrete members. No protection could be provided for the employees erecting the temporary structural supports and these supports would have to be moved for each successive step in the construction process, thus greatly increasing the employee's exposure to the fall hazard.

(c) The use of a cable strung horizontally between two columns to provide tie off lines for erecting or walking a beam for connecting work is not feasible and creates a greater hazard on this multi-story building for the following reasons:

(1) If a connector is to use such a line, it must be installed between the two columns. To perform this installation requires an erector to have more fall exposure time attaching the cable to the columns than would be spent to make the beam to column connection itself.

(2) If such a line is to be installed so that an erector can walk along a beam, it must be overhead or below him. For example, if a connector must walk along a 24 in. wide beam, the presence of a line next to the connector at waist level, attached directly to the columns, would prevent the connector from centering their weight over the beam and balancing themselves. Installing the line above the connector might be possible on the first level of a two-story column; however, the column may extend only a few feet above the floor level at the second level or be flush with the floor level. Attaching the line to the side of the beam could be a solution; however, it would require the connector to attach the lanyard below foot level which would most likely extend a fall farther than 6 feet.

(3) When lines are strung over every beam, it becomes more and more difficult for the crane operator to lower a precast concrete member into position without the member becoming fouled. Should the member become entangled, it could easily dislodge the line from a column. If a worker is tied to it at the time, a fall could be caused.

6. The ANSI A10.14-1991 American National Standard for Construction and Demolition Operations--Requirements for Safety Belts, Harnesses, Lanyards and Lifelines for Construction and Demolition Use, states that the anchor point of a lanyard or deceleration device should, if possible, be located above the wearer's belt or harness attachment. ANSI A10.14 also states that a suitable anchorage point is one which is located as high as possible to prevent contact with an obstruction below should the worker fall. Most manufacturers also warn in the user's handbook that the safety block/retractable lifeline must be positioned above the D-ring (above the work space of the intended user) and OSHA recommends that fall arrest and restraint equipment be used in accordance with the manufacturer's instructions.

Attachment of a retractable device to a horizontal cable near floor level or using the inserts in the floor or roof members may result in increased free fall due to the dorsal D-ring of the full-body harness riding higher than the attachment point of the snaphook to the cable or insert (e.g., 6 foot tall worker with a dorsal D-ring at 5 feet above the floor or surface, reduces the working length to only one foot, by placing the anchorage five feet away from the fall hazard). In addition, impact loads may exceed maximum fall arrest forces (MAF) because the fall arrest D-ring would be 4 to 5 feet higher than the safety block/retractable lifeline anchored to the walking-working surface; and the potential for swing hazards is increased.

Manufacturers also require that workers not work at a level where the point of snaphook attachment to the body harness is above the device because this will increase the free fall distance and the deceleration distance and will cause higher forces on the body in the event of an accidental fall.

Manufacturers recommend an anchorage for the retractable lifeline which is immovably fixed in space and is independent of the user's support systems. A moveable anchorage is one which can be moved around (such as equipment or wheeled vehicles) or which can deflect substantially under shock loading (such as a horizontal cable or very flexible beam). In the case of a very flexible anchorage, a shock load applied to the anchorage during fall arrest can cause oscillation of the flexible anchorage such that the retractable brake mechanism may undergo one or more cycles of locking/unlocking/locking (ratchet effect) until the anchorage deflection is dampened. Therefore, use of a moveable anchorage involves critical engineering and safety factors and should only be considered after fixed anchorage has been determined to be not feasible.

Horizontal cables used as an anchorage present an additional hazard due to amplification of the horizontal component of maximum arrest force (of a fall) transmitted to the points where the horizontal cable is attached to the structure. This amplification is due to the angle of sag of a horizontal cable and is most severe for small angles of sag. For a cable sag angle of 2 degrees the horizontal force on the points of cable attachment can be amplified by a factor of 15.

It is also necessary to install the retractable device vertically overhead to minimize swing falls. If an object is in the worker's swing path (or that of the cable) hazardous situations exist: (1) due to the swing, horizontal speed of the user may be high enough to cause injury when an obstacle in the swing fall path is struck by either the user or the cable; (2) the total vertical fall distance of the user may be much greater than if the user had fallen only vertically without a swing fall path.

With retractable lines, overconfidence may cause the worker to engage in inappropriate behavior, such as approaching the perimeter of a floor or roof at a distance appreciably greater than the shortest distance between the anchorage point and the leading edge. Though the retractable lifeline may arrest a worker's fall before he or she has fallen a few feet, the lifeline may drag along the edge of the floor or beam and swing the worker like a pendulum until the line has moved to a position where the distance between the anchorage point and floor edge is the shortest distance between those two points. Accompanying this pendulum swing is a lowering of the worker, with the attendant danger that he or she may violently impact the floor or some obstruction below.

The risk of a cable breaking is increased if a lifeline is dragged sideways across the rough surface or edge of a concrete member at the same moment that the lifeline is being subjected to a maximum impact loading during a fall. The typical 3/16 in. cable in a retractable lifeline has a breaking strength of from 3000 to 3700 lbs.

7. The competent person, who can take into account the specialized operations being performed on this project, should determine when and where a designated erector cannot use a personal fall arrest system.

Safety Net Systems

The nature of this particular precast concrete erection worksite precludes the safe use of safety nets where point of erection or leading edge work must take place.

1. To install safety nets in the interior high bay of the single story portion of the building poses rigging attachment problems. Structural members do not exist to which supporting devices for nets can be attached in the area where protection is required. As the erection operation advances, the location of point of erection or leading edge work changes constantly as each member is attached to the structure. Due to this constant change it is not feasible to set net sections and build separate structures to support the nets.
2. The nature of the erection process for the precast concrete members is such that an installed net would protect workers as they position and secure only one structural member. After each member is stabilized the net would have to be moved to a new location (this could mean a move of 8 to 10 feet or the possibility of a move to a different level or area of the structure) to protect workers placing the next piece in the construction sequence. The result would be the installation and dismantling of safety nets repeatedly throughout the normal work day. As the time necessary to install a net, test, and remove it is significantly greater than the time necessary to position and secure a precast concrete member, the exposure time for the worker installing the safety net would be far longer than for the workers whom the net is intended to protect. The time exposure repeats itself each time the nets and supporting hardware must be moved laterally or upward to provide protection at the point of erection or leading edge.
3. Strict interpretation of §1926.502(c) requires that operations shall not be undertaken until the net is in place and has been tested. With the point of erection constantly changing, the time necessary to install and test a safety net significantly exceeds the time necessary to position and secure the concrete member.
4. Use of safety nets on exposed perimeter wall openings and open-sided floors, causes attachment points to be left in architectural concrete which must be patched and filled with matching material after the net supporting hardware is removed. In order to patch these openings, additional numbers of employees must be suspended by swing stages, boatswain chairs or other devices, thereby increasing the amount of fall exposure time to employees.
5. Installed safety nets pose an additional hazard at the perimeter of the erected structure where limited space is available in which members can be turned after being lifted from the ground by the crane. There would be a high probability that the member being lifted could become entangled in net hardware, cables, etc.

6. The use of safety nets where structural wall panels are being erected would prevent movement of panels to point of installation. To be effective, nets would necessarily have to provide protection across the area where structural supporting wall panels would be set and plumbed before roof units could be placed.
7. Use of a tower crane for the erection of the high rise portion of the structure poses a particular hazard in that the crane operator cannot see or judge the proximity of the load in relation to the structure or nets. If the signaler is looking through nets and supporting structural devices while giving instructions to the crane operator, it is not possible to judge precise relationships between the load and the structure itself or to nets and supporting structural devices. This could cause the load to become entangled in the net or hit the structure causing potential damage.

