

No.: 001  
Revision No.: 0  
Page: 1 of 76  
Original Issue Date: 1/3/09  
Revision Date:



# **Safety & Health Program Manual**

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## TABLE OF CONTENTS

<b>Subject</b>	<b>Page</b>
General Instructions	3
Safety Mission Statement	4
Responsibilities	5
Safety Disciplinary Policy	7
Procedure for Reporting & Investigating Injuries or Illnesses	8
Safety Bulletin Board Information	10
First Aid	11
Monthly Safety Meetings	13
Safety Inspections	15
General Safety Rules	16
Ladder Safety Rules	17
Fall Protection Safety Rules	20
Trenching and Excavating	23
Scaffold Safety Rules	27
Motorized Vehicles and Equipment	28
Material Handling Safety Guidelines	32
Welding and Cutting Safety Rules	35
Hazard Communication Program	40
Hearing Conservation Program	41
Heat Stress (Heat Illness)	42
Confined Space	44
Job Safety Analysis	45
Personal Protective Equipment	48
Chainsaw Operations	50
Crane Safety	53
Lockout/Tagout	58
<b>Appendixes:</b>	
Employee Orientation Checklist	A-1
Employee's Report of Injury Form	A-2
Incident Investigation Report Form	A-3
Crew Leader Safety Meeting Form	A-4
Safety Observation Checklist	A-5
Safety Inspection Checklist	A-6
Job Safety Analysis Worksheet	A-7



# GENERAL INSTRUCTIONS

## A. Overview

Occupational injuries create a no-win situation for everyone involved. Employees experience pain, suffering and incapacitation while the company suffers from the loss of the injured person's contributions. This program is designed to assist all personnel in assuring that such an undesirable situation will not develop in this company. It provides information and guidance for the establishment and maintenance of an injury-free work environment.

## B. Procedures

This program contains guidance for safety procedures to be followed and forms to be used. Supervisors are expected to integrate the procedures into the appropriate work activity and employees are expected to apply them on the job. The checklist & forms are to be used if they apply to the job concerned.

## C. Dissemination

A copy of this program will be issued to all supervisory and management personnel. A copy of the policy statement will be posted on company safety and health bulletin boards at all Heeter Construction jobsites.



## SAFETY MISSION STATEMENT

Heeter Construction is a company that meets and exceeds our client's expectations by utilizing innovative paving methods, state of the art equipment, and world-class Environmental, Health & Safety performance in providing millions of yards of Roller Compacted Concrete, Heavy Earth Work, and Dam Construction. Heeter Construction is fully committed to Environmental, Health & Safety (EHS) excellence. To achieve this standard of excellence, we have instituted an EHS Management System based on leading performance indicators. These include the prevention of incidents through strong supervisory leadership, employee involvement, and personal ownership of the safety process and compliance with all relevant federal, state, and local EHS legislation and regulations. Simply put, the Heeter Construction team will "Do it right the first time in the most safe and cost efficient method without a compromise to quality or the environment in which we work and live!"

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David P. Heeter, President

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David W. Heeter, Vice President

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Roy Tanner, Project Superintendent

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Peggy Heeter, Treasurer

---

Sheila Coe, Assistant Controller, Office Manager and Insurance

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Chrystal Tanner, Human Resources

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Erica Starcher, Payroll and Accounts Payable

---

John Coe, Engineer

---

Rick Prine, Surveyor



# RESPONSIBILITIES

Responsibilities for safety and health include the establishment and maintenance of an effective communication system among workers, supervisors and management officials. To this end, all personnel are responsible to assure that their messages are received and understood by the intended receiver. Specific safety and health responsibilities for company personnel are as follows:

## 1. Management

Active participation in and support of safety and health programs is essential. Management officials will display their interest in safety matters at every opportunity. To accomplish this obligation, Managers will:

1. At least one manager (as designated) will participate in the safety meetings, incident investigations, and inspections.
2. Each manager will establish realistic goals for implementing instructions for meeting the goals. Goals and implementing instructions shall be within the framework established by this program.
3. Incentives will be included as part of the instructions.
4. Review injury trends and establish prevention measures.
5. Actively follow the progress of injured workers and display an interest in their rapid recovery and return to work

## 2. Supervisors

The safety and health of the employees they supervise is a primary responsibility of the supervisors. To accomplish this obligation, supervisors will:

1. Assure that all safety and health rules, regulations, policies and procedures are understood and observed.
2. Require the proper care and use of all required personal protective equipment.
3. Identify and eliminate job hazards quickly through job safety analysis procedures. (See the Job Safety Analysis form)
4. Inform and train employees on the hazardous chemicals and/or procedures they MAY encounter under normal working conditions or during an emergency situation. (See the hazard communication program.)
5. Receive and take initial action on employee suggestions, awards or disciplinary measures.
6. Conduct weekly safety meetings the first fifteen (15) minutes each Monday morning to discuss safety and health matters and work plans for the week.
7. Conduct walk-around safety inspections at least weekly.
8. Train employees (new and experienced) in the safe and efficient methods of accomplishing each job or task as necessary.
9. Lead weekly safety meetings.
10. Lead incident investigations and inspections.



11. Promote employee participation in the safety program.
12. Actively follow the progress of injured workers and display an interest in their rapid recovery and return to work.

3. Employees

1. Observe the items of responsibility established in this document as well as job safety rules which may apply to specific task assignments.
2. Attend weekly safety meetings the first fifteen (15) minutes each Monday morning to discuss safety and health matters and work plans for the week.
3. Participate in incident investigations and inspections.
4. Attend all safety training.
5. Report ALL incidents, including nearmisses, immediately to your supervisor.



## **SAFETY DISCIPLINARY POLICY**

Heeter Construction Company believes that a Safety Program is unenforceable without some type of disciplinary policy. Our company believes that in order to maintain a safe and healthful workplace, the employees must be cognizant and aware of all company, State, and Federal safety and health regulations as they apply to the specific job duties required. The following disciplinary policy is in effect and will be applied to all safety and health violations.

The following steps will be followed unless the seriousness of the violation would dictate going directly to Step 2 or Step 3.

1. A first time violation will be discussed orally between company supervision and the employee. This will be done as soon as possible.
2. A second time offense will be followed up in written form and a copy of this written documentation will be entered into the employee's personnel folder.
3. A third time violation will result in time off or possible termination, depending on the seriousness of the violation.



## PROCEDURE FOR INJURY OR ILLNESS

### A. Superintendent immediately takes charge

1. Supervise and administer first aid as needed.
2. Arrange for transportation (ambulance, helicopter, company vehicle, etc.), depending on the seriousness of the injury.
3. Protect the injured person from further injury.
4. Notify Operations Manager, if not already present.
5. Do not move anything unless necessary, pending investigation of the incident.
6. Accompany or take injured person(s) to doctor, hospital, etc. (depending on the extent of injuries).
7. Take injured person to family doctor, if available.
8. Remain with the injured person until relieved by other authorized persons (manager, EMT, doctor, etc.).
9. When the injured person's immediate family is known, the owner or supervisor should properly notify family members, preferable in person, or have an appropriate person do so.

### B. Documentation

1. Minor injuries – requiring doctor or outpatient care: After the emergency actions following an injury, an investigation of the incident will be conducted by the Superintendent, the employees involved, and any witness(es) to determine the root causes. The findings must be documented on our investigation form.
2. Major injuries – fatality or multiple hospitalizations: Operations Manager must see that the Department of Labor is notified as soon as possible, but at least within 8 hours of the incident. Call or contact in person the nearest office of the Department or call the OSHA toll free central number (1-800-321-6742). Top management will then assist the Department in the investigation.
3. The findings must be documented on our incident investigation report form and recorded on the OSHA 300 log, if applicable. (See incident investigation report form)

### C. Near Misses

1. All near-miss incidents (close calls) must be investigated.
2. Document the finding on the company incident investigation report form.
3. Review the findings at the weekly safety meetings or sooner if the situation warrants.

### D. Basic Rules for Accident Investigation

1. The purpose of an investigation is to find the root cause(s) of an incident and prevent future occurrences, not to fix blame.
2. Visit the incident scene as soon as possible – while facts are fresh and before witnesses forget important details.



3. If possible, interview the injured worker at the scene of the incident and “walk” him or her through a re-enactment. Be careful not to actually repeat the act that caused the injury.
4. All interviews should be conducted as privately as possible. Interview witnesses one at a time. Talk with anyone who has knowledge of the incident, even if they did not actually witness the mishap.
5. Consider taking the signed statements in cases where facts are unclear or there is an element of controversy.
6. Graphically document details of the incident: area, tools, and equipment. Use sketches, diagrams, and photos as needed, and take measurements when appropriate.
7. Focus on causes and hazards. Develop an analysis of what happened, how it happened, and how it could have been prevented. Determine what caused the incident itself (unsafe equipment/condition, unsafe act, etc), not just the injury.
8. How will you prevent such incidents in the future? Every investigation should include an action plan.
9. If a third party or defective product contributed to the incident, save any evidence. It could be critical to the recovery of the claim costs.

Use Incident Investigation Report Form – Appendix C-1 to write up accident investigation report.



## SAFETY BULLETIN BOARD

A. Purpose: To increase employee's safety awareness and convey the company's safety message. If a proper place can be found for a bulletin board, this is a good tool.

B. The following items are required to be posted:

1. OSHA Rights poster (required)
2. Worker's Compensation (required)
3. Copy of OSHA's Hearing Conservation Standard (required)
4. Wage and hour laws (required)
5. Citation and Notice (as appropriate)  
If a Citation and Notice is received, it must be posted until all violations are abated.
6. Emergency Telephone Numbers Posted (as appropriate)
7. OSHA 300 Summary (required February 1 thru April 30 of each year)
8. Safety Inspections (Weekly)

C. Suggested Items:

1. Safety and health posters
2. Recent safety meetings
3. Date, time, and place of next safety meeting
4. Information about any recent incidents
5. Safety awards/employee recognition
6. Hazard communication information
7. Pertinent safety concerns, news clippings and other off-the-job items that may be of significant importance to employees.



## FIRST AID TRAINING & KITS

To afford the employees immediate and effective medical attention should an injury result, Heeter Construction will ensure that a certified first aider(s) will be available.

To meet the above objectives, the following procedures will be followed:

1. All supervisors or persons in charge of crews will be first aid trained unless their duties require them to be away from the jobsite. If so, other persons who are certified in first aid will be designated as the recognized first aider.
2. Other persons will be trained in order to augment or surpass the standard requirements.
3. Valid first aid cards are recognized as ones that include both first aid and cardiopulmonary resuscitation (CPR) and have not reached the expiration date.
4. First aid kit locations at this jobsite include:
  - i. Office Trailer
  - ii. All mobile equipment
5. Operations Manager is designated to ensure that the first aid kits are properly maintained and stocked.
6. Posters listing emergency numbers, procedures, etc., will be strategically located, such as on the first aid kit, at telephones, and in other areas where employees have easy access.

### FIRST AID PROCEDURES:

If first aid trained personnel are involved in a situation involving blood, they must:

1. Avoid skin contact with blood/other potentially infectious materials by letting the victim help as much as possible, and by using gloves provided in the first aid kit.
2. Remove clothing, etc. with blood on it after rendering help.
3. Wash thoroughly with soap and water to remove blood. A 10% chlorine bleach solution is good for disinfecting areas contaminated with blood (spills, etc.).
4. Report such first aid incidents within the Superintendent

Hepatitis B vaccinations will be provided as soon as possible but not later than 24 hours after the first aid incident.

If an exposure incident occurs, we will immediately make available appropriate:

1. Post exposure evaluation
2. Follow-up treatment
3. Follow-up as listed in Occupational Exposure to Bloodborne Pathogens.



**FIRST AID KITS:**

The following list sets forth the minimally acceptable number and type of first-aid supplies for first-aid kits. The contents of the first-aid kit listed should be adequate for small work sites, consisting of approximately two to three employees. When larger operations or multiple operations are being conducted at the same location, additional first-aid kits should be provided at the work site or additional quantities of supplies should be included in the first-aid kits:

Gauze pads (at least 4 x 4 inches)	Tweezers
Two large gauze pads (at least 8 x 10 inches)	Adhesive tape
Box adhesive bandages (band-aids)	Latex gloves
One package gauze roller bandage @ least 2" wide	A resuscitation bag, airway, or pocket mask
Two triangular bandages	Two elastic wraps
Wound cleaning agent such as sealed towelettes	Splint
Scissors	Directions for requesting emergency assistance
At least one blanket	



## WEEKLY SAFETY MEETINGS

Heeter Construction believes that hard work and perseverance are required for the prevention of injuries and illnesses, with management being the key to a successful result.

Purpose: To assist in the detection and elimination of unsafe conditions and work procedures.

Procedures: The following guidelines will be followed:

1. These meetings are held each Monday morning, or if no work took place on Monday, the first day back after a weekend or two day breaks.
2. It is important that the Superintendent talk daily on injury prevention and immediately upon witnessing an unsafe act.
3. The attendance and subjects discussed will be documented and maintained on file for one year.
4. Copies of the meetings will be made available to the employees by posting or other means.

Scope of Activities at the meetings:

1. Conduct in-house safety inspections with supervisor concerned.
2. Investigate incidents to uncover trends.
3. Review incident reports to determine means or elimination.
4. Accept and evaluate employee suggestions.
5. Review job procedures and recommend improvements (Job Safety Analysis Form is available in the Appendix)
6. Monitor the safety program effectiveness.
7. Promote and publicize safety.

Documentation: The sample form in the Appendix D-1 is available to assist in documenting activities of safety meetings. There is also a Safety Meeting Notice form that you can print out and copy to announce your next safety meeting.

How to hold a *good* safety meeting:

1. Be certain everyone knows the time and place of the next meeting.
2. Insist that everyone attend. Before the next meeting, remind those who were late or failed to attend that attendance is not optional.
3. Pick an appropriate topic. If you can't think of an appropriate topic, use one of the Safety Services Company Tailgate Safety Training sessions.
4. Start the meeting on time.
5. Don't waste time – give the meeting your undivided attention. TURN OFF CELL PHONE!
6. Discuss the topic you have chosen and prepared.
7. Use handouts or posters to illustrate your topic.
8. Discuss current job site safety events, injuries and close calls.
9. Encourage employees to discuss safety problems as they arise.
10. Allow some time for employee questions or input at the end of the meeting.
11. Repeating topics several times during the course of a project is beneficial as long as it applies to the work being done.

No.: 001  
Revision No.: 0  
Page: 14 of 76  
Original Issue Date: 1/3/09  
Revision Date:



12. Follow up on employee concerns or questions and get back to them with the answer before the next meeting.
13. Be certain to document the attendance and the topics discussed.



## **WALK-AROUND SAFETY INSPECTIONS**

Job-site safety inspections will be conducted at Monthly.

The inspections will be conducted jointly by at least one member of management and at least one non-management employee.

The inspections will be documented using the inspection checklist in the Appendix and the documentation will be made available for all employees to review by posting the most recent two inspections on the safety bulletin board.

The records of the walk-around inspections will be maintained until the completion of the job.

Job-site safety observations will be conducted at least Weekly.

The safety observation will be conducted by at least one member of management and at least one non-management employee.

The observations will be documented using the observation checklist in the Appendix and the documentation will be made available for all employees to review by posting the most recent two inspections on the safety bulletin board.

The records of the safety observations will be maintained until the completion of the job.



