



**HARRISON WESTERN**



**HARRISON WESTERN CONSTRUCTION CORP**  
**&**  
**UNDERGROUND INFRASTRUCTURE TECHNOLOGIES**  
**HEALTH AND SAFETY PLAN**

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## 1. CORPORATE SAFETY AND HEALTH PROGRAM ENDORSEMENT

### CORE VALUES

Harrison Western Construction Corporation is governed by the below set of core values, upon which the beliefs, commitments, and actions of the company are based. This is the “HW Way”

**Safety** - Executed Through Planning & Empowerment

**Integrity** – Right matters, regardless

**Team & Family** – Selflessness, respect, loyalty...your family is our family, we are HW

**Passion & Pride** – In all that we do, quality, tenacity

**Relationships** – Solution & Results driven, we are trusted partner

**Purpose Driven Innovation** –We can make a difference, through conscientious and unconventional thinking

### COMMITMENT TO SAFETY

Harrison Western Construction Corporation is governed by the above set of core values, upon which the beliefs, commitments, decisions, and actions of the company are based. The first tenant of these core values is Safety, and comes with a commitment to providing a safe work environment for employees, clients, subcontractors, visitors, and other people who may come into contact with our work.

It is the responsibility of each individual to comply with all the rules and to be personally accountable for using safe work practices at all times, helping others do so, and bringing ideas for improvement forward for the benefit of everyone. Safe job performance is a condition of employment. Individuals are required to work safely at all times. Those who do not work safely will be counseled and disciplined as required.



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Tom Szyrakiewicz  
COO Harrison Western

# S A F E T Y   M A N U A L

To All: Employees, Contractors, Subcontractors and Visitors

This manual sets forth basic responsibilities, guidelines, and rules for all personnel involved with the Harrison Western Construction and Underground Infrastructure Technologies business groups. The intent of this manual is to enhance and supplement the safety and health standards which are required by law and which are applicable to all employees, contractors, subcontractors, and visitors. It is the responsibility of management, contractors, subcontractors and visitors to ensure they are in compliance with this manual and all safety directives required by law.

If you are unsure of a current safe practice, contact your supervisor. In the event of a conflict between the provisions of this manual and applicable local, state, or federal safety and health law, regulations and/or standards, the more stringent or more applicable shall apply.

To support this commitment Harrison Western Construction Corporation provides this safety program manual as a guideline. There are a number of facets to this program including:

- Understanding this policy is a minimum standard and that it will be modified through continuous improvement efforts
- Recognition that individual job planning may create policies that supersede the program by providing more applicable policies
- Additional policies, plans, and tools may exist to supplement this program
- These are not an all-inclusive program and regulations, the policies of clients, general contractors, or other controlling entities, and accepted industry practices may supersede this program, as we are guest on their site

The full cooperation of everyone is expected in order to continually improve the safety performance of the organization. Your help and support is not just important to making our company a safe place to work, it cannot be done without you.

Safe work sites can be created through a combination of planned work, leveraging of available resources, and conscientious decision making. We trust that you will join us in this commitment to providing a safe work environment.

## 2.0 GENERAL STATEMENT OF POLICY

It is the policy of Harrison Western to establish and maintain throughout the organization a commitment to the safety and health of its employees, other contractors' personnel, the general public, and client assets & expectations.

Safe job planning & accident prevention should be viewed as the highest priority on all of our jobs. By adhering to the safe work practices outlined in this manual we can protect our employees and others from injury; as well as, protect equipment and property from damage.

### 2.1 Goals:

Our goal is the promotion of quality work and elimination of accidents from our operations. Managers should keep this goal first and foremost in their minds in all phases of our construction endeavors from bidding the work through planning and execution of the job. Each supervisor and job superintendent should strive to accomplish this goal. All employees should be made aware of our goal and the importance of their help in achieving it. Safety performance and working toward our goal is one of the primary criteria for evaluation of all employees from top to bottom.

### 2.2 Responsibility:

The following assignments of responsibility are made:

#### a. Management

##### 1. Programs:

Establish rules and programs designed to promote safety and make known to all employees established rules and programs.

##### 2. Policies:

Provide all supervisors with copies of appropriate policies and standards.

##### 3. Training:

Make available training necessary for employees to perform their tasks safely and provide protective equipment for employees where required.

##### 4. Responsibility:

Appoint a company employee with enforcement authority over safety matters.

##### 5. Accountability:

Impress upon all the responsibility and accountability of each individual to maintain a safe workplace; discipline any employee disregarding this policy.

##### 6. Subcontractors:

Require all subcontractors as a matter of contract and all material suppliers through purchase order terms to follow safety rules. Encourage all prime contractors to work safely.

7. Inspections:  
Conduct safety inspections of all the company's jobsites, maintain records, and continually monitor the program for effectiveness
  8. Documentation:  
Record all instances of inspections, training, certifications, violations and investigations of all incidents.
  9. Incident Investigations:  
Any incident, near-miss or actual loss, will be investigated at the jobsite. All information provided to the home office will be thoroughly reviewed and any company needed corrective actions will be implemented.
  10. Resources:  
In addition, insurance brokers and carriers are available to assist and every effort will be made to engage and cooperate with them as a part of the company safety 'team'.
- b. Job Superintendents:
1. Planning:  
Plan production so that all work will be done in compliance with established safety regulations.
  2. Responsibility:  
Be completely responsible for on-the-job safety and health and ensure the correction of safety deficiencies.
  3. Materials:  
Make sure proper safety materials and protective devices are available and used, and all equipment is in safe working order.
  4. Instruction:  
Instruct foremen in safety requirements.
  5. Oversight:  
Review accidents, supervise correction of unsafe practices, and file accident reports.
  6. Meetings:  
Conduct daily jobsite safety meetings and provide employees with proper instruction on safety requirements.
  7. Accountability:  
Require conformity to safety standards from subcontractors.
  8. Notifications:  
Notify company office of safety violations.
  9. Client/Public Protection:

Provide for the protection of the public from company operations.

10. Others:

Attempt to ensure safe performance by others present on the site, including owner and architect/engineer representatives, the general public, visitors, and the employees of other contractors.

c. Supervisors:

1. Implement:

Carry out safety programs at the work level.

2. PPE:

Make sure protective equipment is available and used.

3. Knowledge & Instruction:

Be aware of all safety requirements and safe working practices. Plan all work activities to comply with safe working practices. Instruct new employees and existing employees performing new tasks on safe working practices.

4. Protect:

Install and maintain devices to protect the public from company operations.

5. Performance:

Make sure work is performed in a safe manner and no unsafe conditions or equipment is present.

6. Corrective Action:

Correct all hazards, including unsafe acts and conditions which are within the scope of your position.

7. Emergency Response:

Secure prompt medical attention for any injured employees.

8. Reporting:

Report all injuries and safety violations.

d. Workers:

1. Safety:

Work safely in such a manner as to ensure your own safety as well as that of co-workers and others.

2. Ask for help:

Request help when unsure about how to perform any task safely.

3. Take Action:  
Correct unsafe acts or conditions within the scope of the immediate work, and report any uncorrected unsafe acts or conditions to the appropriate supervisor.
  4. Performance:  
Report to work in good mental and physical condition, enabling you to safely carry out assigned duties.
  5. Participate:  
Avail yourself of company and industry sponsored safety programs.
  6. Comply:  
Use and maintain all safety devices provided. Follow all safety rules.
  7. Look After:  
Maintain and properly use all tools under your control.
  8. Mentor:  
Provide assistance to fellow employees with safety requirements.
- e. All Personnel:
1. Safety:  
Strive to make all operations safe.
  2. Performance:  
Maintain mental and physical health conducive to working safely.
  3. Housekeeping:  
Keep all work areas clean and free of debris.
  4. Planning:  
Assess result of your actions on the entire workplace. Work will not be performed in ways that cause hazards for others.
  5. Security:  
Before leaving work, replace or repair safety precaution signs removed or altered. Make sure that unsafe conditions will not be left to imperil others.
  6. Compliance:  
Abide by the safety rules and regulations of every construction site, or work area.
  7. Regulations:  
Work in strict conformance with federal, state, and local regulations.
  8. Authority:  
All employees have the authority to stop work which is unsafe.

f. Subcontractors and Suppliers:

1. Requirements:  
Abide by the safety rules of contractors on site.
2. Notification:  
Notify all other contractors when their activities could affect the health or safety of other company employees.
3. Check-In:  
Check in with jobsite supervisor before entering the jobsite.
4. Report:  
Inform controlling contractor of all injuries to workers.
5. Action:  
Report to controlling contractor any unsafe conditions that come to your attention.

g. Architects, Engineers, Owners and Visitors:

1. Comply:  
Abide by all safety rules.
2. Report:  
Inform to controlling contractor any unsafe conditions that come to your attention.
3. Notify:  
Check in with the jobsite supervisor so personal protective equipment may be provided such as hard hats, eye protection, and respirators if necessary.

2.3 Enforcement and Discipline:

The responsibilities for making this Safety and Health Program work have been clearly stated. Failure to comply with the safety rules will result in corrective action or dismissal. Willful endangerment of others is grounds for immediate dismissal.

2.4 Fitness for Duty of Employees:

All persons employed, throughout the course of the work, shall be physically qualified for performing the duties to which they are assigned. Factors to be considered include: strength, agility, emotional stability, coordination, and visual & auditory acuity. No person shall be permitted to work while that person's ability or alertness is impaired by fatigue, illness, injury, medication or other cause that might unnecessarily expose that person or others to injury or cause damage to property.

## 3.0 COMMUNICATION AND TRAINING

### 3.1 Accident Prevention:

Each jobsite will institute a program of inspection of work areas, material lay-down areas, and all other areas under the control of or used by Harrison Western employees. Further, all equipment and machinery will be regularly inspected to assure that the items are in proper working order and that safety guards and devices are in place and functioning as intended.