Guardrail Systems

On this particular worksite, guardrails, barricades, ropes, cables or other perimeter guarding devices or methods on the erection floor will pose problems to safe erection procedures. Typically, a floor or roof is erected by placing 4 to 10 feet wide structural members next to one another and welding or grouting them together. The perimeter of a floor and roof changes each time a new member is placed into position. It is unreasonable and virtually impossible to erect guardrails and toe boards at the ever changing leading edge of a floor or roof.

1. To position a member safely it is necessary to remove all obstructions extending above the floor level near the point of erection. Such a procedure allows workers to swing a new member across the erected surface as necessary to position it properly without worrying about knocking material off of this surface.

Hollow core slab erection on the masonry wall requires installation of the perimeter protection where the masonry wall has to be constructed. This means the guardrail is installed then subsequently removed to continue the masonry construction. The erector will be exposed to a fall hazard for a longer period of time while installing and removing perimeter protection than while erecting the slabs.

In hollow core work, as in other precast concrete erection, others are not typically on the work deck until the precast concrete erection is complete. The deck is not complete until the leveling, aligning, and grouting of the joints is done. It is normal practice to keep others off the deck until at least the next day after the installation is complete to allow the grout to harden.

2. There is no permanent boundary until all structural members have been placed in the floor or roof. At the leading edge, workers are operating at the temporary edge of the structure as they work to position the next member in the sequence. Compliance with the standard would require a guardrail and toe board be installed along this edge. However, the presence of such a device would prevent a new member from being swung over the erected surface low enough to allow workers to control it safely during the positioning process. Further, these employees would have to work through the guardrail to align the new member and connect it to the structure. The guardrail would not protect an employee who must lean through it to do the necessary work, rather it would hinder the employee to such a degree that a greater hazard is created than if the guardrail were absent.

3. Guardrail requirements pose a hazard at the leading edge of installed floor or roof sections by creating the possibility of employees being caught between guardrails and suspended loads. The lack of a clear work area in which to guide the suspended load into position for placement and welding of members into the existing structure creates still further hazards.
4. Where erection processes require precast concrete stairways or openings to be installed as an integral part of the overall erection process, it must also be recognized that guardrails or handrails must not project above the surface of the erection floor. Such guardrails should be terminated at the level of the erection floor to avoid placing hazardous obstacles in the path of a member being positioned.

Other Fall Protection Measures Consider For This Job

The following is a list and explanation of other fall protection measures available and an explanation of limitations for use on this particular jobsite. If during the course of erecting the building the employee sees an area that could be erected more safely by the use of these fall protection measures, the foreman should be notified.

A. Scaffolds are not used because:

1. The leading edge of the building is constantly changing and the scaffolding would have to be moved at very frequent intervals. Employees erecting and dismantling the scaffolding would be exposed to fall hazards for a greater length of time than they would by merely erecting the precast concrete member.
2. A scaffold tower could interfere with the safe swinging of a load by the crane.
3. Power lines, terrain and site do not allow for the safe use of scaffolding.

B. Vehicle mounted platforms are not used because:

1. A vehicle mounted platform will not reach areas on the deck that are erected over other levels.
2. The leading edge of the building is usually over a lower level of the building and this lower level will not support the weight of a vehicle mounted platform.
3. A vehicle mounted platform could interfere with the safe swinging of a load by the crane, either by the crane swinging the load over or into the equipment.
4. Power lines and surrounding site work do not allow for the safe use of a vehicle mounted platform.

C. Crane suspended personnel platforms are not used because:

1. A second crane close enough to suspend any employee in the working and erecting area could interfere with the safe swinging of a load by the crane hoisting the product to be erected.
2. Power lines and surrounding site work do not allow for the safe use of a second crane on the job.

Enforcement

Constant awareness of and respect for fall hazards, and compliance with all safety rules are considered conditions of employment. The jobsite Superintendent, as well as individuals in the Safety and Personnel Department, reserve the right to issue disciplinary warnings to employees, up to and including termination, for failure to follow the guidelines of this program.

Accident Investigations

All accidents that result in injury to workers, regardless of their nature, shall be investigated and reported. 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.

In the event that an employee falls or there is some other related, serious incident occurring, this plan shall be reviewed to determine if additional practices, procedures, or training need to be implemented to prevent similar types of falls or incidents from occurring.

Changes to Plan

Any changes to the plan will be approved by **(name of the qualified person)**. This plan shall be reviewed by a qualified person as the job progresses to determine if additional practices, procedures or training needs to be implemented by the competent person to improve or provide additional fall protection. 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.



Bernie Buchner, Inc.

"EQUAL OPPORTUNITY EMPLOYER"

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Crystalline Silica Exposure Control Policy, Program & Procedure

Silica is the second most common mineral on earth, found in the common form as “sand” and “rock”. Silica is the compound formed from the elements silicon (Si) and oxygen (O) and has a molecular form of SiO₂. The three main forms or ‘polymorphs’ of silica are alpha quartz, cristobalite and tridymite. The polymer most abundant and most hazardous to human health is alpha quartz, and is commonly referred to as crystalline silica.

Health Hazards Associated with Silica Exposure

The health hazards of silica come from breathing in the dust. If crystalline silica becomes airborne through industrial activities, exposures to fine crystalline silica dust (*specifically exposure to the size fraction that is considered to be respirable*) can lead to 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 the symptoms of the diseases may not appear for many years. As noted in the following Figure, (respirable) silica dust is very small, and is not visible to the human eye.

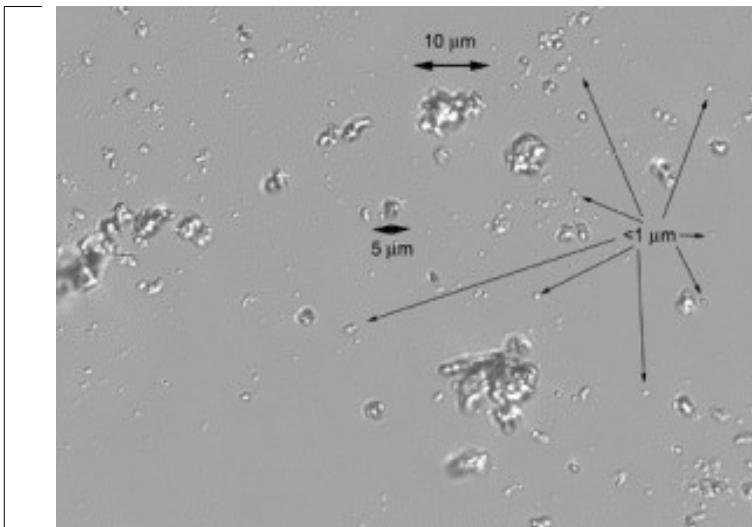


Figure 1: Crystalline silica up close. 1000 times magnification of sand dust. These particles are small enough to be trapped in lung tissue.

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

- Chronic Silicosis: Develops after 10 or more years of exposure to crystalline silica and relatively low concentrations.
- Accelerated Silicosis: Develops 5 to 10 years after initial exposure to crystalline silica at high concentrations.
- Acute Silicosis: Develops within weeks, or 4 to 5 years, after exposure to very high concentrations of crystalline silica.

Initially, workers with silicosis may have no symptoms; however, as the disease progresses, workers 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.

Silica Exposures at Bernie Buchner, Inc

Many of the activities performed on Bernie Buchner, Inc Projects result in the creation/release of silica dust, thus exposing our employees. These activities include, but are not necessarily limited to:

Specific Exposures

- *Hammer Drilling*
- *Core Drilling*
- *Saw-cutting*

Bermie Buchner, Inc. is committed to providing a safe and healthy workplace to our employees, recognizing the right of workers to work in a safe and healthy work environment and ensuring that Bernie Buchner's activities do not adversely affect the health and safety of any other persons.