## GENERAL SAFETY RULES

1. Employees are not allowed to use cell phones while working, unless it is pre-approved by the Superintendent.
  - a. At NO time is an operator of mobile equipment allowed to use a cell phone.
2. Always store materials in a safe manner.
  - a. Tie down or support piles if necessary to prevent falling, rolling, or shifting.
3. Shavings, dust scraps, oil or grease should not be allowed to accumulate. Good housekeeping is a part of the job.
4. Trash piles must be removed as soon as possible.
  - a. Trash is a safety and fire hazard.
5. Remove or bend over the nails in lumber that has been used.
6. Immediately remove all loose materials from stairs, walkways, ramps, platforms, etc.
7. Do not block aisles, traffic lanes, fire exits, gangways, or stairs.
8. Avoid shortcuts – use ramps, stairs, walkways, ladders, etc.
9. Standard guardrails must be erected around all floor openings and excavations must be barricaded.
  - a. Contact the Superintendent for the correct specifications.
10. Do not remove, deface or destroy any warning, danger sign, or barricade, or interfere with any form of protective device or practice provided for your use or that is being used by other workers.
11. Get help with heavy or bulky materials to avoid injury to yourself or damage to material.
  - a. NOTE: Any object that weighs over 60 pounds MUST be handled by at least two workers.
12. Keep all tools away from the edges of scaffolding, platforms, shaft openings, etc.
13. Do not use tools with split, broken, or loose handles, or burred or mushroomed heads.
14. Keep cutting tools sharp and carry all tools in a container.
15. Know the correct use of hand and power tools. Use the right tool for the job.
16. Know the location and use of fire extinguishing equipment and the procedure for sounding a fire alarm.
17. Flammable liquids shall be used only in small amounts at the job location and in approved safety cans.
18. Proper guards or shields must be installed on all power tools before use.
  - a. Do not use any tools without the guards in their proper working condition.
  - b. No "homemade" handles or extensions (cheaters) will be used!
19. All electrical power tools (unless double insulated), extension cords, and equipment must be properly grounded.
20. All electrical power tools and extension cords must be properly insulated. Damaged cords must be replaced.
21. Do not operate any power tool or equipment unless you are trained in its operation and authorized by your firm to do so.
22. All portable electrical equipment must utilize a use a Ground-Fault Circuit Interrupter (GFCI).
23. All electrical power equipment and tools must be grounded or double insulated.
24. Use tools only for their designed purpose.



# LADDER SAFETY

## General:

1. Inspect before use for physical defects.
2. Ladders are not to be painted except for numbering purposes.
3. Do not use ladders for skids, braces, workbenches, or any purpose other than climbing.
4. When you are ascending or descending a ladder, do not carry objects that will prevent you from grasping the ladder with both hands.
5. Always face the ladder when ascending and descending and maintain a Three-Point Contact.
6. If you must place a ladder over a doorway, barricade the door to prevent its use and post a warning sign.
7. Only one person is allowed on a ladder at a time.
8. Do not jump from a ladder when descending.
9. All joints between steps, rungs, and side rails must be tight.
10. Safety feet must be in good working order and in place.
11. Rungs must be free of grease and/or oil.
12. All ladders must be equipped with safety (non-skid) feet.
13. Ladders shall not be tied or fastened together to provide longer sections unless they are specifically designed for such use.
14. Ladders shall be maintained free of oil, grease, and other slipping hazards.
15. Ladders shall not be loaded beyond the maximum intended load for which they were built, nor beyond their manufacturer's rated capacity.
16. Ladders placed in any location where they can be displaced by workplace activities or traffic, such as in passageways, doorways, or driveways, shall be secured to prevent accidental displacement, or a barricade shall be used to keep the activities or traffic away from the ladder.
17. Ladders shall have nonconductive siderails if they are used where the employee or the ladder could contact exposed energized electrical equipment.

## Stepladders:

1. Do not place tools or materials on the steps or platform of a stepladder
2. Do not use the top two steps of a stepladder as a step or stand.
3. Always level all four feet and lock spreaders in place.
4. Do not use a stepladder as a straight ladder.

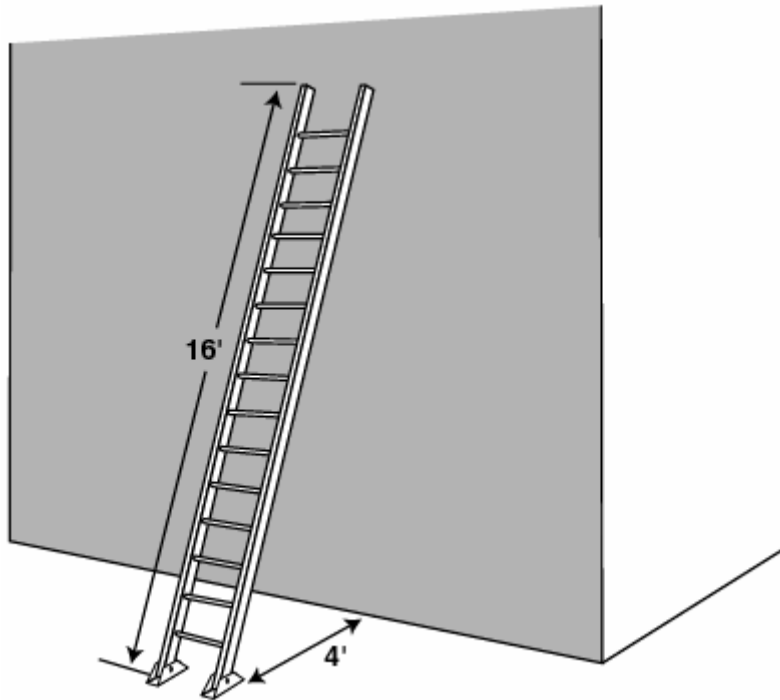
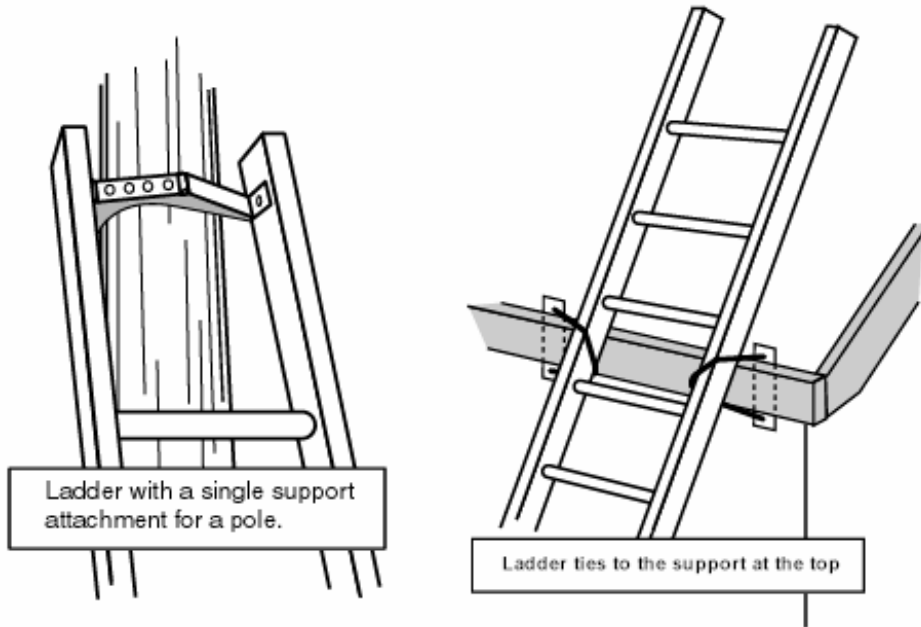
## Straight type or extension ladders:

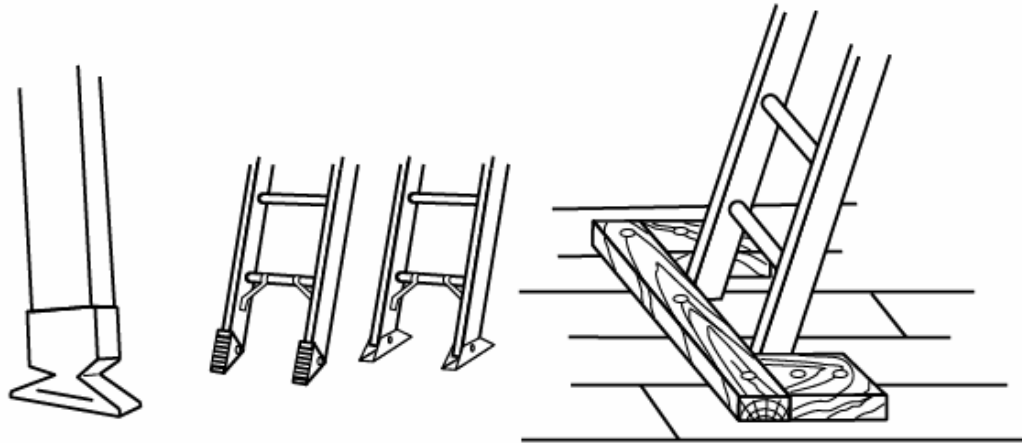
1. All straight or extension ladders must extend at least three feet beyond the supporting object when used as an access to an elevated work area.
2. After raising the extension portion of a two or more stage ladder to the desired height, check to ensure that the safety dogs or latches are engaged.
3. All extension or straight ladders must be secured or tied off at the top.



4. All extension or straight ladders must be used at such a pitch that the horizontal distance from the top support to the foot of the ladder is about one-quarter of the working length of the ladder.

Refer to the following diagrams for proper set-up methods.





Rubber Safety Feet	Spikes	Cleats Nailed to the Floor
Ladders with supports on the bottom.		



## FALL PROTECTION

Falls are a major cause of injuries and deaths in the construction industry. Heeter Construction is committed to eliminating injuries caused by fall hazards by instituting a program of 100% fall protection for all fall hazards 6 feet or greater.

Fall Protection is required in the following work situation that Heeter Construction could be in:

1. Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet (1.8 m) or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall arrest systems.
2. Each employee in a hoist area shall be protected from falling 6 feet (1.8 m) or more to lower levels by guardrail systems or personal fall arrest systems.
  - a. If guardrail systems, [or chain, gate, or guardrail] or portions thereof, are removed to facilitate the hoisting operation (e.g., during landing of materials), and an employee must lean through the access opening or out over the edge of the access opening (to receive or guide equipment and materials, for example), that employee shall be protected from fall hazards by a personal fall arrest system.
3. Each employee at the edge of an excavation 6 feet (1.8 m) or more in depth shall be protected from falling by guardrail systems, fences, or barricades when the excavations are not readily seen because of plant growth or other visual barrier.
4. Each employee at the edge of a well, pit, shaft, and similar excavation 6 feet (1.8 m) or more in depth shall be protected from falling by guardrail systems, fences, barricades, or covers.
5. Each employee working above dangerous equipment shall be protected from falling into or onto the dangerous equipment by guardrail systems or by equipment guards.

### Personal fall arrest systems:

1. Effective January 1, 1998, body belts are not acceptable as part of a personal fall arrest system. Note:
  - a. The use of a body belt in a positioning device system is acceptable.
2. Connectors shall be drop forged, pressed or formed steel, or made of equivalent materials.
3. Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of the system.
4. Dee-rings and snaphooks shall have a minimum tensile strength of 5,000 pounds (22.2 kN).
5. Dee-rings and snaphooks shall be proof-tested to a minimum tensile load of 3,600 pounds (16 kN) without cracking, breaking, or taking permanent deformation.
6. Snaphooks shall be sized to be compatible with the member to which they are connected to prevent unintentional disengagement of the snaphook by depression of the snaphook keeper by the connected member, or shall be a locking type snaphook designed and used to prevent disengagement of the snaphook by the contact of the snaphook keeper by the connected member.
  - a. Effective January 1, 1998, only locking type snaphooks shall be used.



7. Unless the snaphook is a locking type and designed for the following connections, snaphooks shall not be engaged:
  - a. directly to webbing, rope or wire rope;
  - b. to each other;
  - c. to a dee-ring to which another snaphook or other connector is attached;
  - d. to a horizontal lifeline; or
  - e. to any object which is incompatibly shaped or dimensioned in relation to the snaphook such that unintentional disengagement could occur by the connected object being able to depress the snaphook keeper and release itself.
8. Horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.
9. Lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds (22.2 kN).
10. When vertical lifelines are used, each employee shall be attached to a separate lifeline.
11. Lifelines shall be protected against being cut or abraded.
12. Self-retracting lifelines and lanyards which automatically limit free fall distance to 2 feet (0.61 m) or less shall be capable of sustaining a minimum tensile load of 3,000 pounds (13.3 kN) applied to the device with the lifeline or lanyard in the fully extended position.
13. Self-retracting lifelines and lanyards which do not limit free fall distance to 2 feet (0.61 m) or less, ripstitch lanyards, and tearing and deforming lanyards shall be capable of sustaining a minimum tensile load of 5,000 pounds (22.2 kN) applied to the device with the lifeline or lanyard in the fully extended position.
14. Ropes and straps (webbing) used in lanyards, lifelines, and strength components of body belts and body harnesses shall be made from synthetic fibers.
15. Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds (22.2 kN) per employee attached, or shall be designed, installed, and used as follows:
  - a. as part of a complete personal fall arrest system which maintains a safety factor of at least two; and
  - b. under the supervision of a qualified person.
16. Personal fall arrest systems, when stopping a fall, shall:
  - a. limit maximum arresting force on an employee to 900 pounds (4 kN) when used with a body belt;
  - b. limit maximum arresting force on an employee to 1,800 pounds (8 kN) when used with a body harness;
  - c. be rigged such that an employee can neither free fall more than 6 feet (1.8 m), nor contact any lower level;
  - d. bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet (1.07 m); and,
  - e. have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 6 feet (1.8 m), or the free fall distance permitted by the system, whichever is less.

No.: 001  
Revision No.: 0  
Page: 22 of 76  
Original Issue Date: 1/3/09  
Revision Date:



17. The employer shall provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves.
18. Personal fall arrest systems shall be inspected prior to each use for wear, damage and other deterioration, and defective components shall be removed from service.
19. Personal fall arrest systems shall not be attached to guardrail systems, nor shall they be attached to hoists except as specified in other subparts of this Part.
20. When a personal fall arrest system is used at hoist areas, it shall be rigged to allow the movement of the employee only as far as the edge of the walking/working surface.