#### a. Jobsite Inspection:

##### 1. Initial:

Investigation of the jobsite shall be made by project supervision to determine existing and probable hazardous conditions once operations commence. Steps must be taken to eliminate these hazards. Hazards which cannot be eliminated shall be controlled and properly marked with warnings, and the dangers shall be specifically pointed out to all new employees. A health and safety plan (HASP) shall be created by project managers and safety to address the site conditions.

##### 2. Periodic:

After the initial inspection, the Job Superintendent, Safety Supervisor, or Management shall re-inspect the jobsite periodically as conditions change or as hazards are recognized. These jobsite inspections will be documented. Copies of the inspection report will be kept in the job safety file and sent to the home office Safety Coordinator.

#### a. Daily Work Area Survey:

Inspection of work areas shall be made daily and documented. Inadequate and deficient protective measures and unsafe work practices that are noted shall be dealt with immediately. The Job Superintendent shall be informed of all deficiencies that cannot be corrected immediately or which may result in damage to facilities, equipment, or creates hazardous public exposure. Inspections of all flammable storage areas, explosives storage, shops, warehouses, lay down areas, shall be made at regular intervals. These inspections / findings / actions taken shall be documented in the supervisor's shift logs. See daily workplace area inspection form.

#### b. Equipment Maintenance and Safety Inspections:

Appropriate mechanical safety inspections are a part of the equipment preventive maintenance program. Prior to being dispatched to a job, Harrison Western owned equipment shall undergo a thorough safety inspection to insure that it is operating safely. This inspection shall be documented; the original inspection form will be retained at the home office and archived after the job is closed out. A copy shall be forwarded to the jobsite with the equipment and a copy retained on MSHA sites. See equipment operation checklist. Rental equipment shall undergo an inspection at the time of delivery to ensure that the equipment is operating safely. This inspection shall be documented, the original inspection form will be forwarded to the home office Safety Coordinator, and a copy retained at the jobsite.

Daily inspections of equipment shall be performed to insure that its use during the preceding shift has not compromised the equipment. This inspection shall be carried out by the equipment operator. In any of the inspections outlined above, deficiencies shall be corrected immediately. If deficiencies cannot be corrected, equipment should be tagged BO "bad order" to prevent use by anyone.

### 3.2 Injury Treatment, Accident Reporting, and Investigation:

#### a. Injury Treatment:

It is a condition of employment that each employee immediately reports all injuries, regardless of the severity, to his / her supervisor.

##### 1. First Aid Cases:

Defined as minor cuts, scrapes, and bumps that do not require treatment from a doctor. These should be evaluated for severity and if minor First Aid treatment is sufficient it will be administered by job personnel. Any injury to a joint such as back, knee, ankle, etc., shall be documented and reported to Home Office Safety Coordinator.

##### 2. Minor Injuries:

Defined as those requiring a doctor and / or outpatient care. In these cases the injured employee will obtain an authorization for medical treatment from the Company. He will be taken or sent to the Company's designated doctor for treatment.

##### 3. Major Injuries:

Defined as accidents requiring hospitalization. The employee will be transported to the hospital in an ambulance for treatment.

#### b. Accident Reporting and Investigation:

All accidents, no matter how minor, shall be reported promptly to the immediate supervisor for evaluation and investigation. Since every accident includes a sequence of contributing causes, it is possible to avoid a repeat accident by investigating and eliminating the causes. Near misses or incidents without injury or damage to property give us a chance correct the contributing factors that caused the near miss. Left unattended, the factors leading to the near miss may cause an accident with injury or damage to property.

The forms and reports referred to in this section can be found in Section 5 of this manual. These injury treatment and accident reporting and investigation procedures may be modified or augmented as necessary to comply with the requirements of a particular jobsite or Owner. The documentation requirements and procedures are outlined below:

1. Near Misses:

As discussed above, near misses give us a second chance to prevent a serious accident. Minor near misses may be addressed on a verbal basis with the crew involved and this information passed to other crews. Near misses of a more serious nature should be investigated in the same manner as Minor Injuries outlined below.

Near miss reports shall be periodically transmitted to the home office Safety Coordinator for distribution to other projects and personnel.

2. First Aid Cases:

Minor cuts, scrapes, and bumps should not be ignored and employees should be made aware that it is a condition of employment to report all minor incidents and have them treated.

The supervisor should take the time to discuss the minor incident and make the employee aware of what action can be taken to prevent future occurrences. First Aid treatment shall be entered in the First Aid Log, and copies of this shall be periodically transmitted to the home office Safety Coordinator.

3. Minor Injuries:

After the emergency actions following an accident, an investigation of the accident will be conducted by the immediate supervisor in conjunction with any witnesses to the accident to determine the causes. The findings of the investigation shall be documented on an accident investigation form and sent to the home office Safety Coordinator.

Accidents rising to the reporting level will be logged on OSHA Form 300 or the MSHA 7000-1 Form and posted for employee reference. Employee names should not be used in postings to be distributed. All documentation regarding this type of accident will be forwarded with the weekly job report to the home office Safety Coordinator.

The Safety Coordinator shall complete the required insurance report and update the employee file with all documentation relating to the incident.

4. Major Injuries:

After the emergency actions following the accident the following will be completed.

a. Investigation:

An investigation of the accident will be conducted by the Job Superintendent, immediate supervisor, and Safety Supervisor.

b. Oversight:

This investigation will be done in conjunction with the Project Manager who shall be responsible for oversight of the accident investigation. If deemed necessary by the Project Manager, the accident scene will be left as it was at the time of the accident until completion of the investigation.

c. Witness:

Witnesses will be interviewed, written statements taken, and other investigative methods such as photos and sketches will be employed. The findings of the investigation shall be documented on an accident investigation form.

d. Recording:

The accident will be logged on OSHA Form 300, MSHA 7000-1 Form, and posted for employee reference. All documentation regarding this type of accident will be forwarded by the end of the shift to the home office Safety Coordinator.

e. Insurance:

The Safety Coordinator shall complete the required insurance report and update the employee file with all documentation relating to the incident.

5. Fatality:

In case of an accidental death, the following actions will occur.

a. Notifications:

The Project Manager and the VP of Operations at the Company's main office will be notified immediately.

**They will in turn notify the following at once:**

- a. **County Sherriff and Coroner**
- b. **The U.S. Department of Labor (OSHA)**
- c. **MSHA (if applicable)**

b. Safety Coordinator:

Shall be responsible for the accident investigation and shall report to the senior company manager.

c. Accident scene:

Accident scene will be left as it was at the time of the accident until completion of the investigation, unless there is a potential for injury to other workers.

d. Witnesses:

Witnesses will be interviewed, statements taken and other investigative methods such as photos and sketches will be employed.

e. Findings:

The findings of the investigation shall be documented on an accident investigation form. Any reports filed by outside entities (*i.e.*, County Sheriff, Coroner, etc.) shall be obtained whenever possible.

f. Documentation:

All documentation regarding this type of accident will be forwarded immediately to the senior company manager.

g. Media:

Only the President shall address the media. No employee should ever talk to the media under any circumstance.

3.3 Evacuation and Emergency Plans:

At the beginning of each project the Job Superintendent and the Project Manager will develop specific plans to safely and expeditiously handle possible emergency situations such as floods, fires, cave-ins, slides, explosions, power outages, and other potentially dangerous occurrences. The plans shall include the definition of responsible personnel and chain of command, provisions for first aid and medical treatment, and recommended course of action as documented in the HASP. Employees will be made aware of these plans either through initial indoctrination or through the Tool Box Meeting and review of HASP. It is recommended that these evacuation and emergency plans be reviewed periodically to ensure that they are kept current. Plans shall be posted on the company bulletin board at the project site or in the HASP – available on the job site.

3.4 Supervisor Training:

At the start of a job, and annually thereafter, job superintendents, supervisors, foremen, and engineering staff shall receive at least four (4) hours of classroom training on the safety and health requirements applicable to the project on which they are assigned. All job superintendents and engineering staff shall be trained and certified in first aid and CPR. The certification shall be updated year for year for CPR and First Aid.

3.5 Employee Orientation and Training:

Newly employed personal shall be instructed in the safety and health practices required to perform their work in a safe manner. At a minimum, this training shall include:

a. Initial Orientation:

1. Each new employee shall receive an initial orientation by the Job Superintendent or other representative of supervision. This orientation shall cover, in general, information about the company's Safety and Health Program and about the safety policies specific to the jobsite, such as Emergency and Evacuation Plans.
2. The Company's Safe Work Practices Handbook shall be issued to each new employee.
3. The employee shall be given the opportunity to study the Safe Work Practices Handbook.

b. Hazard Communication Training:

- a. All employees shall be indoctrinated in their rights and responsibilities with regard to hazardous material and the "right to know" about the material they will be working with.

- b. This training shall include Safety Data Sheets (SDS); how to read, where to find, etc., for all hazardous materials in use on the jobsite, container labeling, and other information needed to assure worker safety.
- c. Pre-work Briefing:
  - 1. A pre-work briefing and demonstration by the new employee's supervisor shall be carried out. This will serve to familiarize the new employee with the work they have been assigned as well as acquaint the supervisor to the capabilities of the new employee.
  - 2. The new employee will also be made aware of the location of jobsite facilities such as tool storage, sanitation facilities, drinking water, and employee accommodations.

### 3.6 On-Going Safety Training:

In an effort to promote a sense of safety awareness and keep the employees focused on working safely the following measures shall be conducted on all Harrison Western and UIT jobs.