This commitment includes ensuring every reasonable precaution is taken to protect our employees (and others) from the adverse health effects associated with exposure to silica.

Due to the risk posed by respirable silica, it is critical that all personnel involved in activities that could potentially create silica dust take specific actions to ensure that, as much as practicable, a hazard is not created. In recognition of this, the following (Silica related) responsibilities have been established and must be adhered to:

Bernie Buchner, Inc. Management Team

- Regularly evaluating new equipment and technologies that become available, as able/appropriate, purchasing the “best available” equipment/technologies (*within Bernie Buchner’s capabilities*). Equipment/technologies with (silica) dust suppression and/or capture technologies will generally be given preference over equipment/technologies that lack such.
- Implementing a suitable respirable silica exposure monitoring program, or otherwise ensuring representative exposure monitoring results are available. The purpose of the program will ensure that (*over time*) *Bernie Buchner, Inc.* has quantifiable silica exposure data available for all regularly occurring, as well as reasonably foreseeable, work activities.
- Ensuring project and/or task specific Exposure Control Plans (ECPs) are developed communicated and effectively implemented as appropriate.
- Ensuring that all employees (*i.e. Managers, Supervisors and Workers*) receive the necessary education and training related to this Policy, as well as project/task specific ECPs.
- Maintaining applicable records (*i.e. exposure sampling, inspections, respirator fit tests, training records, etc.*) in accordance with Bernie Buchner’s record retention procedures/practices.

Bernie Buchner Safety Manager(Ryan Deml or onsite Forman) are responsible for:

- Obtaining a copy of the project/task specific ECPs (*and/or other similar such information*), and ensuring such are made available at each work site.
- Ensuring that all the tools, equipment, PPE and materials (*including water*) necessary to implement the ECP is available (*and in good working order*) prior to allowing work activities to commence.
- Ensuring that all workers (*under the supervisor’s direction and control*) have received the necessary education and training. As appropriate, each supervisor must ensure that workers are available to “demonstrate competency” for identified tasks.
- Ensuring that workers adhere to the project/task specific ECP, including PPE and personal hygiene (*i.e. including be clean shaven where the respirator seals to the user’s face*) requirements.

- Coordinating work activities with the Owner/Prime Contractor as required, and/or otherwise implementing the controls necessary to protect others (*i.e. erecting of barricades and signage*) who could be adversely effected by Bernie Buchner's acts (*or omissions*).

Bernie Buchner, Inc.

Employees (and subcontracted employees) are responsible for:

- Knowing the hazards of silica dust exposure.
- Using the assigned protective equipment in an effective and safe manner.
- Working in accordance with the project/task specific ECP.
- Reporting (*immediately*) to their supervisor, any hazards (*i.e. unsafe conditions, unsafe acts, improperly operating equipment, etc.*).

Exposure Limits/Considerations: The Occupational Health & Safety Regulation (OHSR) lists an occupational exposure limit (OEL) for respirable crystalline silica (including quartz) of 0.025 milligrams per cubic metre (mg/m³). This is a concentration to which nearly all workers could be exposed for eight hours a day, five days a week, without adverse health effects. However, as a suspected carcinogen, crystalline silica is also an ALARA substance, and exposures must be reduced to levels **As Low As Reasonably Achievable** below the OEL.

The health hazards of silica come from breathing in the dust. In addition to identifying the specific activities/areas where personnel could be exposed to silica dust, the "amount" of exposure and "duration" of exposure must also be considered. With consideration to these three factors, activities performed by Bernie Buchner (or that are otherwise occurring in proximity to Bernie Buchner's activities) that expose our employees (as well as members of the public and other workers) to the dust include, but are not necessarily limited to:

- Surface preparation activities such as: (1) the use of Blow-Packs, (2) the use of Bobcats with "sweeper" attachments, (3) the use of Sweeper trucks and (4) hand sweeping.
- Jack-hammering (of both asphalt and concrete).
- Saw-cutting (of both asphalt and concrete).
- Drilling (of concrete).
- Granular Surface Preparation activities (i.e. grading and rolling), and
- Grinding or Sanding Work (i.e. floor prep, drywall prep)

Risk Assessment: Bernie Buchner, Inc. will use a variety of methods to assist with the “assessment” of (*possible and actual*) silica exposures. These methods will include, but may not necessarily be limited to:

- Reviewing data/reports available in the public domain (*i.e. Information available through regulatory agencies (including WorkSafeBC) and industry associations (including the BC Construction Safety Alliance)*).
- Regularly consulting with the Safety Resources/Safety Managers from firms who perform similar work (*i.e. through ATAC (Asphalt Technical Advisory Committee)*).
- Implementing a suitable respirable silica exposure monitoring program. This program will ensure that (*over time*) *Bernie Buchne, Inc* has quantifiable silica exposure data available that is representative of all regularly occurring, as well as reasonably foreseeable work activities. Exposure monitoring will generally be conducted “in-house”, although assistance (*i.e. actual monitoring and/or interpretation of results*) may be obtained through outside consultants/hygienists.

Control Methods: When determining measures to reduce or eliminate worker exposure to silica dust, *Bernie Buchner, Inc.* will generally select a combination of controls, listed in order of preference:

- Elimination and Substitution.
- Engineering.
- Administrative.
- Personnel Protection Equipment (PPE).

Substitution and Elimination: Whenever possible, *Bernie Buchner, Inc.* will substitute products containing silica with products that do not contain *(or contain a lower percentage of)* crystalline silica. While there have historically been few “substitution” options available, *Bernie Buchner, Inc.* recognizes the importance of planning work in order to minimize the amount of silica dust generated. During the planning phases of a project, *Bernie Buchner, Inc.* will advocate for the use of methods that reduce the need for cutting, grinding, or drilling of concrete surfaces.

Engineering Controls: Engineering controls are those controls which aim to control or otherwise minimize the release of crystalline silica. Two “common” engineering control options are available to *Bernie Buchner, Inc.* in many circumstances. These include the Local Exhaust Ventilation (LEV) and Wet Dust Suppression (WDS) systems.

LEV Systems: Tools/appliance specific LEV systems are available on some tools/appliances. Such LEV systems are generally comprised of a shroud assembly, a hose attachment, and a vacuum system. Dust-laden air is collected within the shroud, drawn into the hose attachment, and conveyed to the vacuum, where it is filtered and discharged. “Large scale” LEV systems, such those available on some Vacuum Trucks and Mobile Sweepers, may also be employed (at times) on *Bernie Buchner, inc.* projects.

When/if LEV systems are used, *Bernie Buchner, Inc.* will employ the following systems and safe work practices:

- Vacuum attachment systems that capture and control dust at its source whenever possible.
- Dust control systems will be maintained in optimal working condition.
- Grinding wheels will be operated at the manufacturer’s recommended RPM *(operating in excess of this can generate significantly higher airborne dust levels)*.
- HEPA or good quality, multi-stage vacuum units *(approved for use with silica dust)* will be used in accordance with the manufacturer’s instructions.
- Whenever possible, concrete grinding will be completed when the concrete is wet *(thus dust release will be significantly reduced)*.

WDS Systems: Unlike LEV systems, many tools/appliances at *Bernie Buchner, Inc.* are equipped with WDS systems *(i.e. on the Milling equipment, sweeper equipped Bobcats, as well as attachments on various hand held/portable, abrasive/cutting equipment)*. When WDS Systems are not available, *(as a standard or retrofitted part of a tool/appliance)*, similar effects can also be achieved by manually wetting the surface *(i.e. with a mister or with a hose)*.