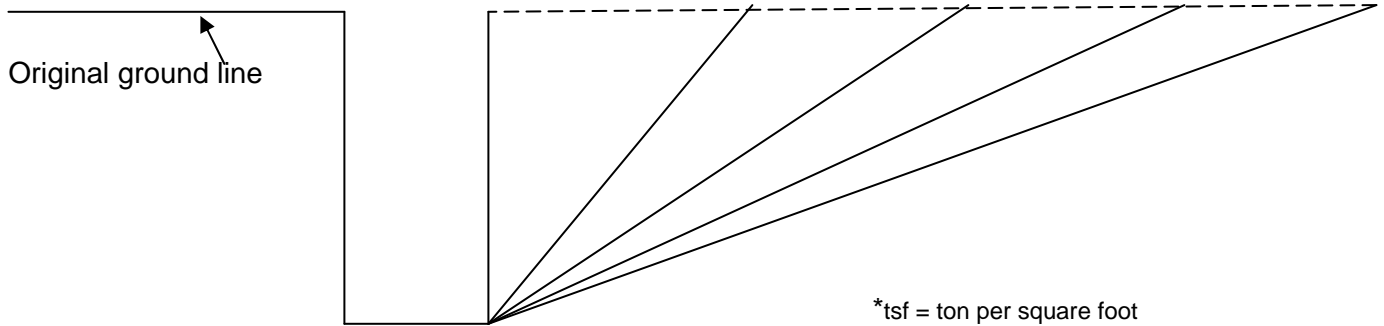


# TRENCHING AND EXCAVATING

1. The determination of the angle of slope and design of the supporting system shall be based on careful evaluation of pertinent factors, such as:
  - a. Depth and/or cut/soils classification
  - b. Possible variation in water content of the material while excavation is open
  - c. Anticipated changes in materials from exposure to air, sun, water, or freezing
  - d. Loading imposed by structures, equipment, or overlaying or stored material
  - e. Vibration from equipment, blasting, traffic, or other sources

## Approximate Angle of Slope for sloping of sides of excavations

		Type A	Type B	Type C	
The presence of ground water requires special treatment	Solid rock and compact shale (90°)	Cohesive and cemented soils. Unconfined compressive strength of 1.5 tsf* or greater. ¾:1 (63°26')	Non-cohesive Granular soils. Unconfined compressive strength >0.5 tsf but <1.5 tsf*. 1:1 (45°)	Compacted sharp sand. Unconfined compressive strength of 0.5 tsf* or less. 1 ½:1 (33°41')	Well rounded loose sand 2:1 (26°34')



2. When excavation operations approach the estimated location of underground installations, the exact location of the installations shall be determined by safe and acceptable means.
3. Walkways or bridges with standard railings must be provided when employees or equipment are required to cross over excavations.
4. The walls and faces of all excavations in which employees are exposed to danger from moving ground must be guarded by a shoring system, sloping of the ground, or some other equivalent means.
5. No employee shall be permitted underneath loads handled by lifting or digging equipment. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials.
6. All employees must be protected with personal protective equipment for the protection of the head, eyes, respiratory system, hands, feet, and other parts of the body.



7. A stairway, ladder, ramp or other safe means of egress shall be located in trench excavations that are 4 feet (1.22 m) or more in depth so as to require no more than 25 feet (7.62 m) of lateral travel for employees.
8. Employees exposed to public vehicular traffic shall be provided with, and shall wear, warning vests or other suitable garments marked with or made of reflectorized or high-visibility material.
9. When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system shall be utilized such as barricades, hand or mechanical signals, or stop logs.
  - a. If possible, the grade should be away from the excavation.
10. Where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or excavations in areas where hazardous substances are stored nearby, the atmospheres in the excavation shall be tested before employees enter excavations greater than 4 feet (1.22 m) in depth.
11. Emergency rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher, shall be readily available where hazardous atmospheric conditions exist or may reasonably be expected to develop during work in an excavation. This equipment shall be attended when in use.
12. Employees entering bell-bottom pier holes, or other similar deep and confined footing excavations, shall wear a harness with a lifeline securely attached to it. The lifeline shall be separate from any line used to handle materials, and shall be individually attended at all times while the employee wearing the lifeline is in the excavation.
13. Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation.
  - a. The precautions necessary to protect employees adequately vary with each situation, but could include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of a safety harness and lifeline.
14. Adequate protection shall be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection shall consist of scaling to remove loose material; installation of protective barricades at intervals as necessary on the face to stop and contain falling material; or other means that provide equivalent protection.
15. Employees shall be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations.
  - a. Protection shall be provided by placing and keeping such materials or equipment at least 2 feet (.61 m) from the edge of excavations, or by the use of retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary.



16. Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions.
  - a. An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift.
  - b. Inspections shall also be made after every rainstorm or other hazard increasing occurrence.
  - c. These inspections are only required when employee exposure can be reasonably anticipated.
17. Where the competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

Requirements for protective systems:

1. Each employee in an excavation shall be protected from cave-ins by an adequate protective system except when:
  - a. Excavations are made entirely in stable rock; or
  - b. Excavations are less than 5 feet (1.52 m) in depth and examination of the ground by a competent person provides no indication of a potential cave-in.
2. Protective systems shall have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied or transmitted to the system.
3. Materials and equipment used for protective systems shall be free from damage or defects that might impair their proper function.
4. Manufactured materials and equipment used for protective systems shall be used and maintained in a manner that is consistent with the recommendations of the manufacturer, and in a manner that will prevent employee exposure to hazards.
5. When material or equipment that is used for protective systems is damaged, a competent person shall examine the material or equipment and evaluate its suitability for continued use.
  - a. If the competent person cannot assure the material or equipment is able to support the intended loads or is otherwise suitable for safe use, then such material or equipment shall be removed from service, and shall be evaluated and approved by a registered professional engineer before being returned to service.
6. Members of support systems shall be securely connected together to prevent sliding, falling, kickouts, or other predictable failure.
7. Support systems shall be installed and removed in a manner that protects employees from cave-ins, structural collapses, or from being struck by members of the support system.
8. Individual members of support systems shall not be subjected to loads exceeding those which those members were designed to withstand.

No.: 001  
Revision No.: 0  
Page: 26 of 76  
Original Issue Date: 1/3/09  
Revision Date:



9. Before temporary removal of individual members begins, additional precautions shall be taken to ensure the safety of employees, such as installing other structural members to carry the loads imposed on the support system.
10. Backfilling shall progress together with the removal of support systems from excavations.



## SCAFFOLD SAFETY

### General:

1. Before starting work on a scaffold, inspect it for the following:
  - a. Are guardrails, toeboards, and planking in place and secure?
  - b. Are locking pins at each joint in place?
  - c. Are all wheels on moveable scaffolds locked?
2. Do not attempt to gain access to a scaffold by climbing on it (unless it is specifically designed for climbing) – always use a ladder.
3. Scaffolds and their components must be capable of supporting four (4) times the maximum intended load.
4. Any scaffold, including accessories such as braces, brackets, trusses, screw legs, ladders, etc., damaged or weakened in any way, must be immediately repaired or replaced.
5. Scaffold planks must extend over their end supports not less than 6 inches nor more than 12 inches, unless otherwise specifically required.
6. Scaffold platforms must be at least 18 inches wide unless otherwise specifically required or exempted.
7. Where persons are required to work or pass under the scaffold, scaffolds shall be provided with a screen between the toeboard and guardrail, extending along the entire opening.
  - a. The screen must be made of No. 18 gauge U.S. Standard wire, ½ inch mesh or equivalent protection.
8. All scaffolds must be erected level and plumb, and on a solid footing.
9. Do not change or remove scaffold members unless authorized.
10. Do not allow workers to ride on a rolling scaffold when it is being moved.
  - a. Remove or secure all materials and tools on deck before moving.
11. Do not alter any scaffold member by welding, burning, cutting, drilling, or bending.



## MOTORIZED VEHICLES AND EQUIPMENT

### General Requirements:

1. Do not ride on motorized vehicles or equipment unless a proper seat is provided for each rider.
2. Always be seated when riding authorized vehicles (unless they are designed for standing).
3. Do not operate any motorized vehicle or equipment unless you are specifically authorized to do so by the job site Superintendent or Operations Manager.
4. Always use your seat belt in the correct manner.
5. Obey all speed limits and other traffic regulations.
6. Always be aware of pedestrians and give them the right-of-way.
7. Always inspect your vehicle or equipment before and after daily use.
8. Never mount or dismount any vehicles or equipment while they are still in motion.
9. Do not dismount any vehicle without first shutting down the engine, setting the parking brake and securing the load.
10. Do not allow other persons to ride the hook or block, dump box, forks, bucket or shovel of any equipment.
11. Each operator must be knowledgeable of all hand signals and obey them.
12. Each operator is responsible for the stability and security of his/her load.
13. All equipment left unattended at night, adjacent to a highway in normal use, or adjacent to construction areas where work is in progress, shall have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, to identify the location of the equipment.
14. A safety tire rack, cage, or equivalent protection shall be provided and used when mounting, or dismounting tires installed on split rims, or rims equipped with locking rings or similar devices.
  - a. When filling a deflated tire on a piece of equipment, personnel will attach the 50' uncharged air line to the stem of the tire, return to the compressor 50' away from the tire and open the valve on the air receiver to fill the tire.
15. Heavy machinery, equipment, or parts thereof, which are suspended or held aloft by use of slings, hoists, or jacks shall be substantially blocked or cribbed to prevent falling or shifting before employees are permitted to work under or between them.
  - a. Bulldozer and scraper blades, end-loader buckets, dump bodies, and similar equipment, shall be either fully lowered or blocked when being repaired or when not in use.
  - b. All controls shall be in a neutral position, with the motors stopped and brakes set, unless work being performed requires otherwise.
16. Whenever the equipment is parked, the parking brake shall be set.
  - a. Equipment parked on inclines shall have the wheels chocked and the parking brake set.
17. All cab glass shall be safety glass, or equivalent, that introduces no visible distortion affecting the safe operation of the equipment.



These rules apply to motor vehicles that operate within an off-highway jobsite:

1. All vehicles shall have a service brake system, an emergency brake system, and a parking brake system. These systems may use common components, and shall be maintained in operable condition.
2. Whenever visibility conditions warrant additional light, all vehicles in use shall be equipped with at least two headlights and two taillights in operable condition.
3. All vehicles shall have brake lights in operable condition regardless of light conditions.
4. All vehicles shall be equipped with an adequate audible warning device at the operator's station and in an operable condition.
5. No employee shall use any motor vehicle equipment having an obstructed view to the rear unless:
  - a. The vehicle has a reverse signal alarm audible above the surrounding noise level or:
  - b. The vehicle is backed up only when an observer signals that it is safe to do so.
6. All vehicles with cabs shall be equipped with windshields and powered wipers.
  - a. Cracked and broken glass shall be replaced.
  - b. Vehicles operating in areas or under conditions that cause fogging or frosting of the windshields shall be equipped with operable defogging or defrosting devices.
7. All haulage vehicles, whose pay load is loaded by means of cranes, power shovels, loaders, or similar equipment, shall have a cab shield and/or canopy adequate to protect the operator from shifting or falling materials.
8. Tools and material shall be secured to prevent movement when transported in the same compartment with employees.
9. Vehicles used to transport employees shall have seats firmly secured and adequate for the number of employees to be carried.
10. Seat belts and anchorages meeting the requirements of 49 CFR Part 571 (Department of Transportation, Federal Motor Vehicle Safety Standards) shall be installed in all motor vehicles.
11. Trucks with dump bodies shall be equipped with positive means of support, permanently attached, and capable of being locked in position to prevent accidental lowering of the body while maintenance or inspection work is being done.
12. Operating levers controlling hoisting or dumping devices on haulage bodies shall be equipped with a latch or other device which will prevent accidental starting or tripping of the mechanism.
13. Trip handles for tailgates of dump trucks shall be so arranged that, in dumping, the operator will be in the clear.
14. All rubber-tired motor vehicle equipment manufactured on or after May 1, 1972, shall be equipped with fenders.
  - a. Mud flaps may be used in lieu of fenders whenever motor vehicle equipment is not designed for fenders.
15. All vehicles in use shall be checked at the beginning of each shift to assure that the following parts, equipment, and accessories are in safe operating condition and free of apparent damage that could cause failure while in use:
  - a. service brakes, including trailer brake connections;
  - b. parking system (hand brake);



- c. emergency stopping system (brakes);
- d. tires;
- e. horn;
- f. steering mechanism;
- g. coupling devices;
- h. seat belts;
- i. operating controls; and safety devices.

16. All defects shall be corrected before the vehicle is placed in service.
- a. These requirements also apply to equipment such as lights, reflectors, windshield wipers, defrosters, fire extinguishers, etc., where such equipment is necessary.

These rules apply to scrapers, loaders, crawler or wheel tractors, bulldozers, off-highway trucks, graders, agricultural and industrial tractors, and similar equipment:

1. Seat belts shall be provided on all equipment covered by this section and shall meet the requirements of the Society of Automotive Engineers, J386-1969, Seat Belts for Construction Equipment.
2. Seat belts need not be provided for equipment which is designed only for standup operation.
3. Seat belts need not be provided for equipment which does not have roll-over protective structure (ROPS) or adequate canopy protection.
4. No employee shall move or cause to be moved construction equipment or vehicles upon any access roadway or grade unless the access roadway or grade is constructed and maintained to accommodate safely the movement of the equipment and vehicles involved.
5. Every emergency access ramp and berm used by an employee shall be constructed to restrain and control runaway vehicles.
6. All earthmoving equipment shall have a service braking system capable of stopping and holding the equipment fully loaded, as specified in Society of Automotive Engineers SAE-J237, Loader Dozer-1971, J236, Graders-1971, and J319b, Scrapers-1971.
7. Brake systems for self-propelled rubber-tired off-highway equipment manufactured after January 1, 1972 shall meet the applicable minimum performance criteria set forth in the following Society of Automotive Engineers Recommended Practices:
  - Self-Propelled Scrapers..... SAE J319b-1971.
  - Self-Propelled Graders..... SAE J236-1971.
  - Trucks and Wagons..... SAE J166-1971.
  - Front End Loaders and Dozers.. SAE J237-1971.
8. Pneumatic-tired earth-moving haulage equipment (trucks, scrapers, tractors, and trailing units) whose maximum speed exceeds 15 miles per hour, shall be equipped with fenders on all wheels to meet the requirements of Society of Automotive Engineers SAE J321a-1970, Fenders for Pneumatic-Tired Earthmoving Haulage Equipment.
  - a. An employer may, of course, at any time seek to show under 1926.2, that the uncovered wheels present no hazard to personnel from flying materials.
9. All bidirectional machines, such as rollers, compacters, front-end loaders, bulldozers, and similar equipment, shall be equipped with a horn, distinguishable from the surrounding noise level, which shall be operated as needed when the machine is moving in either direction.
  - a. The horn shall be maintained in an operative condition.



10. No employer shall permit earthmoving or compacting equipment which has an obstructed view to the rear to be used in reverse gear unless the equipment has in operation a reverse signal alarm distinguishable from the surrounding noise level or an employee signals that it is safe to do so.
11. Scissor points on all front-end loaders, which constitute a hazard to the operator during normal operation, shall be guarded.
12. Tractors shall have seat belts as required for the operators when seated in the normal seating arrangement for tractor operation, even though back-hoes, breakers, or other similar attachments are used on these machines for excavating or other work.
13. Lift trucks, stackers, etc., shall have the rated capacity clearly posted on the vehicle so as to be clearly visible to the operator.
  - a. When auxiliary removable counterweights are provided by the manufacturer, corresponding alternate rated capacities also shall be clearly shown on the vehicle.
  - b. These ratings shall not be exceeded.
14. No modifications or additions which affect the capacity or safe operation of the equipment shall be made without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly. In no case shall the original safety factor of the equipment be reduced.
15. If a load is lifted by two or more trucks working in unison, the proportion of the total load carried by any one truck shall not exceed its capacity.
16. Steering or spinner knobs shall not be attached to the steering wheel unless the steering mechanism is of a type that prevents road reactions from causing the steering handwheel to spin.
  - a. The steering knob shall be mounted within the periphery of the wheel.
17. All high lift rider industrial trucks shall be equipped with overhead guards which meet the configuration and structural requirements as defined in paragraph 421 of American National Standards Institute B56.1-1969, Safety Standards for Powered Industrial Trucks.
18. All industrial trucks in use shall meet the applicable requirements of design, construction, stability, inspection, testing, maintenance, and operation, as defined in American National Standards Institute B56.1-1969, Safety Standards for Powered Industrial Trucks.
19. Unauthorized personnel shall not be permitted to ride on powered industrial trucks.
  - a. A safe place to ride shall be provided where riding of trucks is authorized.
20. Whenever a truck is equipped with vertical only, or vertical and horizontal controls elevatable with the lifting carriage or forks for lifting personnel, the following additional precautions shall be taken for the protection of personnel being elevated.
21. Use of a safety platform firmly secured to the lifting carriage and/or forks.
22. Means shall be provided whereby personnel on the platform can shut off power to the truck.
23. Such protection from falling objects as indicated necessary by the operating conditions shall be provided.
24. BEFORE loading large bulk rock into bed of truck, it is required that the bed be padded with TWO scoops of lesser size rock.