- a. Tool Box Meetings:
  - 1. **These meetings shall at a minimum be held once daily.** These meetings will be held by each crew. They will be conducted by the foreman and attended by the job supervision and all members of the crew. Everyone shall attend these meetings.
  - 2. These meetings shall be 10 to 30 minutes long and shall emphasize safe working practices for the day's activities, prevention of accidents, and a review of accidents and near misses which may have occurred since the last meeting. A record of the tool box meeting will be made and all in attendance shall sign the meeting record. A copy of the tool box meeting form can be found in Section 44.0 of this manual.
- b. Job Hazard Analysis:
  - 1. At various times throughout a job, new activities will be encountered. These new activities should be planned for from both a production and a safety stand point.
  - 2. To assist in the planning process a Job Hazard Analysis form is used. This form shall be used whenever new processes or major construction activities are encountered. Examples of new processes or major activities can include: beginning underground operations, a major crane lift, the arrival of a new piece of equipment on site, or any topic deemed appropriate by supervision.
  - 3. The responsible supervisor shall fill out the Job Hazard Analysis form, and review it with the crew that will be performing the work. For further instructions on the Job Hazard Analysis form see Section 29.

### 3.7 Training Records:

All training received by employees shall be documented. Training records shall be maintained for all personnel who have been employed by Harrison Western. Training records shall be retained on site and copies transmitted to the home office Safety Coordinator.

#### a. Personnel Training Records:

1. Personnel training shall include any training received either alone or with a group where records or certification are made for each individual trained. Personal training records should include: initial indoctrination, hazard communication training, and pre-work briefing (acknowledgment of), Supervisor Safety Training, Fire Protection (fire-fighting), First Aid, CPR, respirator, Task training, and any other training received.

#### b. Group Training Records:

1. Group training shall include any training received as a group where records are made for the whole group.
2. Group training records should include records of Supervisors' Safety Meetings, Tool Box Meetings, Job Hazard Analysis, and any other training received.

## 4.0 ACCIDENT INVESTIGATION CHECKLIST

### 4.1 Accident Investigation Checklist and Emergency Numbers:

In case of a serious accident on the job, the following must be done to ensure that a true depiction of the incident is documented.

a. See that the injured are cared for:

The first concern at an accident scene, regardless of its seriousness, is care of the injured. Immediately contact the appropriate Emergency Medical Services (EMS) System. **Nothing should interfere with this concern except safety of the rescuers themselves.**

b. Protect other people and property:

Only after the accident site is safe to approach should the actual investigation begin.

c. Have someone contact Harrison Western/UIT Home Office:

CONTACT: James Southcott

CONTACT: Eric Gavin

Mobile: \_\_\_\_\_

Mobile: 720.382.4422

Office: \_\_\_\_\_

Office: 303.234.0273x265

In addition, it will be the Safety Coordinator's responsibility to report to OSHA within eight (8) hours any accident that results in a fatality or the hospitalization of three (3) or more employees. The following information must be supplied:

1. Company Name
2. Location of Incident
3. Time of Incident
4. Number of fatalities or hospitalized employees
5. Contact person
6. Phone number
7. Brief description of the incident

Region VIII OSHA Office.....303-884-5285

On MSHA governed worksites, there are 12 immediately reportable incidents which require a phone call to MSHA within 15 minutes of management becoming aware of the situation. Site Management shall be responsible for making the call and notifying Harrison Western/UIT Home Office Safety Coordinator immediately. The 12 incidents are as follows:

1. A death of an individual at a mine
2. An injury to an individual at a mine which has a reasonable potential to cause death
3. An entrapment of an individual for more than thirty minutes or which has a reasonable potential to cause death
4. An unplanned inundation of a mine by a liquid or gas
5. An unplanned ignition or explosion of gas or dust
6. In underground mines, an unplanned fire not extinguished within 10 minutes of discovery; in surface mines and surface areas of underground mines, an unplanned fire not extinguished within 30 minutes of discovery
7. An unplanned ignition or explosion of a blasting agent or an explosive
8. An unplanned roof fall at or above the anchorage zone in active workings where roof bolts are in use; or, an unplanned roof or rib fall in active workings that impairs ventilation or impedes passage
9. A coal or rock outburst that causes withdrawal of miners or which disrupts regular mining activity for more than one hour
10. An unstable condition at an impoundment, refuse pile, or culm bank which requires emergency action in order to prevent failure, or which causes individuals to evacuate an area; or, failure of an impoundment, refuse pile, or culm bank
11. Damage to hoisting equipment in a shaft or slope which endangers an individual or which interferes with use of the equipment for more than thirty minutes
12. An event at a mine which causes death or bodily injury to an individual not at the mine at the time the event occurs

**MSHA one call does it all.....800-746-1553 24/7**

**OSHA Emergency Hotline.....800-321-OSHA (6742)**

d. Preserve the scene as it was after the accident:

Cordon off or barricade the area to keep curious bystanders from destroying evidence.

e. Make a visual walk through of the accident scene:

Conditions at an accident scene will change rapidly. Take notice of the location of all items of evidence. Record this information as the walkthrough is made. Mark the location of items likely to be moved - injured people, lightweight or high value items, etc.

f. Obtain identity of all who might have information about the accident:

Record their names, crafts, and company worked for. If they are members of the public, obtain their addresses and telephone numbers.

g. Examine the evidence:

The items that will provide information about what happened, how it happened, and why it happened must be identified and examined.

h. Photograph all evidence:

Photographs of the general area, major elements of the accident site, and articles of evidence should be taken as soon as possible after the accident. A log should be kept to provide a description of each photograph and all photographs will be marked on the back with identification tags. **Do Not Photograph The Injured Person.**

i. Make a diagram of the accident scene:

A sketch should be made of the accident scene, showing the location of all evidence essential to understanding the accident situation. Distances involved should be measured and recorded on the sketch. At a later time, information from the sketch can be used to prepare a scaled diagram for inclusion in the accident report.

j. Interview and obtain statements from all witnesses:

All persons who may be able to contribute information about the accident should be interviewed as soon as possible after the accident. Recorded statements should be obtained from them.

k. Prepare an accident report:

A written report must be prepared for all serious accidents. A sample Accident Investigation Report is in Section 5.0. The report should contain details of what happened, when it happened, and who was involved. It should develop conclusions regarding the physical cause of the accident, but should not deal with the placement of legal liability upon any party.

No part of the report shall be given to any other party, including the injured employee, unless authorized by the Company Safety Coordinator and VP of Operations.

The following accident investigation procedure shall be employed as applicable:

1. A detailed inspection concerning the probable cause of the accident should be made in a written report of the cause and effect of the accident. This written report should be made as soon as possible after the accident. If a subcontractor or material supplier is involved in the accident, a determination should be made concerning the applicable subcontract employer, the extent of the employer's liability, any possible third party liability for the accident, and a review of possible insurance coverage summarized. The written report should be accompanied by a drawing or diagram of the location of the accident with directions noted.
2. In the event of motor vehicle accidents or OSHA investigated accidents; a preliminary report should be prepared and reviewed with the Company Safety Coordinator. The Safety Coordinator should then control the submittal of the report to any regulatory agency.
3. The time of the accident, weather conditions, and any other physical conditions existing at the scene of the accident should be observed and reported.
4. As a final summary, the results of the steps should be placed in a detailed accident report form and transmitted to the Company Safety Coordinator as soon as is practical with all backup information attached.
5. Do not assume a certain accident by its appearance or characteristics is unimportant and we have no liability. **PREPARE THE REPORT REGARDLESS.**

#### 4.2 Other Critical Elements:

- a. Cordon off the area and do not disturb any accident elements, or move equipment (except to save life or provide medical attention.)
- b. Have all training and task training form available.
- c. Have the miners' ART, new miner or experienced miner 5000-23 available.
- d. Have all pre-operational daily checks for any equipment involved.
- e. Make sure you have all your site daily work place inspections in chronological order and ready for inspection.

#### 4.3 Other Considerations:

- a. If an MSHA site and it is a fatality or there was a reasonable potential of death you **MUST** call MSHA within 15 minutes at 1-800-746-1533.
- b. If it is an OSHA site and there is a fatality within eight (8) hours of the incident you must call OSHA at 1-800-321-6742.
- c. Other OSHA notifications are inpatient hospitalization, amputation, loss of an eye or hospitalization of more than one employee. Within 24 hours of the occurrence you must call OSHA at 1-800-321-6742.
- d. Make sure the supervisor notifies Harrison Western/UIT home office at 303-905-9220 and you complete the MSHA 7000-1 or OSHA 300 Accident Form.

## 5.0 ACCIDENT INVESTIGATION REPORT

Employee Injury or Illness		
Employee Name		
Sex	Age	
Referred to Medical Facility/Doctor?	(Yes) (No)	Did Employee Return to Wrok? (Yes) (No)
Occupation	Part of Body	
Nature of Injury or Illness		
Object/Equipment Inflicting Injury or Illness		
Exact Location		
Injured Employee Interview/Statement: (Attached)		
Witnesses:		
Witnesses Interview/ Statements: (Attached)		
Describe clearly how the accident occurred (what happened).		
THE CAUSE OF THE ACCIDENT: What acts, failure to act, and/or conditions contibuted most directly to this accident? Describe any unsafe acts and/or unsafe conditions.		
Explain specifically why these acts and/or conditions existed.		
What action has or will be taken to prevent recurrence (List items, then place and "x" by items completed and date).		
Supervisor of Injured Person	Date	Reviewd by Manager
Accident Diagram/Photographs		

## 6.0 SPILLS – ENVIRONMENTAL INCIDENT MANAGEMENT

### 6.0 Large Spills or Spills That Threaten Water or City Services:

- a. The first step should be to contain the solution in the smallest area. If the spill is flowing towards a water way or storm sewer, any available dirt or appropriate material needs to be used to stop the spill's movement.
- b. If available, call the nearest Hazardous Materials Response Unit identifying the material and the potential area that could be contaminated. **KNOW THE NUMBER BEFORE YOU NEED IT!**
- c. Notify Harrison Western/UIT home office for further information.
- d. Spill kits shall be considered for all projects sites as appropriate.