When WDS systems are used, Bernie Buchner, Inc. will employ the following systems and safe work practices:

- If water is not readily available on the specific Bernie Buchner, Inc. project, the project supervisor will arrange to have a water tank delivered to the site for use.
- Pneumatic or fuel (*i.e. gasoline*) powered equipment will generally be used instead of electrically powered equipment if water is the method of dust control, unless the electrical equipment is specifically designed to be used in such circumstances.
- Pressure and flow rate will be controlled in accordance with the tool manufacturer's specifications.
- When sawing concrete, tools that provide water directly to the blade will be used if possible.
- Wet slurry will be cleaned from work surfaces when the work is complete, if/when necessary.

Administrative Controls: Administrative controls are those that aim to control or otherwise minimize the release of silica through the use of work procedure and work methods, rather than by affecting the actual physical work. Common examples of administrative controls include, but are not limited to:

- Posting of warning signs.
- Rescheduling of work as to avoid the activities of others.
- Relocating unprotected workers away from dusty areas.

When administrative controls are used, Bernie Buchner, Inc. will employ the following systems and safe work practices:

- In conjunction with the Owner/Prime Contractor, suitable exposure control strategies (*both within and outside Bernie Buchner, Inc.'s capabilities/responsibilities*) will be discussed and determined. As necessary/appropriate, supplemental (to this policy/procedure) project and task specific Exposure Control Plans will be developed.
- Suitable housekeeping, restricted work area, hygiene practices, training and supervision procedures/standards will be determined and implemented on Bernie Buchner, Inc. projects.
- As appropriate, barriers will be erected around known silica dust generating activities, and/or warning signs will be posted.
- As able, work activities will be scheduled to minimize the silica related effect on, and from, others.

Personal Protective Equipment Controls: When used in conjunction with the other (*i.e. Engineering and Administrative*) controls elsewhere identified, personal protective equipment and clothing can help further reduce our employee's exposure to silica dust.

An air purifying respirator fitted with HEPA cartridges is the most common piece of PPE that would be used by Bernie Buchner, Inc. to minimize exposure to silica dust. Dependent on the effectiveness of the other (*i.e. engineering*) control measures employed, either a "full face piece" or "1/2 face piece" respirator would be used by personnel (*In the majority of situations a 1/2 face respirator will be used. When working indoors or in other areas with poor ventilation, a full face respirator may be required*). Both of these respirators are "seal dependent", and thus the users must be "fit tested" and clean shaven where the respirator seals to the face.

In addition to respiratory PPE, protective clothing (*i.e. disposable/washable coveralls*) may be used and/or required to help prevent the contamination of the worker's personnel clothing.

Education and Training: Prior to performing activities, or working on project sites where personnel could be exposed to silica dust, Bernie Buchner, Inc. will ensure that personnel receive suitable education and training. As necessary, personnel will be trained to a level of “demonstrated competency”. While not necessarily an exhaustive list, education and training may include:

- The hazards and risks associated with exposure to silica dust.
- The signs and symptoms of silica related diseases.
- General and specific silica exposure reduction methods/strategies (*i.e. as detailed in the general/specific exposure control plans*).
- The use of specific pieces of equipment and control systems (*i.e. LEV and WDS systems*).
- The use and care of respiratory (and other) personal protective equipment.
- How to seek first aid (*i.e. for respiratory related concerns, including those that may be caused/associated with silica dust exposure*), and
- How to report items of the concern (*i.e. those related to silica dust*).

The education and training detailed will be delivered to Bernie Buchner, Inc. employees through a variety of forums, including but not necessarily limited to:

- New Employee Orientations.
- Project/Site Orientations.
- Equipment/task specific training (*in accordance with Bernie Buchner, Inc's Policy, all personnel must be trained to a level of "demonstrated competency" prior to using required tools, equipment and appliances*).
- Start of shift “tool box talks”.
- Regularly scheduled crew “Tailgate Meetings”.
- Notifications and Bulletins (*those developed in house and those acquired from other reputable sources*).

Bernie Buchner, Inc.

Company:
Bernie Buchner, Inc.

Person Completing the Plan/Title:
Ryan Deml / Construction/Safety Manager

Jobsite/Project:
General site

Description of Work:
Drilling or Coring thru Concrete, Concrete block and Brick

Competent Person
Ryan Deml or Jobsite Forman

1 **Material** **Task**
Brick Drilling/coring

Equipment and Control(s)
Core Drill with Water (Table 1 Entry)

Task/Control Description
Core drilling holes thru brick. Water to be used when coring. Make sure hoses for water are in good shape and not kinked.

2 **Material** **Task**
Concrete Drilling/coring

Equipment and Control(s)
Core Drill with Water (Table 1 Entry)

Task/Control Description
Core drilling holes thru Concrete. Water to be used for coring. Make sure hoses for water are in good shape and not kinked.

3 **Material** **Task**
Concrete Block Drilling/coring

Equipment and Control(s)
Core Drill with Water (Table 1 Entry)

Task/Control Description
Core drilling holes thru Concrete block. Water to be used for coring. Make sure hoses for water are in good shape and not kinked.

Safety of Others:

Schedule work so that only employees engaged in the task(Drilling or Coring) are the only ones in the area. If this is not possible mark area off and inform any persons in the area of work about the task you are completing.

Worker Training:

All Employees will be trained in house with Safety Services training program. This training is focused on Silca Dust Exposure. Employees will also be trained on the dust extraction equipment that is provided to them.

Personal hygiene: the need to avoid shaking off dust that has accumulated on clothing and hair, to wash up at the end of a shift, avoid smoking, and to avoid eating and drinking in areas where silica dust is present

All employees must use all controls and personal protective equipment provided by the employer.

Housekeeping:

Use wet methods, such as a water spray on the dust source, wet mopping or wiping, (non-silica containing) sweeping compounds, or vacuums with HEPA filters to remove dust from floors and surfaces

Keep bags and other containers of silica-containing waste tightly closed to prevent the dust from escaping and becoming

airborne. Do not use compressed air or dry sweeping for clean dust from work area. Clean up immediately after coring while area is still wet.

Medical Surveillance:

Bernie Buchner, Inc shall make medical surveillance available at no cost to the employee, and at a reasonable time and place, for each employee who will be required under this section to use a respirator for 30 or more days per year. Bernie Buchner, Inc shall ensure that all medical examinations and procedures required by this section are performed by a PLHCP as defined in paragraph (b) of this section.

Other Considerations:

Tools with water collection systems can help avoid creating wet, slippery ground and walking surfaces. During cold weather a layer of ice can form on wet surfaces and increase the risk of slips and falls. Depending on the system, wet cutting can result in run-off that may need to be controlled.

Remove silica-containing debris while wet to prevent the dust from becoming airborne and hazardous once dry.

Avoid electric shocks when using an electric-powered tool with a water control by making sure that the electrical cords and extensions are rated for the tool's power requirements, regularly inspected, and used in combination with ground fault interrupt circuits.

Bernie Buchner, Inc.

Company:
Bernie Buchner, Inc.

Person Completing the Plan/Title:
Ryan Deml / Construction/Safety Manager

Jobsite/Project:
General site

Description of Work:
Drilling thru Concrete, Concrete block and Brick

Competent Person
Ryan Deml or Jobsite Forman

1 **Material** **Task**
Brick Drilling/coring

Equipment and Control(s)
Hand-Held Drill with Dust Extraction (Table 1 Entry)

Task/Control Description
Drilling holes thru brick. Use drill with appropriate dust collection system with Hepa filter(99%). Check filters for proper function.