## GENERAL MATERIALS HANDLING SAFETY

### General material storage safety:

1. Make sure that all materials stored in tiers are stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling, or collapse.
2. Post conspicuously the maximum safe load limits of floors within buildings and structures, in pounds per square foot, in all storage areas, except for floor or slab on grade.
  - a. Do not exceed the maximum safe loads.
3. Keep aisles and passageways clear to provide for the free and safe movement of material handling equipment or employees.
  - a. Keep these areas in good repair.
4. Do not store materials on scaffolds or runways in excess of supplies needed for immediate operations.
5. Use ramps, blocking, or grading when a difference in road or working levels exists to ensure the safe movement of vehicles between the two levels.
6. Do not place materials stored inside buildings under construction within 6 feet of any hoistway or inside floor openings, or within 10 feet of an exterior wall which does not extend above the top of the material stored.
7. Anchor and brace temporary floors used in steel erection, concrete forms, and shoring and other "in-process equipment" that are to be left overnight or for longer periods of time to prevent their displacement in any direction.
8. When working on stored materials in silos, hoppers, tanks, and similar storage areas, use personal fall arrest equipment meeting the requirements of this program.
9. Segregate non-compatible materials in storage.
10. Stack bagged materials by stepping back the layers and cross-keying the bags at least every ten bags high.
  - a. Carefully handle cement and lime delivered in paper bags to prevent the bags from bursting.
  - b. Do not pile cement and lime bags more than ten bags high except when stored in bins or enclosures built for the purpose of storage.
  - c. When bags are removed from the pile, keep the length of the pile at an even height and maintain the necessary step backs every five bags.
  - d. When handling cement and lime bags, wear eye protection preventing any contact with the substance (such as goggles or other sealed eye protection) and wear long sleeve shirts with close fitting collar and cuffs.
  - e. Do not wear clothing that has become hard and stiff with cement.
  - f. Make sure to report any susceptibility of skin to cement and lime burns.
  - g. Make sure that a hand cream or Vaseline and eyewash is provided and kept ready for use to prevent burns.
  - h. Store lime in a dry place to prevent a premature slacking action that may cause fire.
11. Do not stack bricks more than 7 feet high. When a loose brick stack reaches a height of 4 feet, taper it back 2 inches for every foot of height above the 4-foot level.
12. Never stack bricks, for storage purposes, on scaffolds or runways.



13. Always stack blocks; do not throw in a loose pile.
14. When stacking masonry blocks higher than 6 feet, taper back the stack one-half block per tier above the 6-foot level.
15. When stacking inside a building, distribute the piles to prevent overloading the floor.
16. Do not drop or throw blocks from an elevation or deliver blocks through chutes.
17. Do not stack lumber more than 20 feet high; if handling lumber manually, do not stack more than 16 feet high.
18. Remove all nails from used lumber before stacking.
19. Stack lumber on level and solidly supported sills, and such that the stack is stable and self-supporting.
20. Stack stored lumber on timber sills to keep it off the ground. Sills must be placed level on solid supports.
21. Place cross strips in the stacks when they are stacked more than 4 feet high.
22. If not racked, stack and block structural steel, poles, pipe, bar stock, and other cylindrical materials as to prevent spreading or tilting.
23. Wear heavy gloves when handling reinforcing steel.
24. When bending reinforcing steel on the job, use a strong bench set up on even dry ground or a floor to work on.
25. Carefully pile structural steel to prevent danger of members rolling off or the pile toppling over.
26. Keep structural steel in low piles, giving consideration to the sequence of use of its members.
27. Stack corrugated and flat iron in flat piles, with the piles not more than 4 feet high; place spacing strips between each bundle.
28. Frequently inspect stock piles of sand, gravel, and crushed stone to prevent their becoming unsafe by continued adding to or withdrawing from the stock.
  - a. Do not remove frozen material in a manner that would produce an overhang.

General Rigging Equipment Safety:

1. Inspect rigging equipment for material handling prior to use on each shift and as necessary during its use to ensure that it is safe.
  - a. Remove defective rigging equipment from service.
2. Never load rigging equipment in excess of its recommended safe working load.
3. Remove rigging equipment when not in use from the immediate work area so as not to present a hazard to employees.
4. Mark special rigging accessories (i.e., spreader bars, grabs, hooks, clamps, etc.) or other lifting accessories with the rated capacity.
  - a. Proof test all components to 125% of the rated load prior to the first use.
  - b. Maintain permanent records on the job site for all special rigging accessories.
5. Disposal of waste materials:
6. Whenever materials are dropped more than 20 feet to any point lying outside the exterior walls of the building, use an enclosed chute of wood or equivalent material.



7. When debris is dropped without the use of chutes, make sure that the area onto which the material is dropped is completely enclosed with barricades at least 42 inches high and 20 feet back from the projected edge of the opening above.
  - a. Post at each level warning signs of the hazard of falling materials.
  - b. Do not remove debris in this lower area until debris handling ceases above.
8. Remove all scrap lumber, waste material, and rubbish from the immediate work area as the work progresses.
9. Make sure to comply with local fire regulations if disposing of waste material or debris by burning.
10. Keep all solvent waste, oily rags, and flammable liquids in fire-resistant covered containers until removed from the work site.



## WELDING AND CUTTING SAFETY RULES

1. Always follow the manufacturer's recommendations for setting up and operating equipment, selection of tip size, and gas cylinder operating pressures.
2. Always use a regulator to reduce gas cylinder pressure to the operating pressures recommended by the equipment manufacturer.
  - a. All piping and equipment must meet the standards of the Compressed Gas Association.
3. Always ensure that all connections are leak tight.
  - a. Each time connections are loosened and retightened each connection should be checked with a soap and water solution (oil free soap).
  - b. Do not check with flame.
4. Before "lighting up" clear out each line by letting a small amount of gas flow (separately) to remove any mixed gases that might be in the lines.
5. Never use defective, worn or leaky equipment.
  - a. Repair it or take it out of service.
6. Never use acetylene in excess of 15 psi pressure.
  - a. Higher pressures with acetylene are dangerous.
  - b. If the cylinder is not fitted with a hand wheel valve control, any special wrench required must be placed on the cylinder while the cylinder is in service.
  - c. On manifolds, one wrench for each manifold will suffice.
7. Always have an appropriate fire extinguisher in good operating condition readily available when operating welding or cutting equipment.
8. Never perform welding, cutting, brazing, or heating operations in a poorly ventilated area.
  - a. Avoid breathing fumes from these operations at all times, particularly when zinc, cadmium, or lead coated metals are involved.
9. Never perform welding or cutting operations near combustible materials (gasoline cans, paints, paper, rags, etc.).
10. Always protect yourself, others present, welding hoses, gas cylinders, and flammable materials in the area from hot slag and sparks from the welding and cutting operations.
11. The welder and spectators must always wear goggles to protect the eyes from injurious light rays, sparks and hot molten metal during welding, cutting, and heating operations.
  - a. Eye protection must comply with the established ANSI Standards.
12. Always wear clean, oil free clothing during welding and cutting operations.
  - a. Protect the hands with leather welding gloves to avoid burns from radiation and hot molten slag.
  - b. Low cut shoes and trousers with cuffs or open pockets should not be worn.
13. Never use a match or cigarette lighter to light a cutting or welding torch.
  - a. Always use a spark igniter.
  - b. Fingers are easily burned by the igniting gas when a match or cigarette lighter is used.
14. Ensure that the material being welded or cut is secure and will not move or fall on anyone.



15. Never use a welding, cutting, or heating torch on a container that has held a flammable liquid.
  - a. Explosive vapors can accumulate and linger in closed containers for extended periods of time.

Fire Prevention:

1. Some work sites may require a Hot Work Permit before welding or cutting begins.
2. A fire extinguisher, rated not less than 2A, shall be provided for each 3,000 square feet of the protected building area, or major fraction thereof.
  - a. Travel distance from any point of the protected area to the nearest fire extinguisher shall not exceed 100 feet.
3. When practical, objects to be welded, cut, or heated shall be moved to a designated safe location or, if the objects to be welded, cut, or heated cannot be readily moved, all movable fire hazards in the vicinity shall be taken to a safe place, or otherwise protected.
4. If the object to be welded, cut, or heated cannot be moved and if all the fire hazards cannot be removed, positive means shall be taken to confine the heat, sparks, and slag, and to protect the immovable fire hazards from them.
5. No welding, cutting, or heating shall be done where the application of flammable paints, or the presence of other flammable compounds, or heavy dust concentrations creates a hazard.
6. Suitable fire extinguishing equipment shall be immediately available in the work area and shall be maintained in a state of readiness for instant use.
7. When the welding, cutting, or heating operation is such that normal fire prevention precautions are not sufficient, additional personnel shall be assigned to guard against fire while the actual welding, cutting, or heating operation is being performed, and for a sufficient period of time after completion of the work to ensure that no possibility of fire exists.
  - a. Such personnel shall be instructed as to the specific anticipated fire hazards and how the firefighting equipment provided is to be used.
8. When welding, cutting, or heating is performed on walls, floors, and ceilings, since direct penetration of sparks or heat transfer may introduce a fire hazard to an adjacent area, the same precautions shall be taken on the opposite side as are taken on the side on which the welding is being performed.
9. For the elimination of possible fire in enclosed spaces as a result of gas escaping through leaking or improperly closed torch valves, the gas supply to the torch shall be positively shut off at some point outside the enclosed space whenever the torch is not to be used or whenever the torch is left unattended for a substantial period of time, such as during the lunch period.
  - a. Overnight and at the change of shifts, the torch and hose shall be removed from the confined space.
  - b. Open end fuel gas and oxygen hoses shall be immediately removed from enclosed spaces when they are disconnected from the torch or other gas-consuming device.
10. Except when the contents are being removed or transferred, drums, pails, and other containers which contain or have contained flammable liquids shall be kept closed. Empty containers shall be removed to a safe area apart from hot work operations or open flames.



11. Drums containers, or hollow structures which have contained toxic or flammable substances shall, before welding, cutting, or heating is undertaken on them, either be filled with water or thoroughly cleaned of such substances and ventilated and tested. For welding, cutting and heating on steel pipelines containing natural gas, the pertinent portions of regulations issued by the Department of Transportation, Office of Pipeline Safety, 49 CFR Part 192, Minimum Federal Safety Standards for Gas Pipelines, shall apply.
12. Before heat is applied to a drum, container, or hollow structure, a vent or opening shall be provided for the release of any built-up pressure during the application of heat.
13. Never use a regulator for gasses other than those for which it was designed for by the manufacturer since the diaphragm and seat materials may not be compatible with other gasses.
14. Never attempt to adapt and use a fuel gas or inert gas regulator on an oxygen cylinder. A special protective device is incorporated on the oxygen regulator to harmlessly dissipate the heat caused by the recompression when the cylinder valve is quickly opened. Such a protective device is not furnished on fuel gas and inert gas regulators.
15. Never tamper with the safety devices on cylinders, fuse plugs, safety discs, etc. and do not permit torch flames or sparks to strike the cylinder.
16. Always refer to the various gasses by their proper names. (Do not refer to oxygen as "air" or acetylene as "gas".)
17. All cylinders, particularly acetylene, should be restrained securely in an upright position to prevent accidents.
  - a. A non-vertical position for an acetylene cylinder in use would allow the discharge of acetone through the regulator and into the cutting torch, clogging the mixer passages and creating a fire hazard.
  - b. It would reduce the efficiency of the flame and contaminate the weld area.
  - c. It also can cause voids in the porous material inside the cylinder, which can lead to acetylene explosions.
18. Store all gas cylinders not in use away from excessive heat sources, such as stoves, furnaces, radiators, the direct rays of the sun, and the presence of open flames.
  - a. ALL cylinders MUST be handled and stored as if they are FULL.
19. Cylinders in storage should always be secured in an upright position.
20. Keep all burning or flammable substances away from the oxygen or fuel gas storage area (at least 20 feet) and post "No Smoking" signs.
21. Upon completion of a welding, heating, or cutting operation immediately inspect the surrounding areas for smoldering embers.
22. Allow at least one half hour to elapse before leaving the area and conduct another thorough inspection just before leaving. Also alert other personnel of fire possibilities.
23. Always have the properly fitted wrench to fasten a regulator to a cylinder.
  - a. Never tighten the regulator by hand.
24. Always leave the fuel gas cylinder valve wrench in place when the cylinder valve is open so that it can be closed quickly in an emergency.
  - a. Do not open acetylene valves more than one-quarter (1/4) turn.
25. Before connecting a regulator to a gas cylinder, open the cylinder valve for a moment.
  - a. Called cracking the cylinder valve, this will blow out any foreign material that may have lodged in the valve during transit.



- b. Do not stand in front of the valve when “cracking”.
26. After attaching a regulator to a gas cylinder, be sure the regulator adjusting screw is fully released (backed off in a counter clockwise direction so that it swivels freely) before the cylinder valve is opened.
- a. Never stand in front of a regulator when you are opening a cylinder valve.
27. Always open the cylinder valve slowly so that gas pressure will build up slowly in the regulator (particularly in the oxygen cylinder).
- a. Quick opening of the cylinder valve causes a build up of heat due to recompression of the gas.
  - b.
  - c. When combined with combustible materials, ignition and explosion may result.
28. If a leak develops in a fuel gas cylinder that cannot be stopped by closing the valve, immediately place the cylinder outside of the building away from possible fire or ignition sources in a location that is free from wind currents that might carry the gas to an ignition source.
29. Never attempt to mix gasses in a cylinder or fill an empty one from another (particularly oxygen cylinders).
- a. Mixture of incompatible gasses and/or heat caused by recompression of the gas or gasses may result in ignition and fire. Only the owner of a cylinder may mix gasses in it.
30. When a gas cylinder is ready for return to the supplier, be certain the cylinder valve is closed to prevent internal contamination and the shipping cap is in place to protect the cylinder valve. Identify empty cylinders.
31. Never use oxygen or other gasses as a substitute for compressed air in operation of air-operated tools, blowing off parts, or for ventilation purposes.
- a. The only exception to this rule is where oxygen is used to blow out port passages and talcum powder or dust from welding hoses when setting up new or old “dusty” equipment.
32. Do not attempt to do your own repair on welding equipment.
- a. Equipment that is improperly repaired can cause leaks and other hazardous conditions.
  - b. Repairs must be performed by qualified repair personnel.
33. Never repair welding hose with tape. Use of tape and many hose splicers can reduce the pressure to the torch and can cause hazardous conditions.
- a. Welding hose must meet the specifications of the Compressed Gas Association.
34. Use the shortest length of hose possible. Longer hoses require higher gas pressures and can be hard to handle.
35. Never use oil or grease on any part of welding or cutting equipment and never let it come into contact with oil or grease.
- a. This includes gas cylinders, work bench, regulators, torches, tips, threads on bottles, and clothes that are worn, such as jackets, gloves, and aprons.
  - b. Oxygen and oil or grease can cause explosions and fire.
36. Never use a hammer on the valve cover caps to loosen them.
- a. Use a piece of wood to soften the impact and prevent sparks and damage to the cap.