## 7.0 BLASTING STANDARD OPERATING PROCEDURE (S.O.P)

### 7.1 Standard Operation Procedure:

- a. Develop the blasting plan before drilling holes.
- b. Ensure that leading line or blasting wire will not be thrown over a live power line by the force of the explosion
- c. Except for very basic delay systems, work out timing on paper. Be sure firing times are as expected.
- d. When the plan is completed, immediately develop a material list. **KNOW WHAT YOU NEED** on shot day.
- e. Prior to loading, check with the Foreman or Project Manager for any changed conditions and briefing.
- f. Size up the blast site for problems that could arise at shot time.
- g. Brief all helpers. Show them exactly what is expected of them and how specifics will be dealt with.
- h. Make sure everyone is familiar with the code of blasting signals, which are posted at the operation.
- i. Take time to back out and think! (Talk with helpers at break about the work being done.)
- j. Only use components designed to work together.
- k. Always use the simplest method to accomplish the task.
- l. Don't use M.S. trunk delays down holes.
- m. Never use EZEDET or HANDY DET systems when planning to backfill overshot.
- n. Never tape down hole delays to detonating cord down lines at the hole collar if cord is used with down hole delay for decking.
  1. Place the detonator at the bottom of the hole. Extend cord up into the hole.
  2. Be sure the cord contacts the cap in the right direction.
  3. Be careful that the cord tails are cut off close at the hole collar.
- o. Use detonating systems from the same manufacturer. **DON'T MIX**

EXAMPLE:

Ensign Bickford.....Atlas  
EZEDET.....HANDY DET  
PRIMADET.....EXEL or BLASTMASTER, MASTER DET

7.2 Warning:

- a. Never smoke or have flame producing, spark producing, or heat producing items within 50 feet of explosives.
- b. Never drill within 50' of loaded nodes.
- c. Never fight a fire when there is imminent danger of it contacting explosives or blasting agents.
- d. Perform GOOD PLANNING. Planning is a bench mark crucial to measuring results.
- e. Explain in detail to all involved, "Stemming" Cap Systems, Tie-in's, etc., and why you do or do not practice different procedures during loading operations.
- f. The responsibility connected with the everyday use of explosives is far too great to allow everyone to use them.
- g. If you wish to be a blasting tech, you must accept that responsibility and the responsibility of those who work directly under you.
- h. NEVER forget the awesome destructive force and potential disasters you are responsible for preventing.
- i. Always have 2 people familiar with the blast and blasting procedures, independently walk the blast checking for tie ins, stemming, sequence, and equipment location prior to blasting.

7.3 Blasting Operations Safety:

- a. Only persons trained and experienced in handling and the use of explosive materials shall direct blasting operations and related activities.
- b. Trainees and inexperienced persons shall work only in the immediate presence of persons trained and experienced in the handling and use of explosive material.
- c. Explosive material shall not be loaded into blast holes with drill stem equipment or other devices that could be extracted while contacting explosive material. The use of loading hose, collar sleeves, or collar pipes is permitted.
- d. Before loading, blast holes shall be checked and whenever possible, cleared of obstructions.

1. Explosives and blasting agents shall be kept separate from the detonators until loading begins.
  2. Always make up primer at the hole to be loaded and lower it immediately.
  3. Do not make up primers in mass production.
  4. Explosives material shall be protected from impact and temperatures in excess of 150 degrees when taken to the blast site.
  5. When using detonating cord to initiate another explosive, a connection shall be prepared with the detonating cord threaded through, attached securely to, or otherwise in contact with the explosive.
- e. Loading shall be continuous except for emergency situations, shift changes.
- f. In electric blasting prior to hook up of the power source and in non-electric blasting prior to the attachment to an initiating device, all persons shall be removed from the blast area except persons in a blasting shelter or other location that protects from concussion (shock wave), flying material, or gases.
1. Ample warning shall be given to allow all persons to be evacuated.
  2. Clear exit routes shall be provided for persons firing the round.
  3. All access routes to the blast area shall be guarded or barricaded to prevent the passage of persons or vehicles.
  4. No work shall resume in the blast area until a post blast examination addressing potential blast related hazards has been conducted by a person having abilities and experience that fully qualify the person to perform the duty assigned.
- g. Initiation systems shall be used in accordance with the manufacturer's instructions.

#### 7.4 Primer Protection:

Tamping shall not be done directly on a primer. If cartridges of explosives or blasting agents exceed four (4) inches in diameter, they shall not be dropped on the primer except where the blast hole is filled with, or under water. Unused explosive material shall be moved to a protected location as soon as practical after loading operations are completed and returned to the magazines or supplier as soon as possible.

#### 7.5 Equipment Operation:

Vehicles and equipment shall not be driven over explosive material or initiating systems in a manner which could contact the material or system or otherwise create a hazard.

Once loading begins, the only activity permitted within the blast site shall be activity directly related to the blasting operation, and occasional haulage activity near the base of the high wall being loaded where no other haulage access exists.

7.6 Misfires:

Faces and muck piles shall be examined for misfires after each blasting operation.

7.7 Security:

Areas that shall be attended, barricaded, and posted or flagged against unauthorized entry are those in which loading was suspended or loaded holes are awaiting firing.

7.8 Detonators:

All electric detonators to be fired in a round shall be from the same manufacturer and have similar electrical firing characteristics. (e.g. current requirements, resistance.)

- a. Electric detonators shall be kept shunted until connected to the blasting line or wire into a blasting round.
- b. Wired rounds shall be kept shunted until connected to the blasting line.
- c. Power sources shall be capable of delivering sufficient current to energize all electric detonators to be fired with the type of circuits used. Storage of dry cell batteries are not permitted as power sources.

7.9 Blasting Machines:

Blasting machines shall be tested, repaired, and maintained in accordance with the manufacturer's instructions. If any part of a blast is connected in parallel and is to be initiated from power lines or lighting circuits, the time of current flow shall be limited to a maximum of 25 milliseconds. This can be accomplished by incorporating an arching control device in the blasting circuit, or by interrupting the circuit with an explosive device attached to one or both lead lines and indicated by a 25 millisecond delay electric detonator.

- a. A blasting galvanometer or other instrument specifically designed for testing blasting circuits shall be used to test the following:
  1. Continuity of each electric detonator in the blast hole prior to stemming and connection to the blasting line.
  2. Resistance of individual series or the resistance of multiple balanced series to be connected in parallel, prior to their connection to the blasting line.
  3. Continuity of blasting lines prior to the connection of electric detonator series.
  4. Total blasting circuit resistance prior to connection to the power source.

- b. A visual check of the completed circuit shall be made to insure that the components are properly aligned and connected. Safety fuse, igniter cord, detonating cord, shock or gas tubing, and similar materials which are kinked, bent sharply, or damaged shall not be used.
- c. When blasting with any non-electric initiation system where continuity cannot be tested, double trunk lines or loop systems shall be used when possible.
- d. When the non-electric initiation system uses shock tube, connections with other initiation devices shall be secured in a manner which provides for uninterrupted propagation.
- e. Factory made units shall be used as assembled and shall not be cut or disassembled except that a single splice is permitted on the lead in trunk line during dry conditions.
- f. Connections between blast holes shall not be made until immediately prior to clearing the blast site with surface delay detonators.
- g. When the non-electric initiation system uses detonating cord, the line of detonating cord extending out of the blast hole shall be cut from the supply spool immediately after the attached explosive is correctly positioned in the hole.
- h. In multiple row blasts, the trunk line layout shall be designed so that the detonation can reach each blast hole from at least two directions.
- i. Connections shall be tight and kept at right angles to the trunk line.
- j. Tamping and loading poles shall be of wood or other non-conductive, non-sparking material. Couplings for poles shall be non-sparking.

#### 7.10 Bulk Delivery Vehicles:

No welding or cutting shall be performed on a bulk delivery vehicle until the vehicle has been washed down and all explosive material has been removed. Before welding or cutting on a hollow shaft, the shaft shall be thoroughly cleaned inside and out, and vented with a minimum ½-inch diameter opening to allow for sufficient ventilation.

#### 7.11 Magazines:

- a. Magazines shall meet the requirements of ATF regulations in 27 CFR Part 555, Subpart K.
- b. Magazines shall remain locked when blasters are not present.
- c. Magazines shall be kept orderly and clean. Inventories shall be accurate at all times.
- d. Unused explosive material shall be returned and inventories updated.

## **8.0 AFTER BLAST PROCEDURES**

### **8.1 Disposal of Explosive Materials:**

- a. Always treat deteriorated or damaged explosive materials with special care; they may be more hazardous than explosive materials in good condition.
- b. Always dispose of explosive materials using proper methods. Check with your supervisor or the manufacturer.
- c. Never re-use any explosive material packaging.
- d. Never burn explosive material packaging in a confined space.

### **8.2 Blast Generated Fumes:**

- a. Always assume toxic fumes are present from all blasts or burning explosive materials and stay away until they have dissipated.
- b. Always comply with applicable federal, state, and local laws and regulations for safe fume levels before returning to blast area.

### **8.3 Reducing Post-Blast Fume Hazard:**

- a. Always use the largest diameter cartridge that fits the job.
- b. Always use water resistant explosive materials in wet conditions and fire the blast as soon as practical after loading.
- c. Always spray the muck pile with water in accordance with federal, state, and local laws and regulations.
- d. Always avoid conditions that might cause explosive materials to burn rather than detonate.
- e. Never use explosive materials that appear deteriorated or damaged.
- f. Never use more explosive material than necessary.
- g. Never add combustible materials to the explosive material load.
- h. Never use combustible materials for stemming.

## 9.0 BLOODBORNE PATHOGENS

Even though the construction industry is not covered by the OSHA Blood Borne Pathogen Standard *29 CFR 1910.1030*, a citation may still be issued according to *Section 5(a)(1)* of the *Occupational Safety and Health Act of 1970 (General Duty Clause)*. For employees who administer first aid as a collateral duty to their routine work assignment, and are not offered the Hepatitis B vaccination until they give aid involving blood or other potentially infectious materials, it will be considered a De Minimis violation (a technical violation carrying no penalties), as long as the following exposure control plan is implemented.