2 **Material** **Task**
Concrete Drilling/coring

Equipment and Control(s)
Hand-Held Drill with Dust Extraction (Table 1 Entry)

Task/Control Description
Drilling holes thru Concrete. Use drill with appropriate dust collection system with Hepa filter(99%). Check filters for proper function.

3 **Material** **Task**
Concrete Block Drilling/coring

Equipment and Control(s)
Hand-Held Drill with Dust Extraction (Table 1 Entry)

Task/Control Description
Drilling holes thru Concrete Block. Use drill with appropriate dust collection system with Hepa filter(99%). Check filters for proper function.

Safety of Others:

Schedule work so that only employees engaged in the task(Drilling or Coring) are in the area. If this is not possible mark area off and inform any persons in the area of work about the task you are completing.

Worker Training:

All Employees will be trained in house with Safety Services training program. This training is focused on Silica Dust Exposure. Employees will also be trained on the dust extraction equipment that is provided to them.

Personal hygiene: the need to avoid shaking off dust that has accumulated on clothing and hair, to wash up at the end of a shift, avoid smoking, and to avoid eating and drinking in areas where silica dust is present

All employees must use all controls and personal protective equipment provided by the employer.

Housekeeping:

Use wet methods, such as a water spray on the dust source, wet mopping or wiping, (non-silica containing) sweeping compounds, or vacuums with HEPA filters to remove dust from floors and surfaces

Keep bags and other containers of silica-containing waste tightly closed to prevent the dust from escaping and becoming

airborne. Do not use compressed air or dry sweeping for clean dust from work area.

Medical Surveillance:

Bernie Buchner, Inc shall make medical surveillance available at no cost to the employee, and at a reasonable time and place, for each employee who will be required under this section to use a respirator for 30 or more days per year. Bernie Buchner, Inc shall ensure that all medical examinations and procedures required by this section are performed by a PLHCP as defined in paragraph (b) of this section.

Other Considerations:

Vacuum controls must be located as close to the dust generation as possible to be effective. A shroud may be needed to contain the dust so the vacuum can capture it. The shroud must be kept as close to the work surface as is practical to provide adequate dust capture. The shroud should be connected to the vacuum with 2-inch, or greater, diameter tubing with a relatively smooth interior.

For dust containing silica, it is important to use as high efficiency filters as practical. The best available are called HEPA (High Efficiency Particle Air) filters because they capture 99.97% of the most penetrating particles. But HEPA filters also create a greater pressure drop and decrease in air flow rate because it is more difficult to pull air through these denser filters so capture velocity may be reduced. HEPAs require routine cleaning or disposal of prefilters, which can cause exposures to those performing the filter maintenance.

Vacuum performance must be monitored on a regular basis to ensure the control's effectiveness. A vacuum with a pressure gauge allows for frequent and easy monitoring of air flow.

Vacuums require an adequate power source -- large electric vacuums commonly require 20 amp electrical circuits in addition to the power required for the tool.

Avoid electric shocks when using an electric-powered tool with a water control by making sure that the electrical cords and extensions are rated for the tool's power requirements, regularly inspected, and used in combination with ground fault interrupt circuits.

Bernie Buchner, Inc.

Company:
Bernie Buchner, Inc.

Person Completing the Plan/Title:
Ryan Deml Construction/Safety Manager

Jobsite/Project:
General Project Site

Description of Work:
Cutting or Sawing of Asphalt, Concrete, Concrete Block & Brick

Competent Person
Ryan Deml or Jobsite Forman

1 **Material** **Task**
Asphalt Cutting/sawing

Equipment and Control(s)
Hand-held Masonry Saw with Water (Table 1 Entry)

Task/Control Description
Cutting or Sawing of asphalt using partner saw. Water to be hooked to saw as per manufactures spec. Make sure hoses are not kinked and in good working condition.

2 **Material** **Task**
Brick Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Water (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Brick using partner saw. Water to be hooked to saw as per manufactures spec. Make sure hoses are not kinked and in good working condition.

3 **Material** **Task**
Concrete Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Water (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Concrete using partner saw. Water to be hooked to saw as per manufactures spec. Make sure hoses are not kinked and in good working condition.

4 **Material** **Task**
Concrete Block Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Water (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Concrete Block using partner saw. Water to be hooked to saw as per manufactures spec. Make sure hoses are not kinked and in good working condition.

Safety of Others:

Schedule work so that only employees engaged in the task(Drilling or Coring) are in the area. If this is not possible mark area off and inform any persons in the area of work about the task you are completing.

Worker Training:

All Employees will be trained in house with Safety Services training program. This training is focused on Silica Dust Exposure. Employees will also be trained on the dust extraction equipment that is provided to them.

Personal hygiene: the need to avoid shaking off dust that has accumulated on clothing and hair, to wash up at the end of a shift, avoid smoking, and to avoid eating and drinking in areas where silica dust is present

All employees must use all controls and personal protective equipment provided by the employer.

Housekeeping:

Use wet methods, such as a water spray on the dust source, wet mopping or wiping, (non-silica containing) sweeping compounds, or vacuums with HEPA filters to remove dust from floors and surfaces. Keep bags and other containers of silica-containing waste tightly closed to prevent the dust from escaping and becoming airborne. Do not use compressed air or dry sweeping for clean dust from work area.

Medical Surveillance:

Bernie Buchner, Inc shall make medical surveillance available at no cost to the employee, and at a reasonable time and place, for each employee who will be required under this section to use a respirator for 30 or more days per year. Bernie Buchner, Inc shall ensure that all medical examinations and procedures required by this section are performed by a PLHCP as defined in paragraph (b) of this section.

Other Considerations:

Tools with water collection systems can help avoid creating wet, slippery ground and walking surfaces. During cold weather a layer of ice can form on wet surfaces and increase the risk of slips and falls. Depending on the system, wet cutting can result in run-off that may need to be controlled. Remove silica-containing debris while wet to prevent the dust from becoming airborne and hazardous once dry. Avoid electric shocks when using an electric-powered tool with a water control by making sure that the electrical cords and extensions are rated for the tool's power requirements, regularly inspected, and used in combination with ground fault interrupt circuits.

Bernie Buchner, Inc.

Company:
Bernie Buchner, Inc.

Person Completing the Plan/Title:
Ryan Deml Construction/Safety Manager

Jobsite/Project:
General Project Site

Description of Work:
Cutting or Sawing of Asphalt, Concrete, Concrete Block & Brick

Competent Person
Ryan Deml or Jobsite Forman

1 **Material** **Task**
Asphalt Cutting/sawing

Equipment and Control(s)
Hand-Held Angle Grinder with Vacuum (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Asphalt using Angle Grinder. Commercial grade dust collection system with HEPA filter (99%)

2 **Material** **Task**
Brick Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Vacuum

Task/Control Description
Cutting or Sawing of Brick using Angle Grinder. Commercial grade dust collection system with HEPA filter (99%)

3 **Material** **Task**
Concrete Cutting/sawing

Equipment and Control(s)
Hand-Held Angle Grinder with Vacuum (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Concrete using Angle Grinder. Commercial grade dust collection system with HEPA filter (99%)

4 **Material** **Task**
Concrete Block Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Vacuum

Task/Control Description
Cutting or Sawing of Concrete Block using Angle Grinder. Commercial grade dust collection system with HEPA filter (99%)

Safety of Others:

Schedule work so that only employees engaged in the task(Drilling or Coring) are in the area. If this is not possible mark area off and inform any persons in the area of work about the task you are completing.