37. When moving gas cylinders always roll them on their bottom edges or in a cart designed for their movement.
  - a. Sliding or dragging them or rolling causes excessive wear and may weaken their walls by metal erosion.
  - b. Slings and electromagnets are not authorized when transporting cylinders.
38. Never use cylinders as rollers to move material.
  - a. Do not let them bump into each other or let them fall.
39. Fuel gas and liquefied fuels must be stored and shipped valve end up.
40. Do not hammer on any cylinder.
  - a.
  - b. Do not tamper with the relief valves.
  - c. If you have trouble, contact the supplier for assistance.
41. Suitable eye protection must be worn for all welding and cutting operations.
42. Cylinders must be secured. Valves must be closed when unattended and caps must be on the cylinders when the regulators are not on the cylinders.
43. Cylinders must be upright when they are transported in powered vehicles.
44. All cylinders with a water weight of over 30 lbs. must have caps or other protection.
45. All fuel gases must be used through a regulator on cylinder or manifold.
46. Compressed gas cylinders must be upright except for short periods for transportation.
47. Repair work on gauges and regulators must be done by qualified personnel.
48. Only 4 inches of hose per foot may be covered with tape. Defective hoses must be removed from service.
49. Oxygen must not be used for ventilation.
50. Oxygen regulators must be marked "Use No Oil". Regulators and fittings must meet the specifications of the Compressed Gas Association.
51. Union nuts on regulators must be checked for damage.
52. Before removing a regulator, shut off cylinder valve and release gas from regulator.
  - a. Equipment must be used only as approved by the manufacturer.
53. Caps must be on cylinders unless they are transported on a special carrier.
54. Hot warnings on materials are required.
55. Fire is the biggest hazard in welding.
  - a. The area should be cleared for a radius of 35 feet.
  - b. Fire shields should be used.
  - c. The area should be monitored for 30 minutes or more after end of work to ensure there is no delayed ignition.
56. Proper personal protective equipment must be worn by all welders and assisting personnel.
57. All welding personnel should be advised of the hazards from heating zinc, lead, cadmium, and any other substances that could cause health problems from the welding activity.



## HAZARD COMMUNICATION PROGRAM

The purpose of the Hazard Communication Program is to ensure that the hazards of all chemicals produced or imported by chemical manufacturers or importers are evaluated. Information concerning the hazards must be transmitted to affected employers and employees before they use the products.

### Procedure:

- Inventory Lists – Maintain a listing of the hazardous chemicals on the jobsite, including those that any subcontractor may have, that are a potential physical or health hazard.
  - MSDS – Make sure there is a material safety data sheet (MSDS) for each chemical on the jobsite.
  - Labeling System – Each container on the jobsite (including those inside pickups) must be properly labeled with the identity of the product, the hazardous warning, and the name and address of the manufacturer.
1. Employees must be made aware of where hazardous chemicals are used in their work areas.
  2. They must also be informed of
    - a. the requirements of the Hazard Communication Standard,
    - b. the availability and location of the written program,
    - c. the list of hazardous chemicals, and
    - d. the material safety data sheets.
  3. Employees must be trained in
    - a. the protective practices implemented in their workplace,
    - b. the labeling system used,
    - c. how to obtain and use MSDSs,
    - d. the physical and health hazards of the chemicals and
    - e. the recognition, avoidance and prevention of accidental entrance of hazardous chemicals into the work environment.

See Appendix for HMIS and NFPA Labeling assistance.



## HEARING CONSERVATION PROGRAM

The purpose of the Hearing Conservation Program is to ensure that all employees are protected from exposure to noise hazards. Employees who are exposed to high noise levels must participate in an active program for protecting their hearing.

### Procedure:

1. An effective hearing conservation program should first assess company wide noise exposures in order to identify any employee or group of employees exposed to noise.
2. Noise is measured with a sound level meter or noise dosimeters, which measure average noise levels over time.
3. Employees who are exposed to noise at or above an eight-hour time-weighted average of 85 dB (decibels) must be covered under a hearing conservation program.
4. For these employees, Heeter Construction has developed, implemented, and maintains (at no cost to the employees) a program consisting of:
  - a. Mandatory annual audiometric testing
  - b. Making hearing protectors available and ensuring their use.
  - c. Comprehensive training explaining hearing loss, hearing protective devices, and the employer's hearing conservation program.
  - d. Warning signs for high noise areas (115 dBA or higher).
  - e. Keeping accurate records.
  - f. Ensuring employee access to their records.
5. Additionally, Heeter Construction will post a copy of the hearing conservation standard or post a notice to affected employees that a copy of the standard is available at the workplace for their review.



## HEAT STRESS PROGRAM

Heeter Construction routinely works in harsh and hi risk work environments. Because of these working conditions, special attention needs to be paid to the atmospheric conditions that will impact workers. To prevent any type of heat related illnesses Heeter Construction management personnel will ensure:

1. Supply adequate water and encourage workers who work in hot weather to drink regularly, even when not thirsty.
2. A small amount of water every 15 minutes is recommended rather than a large amount after hours of sweating.
3. All employees will learn the signs and symptoms of heat-related illness.
4. Inform workers they should avoid alcohol or drinks with caffeine before or during work in hot weather.
5. Try to do the heaviest work during the cooler parts of the day.
6. Adjusting to work in heat takes time.
7. Allow workers to acclimatize.
8. Start slower and work up to your normal pace.
9. Wear lightweight, loose-fitting, light-colored, breathable (e.g. cotton) clothing and a hat.
10. Allow workers to take regular breaks from the sun.
11. Loosen or remove clothing that restricts cooling.
12. All employees will watch each other for symptoms of heat-related illness.
13. This is especially important for non-acclimatized workers, those returning from vacations and for all workers during heat-wave events.
14. If exertion causes someone's heart to pound or makes them gasp for breath, become lightheaded, confused, weak or faint, they should STOP all activity and get into a cool area or at least into the shade, and rest.

The two major heat-related illnesses are heat exhaustion and heat stroke. Heat exhaustion, if untreated, may progress to deadly heat stroke. **Heat stroke is very dangerous and frequently fatal.** If workers show symptoms, *always take this seriously* and have them take a break and cool down before returning to work. *Stay with them.* If symptoms worsen or the worker does not recover within about 15 minutes, call 911 and have them transported and medically evaluated. *Do not delay transport.*



## Heat Stroke or Heat Exhaustion?

The telling difference is mental confusion or disorientation in ALL heat stroke victims  
You can ask these 3 questions:

- What is your name? What day is this? Where are we?

If a worker can't answer these questions, **ASSUME IT IS HEAT STROKE.**

### What are the symptoms of heat exhaustion and heat stroke?

Heat Exhaustion	Heat Stroke
<ul style="list-style-type: none"> <li>• Heavy sweating</li> <li>• Exhaustion, weakness</li> <li>• Fainting / Lightheadedness</li> <li>• Paleness</li> <li>• Headache</li> <li>• Clumsiness, dizziness</li> <li>• Nausea or vomiting</li> <li>• Irritability</li> </ul>	<ul style="list-style-type: none"> <li>• Sweating may or may not be present</li> <li>• Red or flushed, hot dry skin</li> <li>• Any symptom of heat exhaustion but more severe</li> <li>• Confusion / Bizarre behavior</li> <li>• Convulsions before or during cooling</li> <li>• Collapse</li> <li>• Panting/rapid breathing</li> <li>• Rapid, weak pulse</li> <li>• Note: May resemble a heart attack</li> </ul>

### What do you do if someone is suffering from heat exhaustion or heat stroke?

Heat Exhaustion	Heat Stroke (medical emergency)
<ul style="list-style-type: none"> <li>• Move the worker to a cool, shaded area to rest; do not leave them alone.</li> <li>• Loosen and remove heavy clothing that restricts evaporative cooling.</li> <li>• Give cool water to drink, about a cup every 15 minutes.</li> <li>• Fan the worker, spray with cool water, or apply a wet cloth to their skin to increase evaporative cooling.</li> <li>• Recovery should be rapid. Call 911 if they do not feel better in a few minutes.</li> <li>• Do not further expose the worker to heat that day. Have them rest and continue to drink cool water or electrolyte drinks.</li> </ul>	<ul style="list-style-type: none"> <li>• Get medical help immediately, call 911 and transport as soon as possible.</li> <li>• Move the worker to a cool, shaded area and remove clothing that restricts cooling.</li> <li>• Seconds count – Cool the worker rapidly using whatever methods you can. For example, immerse the worker in a tub of cool water; place the worker in a cool shower; spray the worker with cool water from a garden hose; sponge the worker with cool water; or, if the humidity is low, wrap the worker in a cool, wet sheet and fan them vigorously. Continue cooling until medical help arrives.</li> <li>• If emergency medical personnel are delayed, call the hospital emergency room for further instruction.</li> <li>• Do not give the worker water to drink until instructed by medical personnel.</li> </ul>

### Heat Stress Check List

- Does the worksite have temperature extremes (above 85 degrees in higher humidity, above 90-95 degrees in lower humidity) that may cause heat stress?
- Do employees do heavy labor or wear heavy protective clothing? (increases heat stress conditions)
- Do employees have access to adequate drinking water at all times?
- Are employees allowed work breaks during prolonged heavy labor?
- Do workers have access to shade during breaks?
- Have employees been trained on the symptoms of heat-related illness (heat exhaustion and heat stroke)?
- Are employees trained on first aid measures for heat-related illness?



## **CONFINED SPACES**

Fatalities and injuries constantly occur among construction workers who, during the course of their jobs, are required to enter confined spaces. In some circumstances, these workers are exposed to multiple hazards, any of which may cause bodily injury, illness, or death. Workers are injured and killed from a variety of atmospheric factors and physical agents.

The construction standard (WAC 296-155) requires that companies follow WAC 296-809, when working in confined spaces. There is an exception for work on sewer systems under construction.

Employers must consult with employees and their authorized representatives on the development and implementation of all aspects of the permit required confined space entry program required by the Confined Space Standard, (WAC 296-809).

All information required by the Confined Space Standard must be available to employees affected by the standard (or their authorized representatives).

You must first determine if you have any confined space situations. A confined space is defined as any space having a limited means of egress, which is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere. Confined or enclosed spaces include, but are not limited to, storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults, tunnels, pipelines, and open top spaces more than 4 feet in depth such as pits, tubs, vaults, and vessels.

All employees required to enter into confined or enclosed spaces shall be instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required.

Heeter Construction will comply with any specific regulations that apply to work in dangerous or potentially dangerous areas.



# JOB SAFETY ANALYSIS

## What is a hazard?

A hazard is the potential for harm. In practical terms, a hazard often is associated with a condition or activity that, if left uncontrolled, can result in an injury or illness. See Appendix 2 for a list of common hazards and descriptions. Identifying hazards and eliminating or controlling them as early as possible will help prevent injuries and illnesses.

## What is a job safety analysis?

A job safety analysis is a technique that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment. Ideally, after you identify uncontrolled hazards, you will take steps to eliminate or reduce them to an acceptable risk level.

## What is the value of a job safety analysis?

Superintendents can use the findings of a job safety analysis to eliminate and prevent hazards in their workplaces. This is likely to result in fewer worker injuries and illnesses; safer, more effective work methods; reduced workers' compensation costs; and increased worker productivity. The analysis also can be a valuable tool for training new employees in the steps required to perform their jobs safely.

For a job safety analysis to be effective, management must demonstrate its commitment to safety and health and follow through to correct any uncontrolled hazards identified. Otherwise, management will lose credibility and employees may hesitate to go to management when dangerous conditions threaten them.

## What jobs are appropriate for a job safety analysis?

A job safety analysis can be conducted on many jobs in your workplace. Priority should go to the following types of jobs:

- Jobs with the highest injury or illness rates;
- Jobs with the potential to cause severe or disabling injuries or illness, even if there is no history of previous accidents;
- Jobs in which one simple human error could lead to a severe accident or injury;
- Jobs that are new to your operation or have undergone changes in processes and procedures; and
- Jobs complex enough to require written instructions.

## Where do I begin?

1. **Involve your employees.** It is very important to involve your employees in the hazard analysis process. They have a unique understanding of the job, and this knowledge is invaluable for finding hazards. Involving employees will help minimize oversights, ensure a quality analysis, and get workers to "buy in" to the solutions because they will share ownership in their safety and health program.



2. **Review your accident history.** Review with your employees your worksite's history of accidents and occupational illnesses that needed treatment, losses that required repair or replacement, and any "near misses" -- events in which an accident or loss did not occur, but could have. These events are indicators that the existing hazard controls (if any) may not be adequate and deserve more scrutiny.
3. **Conduct a preliminary job review.** Discuss with your employees the hazards they know exist in their current work and surroundings. Brainstorm with them for ideas to eliminate or control those hazards.  
*If any hazards exist that pose an immediate danger to an employee's life or health, take immediate action to protect the worker.*
4. **List, rank, and set priorities for hazardous jobs.** List jobs with hazards that present unacceptable risks, based on those most likely to occur and with the most severe consequences. These jobs should be your first priority for analysis.
5. **Outline the steps or tasks.** Nearly every job can be broken down into job tasks or steps. When beginning a job safety analysis, watch the employee perform the job and list each step as the worker takes it. Be sure to record enough information to describe each job action without getting overly detailed. Avoid making the breakdown of steps so detailed that it becomes unnecessarily long or so broad that it does not include basic steps. You may find it valuable to get input from other workers who have performed the same job. Later, review the job steps with the employee to make sure you have not omitted something. Point out that you are evaluating the job itself, not the employee's job performance. Include the employee in all phases of the analysis -- from reviewing the job steps and procedures to discussing uncontrolled hazards and recommended solutions.

Sometimes, in conducting a job safety analysis, it may be helpful to photograph or videotape the worker performing the job. These visual records can be handy references when doing a more detailed analysis of the work.

### **How do I identify workplace hazards?**

A job safety analysis is an exercise in detective work. Your goal is to discover the following:

- What can go wrong?
- What are the consequences?
- How could it arise?
- What are other contributing factors?
- How likely is it that the hazard will occur?

To make your job safety analysis useful, document the answers to these questions in a consistent manner. Describing a hazard in this way helps to ensure that your efforts to eliminate the hazard and implement hazard controls help target the most important contributors to the hazard.



Good hazard scenarios describe:

- Where it is happening (environment),
- Who or what it is happening to (exposure),
- What precipitates the hazard (trigger),
- The outcome that would occur should it happen (consequence), and
- Any other contributing factors.

The JSA form found in Appendix A-7 helps you organize your information to provide these details.

To perform a job safety analysis, you would ask:

- **What can go wrong?** The worker's hand could come into contact with a rotating object that "catches" it and pulls it into the machine.
- **What are the consequences?** The worker could receive a severe injury and lose fingers and hands.
- **How could it happen?** The accident could happen as a result of the worker trying to clear a snag during operations or as part of a maintenance activity while the pulley is operating. Obviously, this hazard scenario could not occur if the pulley is not rotating.
- **What are other contributing factors?** This hazard occurs very quickly. It does not give the worker much opportunity to recover or prevent it once his hand comes into contact with the pulley. This is an important factor, because it helps you determine the severity and likelihood of an accident when selecting appropriate hazard controls. Unfortunately, experience has shown that training is not very effective in hazard control when triggering events happen quickly because humans can react only so quickly.
- **How likely is it that the hazard will occur?** This determination requires some judgment. If there have been "near-misses" or actual cases, then the likelihood of a recurrence would be considered high. If the pulley is exposed and easily accessible, that also is a consideration. In the example, the likelihood that the hazard will occur is high because there is no guard preventing contact, and the operation is performed while the machine is running. By following the steps in this example, you can organize your hazard analysis activities.