### 9.1 Exposure Control Plan:

#### a. Training on the diseases caused by blood borne pathogens:

1. Symptoms
2. Modes of transmission
3. Universal precautions

#### b. Personal Protective Equipment (PPE):

Harrison Western/UIT must provide each employee potentially exposed to blood borne pathogens with adequate personal protective equipment, free of charge. Any protective equipment must be easily accessible to those employees who use it. The equipment must also be properly stored, maintained, decontaminated, and disposed of when necessary. Examples of adequate personal protective equipment which could be kept with the first aid supplies are as follows:

1. Rubber gloves
2. Face shields
3. Eye protection
4. Pocket masks

#### c. Labeling and disposal of Infectious Waste:

1. Labels shall be fluorescent orange, or orange-red, or predominantly so; with lettering or symbols in a contrasting color, according to the legend of *29 CFR 1910.1030(g)(1)(i)(B.)*.
2. Sharp objects shall be placed in puncture resistant labeled containers.
3. Soiled bandages, disposable rags, medical gloves and the like, should be placed in securely fastened, labeled plastic bags before being placed in trash cans for disposal or given to EMS personnel.

d. Reporting Procedures:

1. Incidents involving exposure must be reported to the employer and safety coordinator before the end of the work shift.
2. Fill out an infection control report and enter on the OSHA 300 log if there is exposure. The following items are needed on the report:
  - a. Names of first aid providers
  - b. Date and Time
  - c. Description of incident
  - d. Determination of whether exposure incident occurred
3. Develop a list of first aid exposure reports which can be made readily available for all employees and for OSHA upon request.

9.2 Post-Exposure Procedures:

- a. Offer full immunization series as soon as possible, and under no circumstances later than 24 hours.
- b. Evaluation and follow-up shall be initiated per the requirements of *29 CFR 1910.1030(f)(3)*.
  1. Route(s) of exposure and circumstances.
  2. Identification of source individual.
  3. Blood tests made on source individual.
  4. Results made available to exposed employee(s).
  5. Determine appropriate course of action.
- c. Enter pin pricks or exposure on the OSHA 300 form.

## 10.0 CONFINED SPACES

### 10.1 Definition:

A confined space is an area which is large enough for a worker to enter and perform work, there are limited or restricted means of entry and exit, and it is not designed for continuous employee occupancy.

### 10.2 Permit Required:

A permit will be required if the confined space has one or more of the following characteristics:

- a. Hazardous atmosphere.
- b. Loose material that could engulf an entrant.
- c. An internal structure that could trap or asphyxiate
- d. Any other recognized serious hazards.

### 10.3 Pre-entry Survey:

Since *29 CFR 1926.120 Permit-Required Confined Spaces* applies to Construction, a pre-entry survey should be made and action should be taken if any characteristics of a permit-required confined space from Section 10.2 above are recognized.

### 10.4 Permit & Attendant not Required:

A permit and attendant will not be required if the following can be determined:

- a. The space is not a permit-required confined space.
- b. Mechanical ventilation alone can maintain a safe condition.

### 10.5 Introduction to Confined Work Space:

The following program will be in effect whenever workers are required to enter:

"Any space having a limited egress, which is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere. Confined spaces include, but are not limited to: 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."

Most confined spaces are not designed for workers to enter and work in on a routine basis. They are designed to store a product, enclose materials and processes, or transport products or substances. Therefore, occasional worker entry for inspection, maintenance, repair, cleanup, or similar tasks is often difficult and dangerous due to chemical or physical hazards within the space.

A confined space found in the workplace may have a combination of these characteristics, which can complicate working in and around these spaces as well as rescue operations during emergencies. If a survey of your working area identifies one or more work spaces with the characteristics listed above, **READ THE FOLLOWING INFORMATION – SOMEDAY IT MAY SAVE YOUR LIFE OR THE LIFE OF A CO-WORKER.**

#### 10.6 Purpose:

The purpose of the program is to protect workers from the hazards of toxic, explosive, or asphyxiating atmospheres and from possible engulfment by small particles. A work area classified as a confined space may contain a hazardous atmosphere which could expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from airborne contaminants or oxygen deficiency.

#### 10.7 Scope:

This program is designed to cover all those involved with confined space work, dealing with the issues of administration, supervision, entry and rescue.

#### 10.8 Definitions:

##### a. Confined Space is an area which:

1. Is large enough and so configured that an employee can bodily enter and perform assigned work.
2. Has limited or restricted means for entry or exit.
3. Is not designed for continuous employee occupancy.

##### b. Permit required confined space:

A confined space having one or more of the following characteristics:

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

c. Non-Permit required confined space:

A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

Entry into a confined space without a written permit or attendant will only be permitted if:

1. The space is determined not to be a permit-required confined space.
2. The space can be maintained in a safe condition for entry by mechanical ventilation alone.

All spaces shall be considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise. After classification as a non-permit space, the SUPERVISOR must fill out the Confined Space Pre-Entry Checklist before entry into the confined space. The checklist or a copy shall be kept at the worksite for the duration of the job. If circumstances dictate an interruption in the work, the permit space must be re-evaluated and a new check list must be completed.

10.9 Responsibilities:

a. Employer:

The employer shall have a "competent person" evaluate the workplace to determine if any spaces are permit-required confined spaces. The proper course of action will then be taken in accordance with the requirements.

b. Entry Supervisor:

All entry supervisors must know the hazards of confined spaces. In addition, they must also perform the following duties:

1. Verify that all tests have been conducted and all procedures and equipment are in place before endorsing a permit. The completed permit shall be made available at the time of entry to all authorized entrants, by posting it at the entry portal or by any other equally effective means.
2. Terminate entry if necessary
3. Cancel permits.
4. Verify that services are available and the means for summoning them are operable.
5. Remove unauthorized individuals who enter the confined space.
6. Determine, at least when shifts and entry supervisors change, that acceptable conditions, as specified in the permit, continue.

c. Standby Person (Attendant):

A standby person must know the hazards of confined spaces, including the mode, signs or symptoms, and consequences of the exposure. In addition, they must also know how to perform the following duties:

1. Be aware of behavioral effects of potential exposures.
2. Maintain continuous count and identification of authorized attendants
3. Remain outside the space until relieved.
4. Communicate with entrants as necessary to monitor entrant status.
5. Monitor activities inside and outside the permit space and order exit if required.
6. Summon rescuers if necessary.
7. Prevent unauthorized entry into the confined space.
8. Perform non-entry rescues if required.
9. Ensure that no other duties are performed which would interfere with the primary duty to monitor and protect the safety of authorized entrants.

d. Authorized Entrant:

Anyone who enters a permit-required confined space must know the following:

1. The potential hazards.
2. The ability to recognize signs or symptoms of exposure.
3. An understanding of the consequences of exposure to hazards.
4. How to use any needed equipment.
5. How to communicate with attendants as necessary.
6. How to alert attendants to the warning signs or the existence of a hazardous condition.
7. Exit whenever there is a detection of a prohibited condition.
8. Exit as quickly as possible whenever ordered or alerted to do so.

e. Rescue Personnel:

Rescue services may be provided by on-site employees or an off-site service. Besides these services, a retrieval system or method shall be used to facilitate non-entry rescue. The following is mandatory of rescue personnel:

1. On-site teams:

- a. Must be properly equipped and receive the same training as authorized entrants.
- b. Must be trained in the use of PPE and rescue equipment.
- c. Must be trained in first aid and CPR, and at least one rescuer, currently certified in both, shall be available.
- d. Must practice simulated rescues at least once every 12 months.

2. Outside Rescue Services:

- a. Must be effectively respond in a timely manner.
- b. Must be equipped, trained, and capable of functioning appropriately to perform permit space rescues.
- c. Must be made aware of the hazards of the confined space.
- d. Must have access to all permit spaces to develop rescue plans.
- e. Must practice rescues.

**NOTE:** A Material Safety Data Sheet (SDS) or similar information shall be submitted to the medical facility treating an exposure victim.

f. Contractors:

The Controlling Contractor must provide information to their subcontractors on permit spaces. The information shall include:

1. The permit space program and procedures.
2. The likely hazards that the subcontractor might encounter.
3. Coordination between subcontractors when joint entries are performed.
4. The Controlling Contractor debriefing at the conclusion of entry operations.

#### 10.10 Requirements:

- a. If a workplace contains permit spaces, the employer shall inform exposed employees by posting danger signs or by any other equally effective means of the existence, location of, and danger posed by the permit spaces.
- b. If it is decided that employees will not enter permit spaces, the employer shall take effective measures to prevent its employees from entering them.
- c. If employees will enter permit spaces, refer to Paragraph 10.13 Permit-Required Confined Space Program, which is the written program available for inspection by the employees and their authorized representatives.
- d. Alternate procedures may be used if the employer can demonstrate that the only hazard posed by the permit space is an actual or potential hazardous atmosphere. These procedures are as follows:
  1. It shall be demonstrated that continuous forced air ventilation alone is sufficient to maintain the permit space safe for entry at a rate of 200 CFM's per individual entering the confined space.
  2. Monitoring and inspection data that supports the demonstrations shall be developed.
  3. If initial entry of the permit space is necessary to obtain the data required, all procedures will comply with the permit-required confined space program.
  4. This data shall be documented and made available to each employee who enters the permit space.
  5. Entry into the permit space under these terms shall be performed in accordance with requirements of *29 CFR 1910.146(c)(5)(ii)*.
    - a. When there are changes in a non-permit confined space that might increase the hazards to entrants, the employer's competent person shall re-evaluate that space and reclassify it if necessary.

**NOTE:** Proper application of the *29 CFR 1910.146 Appendix A - Permit-Required Confined Space Decision Flow Chart* would facilitate compliance with the preceding requirements. A copy of the flow chart is included at the end of this section.