Worker Training:

All Employees will be trained in house with Safety Services training program. This training is focused on Silica Dust Exposure. Employees will also be trained on the dust extraction equipment that is provided to them.

Personal hygiene: the need to avoid shaking off dust that has accumulated on clothing and hair, to wash up at the end of a shift, avoid smoking, and to avoid eating and drinking in areas where silica dust is present

All employees must use all controls and personal protective equipment provided by the employer.

Housekeeping:

Use wet methods, such as a water spray on the dust source, wet mopping or wiping, (non-silica containing) sweeping compounds, or vacuums with HEPA filters to remove dust from floors and surfaces

Keep bags and other containers of silica-containing waste tightly closed to prevent the dust from escaping and becoming airborne. Do not use compressed air or dry sweeping for clean dust from work area.

Medical Surveillance:

Bernie Buchner, Inc shall make medical surveillance available at no cost to the employee, and at a reasonable time and place, for each employee who will be required under this section to use a respirator for 30 or more days per year. Bernie Buchner, Inc shall ensure that all medical examinations and procedures required by this section are performed by a PLHCP as defined in paragraph (b) of this section.

Other Considerations:

Tools with water collection systems can help avoid creating wet, slippery ground and walking surfaces. During cold weather a layer of ice can form on wet surfaces and increase the risk of slips and falls. Depending on the system, wet cutting can result in run-off that may need to be controlled. Remove silica-containing debris while wet to prevent the dust from becoming airborne and hazardous once dry. Avoid electric shocks when using an electric-powered tool with a water control by making sure that the electrical cords and extensions are rated for the tool's power requirements, regularly inspected, and used in combination with ground fault interrupt circuits.



Bernie Buchner, Inc.

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OSHA

Jobsite

Silica Plan

Company:
Bernie Buchner, Inc.

Person Completing the Plan/Title:
Ryan Deml / Construction/Safety Manager

Jobsite/Project:
General site

Description of Work:
Drilling or Coring thru Concrete, Concrete block and Brick

Competent Person
Ryan Deml

1 **Material** **Task**
Brick Drilling/coring

Equipment and Control(s)
Core Drill with Water (Table 1 Entry)

Task/Control Description
Core drilling holes thru brick. Water to be used for coring. Make sure hoses are not kinked.

2 **Material** **Task**
Concrete Drilling/coring

Equipment and Control(s)
Core Drill with Water (Table 1 Entry)

Task/Control Description
Core drilling holes thru Concrete. Water to be used for coring. Make sure hoses are not kinked.

3 **Material** **Task**
Concrete Block Drilling/coring

Equipment and Control(s)
Core Drill with Water (Table 1 Entry)

Task/Control Description
Core drilling holes thru Concrete block. Water to be used for coring. Make sure hoses are not kinked.

Safety of Others:

Schedule work so that only employees engaged in the task(Drilling or Coring) are in the area. If this is not possible mark area off and inform any persons in the area of work about the task you are completing.

Worker Training:

The health hazards associated with exposure to respirable crystalline silica;
Specific tasks in the workplace that could result in exposure to respirable crystalline silica;
Specific measures the employer has implemented to protect employees from exposure to respirable crystalline silica, including engineering controls, work practices, and respirators to be used;

Personal hygiene: the need to avoid shaking off dust that has accumulated on clothing and hair, to wash up at the end of a shift, avoid smoking, and to avoid eating and drinking in areas where silica dust is present

How to identify when a control is not working

The importance of using all controls and personal protective equipment provided by the employer.

Housekeeping:

Use wet methods, such as a water spray on the dust source, wet mopping or wiping, (non-silica containing) sweeping compounds, or vacuums with HEPA filters to remove dust from floors and surfaces

Keep bags and other containers of silica-containing waste tightly closed to prevent the dust from escaping and becoming airborne. Do not use compressed air or dry sweeping for clean dust from work area.

Medical Surveillance:

Bernie Buchner, Inc shall make medical surveillance available at no cost to the employee, and at a reasonable time and place, for each employee who will be required under this section to use a respirator for 30 or more days per year. Bernie Buchner, Inc shall ensure that all medical examinations and procedures required by this section are performed by a PLHCP as defined in paragraph (b) of this section.

Other Considerations:

Tools with water collection systems can help avoid creating wet, slippery ground and walking surfaces. During cold weather a layer of ice can form on wet surfaces and increase the risk of slips and falls. Depending on the system, wet cutting can result in run-off that may need to be controlled.

Remove silica-containing debris while wet to prevent the dust from becoming airborne and hazardous once dry.

Avoid electric shocks when using an electric-powered tool with a water control by making sure that the electrical cords and extensions are rated for the tool's power requirements, regularly inspected, and used in combination with ground fault interrupt circuits.

Company:
Bernie Buchner, Inc.

Person Completing the Plan/Title:
Ryan Deml / Construction/Safety Manager

Jobsite/Project:
General site

Description of Work:
Drilling thru Concrete, Concrete block and Brick

Competent Person
Ryan Deml

1 **Material** **Task**
Brick Drilling/coring

Equipment and Control(s)
Hand-Held Drill with Dust Extraction (Table 1 Entry)

Task/Control Description
Drilling holes thru brick. Use drill with appropriate dust collection system with Hepa filter(99%).

2 **Material** **Task**
Concrete Drilling/coring

Equipment and Control(s)
Hand-Held Drill with Dust Extraction (Table 1 Entry)

Task/Control Description
Drilling holes thru Concrete. Use drill with appropriate dust collection system with Hepa filter(99%).

3 **Material** **Task**
Concrete Block Drilling/coring

Equipment and Control(s)
Hand-Held Drill with Dust Extraction (Table 1 Entry)

Task/Control Description
Drilling holes thru Concrete Block. Use drill with appropriate dust collection system with Hepa filter(99%).

Safety of Others:

Schedule work so that only employees engaged in the task(Drilling or Coring) are in the area. If this is not possible mark area off and inform any persons in the area of work about the task you are completing.

Worker Training:

The health hazards associated with exposure to respirable crystalline silica;
Specific tasks in the workplace that could result in exposure to respirable crystalline silica;
Specific measures the employer has implemented to protect employees from exposure to respirable crystalline silica, including engineering controls, work practices, and respirators to be used;

Personal hygiene: the need to avoid shaking off dust that has accumulated on clothing and hair, to wash up at the end of a shift, avoid smoking, and to avoid eating and drinking in areas where silica dust is present

How to identify when a control is not working

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Housekeeping:

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Other Considerations:

Vacuum controls must be located as close to the dust generation as possible to be effective. A shroud may be needed to contain the dust so the vacuum can capture it. The shroud must be kept as close to the work surface as is practical to provide adequate dust capture. The shroud should be connected to the vacuum with 2-inch, or greater, diameter tubing with a relatively smooth interior.

For dust containing silica, it is important to use as high efficiency filters as practical. The best available are called HEPA (High Efficiency Particle Air) filters because they capture 99.97% of the most penetrating particles. But HEPA filters also create a greater pressure drop and decrease in air flow rate because it is more difficult to pull air through these denser filters so capture velocity may be reduced. HEPAs require routine cleaning or disposal of prefilters, which can cause exposures to those performing the filter maintenance.

For operations that generate large amounts of dust, cyclonic collection units may be a good option. These units spin the particles and drop them into cheap bags that do not need to be replaced as frequently as other types of vacuum bags because the vacuum pressure does not drop as the bags fill up.

Vacuum performance must be monitored on a regular basis to ensure the control's effectiveness. A vacuum with a pressure gauge allows for frequent and easy monitoring of air flow.

Vacuums require an adequate power source -- large electric vacuums commonly require 20 amp electrical circuits in addition to the power required for the tool.