# PERSONAL PROTECTIVE EQUIPMENT

## Hard Hats:

- Employees working in areas where there is a possible danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns, shall be protected by protective helmets.
- Helmets for the protection of employees against impact and penetration of falling and flying objects shall meet the specifications contained in American National Standards Institute, Z89.1-1969, Safety Requirements for Industrial Head Protection.
- Helmets for the head protection of employees exposed to high voltage electrical shock and burns shall meet the specifications contained in American National Standards Institute, Z89.2-1971.

## Hearing Protection:

- Wherever it is not feasible to reduce the noise levels or duration of exposures to those specified in Table below, ear protective devices shall be provided and used.

Duration (hrs)	Exposure
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25	115

- Plain cotton is not an acceptable protective device!

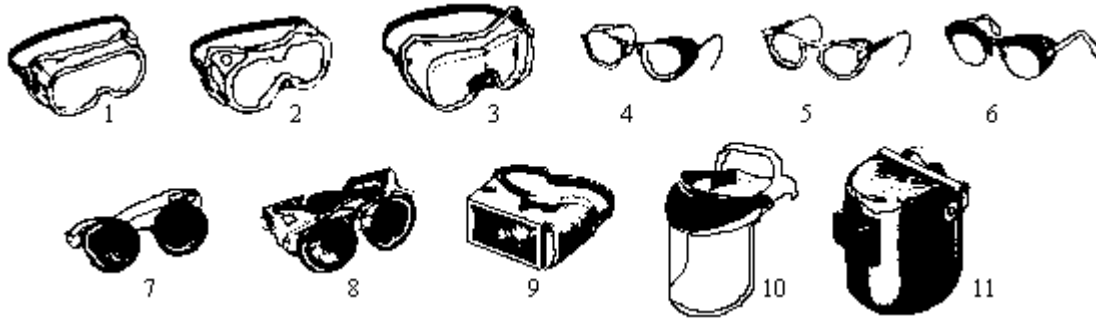
## Eye & Face Protection:

- Employees are provided with eye and face protection equipment when machines or operations present potential eye or face injury from physical or chemical hazards.
- Eye and face protection equipment used shall meet the requirements specified in American National Standards Institute, Z87.1-1968, Practice for Occupational and Educational Eye and Face Protection.
- Employees whose vision requires the use of corrective lenses in spectacles, when required to wear eye protection, shall be protected by goggles or spectacles of one of the following types:
  - Spectacles whose protective lenses provide optical correction;
  - Goggles that can be worn over corrective spectacles without disturbing the adjustment of the spectacles;
  - Goggles that incorporate corrective lenses mounted behind the protective lenses.



- Face and eye protection equipment shall be kept clean and in good repair.
- The use of this type equipment with structural or optical defects shall be prohibited.

### Eye & Face Protection Guide



Operation	Hazards	Recommended protectors: (see Figure above)
Acetylene-burning, Acetylene-cutting, Acetylenewelding	Sparks, harmful rays, molten metal, flying particles	7,8,9
Chemical handling	Splash, acid burns, fumes	2,10 (for severe exposure add 10 over 2)
Chipping	Flying particles	1,3,4,5,6,7A,8A
Electric (arc) welding	Sparks, intense rays, molten metal	9,11 (11 in combination with 4,5,6 in tinted lenses advisable)
Furnace operations	Glare, heat, molten metal	7,8,9 (for severe exposure add 10)
Grinding - light	Flying particles	1,3,4,5,6,10
Grinding - heavy	Flying particles	1,3,7A,8A (for sever exposure add 10)
Laboratory	Chemical splash, glass	2 (10 when in breakage combination with 4,5,6)
Machining	Flying particles	1,3,4,5,6,10
Molten metals	Heat, glare, sparks, splash	7,8 (10 in combination with 4,5,6 in tinted lenses)
Spot welding	Flying particles, sparks	1,3,4,5,6,10

### Foot Protection:

- Ground personnel are required to wear steel toe boots when working on a job-site.
- Safety-toe footwear for employees shall meet the requirements and specifications in American National Standard for Men's Safety-Toe Footwear, Z41.1-1967.



## CHAINSAW OPERATIONS

- The employee shall assure that personal protective equipment is inspected before initial use during each workshift.
  - Defects or damage shall be repaired or the unserviceable personal protective equipment shall be replaced before work is commenced.
- The employee shall ensure that each employee handling wire rope wears, hand protection which provides adequate protection from puncture wounds, cuts and lacerations.
- The employee who operates a chain saw is required to wear leg protection constructed with cut-resistant material, such as ballistic nylon.
  - The leg protection shall cover the full length of the thigh to the top of the boot on each leg to protect against contact with a moving chain saw.
- The employee is required to wear foot protection, such as heavy-duty logging boots that are waterproof or water repellent, cover and provide support to the ankle.
  - The foot protection must be constructed with cut-resistant material which will protect the employee against contact with a running chain saw.
- Each employee who works in an area where there is potential for head injury from falling or flying objects is required to wear a company issued hard hat.
- Each employee is required to wear company issued eye protection where there is potential for eye injury due to falling or flying objects and face protection where there is potential for facial injury such as, but not limited to, operating a chipper.
  - Logger-type mesh screens may be worn by employees performing chain-saw operations and yarding.
    - Each hand and portable powered tool is to be maintained in serviceable condition.
    - The employer shall assure that each tool is inspected before initial use during each workshift.
      - At a minimum, the inspection shall include the following:
        - Handles and guards, to assure that they are sound, tight-fitting, properly shaped, free of splinters and sharp edges, and in place;
        - Controls, to assure proper function;
        - Chain-saw chains, to assure proper adjustment;
        - Chain-saw mufflers, to assure that they are operational and in place;
        - Chain brakes and nose shielding devices, to assure that they are in place and function properly;
        - Heads of shock, impact-driven and driving tools, to assure that there is no mushrooming;
        - Cutting edges, to assure that they are sharp and properly shaped; and
        - All other safety devices, to assure that they are in place and function properly.
- The employee shall assure that each tool is used only for purposes for which it has been designed.
  - When the head of any shock, impact-driven or driving tool begins to chip, it shall be repaired or removed from service.



- The cutting edge of each tool shall be sharpened in accordance with manufacturer's specifications whenever it becomes dull during the workshift.
- Each tool shall be stored in the provided location when not being used at a work site.
- Racks, boxes, holsters or other means shall be provided, arranged and used for the transportation of tools so that a hazard is not created for any vehicle operator or passenger.

#### Chainsaws:

- Each chain saw shall be equipped with a chain brake and shall otherwise meet the requirements of the ANSI B175.1-1991 "Safety Requirements for Gasoline-Powered Chain Saws".
- Each gasoline-powered chain saw shall be equipped with a continuous pressure throttle control system which will stop the chain when pressure on the throttle is released.
- The chain saw shall be operated and adjusted in accordance with the manufacturer's instructions.
- The chainsaw shall be fueled at least 10 feet (3 m) from any open flame or other source of ignition.
- The chainsaw shall be started at least 10 feet (3 m) from the fueling area.
- 1910.266(e)(2)(vi)
- The chainsaw shall be started on the ground or where otherwise firmly supported.
  - Drop starting a chain saw is PROHIBITED.
- The chainsaw shall be started with the chain brake engaged.
- The chainsaw shall be held with the thumbs and fingers of both hands encircling the handles during operation unless the employer demonstrates that a greater hazard is posed by keeping both hands on the chain saw in that particular situation.
- The chainsaw operator shall be certain of footing before starting to cut.
  - The chainsaw shall not be used in a position or at a distance that could cause the operator to become off-balance, to have insecure footing, or to relinquish a firm grip on the saw.
- Prior to felling any tree, the chain-saw operator shall clear away brush or other potential obstacles which might interfere with cutting the tree or using the retreat path.
- The chainsaw shall not be used to cut directly overhead.
- The chainsaw shall be carried in a manner that will prevent operator contact with the cutting chain and muffler.
- The chainsaw shall be shut off or the throttle released before the feller starts his retreat.
- The chain saw shall be shut down or the chain brake shall be engaged whenever a saw is carried further than 50 feet (15.2 m).
  - The chain saw shall be shut down or the chain brake shall be engaged when a saw is carried less than 50 feet if conditions such as, but not limited to, the terrain, underbrush and slippery surfaces, may create a hazard for an employee.
- At a minimum, each operator shall be trained on the following elements:
  - Safe performance of assigned work tasks;
  - Safe use, operation and maintenance of tools, machines and vehicles the employee uses or operates, including emphasis on understanding and following the manufacturer's operating and maintenance instructions, warnings and precautions;

No.: 001  
Revision No.: 0  
Page: 52 of 76  
Original Issue Date: 1/3/09  
Revision Date:



- Recognition of safety and health hazards associated with the employee's specific work tasks, including the use of measures and work practices to prevent or control those hazards;
- Recognition, prevention and control of other safety and health hazards
- Procedures, practices and requirements of the employer's work site; and
- The requirements of this program.



# CRANE SAFETY

## General:

1. The owner/operator must be able to provide an annual crane inspection certification.
2. All crane operators and riggers must have received Crane Safety and Rigging Training before operating a crane on a Heeter Construction jobsite.
3. Crane owner shall ensure that only designated trained personnel shall be permitted to operate a crane.
4. Crane(s) must have a preventative maintenance program established.
5. An inspection shall be performed and documented prior to the daily use of the crane.
  - a. The inspection shall include at least the following:
    - i. All functional operating mechanism for maladjustments interfering with proper operation.
    - ii. Deterioration or leakage in lines, tanks, valves, drain pump and other parts of air or hydraulic systems.
    - iii. Inspections of hook and block.
    - iv. All functional operating mechanisms for excessive wear of components.
    - v. Rope reeving for non-compliance with manufacture recommendations.
    - vi. Insure that all safety equipment is operational.
6. Operator shall insure that the rope has been inspected monthly.
7. The operator shall inspect the rigging and slings prior to use.
8. Personnel Man Baskets must be load tested prior to each use.

## Handling the Load:

1. The crane shall not be loaded beyond its rated capacity.
2. The hoist chain or hoist rope shall be free from kinks or twists and shall not be wrapped around the load.
3. The load shall be attached to the load block hook by means of slings or other approved devices.
4. Care shall be taken to make certain that the sling clears all obstacles.

## Moving the Load:

1. The load shall be well secured and properly balanced in the sling or lifting device before it is lifted more than two (2) inches.
2. Before starting to hoist, the following conditions shall be noted:
  - a. Hoist rope shall not be kinked.
  - b. Multiple part lines shall not be twisted around each other.
  - c. The hook shall be brought over the load in such a manner as to prevent swaying.
3. During hoisting care shall be taken that:
  - a. There is no sudden acceleration or deceleration of the moving load.
  - b. The load does not contact any obstructions.
  - c. A tag line will be used to guide the load.
4. Cranes will not be used for side pulls.



5. While any employee is on the load or hook there will be no hoisting, lowering, or tracking.
6. Operator **MUST** avoid carrying loads over people.
7. Crane operator shall test the brakes each time a load approaching the rated load is handled.
  - a. The brakes shall be test by raising the load a few inches and applying the brakes.
8. The load shall not be lowered below the point where less than three full wraps of rope remain on the hoisting drum.
9. When two or more cranes are used to lift a load, one qualified responsible person shall be in charge of the operation.
  - a. He/she shall analyze the operation and instruct all personnel involved in proper positioning, rigging of the load and the movements to be made.
10. Crane operator will not leave his positions at the controls while the load is suspended.
11. Crane operator shall sound a warning signal when a load or hook approaches near personnel.

#### Classifications of Lifting:

- Normal Lift: Any lift that is less than 80% of the crane's working capacity at the stated working radius.
- Heavy Lift: Any lift that meets or exceeds 80% of the crane's working capacity at the stated working radius.
- Critical Lift: Any heavy lift at the stated working radius of any and all lifts within the crane's boom distance in any direction from a unit that contains flammables that meets the following criteria:
  - Load exceeds 20,000 pounds.
  - Load weighs over 10,000 pounds and is lifted over live process lines or equipment.
  - Any multi-crane lift that involves equipment that is not routinely on the plant.
  - Any load valued at more than \$100,000.
  - Any lift in which personnel are lifted.

**WARNING:** No lift shall be permitted that meets or exceeds 90% of the crane's working capacity!

**CAUTION:** Formal documented lifting plans are required for heavy lifts and critical lifts

#### Lifting Plans:

1. A written lifting plan, signed by the Crane Operator and approved by the Superintendent, shall be submitted to the Project Engineer for review at least twelve (12) hours prior to the proposed lifting date and shall provide the following data:
  - a. Copy of crane load chart.
  - b. Weight of load, including rigging gear.
  - c. Sling size and rated capacity.
  - d. Spreader bar data, if used.
  - e. Crane's capacity at working radius and reeving configuration.
  - f. Block and Shackles: throat checked for excessive deformation.
  - g. Lifting Lugs - NDE certification.
  - h. Plot Plan indicating affected ground area with boom in horizontal position.
  - i. Anti-Two Blocking device on personnel lifts.
  - j. Annual Inspection Certification of Crane to be used in the lift



### Lifting Gear:

#### Slings

1. All slings utilized in a heavy or critical lift should be permanently tagged with load rating.
2. All slings shall be inspected for broken or damage wire rope.
3. Sling proof-load documentation shall be submitted with the lifting plan.

#### Spreader Bar

1. Vendor shall submit documentation of load testing or capacity certification stamp by a registered professional civil engineer.
  - a. Safe working load of spreader bar to be stenciled on equipment.

### Training:

#### Rigging

1. All personnel whose duties involve rigging shall be trained on the proper methods of rigging.

#### Lifting

1. All personnel that operate lifting equipment shall be trained on proper lifting techniques.

## **SUSPENDED WORK BASKETS (HOOK EQUIPMENT)**

### Definition of Procedure:

Defines requirements to follow when employees are required to work from a work basket/platform suspended by Hook Equipment.

### Application of Procedure:

1. Alternate methods and safety requirements shall be investigated before using the work basket as a method.
2. This method shall be used only when other means of access to the work are extremely hazardous or is not possible because of structural design or work site conditions.
3. In no case is a work basket to be used as an elevator.
4. Employees shall be properly positioned in a suspended work basket.
5. Only work baskets that are designed by a qualified engineer, who is competent in structural design, shall be used.
6. This basket shall be constructed for the specific purpose of hoisting personnel by means of a crane.

### Design Guidelines:

1. The lifting bridles on work baskets shall be designed to minimize tipping of the basket due to the movement of employees occupying the basket.
2. The baskets shall meet the following requirements:
  - a. It shall be at least four feet square.



- b. It shall provide head room which allows employees to stand upright in the platform.
  - i. Also, overhead protection shall be provided when employees are exposed to falling objects.
- c. It shall have a weld construction with a safety factor of ten.
- d. A 42" high guardrail for perimeter protection of personnel within the work basket shall be maintained.
- e. It shall be either solid construction or expanded metal having openings of no greater than 1/2 inch, with a gate that swings inward only and equipped with a positive latch.
- f. The work basket weight, maximum number of employees, and the load capacity of the basket must be posted permanently on the basket door.
- g. it shall be identifiable by color or marking.
- h. It shall not be used to hoist materials or tools without an employee.
- i. It shall have a grab rail inside the basket.
- j. all welding shall be done by a welder qualified for the weld grades, types, and materials specified in the design.
- k. All exposed rough edges shall be ground smooth.