#### 10.11 Atmospheric Testing:

- a. Atmospheric Testing:  
Required for two distinct purposes. Evaluation of the hazards and verification that acceptable entry conditions exist.
- b. Evaluation Testing:  
The atmosphere shall be analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmosphere that may exist or arise. The order of testing is to test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.
- c. Verification Testing:  
The atmosphere should be tested for residues of all contaminants identified by the evaluation testing, to determine that concentrations, at the time of testing and entry, are within the range of acceptable entry conditions.
- d. Duration of Testing:  
Measurements shall be made for at least the minimum response time of the test instrument specified by the manufacturer.
- e. Testing Stratified Atmospheres:  
The atmospheric envelope should be tested at a distance of approximately four (4) feet in the direction of travel and to each side. If a sampling probe is used, the entrant's rate of progress should be slowed to accommodate the sampling speed and detector response.

#### 10.12 Training:

- a. The employer shall provide training to each affected employee so that they acquire the understanding, knowledge, and skills necessary for safe performance.
- b. The employer shall also certify that the required training has been accomplished. The certification shall contain each employee's name, the signatures or initials of the trainers, and the dates of training.

#### 10.13 Permit-Required Confined Space Program:

- a. The employer shall:
  1. Implement the measures necessary to prevent unauthorized entry.
  2. Identify and evaluate the hazards of permit spaces before employees enter them.

3. Develop and implement safe entry operations, including, but not limited to, the following:
  - a. Specify acceptable entry conditions.
  - b. Isolate the permit space.
  - c. Purge, inert, flush, or ventilate the permit space as necessary.
  - d. Provide barriers to protect entrants from external hazards.
  - e. Verify that conditions are acceptable throughout the duration of an authorized entry.
  
4. Provide the following equipment at no cost to the employees, maintain that equipment properly, and ensure it is used properly:
  - a. Testing and monitoring equipment.
  - b. Ventilating equipment.
  - c. Communications equipment.
  - d. Personal protective equipment.
  - e. Lighting equipment.
  - f. Barriers and shields.
  - g. Equipment needed for safe entry and exit (i.e. ladders).
  - h. Rescue and emergency equipment needed.
  - i. Any other equipment necessary for safe entry into and rescue from permit spaces.
  
5. Evaluate conditions as follows when entry operations are conducted:
  - a. Pre-entry testing shall be performed to the extent feasible before entry is authorized. If conditions are acceptable, monitoring will be continuous in the working areas.
  - b. Test or monitor as necessary to determine acceptable conditions during entry operations.
  - c. When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.
  - d. Provide at least one standby person outside for the duration of entry operations.
  - e. If multiple spaces are to be monitored by a single standby person, procedures to respond accordingly will be included in the permit program.
  - f. Designate all those involved in the entry operations, identify their duties, and provide them with the required training.
  - g. Develop and implement procedures for summoning rescue, the actual rescue, emergency services, and preventing unauthorized attempts of rescue.
  - h. Develop and implement a system for the preparation, issuance, use, and cancellation of entry permits.
  - i. Develop and implement procedures to coordinate entry operations when two or more subcontractors are working simultaneously.
  - j. Develop and implement procedures to conclude entry after operations have been completed.
  - k. Review entry operations and correct any deficiencies.
  - l. Review this program using the canceled permits - which need to be retained for at least one (1) year - after each entry and revise the program as necessary.

#### 10.14 Entry Permit:

A copy of an entry permit is included at the end of this policy. If another needs to be developed to satisfy a certain condition, it needs to identify the following:

- a. The permit space to be entered.
- b. The purpose of entry.
- c. The date and the authorized duration of the entry permit.
- d. The authorized entrants within the permit space by name or some other identifiable means.
- e. The personnel by name currently serving as standby persons.
- f. The individual by name currently serving as entry supervisor, with a space for the signature or initials of the entry supervisor who originally authorized entry.
- g. The hazards of the permit space to be entered.
- h. The measures used to isolate the permit space and to eliminate or control permit space hazards before entry.
- i. The acceptable entry conditions.
- j. The results of initial and periodic tests performed, along with the name or initials of the tester and a time reference.
- k. The rescue and emergency services to be summoned and the means to do so.
- l. The communication procedures used to maintain contact during the entry.
- m. The required equipment.
- n. Any other pertinent information, given the circumstances, to ensure employee safety.
- o. Any additional permits issued to authorize work.

**PERMIT-REQUIRED CONFINED SPACE ACKNOWLEDGMENT OF TRAINING**

I have been informed about the *OSHA Permit-Required Confined Space Standard (29CFR 1926.1200)*. I understand and have the knowledge and skills necessary for safe performance in confined spaces. I know where the emergency medical supplies are kept. I know where the emergency phone numbers are posted and Hazard Communication Information is kept. I am aware that I may review a copy of the Permit-Required Confined Space Program or designate an authorized representative to do so. I may also obtain further information from my supervisor or the company safety officer / representative.

Name \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ Date \_\_\_\_\_

TRAINER'S Name \_\_\_\_\_ Date \_\_\_\_\_

## CONFINED SPACE PRE-ENTRY CHECK LIST

A non-permit confined space is one that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm. Entry into a confined space without a written permit will only be allowed if the space can be maintained in a safe condition for entry by mechanical ventilation alone. This checklist and a continuous air monitoring log need to be filled out before work begins or is resumed in an area that meets this criteria.

	YES	NO
Did your survey of the surrounding area show it to be free of hazards such as drifting vapors from tanks, piping, or sewers?		
Does your knowledge of industrial or other discharges indicate this area is likely to remain free of dangerous air contaminants while occupied?		
Are you certified in the operation of the gas monitor to be used?		
Has a gas monitor functional test (Bump Test) been performed this shift on the gas monitor to be used?		
Did you test the atmosphere of the confined space prior to entry?		
Did the atmosphere check as acceptable (no alarms given)?		
Will the atmosphere be continuously monitored while the space is occupied?		
Have the proper control measures (mechanical ventilation) been installed to eliminate a potentially hazardous atmosphere?		
Have the applicable SDSs, for products being used, been reviewed by all those occupying the space?		

**NOTICE:** If any of the above questions are answered "NO", **DO NOT ENTER.** Contact your immediate supervisor.

IN CASE OF EMERGENCY, CALL THIS NUMBER \_\_\_\_\_

Job Location \_\_\_\_\_

Supervisor Signature \_\_\_\_\_ Date/Time \_\_\_\_\_

## CONFINED SPACE ENTRY PERMIT

**THIS PERMIT MUST BE POSTED AT THE JOBSITE BEFORE AND DURING ENTRY. PERMIT IS GOOD ONLY FOR DATE INDICATED.**

Location and Description of Space: \_\_\_\_\_

Purpose of Entry: \_\_\_\_\_

Permit Start Date & Time: \_\_\_\_\_ Permit End Date & Time: \_\_\_\_\_

Entry Supervisor: \_\_\_\_\_ Authorized Attendant(s): \_\_\_\_\_

Authorized Persons (List by name)	Time In	Time Out	Time In	Time Out	Time In	Time Out	Time In	Time Out
1. _____								
2. _____								
3. _____								
4. _____								

**PERMIT SPACE HAZARDS**

**SPECIAL REQUIREMENTS**

- |   |  |
|---|--|
| <input type="checkbox"/> Oxygen Enriched (>23.5%)<br><input type="checkbox"/> Oxygen Deficient (<19.5%)<br><input type="checkbox"/> Flammable Atmosphere<br><input type="checkbox"/> Toxic Gases or Vapors<br><input type="checkbox"/> Hazardous Chemicals<br><input type="checkbox"/> Emergent Equipment | <input type="checkbox"/> Entrapment<br><input type="checkbox"/> Electrical<br><input type="checkbox"/> Other _____<br><input type="checkbox"/> Slings/Pockets<br><input type="checkbox"/> Live Piping/Plasma(s)<br><input type="checkbox"/> Lockout/Tagout<br><input type="checkbox"/> Tripod Retrieval Unit<br><input type="checkbox"/> Spark Resistant Lighting<br><input type="checkbox"/> Emissiones |
| <input type="checkbox"/> Ventilation<br><input type="checkbox"/> GPPS<br><input type="checkbox"/> Respirators<br><input type="checkbox"/> Self-Contained Breathing Apparatus<br><input type="checkbox"/> Hot Work<br><input type="checkbox"/> Other _____   | <input type="checkbox"/> Head Protection<br><input type="checkbox"/> Eye/Face Protection<br><input type="checkbox"/> Protective Clothing   |

Test For:	Permissible Levels	Pre-Entry Levels	Levels After Ventilation & Circulation	Periodic Check* Time/Result	Periodic Check* Time/Result	Periodic Check* Time/Result
Oxygen	19.5% - 23.5%					
Carbon Monoxide	<35ppm					
Hydrogen Sulfide	<10ppm					
Lower Explosive Limit	<10%					
Other:						

\*OSHA's CFR 1926 Subpart AA requires continuous monitoring of the atmosphere within this confined space. See regulation (a) above for details.