Company:
Bernie Buchner, Inc.

Person Completing the Plan/Title:
Ryan Deml Construction/Safety Manager

Jobsite/Project:
General Project Site

Description of Work:
Cutting or Sawing of Asphalt, Concrete, Concrete Block & Brick

Competent Person
Ryan Deml

1 **Material** **Task**
Asphalt Cutting/sawing

Equipment and Control(s)
Hand-held Masonry Saw with Water (Table 1 Entry)

Task/Control Description
Cutting or Sawing of asphalt using partner saw. Water to be hooked to saw as per manufactures spec.

2 **Material** **Task**
Brick Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Water (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Brick using partner saw. Water to be hooked to saw as per manufactures spec.

3 **Material** **Task**
Concrete Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Water (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Concrete using partner saw. Water to be hooked to saw as per manufactures spec.

4 **Material** **Task**
Concrete Block Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Water (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Concrete Block using partner saw. Water to be hooked to saw as per manufactures spec.

Safety of Others:

Schedule work so that only employees engaged in the task(Drilling or Coring) are in the area. If this is not possible mark area off and inform any persons in the area of work about the task you are completing.

Worker Training:

The health hazards associated with exposure to respirable crystalline silica;
Specific tasks in the workplace that could result in exposure to respirable crystalline silica;
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The importance of using all controls and personal protective equipment provided by the employer.

Housekeeping:

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Other Considerations:

Tools with water collection systems can help avoid creating wet, slippery ground and walking surfaces. During cold weather a layer of ice can form on wet surfaces and increase the risk of slips and falls. Depending on the system, wet cutting can result in run-off that may need to be controlled.

Remove silica-containing debris while wet to prevent the dust from becoming airborne and hazardous once dry.

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Company:
Bernie Buchner, Inc.

Person Completing the Plan/Title:
Ryan Deml Construction/Safety Manager

Jobsite/Project:
General Project Site

Description of Work:
Cutting or Sawing of Asphalt, Concrete, Concrete Block & Brick

Competent Person
Ryan Deml

1 **Material** **Task**
Asphalt Cutting/sawing

Equipment and Control(s)
Hand-Held Angle Grinder with Vacuum (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Asphalt using Angle Grinder. Commercial grade dust collection system with HEPA filter (99%)

2 **Material** **Task**
Brick Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Vacuum

Task/Control Description
Cutting or Sawing of Brick using Angle Grinder. Commercial grade dust collection system with HEPA filter (99%)

3 **Material** **Task**
Concrete Cutting/sawing

Equipment and Control(s)
Hand-Held Angle Grinder with Vacuum (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Concrete using Angle Grinder. Commercial grade dust collection system with HEPA filter (99%)

4 **Material** **Task**
Concrete Block Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Vacuum

Task/Control Description
Cutting or Sawing of Concrete Block using Angle Grinder. Commercial grade dust collection system with HEPA filter (99%)

Safety of Others:

Schedule work so that only employees engaged in the task(Drilling or Coring) are in the area. If this is not possible mark area off and inform any persons in the area of work about the task you are completing.

Worker Training:

The health hazards associated with exposure to respirable crystalline silica;
Specific tasks in the workplace that could result in exposure to respirable crystalline silica;
Specific measures the employer has implemented to protect employees from exposure to respirable crystalline silica, including engineering controls, work practices, and respirators to be used;
Personal hygiene: the need to avoid shaking off dust that has accumulated on clothing and hair, to wash up at the end of a

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How to identify when a control is not working

The importance of using all controls and personal protective equipment provided by the employer.

Housekeeping:

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Company:
Bernie Buchner, Inc.

Person Completing the Plan/Title:
Ryan Deml Construction/Safety Manager

Jobsite/Project:
General Project Site

Description of Work:
Cutting or Sawing of Asphalt, Concrete, Concrete Block & Brick

Competent Person
Ryan Deml

1 **Material** **Task**
Asphalt Cutting/sawing

Equipment and Control(s)
Hand-held Masonry Saw with Water (Table 1 Entry)

Task/Control Description
Cutting or Sawing of asphalt using partner saw. Water to be hooked to saw as per manufactures spec.

2 **Material** **Task**
Brick Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Water (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Brick using partner saw. Water to be hooked to saw as per manufactures spec.

3 **Material** **Task**
Concrete Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Water (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Concrete using partner saw. Water to be hooked to saw as per manufactures spec.

4 **Material** **Task**
Concrete Block Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Water (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Concrete Block using partner saw. Water to be hooked to saw as per manufactures spec.

Safety of Others:

Schedule work so that only employees engaged in the task(Drilling or Coring) are in the area. If this is not possible mark area off and inform any persons in the area of work about the task you are completing.

Worker Training:

The health hazards associated with exposure to respirable crystalline silica;
Specific tasks in the workplace that could result in exposure to respirable crystalline silica;
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How to identify when a control is not working
The importance of using all controls and personal protective equipment provided by the employer.

Housekeeping:

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Other Considerations:

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Your Silica Control Plan

Company:
Bernie Buchner, Inc.

Person Completing the Plan/Title:
Ryan Deml Construction/Safety Manager

Jobsite/Project:
General Project Site

Description of Work:
Cutting or Sawing of Asphalt, Concrete, Concrete Block & Brick

Competent Person
Ryan Deml

1 **Material** **Task**
Asphalt Cutting/sawing

Equipment and Control(s)
Hand-held Masonry Saw with Water (Table 1 Entry)

Task/Control Description
Cutting or Sawing of asphalt using partner saw. Water to be hooked to saw as per manufactures spec.

2 **Material** **Task**
Brick Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Water (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Brick using partner saw. Water to be hooked to saw as per manufactures spec.

3 **Material** **Task**
Concrete Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Water (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Concrete using partner saw. Water to be hooked to saw as per manufactures spec.

4 **Material** **Task**
Concrete Block Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Water (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Concrete Block using partner saw. Water to be hooked to saw as per manufactures spec.

Safety of Others:

Schedule work so that only employees engaged in the task(Drilling or Coring) are in the area. If this is not possible mark area off and inform any persons in the area of work about the task you are completing.

Worker Training:

The health hazards associated with exposure to respirable crystalline silica;
Specific tasks in the workplace that could result in exposure to respirable crystalline silica;
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How to identify when a control is not working
The importance of using all controls and personal protective equipment provided by the employer.

Housekeeping:

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Company:
Bernie Buchner, Inc.

Person Completing the Plan/Title:
Ryan Deml Construction/Safety Manager

Jobsite/Project:
General Project Site

Description of Work:
Cutting or Sawing of Asphalt, Concrete, Concrete Block & Brick

Competent Person
Ryan Deml

1 **Material** **Task**
Asphalt Cutting/sawing

Equipment and Control(s)
Hand-Held Angle Grinder with Vacuum (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Asphalt using Angle Grinder. Commercial grade dust collection system with HEPA filter (99%)

2 **Material** **Task**
Brick Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Vacuum

Task/Control Description
Cutting or Sawing of Brick using Angle Grinder. Commercial grade dust collection system with HEPA filter (99%)

3 **Material** **Task**
Concrete Cutting/sawing

Equipment and Control(s)
Hand-Held Angle Grinder with Vacuum (Table 1 Entry)

Task/Control Description
Cutting or Sawing of Concrete using Angle Grinder. Commercial grade dust collection system with HEPA filter (99%)

4 **Material** **Task**
Concrete Block Cutting/sawing

Equipment and Control(s)
Hand-Held Masonry Saw with Vacuum

Task/Control Description
Cutting or Sawing of Concrete Block using Angle Grinder. Commercial grade dust collection system with HEPA filter (99%)

Safety of Others:

Schedule work so that only employees engaged in the task(Drilling or Coring) are in the area. If this is not possible mark area off and inform any persons in the area of work about the task you are completing.