#### Rigging:

1. Load block or ball hooks shall be a type that can be closed and locked. As an alternate, a shackle with a screw pin, nut, and retaining pin may be used.
2. When a wire rope lifting bridle is used to connect the work basket to the load line, the bridle legs shall be connected to a single ring or shackle.
  - a. Lifting bridles and associated hardware used for attaching the work basket to the hoist line shall not be used for any other service.
3. All eyes in wire rope slings shall be fabricated with thimbles. Wire rope, shackles, rings, and other rigging hardware shall have a minimum safety factor of ten.
4. A safety wire rope sling shall be affixed from the uppermost part of the lifting bridle to a point above the ball or dead-end load line of the load block or to the load block.
5. Tag lines shall be used where practical.

#### Crane Setup and Operation:

1. The crane shall be uniformly level within one percent of the level grade and located on firm footing.
2. Crane outriggers, if provided, shall be used according to manufacturer's specifications.
3. Crane travel is prohibited while the work basket is suspended.
4. The crane operator shall remain at the controls at all times, with the engine running, when the work basket is suspended.
5. Total weight of the loaded work basket and related rigging shall not exceed 25% of the rated capacity for the radius and configuration of the crane.
6. The minimum load hoist wire rope safety factor shall be seven.
7. Except where rotation resistance ropes are used, the line should be capable of supporting, without failure, at least ten times the maximum intended load.
8. Lifting and lowering speeds shall not exceed 100 feet per minute.



9. The load-line hoist drum shall have controlled (power) load lowering capability.
10. Only cranes with a fail-safe braking system will be permitted.
11. Telescoping booms shall be marked or equipped with a device to clearly indicate to the operator, at all times, the boom's extended length.
12. A boom angle indicator shall be installed on cranes, readily visible to the operator.
13. A positive acting device shall be used which prevents contact between the load block or overhaul ball and the boom tip (anti-Two-Blocking device), or a system shall be used which deactivates the hoisting action before damage occurs in the event of a two-blocking situation (two-block damage prevention feature).
14. Load and boom hoist drum brakes, swing brakes, and locking devices such as dogs and pawls, as equipped, shall be engaged when the occupied work basket is in a stationary working position.
  
15. If the work is not landed, it shall be secured to the structure before employees exit or enter the basket.

#### Inspection And Testing:

1. The crane to be used and the work basket shall be inspected by a competent person at the beginning of each shift and before hoisting employees in the work basket after the crane has been used for any material handling operation in which greater than 50% of the rated capacity was lifted.
2. A trial lift with the work basket unoccupied shall be made for each new work location and at the beginning of each shift to ensure that all systems, controls, and safety devices are functioning properly.
3. A full-cycle operational test lift at 125% of the intended load of the work basket shall also be made at each new setup location before hoisting employees for the first time.
4. A visual inspection of the crane, work basket, and base support shall be conducted immediately after the test lift to determine whether the testing had any adverse effect upon any component or structure.
5. A copy of the Suspended Work Basket or Platform Checklist, (see Attachment), shall be completed for the crane.
6. Any defects found during such inspections which may create a safety hazard shall be corrected before any further use of the work basket is allowed.

#### Safe Work Practices:

1. Employees shall keep all parts of their bodies inside the work basket during raising, lowering, and positioning.
2. Hoisting of employees shall be discontinued upon indication of any dangerous weather conditions or other impending danger.
3. The work basket shall be hoisted just above the ground and inspected to assure that it is secure and properly balanced before employees are allowed to occupy the work basket.
4. Employees being hoisted shall be in continuous sight of and in communication with the crane operator or signal person.
  - a. If at any time the operator cannot see hand signals or hear radio-relayed signals, he/she shall stop all operations until he/she can receive signals.

No.: 001  
Revision No.: 0  
Page: 58 of 76  
Original Issue Date: 1/3/09  
Revision Date:



5. Employees occupying the work basket shall wear a safety harness with a lanyard appropriately attached to a structural member within the work basket.
6. No more than 2 employees are permitted to work in a work basket at one time.

Pre-Lift Meeting:

1. A meeting attended by the operator, signal person(s) to be lifted, and the person responsible for the task to be performed shall be held to review this procedure and the work procedures to be followed.
2. This meeting shall be held before the beginning of personnel hoisting operations at each new work location and thereafter for any employees newly assigned to the operation.



## LOCKOUT/TAGOUT

1. Any main electrical power disconnect means which controls a source of power or material flow shall be locked out with a lockout device whenever employees are maintaining, cleaning, adjusting, or servicing machinery or equipment, if the disconnect is not in clear sight of the employee.
  - a. A "Do Not Start" shall be affixed to any and all operating controls.
2. The pressure shall be eliminated from any pneumatic and hydraulic lines that activate a mechanism or machine, and the valve holding back the activating substance shall be locked out before an employee works on that mechanism or machine.
3. Mechanisms under spring tension or compression shall be blocked, clamped, secured in position, or the compression or tension totally relieved before being worked on by an employee.
4. Suspended mechanisms or parts that normally cycle through a lower position shall be lowered to the lowest position, be clamped, blocked, or otherwise secured in position before being worked on by an employee.
5. Where more than one employee is engaged in working on machinery or equipment, each employee shall affix the employee's individual lockout device or lock to the disconnect switch or power supply.
6. Controls that are to be deactivated during the course of work on energized or deenergized equipment or circuits shall be tagged.
7. Equipment or circuits that are deenergized shall be rendered inoperative and shall have tags attached at all points where such equipment or circuits can be energized.
8. Tags shall be placed to identify plainly the equipment or circuits being worked on.
9. Heavy machinery, equipment, or parts thereof, which are suspended or held aloft by the use of slings, hoists, or jacks shall be substantially blocked or cribbed to prevent falling or shifting before employees are permitted to work under or between them.
10. Bulldozer and scraper blades, end-loader buckets, dump bodies, and similar equipment, shall be either fully lowered or blocked when being repaired or when not in use. All controls shall be in a neutral position, with the motors stopped and brakes set, unless work being performed requires otherwise.
11. Whenever the equipment is parked, the parking brake shall be set.
  - a. Equipment parked on inclines shall have the wheels chocked and the parking brake set.
12. Trucks with dump bodies shall be equipped with positive means of support, permanently attached, and capable of being locked in position to prevent accidental lowering of the body while maintenance or inspection work is being done.
13. Operating levers controlling hoisting or dumping devices on haulage bodies shall be equipped with a latch or other device which will prevent accidental starting or tripping of the mechanism.
14. A blocking device, capable of supporting the weight of the hammer, shall be provided for placement in the leads under the hammer at all times while employees are working under the hammer.

No.: 001  
Revision No.: 0  
Page: 60 of 76  
Original Issue Date: 1/3/09  
Revision Date:



# APPENDIXES



## Job Orientation Guide

Company: HEETER Construction Inc. Employee: \_\_\_\_\_  
 Trainer: \_\_\_\_\_ Hire Date: \_\_\_\_\_  
 Date \_\_\_\_\_ Position: \_\_\_\_\_

This checklist is a guideline for conducting employee safety orientations for NEW employees. Once completed and signed by both Superintendent and employee, it serves as documentation that orientation has taken place.

	Date	Initials
1. Explain the company safety program, including:		
Orientation	_____	_____
On-the-job training	_____	_____
Safety meetings	_____	_____
Incident investigation	_____	_____
Disciplinary action	_____	_____
2. Use and care of personal protective equipment (Hard hat, fall protection, eye protection, etc.)	_____	_____
3. Line of communication and responsibility for immediately reporting injuries.		
A. When to report an injury	_____	_____
B. How to report an injury	_____	_____
C. Who to report an injury to	_____	_____
D. Filling out incident report forms	_____	_____
4. General overview of operation, procedures, methods and hazards as they relate to the specific job	_____	_____
5. Pertinent safety rules of the company and WISHA	_____	_____
6. First aid supplies, equipment and training		
A. Obtaining treatment	_____	_____
B. Location of Facilities	_____	_____
C. Location and names of First-aid trained personnel	_____	_____
7. Emergency plan		
A. Exit location and evacuation routes	_____	_____
B. Use of fire fighting equipment (extinguishers, hose)	_____	_____
C. Specific procedures (medical, chemical, etc.)	_____	_____
8. Vehicle safety	_____	_____
9. Personal work habits		
A. Serious consequences of horseplay	_____	_____
B. Fighting	_____	_____
C. Inattention	_____	_____
D. Smoking policy	_____	_____
E. Good housekeeping practices	_____	_____
F. Proper lifting techniques	_____	_____

**NOTE TO EMPLOYEES:** Do not sign unless ALL items are covered and ALL questions are satisfactorily answered.

The signatures below document that the appropriate elements have been discussed to the satisfaction of both parties, and that both the supervisor and the employee accept responsibility for maintaining a safe and healthful work environment.

Date: \_\_\_\_\_ Supervisor's Signature: \_\_\_\_\_

Date: \_\_\_\_\_ Employee's Signature: \_\_\_\_\_



## Employee's Report of Incident Form

This form is to be COMPLETED by the employee and GIVEN to Superintendent BEFORE end of Shift.

I am reporting a work related: <input type="checkbox"/> Injury <input type="checkbox"/> Illness <input type="checkbox"/> Property Damage <input type="checkbox"/> Fire <input type="checkbox"/> Near miss	
Your Name:	Job title:
Superintendent:	
Have you told your supervisor about this incident? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Date of injury/near miss:	Time of injury/near miss:
Names of witnesses (if any) and their job title and company name if not employed by Heeter Construction Inc.:	
Where, exactly, did it happen on the jobsite or off the jobsite (i.e. transportation accident)?	
What were you doing at the time of the incident?	
Describe step by step what led up to the injury/near miss. (continue on the back if necessary):	
What could have been done to prevent this injury/near miss?	
What parts of your body were injured? If a near miss, how could you have been hurt?	
Did you see a doctor about this injury/illness? <input type="checkbox"/> Yes <input type="checkbox"/> No	
If yes, whom did you see?	Doctor's phone number and address:
Date of Treatment:    /    /	Time of Treatment:                      am/pm
Has this part of your body been injured before? <input type="checkbox"/> Yes <input type="checkbox"/> No	
If yes, when?	Employer you were working for at time of injury:
Your signature (REQUIRED):	Date:

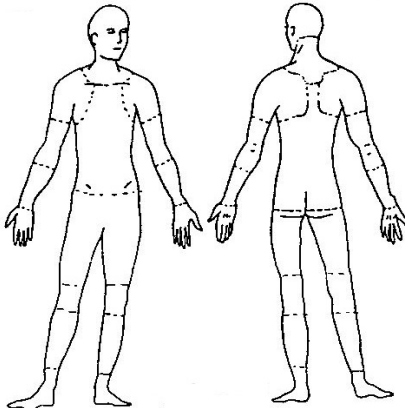


## Incident Investigation Report Form

Superintendent completes this form as soon as possible after an incident that results in serious injury or illness.

This is a report of a:     Death     Lost Time     Dr. Visit Only     First Aid Only     Near Miss

### Step 1: Injured employee (complete this part for each injured employee)

Name:	Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female	Age:
Department:	Job title at time of incident:	
Part of body affected: (shade all that apply)  	Nature of injury: (most serious one) <input type="checkbox"/> Abrasion, scrapes <input type="checkbox"/> Amputation <input type="checkbox"/> Broken bone <input type="checkbox"/> Bruise <input type="checkbox"/> Burn (heat) <input type="checkbox"/> Burn (chemical) <input type="checkbox"/> Concussion (to the head) <input type="checkbox"/> Crushing Injury <input type="checkbox"/> Cut, laceration, puncture <input type="checkbox"/> Hernia <input type="checkbox"/> Illness <input type="checkbox"/> Sprain, strain <input type="checkbox"/> Damage to a body system: <input type="checkbox"/> Other _____	This employee works: <input type="checkbox"/> Regular full time <input type="checkbox"/> Regular part time <input type="checkbox"/> Seasonal <input type="checkbox"/> Temporary
		Months with this employer
		Months doing this job:

### Step 2: Describe the incident

Exact location of the incident:	Exact time:		
What part of employee's workday? <input type="checkbox"/> Entering or leaving work <input type="checkbox"/> Doing normal work activities <input type="checkbox"/> During meal period <input type="checkbox"/> During break <input type="checkbox"/> Working overtime <input type="checkbox"/> Other			
Names of witnesses (if any):			
Number of attachments:	Written witness statements:	Photographs:	Maps / drawings:
What personal protective equipment was being used (if any)?			
Describe, step-by-step the events that led up to the injury. Include names of any machines, parts, objects, tools, materials and other important details.			



**Step 3: Why did the incident happen?**

Unsafe workplace conditions: (Check all that apply)

- Inadequate guard
- Unguarded hazard
- Safety device is defective
- Tool or equipment defective
- Workstation layout is hazardous
- Unsafe lighting
- Unsafe ventilation
- Lack of needed personal protective equipment
- Lack of appropriate equipment / tools
- Unsafe clothing
- No training or insufficient training
- Other: \_\_\_\_\_

Unsafe acts by people: (Check all that apply)

- Operating without permission
- Operating at unsafe speed
- Servicing equipment that has power to it
- Making a safety device inoperative
- Using defective equipment
- Using equipment in an unapproved way
- Unsafe lifting by hand
- Taking an unsafe position or posture
- Distraction, teasing, horseplay
- Failure to wear personal protective equipment
- Failure to use the available equipment / tools
- Other: \_\_\_\_\_

Why did the unsafe conditions exist?

Why did the unsafe acts occur?

Is there a reward (such as “the job can be done more quickly”, or “the product is less likely to be damaged”) that may have encouraged the unsafe conditions or acts?  Yes  No  
 If yes, describe:

Were the unsafe acts or conditions reported prior to the incident?  Yes  No

Have there been similar incidents or near misses prior to this one?  Yes  No

**Step 4: How can future incidents be prevented?**

**What changes do you suggest to prevent this injury/near miss from happening again?**

- Stop this activity
- Guard the hazard
- Train the employee(s)
- Train the supervisor(s)
- Redesign task steps
- Redesign work station
- Write a new policy/rule
- Enforce existing policy
- Routinely inspect for the hazard
- Personal Protective Equipment
- Other: \_\_\_\_\_

What should be (or has been) done to carry out the suggestion(s) checked above?