Means for detecting an increase in atmospheric hazard levels in the event the ventilation system fails: \_\_\_\_\_

Equipment Name	Type	Date Calibrated

Atmosphere Tested By: \_\_\_\_\_

**COMMUNICATION MEASURES**

Visual  Pagers  Voice  Radio/Cell

Procedures: \_\_\_\_\_

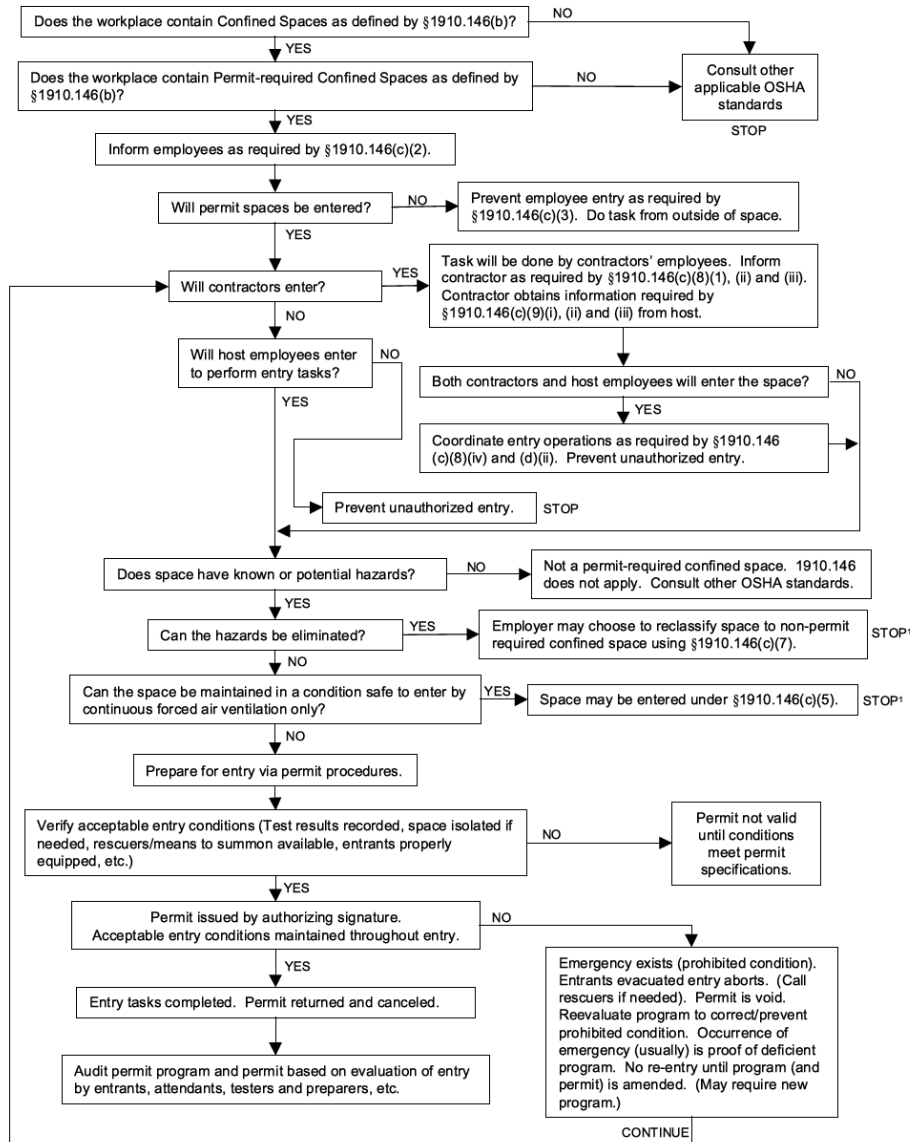
**EMERGENCY PROCEDURES**

**Authorization by Entry Supervisor**

I certify that all required conditions and/or actions have been performed and/or taken to provide safe entry and work in this confined space.

Printed Name: \_\_\_\_\_ Signature: \_\_\_\_\_

Permit-required Confined Space Decision Flow Chart



¹Spaces may have to be evacuated and re-evaluated if hazards arise during entry

## **11.0 DISCIPLINARY ACTIONS**

It is the policy of Harrison Western to enforce compliance with the Health and Safety Program by following the standard procedures listed below.

- a. When deemed appropriate by management, disciplinary action will be taken for violations of this safety Program or other actions, the level of disciplinary action will be based on severity or egregiousness of the violation or action of the employee, the repetitiveness of violations by the employee, and other contributing circumstances. Disciplinary Actions may include, but are not limited to, verbal warnings, written warnings, suspension (without pay) of up to 1 week, and termination, as well as loss of safety bonus if eligible. Supervisors and superintendents will consult with senior management regarding all disciplinary action situations or potential situations. All disciplinary action forms will be filed on site with duplicate copies sent to the home office for filing.
- b. All levels of supervision must enthusiastically maintain the company's high standards of safety and health on the job. Any employee who violates the company safety and health rules, policies, and procedures, must be immediately and positively corrected by their individual supervisors. If a supervisor is not enforcing safety as part of their overall job, they will be removed from their supervisory position.





## 12.0 PRIMARY MEDICAL PROVIDER

There are specific medical centers to be used by Harrison Western/UIT for all on-the-job injuries in the Denver area. We will set up clinics in other areas where we have large jobs.

- a. Please use one of our designated facilities, if possible, to provide the best occupational care for our employees. If possible, prior to taking an employee to one of the centers call to notify them a worker is being brought there.
- b. Whenever an employee is injured, it is best if someone from management accompanies them to the facility to answer questions only, supervision shall not diagnose or otherwise direct diagnosis or treatment. This helps to eliminate employees from going to their own doctor, or a doctor who is not occupationally trained.
- c. A drug form must be sent with any employee who is seen at these medical centers. Also, the First Report of Injury must be completed and returned to the main office and/or MSHA 7000-1 form.

### 12.1 Clinic Locations:

Clinic locations are based on job locale and will be determined as part of the HASP preparation prior to mobilizing to the work site.

### 12.2 Hospital Locations:

Hospital locations are based on job locale and will be determined as part of the HASP preparation prior to mobilizing to the work site.

### 12.3 Modified Duty Program:

- a. It is the intent of Harrison Western to get injured employees back to work as soon as possible. Our workman's compensation specialist will work directly with the employee's physician to establish the requirements and restrictions of the modified duty program personally tailored to the individual involved.
- b. Each instance will be evaluated on an individual basis depending on the restrictions of the employee and the availability of employment, length of time of restriction, and any other factors involved.
- c. HWCC will, at its option, make reasonable effort to find alternative work activities meeting the doctor specified work restrictions for injured employees.

## 13.0 DRILLING OPERATIONS

### 13.1 Protective Equipment:

- a. Hearing and eye protection shall be worn at all times.
- b. Hard hats shall be worn at all times when at a work site.
- c. Steel toed boots will be required.

13.2 Lubrication: Use only approved rock drill oil in oilers on air tracks and hand drills.

### 13.3 Air Lines:

- a. Use whip checks at all air line connections.
- b. Shut air off when hooking or unhooking air lines.

### 13.4 Bits and Steel:

- a. Never hammer on bits to get them loose.
- b. Never use bent or damaged steel.
- c. Use plenty of thread grease; it helps keep collars cool and makes them last longer.

### 13.5 Motorized Drill Rigs

#### a. Before Set Up:

1. Check for overhead power lines.
2. Check for underground power lines, gas lines, etc. and perform locates for all utilities.

#### b. Drilling:

1. Bar down loose rock from high walls and faces before drilling.
2. Never drill into old holes.
3. Make sure you start a hole straight.
4. Watch for loose rock falling from high walls when drilling.
5. Use safety belts and lines when drilling close to a high wall.
6. Never grab rotating drill steel and grip with closed hand.

#### c. Maintenance:

1. Lubricate and inspect all moving parts for excessive wear (especially mast and boom pins).
2. Do not work on a machine while it is running, unless work being done requires otherwise.

d. MSHA Sites:

1. Conduct daily pre-operational checks on equipment as referenced by 30 CFR Part 56/57.14100, 7009,7010,7011,7012,7013,7014.

e. Moving:

1. Lower the mast when moving long distances or over rough terrain.
2. Never move with boom extension extended.
3. Always take extra steel out of steel carriage.
4. Never allow riders on any machine.

## 14.0 ELECTRICAL WIRING & APPARATUS

### 14.1 Introduction:

It is the responsibility of the Safety Coordinator for Harrison Western to ensure a safe distribution of electrical power. What follows are guidelines for insuring the safety of the electrical distribution system. Harrison Western shall either use ground fault circuit interrupters or an assured equipment grounding conductor program. Both are included in this section. It is the responsibility of the site superintendent for adherence to the guidelines for the implementation of the assured equipment grounding conductor program.

### 14.2 General:

Electrical wire, conduit, apparatus, and equipment will be approved or listed by the Underwriters Laboratories for the specific application. Work on electrical circuits and equipment will be performed only by qualified personnel familiar with code requirements.

### 14.3 Temporary Electrical Distribution System:

- a. The system shall be checked and accepted for polarity, ground continuity, and ground resistance prior to initial use and prior to use after modification. Testers are readily available at any larger home improvement store.
- b. Grounding rods must be at least  $\frac{5}{8}$  inch diameter steel or iron rod, or  $\frac{1}{2}$  inch diameter copper-clad steel. They shall be in unbroken eight (8) foot lengths and driven to full depth.
- c. Resistance to ground will be tested and shall not exceed 25 ohms and a record kept verifying it was tested.
- d. Switches, fuses, and automatic circuit breakers shall be marked, labeled, or arranged for ready identification of circuits or equipment supplied through them.
- e. Ground fault circuit interrupters (GFCIs) are required in all 120 volt, single-phase, 15-20 amp receptacles used in construction operations in accordance with *Safety & Health Regulations for Construction. [Section 1926.404 paragraph (b)(1)(ii)]*.

### 14.4 Assured Equipment Grounding Conductor Program:

- a. All portable electric tools, drop cords, extension cords, and similar items will be visually inspected daily before being put to use. Any items showing signs of possible damage will not be used until repaired as indicated and tested.
- b. All portable electric tools, extension and drop cords, fixed temporary wiring, and receptacle will be tested for continuity of the grounding conductor and for its connection to the exposed frame in the case of tools. This test can be made by either an ohmmeter or a battery-powered test light.