Worker Training:

The health hazards associated with exposure to respirable crystalline silica;

Specific tasks in the workplace that could result in exposure to respirable crystalline silica;

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How to identify when a control is not working

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Company:
Bernie Buchner, Inc.

Person Completing the Plan/Title:
Ryan Deml / Construction/Safety Manager

Jobsite/Project:
General site

Description of Work:
Drilling thru Concrete, Concrete block and Brick

Competent Person
Ryan Deml

1 **Material** **Task**
Brick Drilling/coring

Equipment and Control(s)
Hand-Held Drill with Dust Extraction (Table 1 Entry)

Task/Control Description
Drilling holes thru brick. Use drill with appropriate dust collection system with Hepa filter(99%).

2 **Material** **Task**
Concrete Drilling/coring

Equipment and Control(s)
Hand-Held Drill with Dust Extraction (Table 1 Entry)

Task/Control Description
Drilling holes thru Concrete. Use drill with appropriate dust collection system with Hepa filter(99%).

3 **Material** **Task**
Concrete Block Drilling/coring

Equipment and Control(s)
Hand-Held Drill with Dust Extraction (Table 1 Entry)

Task/Control Description
Drilling holes thru Concrete Block. Use drill with appropriate dust collection system with Hepa filter(99%).

Safety of Others:

Schedule work so that only employees engaged in the task(Drilling or Coring) are in the area. If this is not possible mark area off and inform any persons in the area of work about the task you are completing.

Worker Training:

The health hazards associated with exposure to respirable crystalline silica;
Specific tasks in the workplace that could result in exposure to respirable crystalline silica;
Specific measures the employer has implemented to protect employees from exposure to respirable crystalline silica, including engineering controls, work practices, and respirators to be used;

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Vacuum performance must be monitored on a regular basis to ensure the control's effectiveness. A vacuum with a pressure gauge allows for frequent and easy monitoring of air flow.

Vacuums require an adequate power source -- large electric vacuums commonly require 20 amp electrical circuits in addition to the power required for the tool.

Your Silica Control Plan

Company:
Bernie Buchner, Inc.

Person Completing the Plan/Title:
Ryan Deml / Construction/Safety Manager

Jobsite/Project:
General site

Description of Work:
Drilling thru Concrete, Concrete block and Brick

Competent Person
Ryan Deml

1 **Material** **Task**
Brick Drilling/coring

Equipment and Control(s)
Hand-Held Drill with Dust Extraction (Table 1 Entry)

Task/Control Description
Drilling holes thru brick. Use drill with appropriate dust collection system with Hepa filter(99%).

2 **Material** **Task**
Concrete Drilling/coring

Equipment and Control(s)
Hand-Held Drill with Dust Extraction (Table 1 Entry)

Task/Control Description
Drilling holes thru Concrete. Use drill with appropriate dust collection system with Hepa filter(99%).

3 **Material** **Task**
Concrete Block Drilling/coring

Equipment and Control(s)
Hand-Held Drill with Dust Extraction (Table 1 Entry)

Task/Control Description
Drilling holes thru Concrete Block. Use drill with appropriate dust collection system with Hepa filter(99%).

Safety of Others:

Schedule work so that only employees engaged in the task(Drilling or Coring) are in the area. If this is not possible mark area off and inform any persons in the area of work about the task you are completing.

Worker Training:

The health hazards associated with exposure to respirable crystalline silica;
Specific tasks in the workplace that could result in exposure to respirable crystalline silica;
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Company:
Bernie Buchner, Inc.

Person Completing the Plan/Title:
Ryan Deml / Construction/Safety Manager

Jobsite/Project:
General site

Description of Work:
Drilling or Coring thru Concrete, Concrete block and Brick

Competent Person
Ryan Deml

1 **Material** **Task**
Brick Drilling/coring

Equipment and Control(s)
Core Drill with Water (Table 1 Entry)

Task/Control Description
Core drilling holes thru brick. Water to be used for coring. Make sure hoses are not kinked.

2 **Material** **Task**
Concrete Drilling/coring

Equipment and Control(s)
Core Drill with Water (Table 1 Entry)

Task/Control Description
Core drilling holes thru Concrete. Water to be used for coring. Make sure hoses are not kinked.

3 **Material** **Task**
Concrete Block Drilling/coring

Equipment and Control(s)
Core Drill with Water (Table 1 Entry)

Task/Control Description
Core drilling holes thru Concrete block. Water to be used for coring. Make sure hoses are not kinked.

Safety of Others:

Schedule work so that only employees engaged in the task(Drilling or Coring) are in the area. If this is not possible mark area off and inform any persons in the area of work about the task you are completing.

Worker Training:

The health hazards associated with exposure to respirable crystalline silica;
Specific tasks in the workplace that could result in exposure to respirable crystalline silica;
Specific measures the employer has implemented to protect employees from exposure to respirable crystalline silica, including engineering controls, work practices, and respirators to be used;

Personal hygiene: the need to avoid shaking off dust that has accumulated on clothing and hair, to wash up at the end of a shift, avoid smoking, and to avoid eating and drinking in areas where silica dust is present

How to identify when a control is not working

The importance of using all controls and personal protective equipment provided by the employer.

Housekeeping:

Use wet methods, such as a water spray on the dust source, wet mopping or wiping, (non-silica containing) sweeping compounds, or vacuums with HEPA filters to remove dust from floors and surfaces

Keep bags and other containers of silica-containing waste tightly closed to prevent the dust from escaping and becoming airborne. Do not use compressed air or dry sweeping for clean dust from work area.

Medical Surveillance:

Bernie Buchner, Inc shall make medical surveillance available at no cost to the employee, and at a reasonable time and place, for each employee who will be required under this section to use a respirator for 30 or more days per year. Bernie Buchner, Inc shall ensure that all medical examinations and procedures required by this section are performed by a PLHCP as defined in paragraph (b) of this section.

Other Considerations:

Tools with water collection systems can help avoid creating wet, slippery ground and walking surfaces. During cold weather a layer of ice can form on wet surfaces and increase the risk of slips and falls. Depending on the system, wet cutting can result in run-off that may need to be controlled.

Remove silica-containing debris while wet to prevent the dust from becoming airborne and hazardous once dry.

Avoid electric shocks when using an electric-powered tool with a water control by making sure that the electrical cords and extensions are rated for the tool's power requirements, regularly inspected, and used in combination with ground fault interrupt circuits.

Employee Crystalline Silica Exposure Control Policy, Program & Procedure Manual Acknowledgment Form

By signing this form, I acknowledge that I have received a copy of Bernie Buchner, Inc. Employee Crystalline Silica Exposure Control Policy, Program & Procedure Manual. I understand the manual and have had the opportunity to ask questions about and discuss the policies with my supervisor or other representative of Bernie Buchner, Inc. The Manual contains important information about Bernie Buchner, Inc. Crystalline Silica Exposure Control Policy, Program & Procedure, and that I am expected to read the Crystalline Silica Exposure Control Policy, Program & Procedure Manual and familiarize myself with its contents, and that the policies in the Crystalline Silica Exposure Control Policy, Program & Procedure Manual apply to me. I understand that nothing in the Crystalline Silica Exposure Control Policy, Program & Procedure Manual constitutes a contract or promise of continued employment and that Bernie Buchner, Inc. may change the policies in the Crystalline Silica Exposure Control Policy, Program & Procedure Manual at any time.

Employee's Signature

_ Date

_ Employee's Name (Print)