- 1)
- 2)
- 3)
- 4)
- 5)

Description continued on attached sheets:

No.: 001  
Revision No.: 0  
Page: 65 of 76  
Original Issue Date: 1/3/09  
Revision Date:



**Step 5: Who completed and reviewed this form? (Please Print)**

Written by:	Title: Date:
Names of investigation team members:	
Reviewed by Operations Manager or Higher:	Title: Date:





## WEEKLY SAFETY OBSERVATION CHECK LIST

Field Safety Audit – General			
People	SAFE	UNSAFE	N/A
Did worker(s) adjusts their PPE when you approached			
Did worker(s) changes body positions when you approached			
Did worker(s) rearrange their job layout when you approached			
Did worker(s) stop work when you approached			
Did worker(s) stop work to apply personal lock to isolation point			
Personal Protective Equipment			
Did worker(s) have on hard hat and was it in good condition			
Did worker(s) have on the correct protection for Eyes & Face protection			
Did worker(s) have on hearing protection as needed			
Did worker(s) have on a respirator as needed			
Did worker(s) have on proper gloves for the job			
Did worker(s) have on proper chemical suit for the job			
Did worker(s) have on proper boots for the job			
Positions			
Is worker(s) in a position where he/she could strike against objects			
Is worker(s) in a position where he/she can be struck by objects			
Is worker(s) in a position to be caught in, on, or between objects			
Is worker(s) in a position which exposes him/her to Fall hazards			
Is worker(s) in a position to contacting hot surfaces			
Is worker(s) in a position to contacting electric sources			
Is worker(s) in a position to be inhaling hazards			
Is worker(s) in a position to be exposed to absorbing hazards			
Is worker(s) in a position that would expose him/her to being overexerted			
Is worker(s) performing repetitive motions			
Is worker(s) in an awkward position or static posture			
Tools & Equipment			
Is worker(s) using wrong tool for the job			
Is worker(s) using the proper tool incorrectly			
Is the tool the worker(s) is using in an unsafe condition/broken			
Is the Forklift/hand truck that the worker is operating inspected			
Procedures			
Does the worker(s) not know or understand the procedures			
Is worker(s) not following documented procedures			
Are there documented procedures for the task being conducted			
Housekeeping			
Work area cluttered			
Standing water in the area			
Spilled material present in the area			
Observation Completed by: PRINT:		SIGN:	
Date of Observation:			



# MONTHLY INSPECTION CHECK LIST

A = Adequate at time of inspection      B = Needs immediate attention

**A      B**

**1. JOB SITE INFORMATION     Not Applicable**

- WISHA and other job site warning posters posted
- Scheduled safety meetings held and documented
- Adequate employee training – general and specific
- Medical services, first aid equipment, stretchers and a qualified first aider available
- Emergency telephone numbers posted (medical services, fire department, police)

**2. HOUSEKEEPING AND SANITATION     Not Applicable**

- Working areas generally neat
- Waste and trash regularly disposed
- Enclosed chute provided when material dropped outside of building from over 20 feet
- Lighting adequate for all work tasks
- Projecting nails removed or bent over
- Oil and grease removed from walkways and stairs
- Waste containers provided and used
- Sanitary facilities adequate and clear
- Potable water available for drinking
- Disposable drinking cups and container for used cups provided

**3. FIRE PREVENTION     Not Applicable**

- Fire protection program developed
- Fire instructions provided to personnel
- Proper type and number of fire extinguishers, identified, checked and accessible
- Phone number of fire department posted
- Hydrants clear, access open
- NO SMOKING signs posted and enforced where needed
- Temporary heating devices safe. Adequate ventilation provided

**4. ELECTRICAL INSTALLATIONS     Not Applicable**

- Adequate wiring, well insulated, grounded, protected from damage
- Assured grounding program followed (**OR**)
- Ground fault circuit interrupters used
- Terminal boxes equipped with required covers

**5. HAND TOOLS     Not Applicable**

- Proper tools being used for each job
- Safe carrying practices used
- Company and employees' tools regularly inspected and maintained



## Safety and Health Inspection Check List – continued

A = Adequate at time of inspection      B = Needs immediate attention

**A      B**

### **6. POWER TOOLS** **Not Applicable**

- Good housekeeping where tools are used
- Tools and cords in good condition
- Proper grounding of all tools
- Double insulated tools used
- Proper instruction in use provided
- All mechanical guards in use
- Tools neatly stored when not in use.
- Right tool being used for the job at hand
- Wiring properly installed
- GFCI in use

### **7. POWDER-ACTUATED TOOLS** **Not Applicable**

- All operators licensed
- Tools and charges protected from unauthorized use
- Competent instruction and supervision provided
- Tools used only on recommended materials
- Flying hazards checked by backing up, removal of personnel, or use of captive stud tool

### **8. LADDERS** **Not Applicable**

- Ladders inspected and in good condition
- Ladders properly secured to prevent slipping, sliding or falling
- Side rails extended 36" above the top of landing
- Job-built ladders properly constructed
- Stepladders fully open when in use
- Metal ladders not used around electrical hazards
- Ladders not painted
- Ladders properly stored
- Ladder safety feet in use

### **9. HEAVY EQUIPMENT** **Not Applicable**

- Inspection and maintenance records up to date
- Lights, brakes, warning signals operative
- Wheels chocked when necessary
- Haul roads well maintained and properly laid out
- Equipment is properly secured when not in use
- Shut-off devices on hose air lines, in case of hose failure
- Noise arrestors in use
- ROPS in place



## Safety and Health Inspection Check List – continued

A = Adequate at time of inspection      B = Needs immediate attention

**A      B**

### **10. SCAFFOLDING** **Not Applicable**

- All structural members meet safety factors
- All connections secure
- Scaffold tied in to the structure when required
- Working areas free of debris, snow, ice and grease
- Foot sills and mud sills provided
- Workers protected from falling objects
- Scaffolds plumb and square, with cross-bracing
- Guard rails, intermediate rails, and toeboards in place
- Adequate, sound planking provided
- Scaffold equipment in good working order
- Ropes and cables in good condition

### **11. MOTOR VEHICLES** **Not Applicable**

- Roadways or walkway hazards effectively barricaded
- Barricades illuminated or reflectorized at night
- Traffic control devices used when appropriate
- Inspection and maintenance records up to date
- Operators qualified for vehicles in use
- Local and state vehicle laws and regulations observed
- Brakes, lights, warning devices operative
- Weight limits and load sizes controlled
- Personnel transported in a safe manner
- All glass in good condition
- Back-up signals provided
- Fire extinguishers installed where required
- SLOW MOVING VEHICLE signs used when required

### **12. HOISTS, CRANES AND DERRICKS** **Not Applicable**

- Cables and sheaves regularly inspected
- Slings and chains, hooks and eyes inspected before each use
- Equipment firmly supported
- Outriggers used if needed
- Power lines inactivated, removed, or at a safe distance
- Proper loading for capacity at lifting radius. Rated load capacities posted?
- All equipment properly lubricated and maintained
- Signalmen where needed
- Signals posed, understood, and observed
- Inspection and maintenance logs maintained
- Hazard signs posted and visible to operator



## Safety and Health Inspection Check List – continued

A = Adequate at time of inspection      B = Needs immediate attention

**A      B**

### **13. BARRICADES** **Not Applicable**

- Floor and wall openings planked over or barricaded
- Roadways or walkway hazards effectively barricaded
- Barricades illuminated or reflectorized at night
- Traffic control devices used when appropriate

### **14. HANDLING AND STORAGE OF MATERIALS** **Not Applicable**

- Materials properly stored or stacked
- Passageways clear
- Stacks on firm footings, not too high
- Materials protected against weather conditions
- Trash chutes safeguarded and properly used
- Traffic controlled in the storage area

### **15. EXPLOSIVES** **Not Applicable**

- Qualified operators and supervision during all explosives operations
- Proper transport vehicles as required by Department of Transportation and WISHA
- State and local laws and regulations observed
- Storage magazines constructed per regulations
- Cases opened ONLY with wooden tools
- NO SMOKING signs posted and observed where appropriate
- Detonators tested before each shot
- All personnel familiar with signals; signals properly used at all times
- Inspection after each shot
- Proper protection and accounting for all explosives at all times
- Proper disposition of wrappings, waste, and scrap
- Nearby residents advised of blasting and danger
- Radio frequency hazards checked

### **16. WELDING AND CUTTING** **Not Applicable**

- Operators qualified
- Screens and shields used when needed
- Goggles, welding helmets, gloves, clothing used as required
- Equipment in safe operating condition
- Electrical equipment grounded
- Power cables and hoses protected and in good repair
- Fire extinguishers of proper type nearby
- Surrounding area inspected for fire hazards
- Flammable materials protected or removed
- Gas cylinders secured upright
- Cylinder caps in use



## Safety and Health Inspection Check List – continued

A = Adequate at time of inspection      B = Needs immediate attention

**A      B**

### **17. FLAMMABLE GASES AND LIQUIDS Not Applicable**

- All containers approved and clearly identified
- Proper storage practices observed
- Fire hazards checked
- Proper types and number of extinguishers nearby
- Proper method for moving cylinders used

### **18. EXCAVATION AND SHORING Not Applicable**

- Adjacent structures properly shored
- Excavation shored, shielded, or sloped as required
- Roads and sidewalks supported and protected
- Material stored away from excavations
- Excavation barricades and lighting adequate
- Equipment a safe distance from edge of excavation
- Ladders provided
- Equipment ramps adequate
- Observer(spotter) provided during trenching operations

### **19. PERSONAL PROTECTIVE EQUIPMENT MONITORED BY SUPERVISORS**

- Hard hats available on-site; worn when overhead hazards exist
- Eye protection
- Face shields
- Written respirator program; respirators fit-tested; replacement cartridges; cleaning and maintenance
- Helmets and hoods
- Hearing protection – noise monitoring; written program
- Foot protection
- Rubber or plastic gloves, aprons, and sleeves for chemical protection
- Electrician's rubber gloves and protectors

### **20. HIGHWAY CONSTRUCTION Not Applicable**

- Laws and ordinances observed
- Competent flaggers properly instructed and dressed; area posted
- Adequate traffic control devices used throughout construction area
- Equipment cleared from right-of-way
- Adequate marking and maintenance of detours approaching construction area
- Dust controlled
- Adequate lighting for night crews



# Safety and Health Inspection Check List – continued

A = Adequate at time of inspection      B = Needs immediate attention

**A      B**

## **21. CONCRETE CONSTRUCTION** **Not Applicable**

- Forms properly installed and braced
- Adequate shoring, plumbed and cross-braced
- Shoring remain in place until strength is attained
- Proper curing period and procedures followed
- Heating devices checked for fire safety
- Mixing and transport equipment supported; traffic planned and routed
- Adequate runways and ramps provided for concrete placement equipment
- Employees protected from cement dust
- Hard hats, boots, gloves, eye protection, and skin protection worn at all times
- Nails bent over or removed and stripped material removed from area

## **22. LIFTING AND BACK SAFETY** **Not Applicable**

- Team lifting used for heavy or awkward loads
- Mechanical lifting devices used when appropriate
- Back care training provided to all employees
- Bent-knee lifting used by workers
- Work hardening program used for returning time-loss employees
- Employees do "warm up" exercises before strenuous work

## **23. HAZARD COMMUNICATION PROGRAM** **Not Applicable**

- Chemical inventory list developed and maintained
- Containers properly labeled
- Material Safety Data Sheets collected and available
- Adequate employee information and training provided
- Written program available

## **24. MASONRY** **Not Applicable**

- Scaffolding procedures meet at least minimum requirements
- Masonry saws properly equipped and grounded, dust protection provided
- Hoisting equipment in safe operating condition and used by qualified personnel
- Limited access zone established
- Walls over 8 feet in height adequately braced

## **25. CONFINED SPACE** **Not Applicable**

- Written confined space program
- Competent instruction and supervisors provided
- Hot work permits obtained, if needed, prior to entry and work
- Evaluation and monitoring – sampling devices adequate, calibrated, and used
- Ventilation adequate, testing and monitoring during operation
- Respirators, standby person, harness/lifeline at the site



## Safety and Health Inspection Check List – continued

A = Adequate at time of inspection      B = Needs immediate attention

**A      B**

- 26. DEMOLITION**  **Not Applicable**
- Written demolition plan
- Protection of adjacent structures
- Material chutes used. Floor openings for material disposal barricaded
- Sidewalk and other public protection provided
- Clear opening space for trucks and other vehicles
- Adequate access ladders or stairs maintained
  
- 27. PILE DRIVING**  **Not Applicable**
- Stored piles properly secured
- Unloading only by properly instructed workers
- Steam lines, slings, etc., in safe operating condition
- Piledriving rigs properly supported
- Cofferdams maintained and inspected
- Adequate pumping available





# JOB SAFETY ANALYSIS WORKSHEET

<b>JOB SAFETY ANALYSIS</b>	TASK to be analyzed:																	
ANALYSIS BY:																		
REVIEWED BY:																		
Required Personal Protective Equipment for Task:	Approved By:																	
SEQUENCE OF BASIC JOB STEPS	POTENTIAL ACCIDENTS OR HAZARDS	RECOMMENDED PROCEDURE																
<ul style="list-style-type: none"> <li>• Break job down into normal basic steps.</li> <li>• Record in normal sequence of occurrence.</li> <li>• Describe the what, not the how, of each step.</li> <li>• Check with employee experienced at the job.</li> </ul> <p>Example: replace light bulb</p> <ol style="list-style-type: none"> <li>1 Bring set up ladder</li> <li>2 Ascend ladder</li> <li>3 Remove light globe</li> <li>4 Replace light</li> <li>5 Replace light globe</li> <li>6 Descend ladder</li> <li>7 Remove and /store ladder</li> </ol>	<ul style="list-style-type: none"> <li>• Question each job step for potential accidents/hazardous outcomes.</li> <li>• Get ideas from (1) observing job being done. (2) discussing with employees, and (3) recalling past accidents.</li> <li>• Record and number each potential accident by combining the correct accident type abbreviation (see below) with the agent of contact. Example: SB-Crane on machine.</li> </ul> <p style="text-align: center;"><b>Accident Type Abbreviations</b></p> <table border="1" style="width:100%; border-collapse: collapse; margin: 5px 0;"> <tr> <td style="padding: 2px;">1 SA Striking against</td> <td style="padding: 2px;">9 HLGS Hot Liquids,Gases,Steam</td> </tr> <tr> <td style="padding: 2px;">2 SB Struck by</td> <td style="padding: 2px;">10 HS Hot Surfaces</td> </tr> <tr> <td style="padding: 2px;">3 SO Sharp Objects</td> <td style="padding: 2px;">11 EC Electrical Contact</td> </tr> <tr> <td style="padding: 2px;">4 CICB Caught In/Between</td> <td style="padding: 2px;">12 CE Chemical Exposure</td> </tr> <tr> <td style="padding: 2px;">5 POM Power Operated Machinery</td> <td style="padding: 2px;">13 FP Foreign Particles</td> </tr> <tr> <td style="padding: 2px;">6 L/P/P Lifting/Pushing/Pulling</td> <td style="padding: 2px;">14 S/R Spill/Release</td> </tr> <tr> <td style="padding: 2px;">7 F/SL Fall Same Level</td> <td style="padding: 2px;">15 F/E Fire/Explosion</td> </tr> <tr> <td style="padding: 2px;">8 F/DL Fall Different Level</td> <td></td> </tr> </table>	1 SA Striking against	9 HLGS Hot Liquids,Gases,Steam	2 SB Struck by	10 HS Hot Surfaces	3 SO Sharp Objects	11 EC Electrical Contact	4 CICB Caught In/Between	12 CE Chemical Exposure	5 POM Power Operated Machinery	13 FP Foreign Particles	6 L/P/P Lifting/Pushing/Pulling	14 S/R Spill/Release	7 F/SL Fall Same Level	15 F/E Fire/Explosion	8 F/DL Fall Different Level		<ul style="list-style-type: none"> <li>• For each potential accident, decide exactly what employee should do or not do to avoid the accident. Be specific.</li> <li>• Number each such recommended procedure to coincide with number assigned to potential accident in Column 2.</li> <li>• Get ideas from (1) observing job, (2) discussing with employees experienced at the job (3) recalling past accidents.</li> <li>• Use simple do-don't statements. Be brief &amp; specific.</li> </ul> <p>Examples: Lock out main power switch, Keep feet inside shuttle car, Don't go beyond temporary supports, Don't pull cable around sharp corner</p> <ul style="list-style-type: none"> <li>• Write as if talking to employees. Never record useless generalities like be careful, be alert, use caution, etc.</li> <li>• If applicable, cite published general safety rule</li> </ul>
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