- c. All cord fittings and receptacles will be tested to make certain the grounding conductor is connected to the proper terminal. This test is in most cases best made by using a circuit polarity tester.
- d. Tests will be made at the following times:
  - 1. Before first use of any item.
  - 2. After repairing any item, before it is put back into service.
  - 3. After any incident which might reasonably be suspected of causing damage. (*Example:* running over an extension cord).
  - 4. At intervals not to exceed three (3) months, except temporary wiring and receptacles fixed in a position where they are not subject to damage, will be tested at intervals not to exceed six (6) months.
- e. Any item which has not passed the above tests will not be made available to any employee for use.
- f. The foreman on the job is designated as the Competent Person and is responsible for seeing that identification markings and test are kept up and legible throughout the current period. New tools and equipment must be inspected before being sent for use in the field and must have identification showing the inspection expiration date.

#### 14.5 Temporary Wiring:

Temporary wiring shall be guarded, buried, or isolated by elevation to prevent accidental contact by personnel or equipment. Vertical clearances shall be as follows:

- a. 10 feet above grade, sidewalks, or any platform or projection from which they might be reached.
- b. 12 feet above areas subject to vehicular traffic other than truck traffic.
- c. 15 feet above areas subject to truck traffic.
- d. 18 feet above public streets, alleys, roads, and driveways. Conductors shall have a clearance of at least three (3) feet from windows, doors, fire escapes, or similar locations.

#### 1. Flexible Extension Cords:

- 1. Electric wire and flexible cord passing through work areas shall be covered or elevated, as described above, to protect it from damage by foot traffic, vehicles, sharp corners, projections, or pinching.
- 1. Flexible cords shall be used only in continuous lengths without splices.
- 2. Extension cords shall not be fastened with staples, hung from nails, or suspended by bare wires.

3. All cord sets shall be listed by Underwriters Laboratories or another recognized listing agent.
  4. All cord sets shall contain the number of conductors required for the service plus an equipment ground wire.
  5. Flexible cords shall all be rated for heavy/industrial use.
1. Temporary Lighting:
    - a. Portable hand lamps shall be of the molded composition or other type approved for the purpose.
    - b. All temporary lighting strings in outdoor or wet locations shall consist of lamp sockets and connection plugs permanently molded to the hard service cord insulation.
      1. Bulbs attached to the temporary lighting strings, hand lamps, and extension cords shall be protected by wire guards or equivalent unless deeply recessed in a reflector.
      2. Temporary lights shall not be suspended by their electric wire unless the cord and lights are designed for this suspension.
      3. Exposed empty light sockets and broken bulbs will not be permitted.
1. Plugs and Receptacles:
    - a. Attachment plugs for use in work areas shall be constructed so that they will endure rough use and be equipped with a cord grip to prevent strain on the terminal screws.
    - b. Plugs and receptacles shall be kept out of water.
    - c. Where a receptacle is installed outdoors it shall be contained in a weatherproof enclosure, the integrity of which is not affected when an attachment plug is inserted.
2. Electrical Power Tools:
    - a. Portable and semi-portable electrical tools and equipment shall be grounded by a multi-conductor cord having an identified grounding conductor and multi-contact polarized plug-in receptacle.
    - b. Tools protected by an approved system of double insulation, or its equivalent, need not be grounded.
    - c. Pay particular attentions to plugs, cords, receptacles, strain reliefs, splices, and guards, on tools.

## 15.0 EMERGENCY ACTION PLAN - 1208 QUAIL ST LAKEWOOD COLORADO 80215 – OSHA 29 CFR Part §1910.38

### 15.1 Purpose:

To ensure that all Harrison Western employees are aware of what to do if there is an emergency or significant changing condition at the facility. This awareness is to assure that all personnel can properly respond and understand the importance of initial action in the event of an emergency for the safety of all.

### 15.2 Scope:

This standard applies to all personnel assigned or working within the facilities located at 1208 Quail Street Lakewood, Colorado 80215 administrative office, shop area and the yard.

### 15.3 Reporting a Fire or Other Emergencies § 1910.38 C (1):

- a. In the event of an incipient fire employees may use a fire extinguisher to extinguish a class A fire within the facilities buildings or outside areas as long as it does not expose an individual to harm or does not block the means of egress.
- b. Any fire incident beyond the scope of **first aid** fire extinguishers shall be considered a threat to life and shall require the notification of the fire department by dialing 911. Reporting location is 1208 Quail Street Lakewood, CO 80215.
- c. Any fire involving fuel (Class B) shall require that the fire department be notified of the emergency at 911. Any attempt to suppress a Class B fire shall be done at a safe distance and upwind of the materials involved.
- d. All Class C fires involving facility main infrastructures shall be grounds for a response by the fire depart to assure no hidden fire is present within the structures wiring, electrical boxes or panels. Plug in equipment that can have a breaker deactivated to secure electrical power and is within the scope of first aid firefighting appliance may not require a fire department response.
- e. If the incident is a medical emergency beyond basic first aid the EMS system shall be activated by calling 911 and reporting your location at 1208 Quail Street Lakewood, CO 80215. Have an individual in position to escort the EMS personnel to prevent delays in providing advanced EMS support to the personnel that may be affected by a medical emergency.

#### 15.4 Emergency Evacuation Procedures § 1910.38 (c) (2):

- a. Evacuation of the main office shall depend on the nature of the incident, threat and your proximity to an exit. The general means and consideration for evacuation for a fire, release of a gas or for odor of smoke shall be the closest exit door as long as it does not impeded your escape route. The second floor UIT offices can be made out the back door on the east end of the building or through the west stair case and out the front door.
- b. All personnel assigned to the HWCC first floor offices have three options for egress to the outside of the building and safe refuge. Depending on the location of the hazard location personnel may evacuate the administrative building through the back door east exit, side door south exit or the west door front entrance.
- c. Shop personnel have two personnel doors that can be used in the event of the need to evacuate. Depending on which exit point offers the safest and shortest means of egress.
  1. Door location for exiting the shop is the west door located at the back end of the administrative building and the shops north door exiting out to the concrete pad yard area.
- d. The overhead bay door may be open on the south end of the build and the single bay door on the north end of the building. Do not attempt to open the overhead doors that result in a delayed evacuation by employees.
- e. Yard area and out buildings shall be evacuated away from the hazard to a safe location.
- f. Remember that the lower warehouse generally has only one point of egress on the south side of the building.

#### 15.5 Procedures for Employees and Critical Operation § 1920.38 (c) (3):

There are no critical operations on the grounds of 1208 Quail St. address.

#### 15.6 Personnel Accountability Post Evacuation § 1910.38 (c) (4):

- a. All personnel regardless of their location after evacuating any facility or area at the 1208 Quail Street address shall proceed to the corner of Quail Street and Collins Street to assure accountability of each person on the premises and assure tier safety. Any person not accounted for shall be reported to the responding emergency services personnel and their assigned work area and that location communicated the emergency services team as well.
- b. Be aware of HWCC or UIT personnel that may be away from the facilities conducting business elsewhere.

15.7 Personnel Conducting Rescue or Medical Duties § 1910.38 (c) (5):

- a. Rescue shall be made to assist personnel to exit from a facility as long as the safety of the person(s) assisting others. At no time will personnel place themselves in harm's way.
- b. The only medical assistance that will be provided will be first aid by those who have been trained and have a current first aid card. Personnel shall not jeopardize their personnel safety if first aid is to be rendered.

15.8 Contact Personnel for Information for this Plan or Duties § 1910.38 (c) (6):

Personnel Roster:

James Southcott – Safety - HWCC  
Eric Gavin – General Superintendent – HWCC  
Beth Cushman – Administrative Offices – HWCC  
Bruce Rose or Brad Stapp – Shop - HWCC  
Randy Everett - UIT  
Donna Hale – UIT

15.9 Employee Alarm System § 1910.38 (d):

All emergency conditions shall be communicated via personal contact and verbal communication. Given the emergency situation such as fire, medical, general evacuation or other conditions that warrant an emergency action by alerting personnel within the facility boundary's at 1208 Quail Street Lakewood, CO 80215.

15.10 Training § 1910.3

The following personnel shall be designated to train and assist facility occupants with Exit training and facility orientation:

James Southcott – Safety - HWCC  
Eric Gavin – General Superintendent – HWCC  
Beth Cushman – Administrative Offices – HWCC  
Bruce Rose or Brad Stapp – Shop - HWCC  
Randy Everett - UIT  
Donna Hale – UIT

15.11 Emergency Action Plan Review § 1910.38 (f):

Upon implementation of the plan all employees shall be given notification or when assigned personnel change. When the plan changes; all personnel shall be made aware of any changes.

## 16.0 EQUIPMENT SAFETY

The safe operation and proper maintenance of equipment is vital to preventing accidents and assuring use of safe equipment.

These guidelines are established to protect everyone.

- a. Only authorized and trained personnel are allowed to operate heavy equipment.
- b. ALL equipment should be checked for proper safety equipment and deficiencies resolved prior to use.
- c. Noted safety-related problems should be passed on to the equipment rental company maintenance department or to your supervisor immediately.
- d. Anyone who cannot perform safely because of an illness, emotional distress, medication, etc., should not be allowed to operate a vehicle or a piece of equipment.
- e. All equipment is to be kept in a reasonably clean condition. This is to aid in noticing any deficiencies with equipment and prolonging the machinery's service life.
- f. Every Contractor vehicle is to carry a registration card, accident reporting form, and insurance card at all times, and a DOT inspection log when required.
- g. No Contractor vehicles are to be allowed to be operated on Harrison Western property unless vehicle and operator are properly licensed.
- h. Supervisors are not to ASSUME that a person is properly licensed or has been trained in the safe operation of the Vehicles / Equipment. A list of authorized employees is maintained at the corporate offices
- i. Equipment should at no time be used for horseplay.
- j. Equipment is to be used only for the purpose for which it was designed and within its safe working limits.
- k. Seat belt shall be worn whenever equipped and at all times.
- l. Safety devices are not to be by-passed, removed, or rendered inoperative.
- m. Guards, covers, warning devices, and other safety equipment are not to be removed except for maintenance or testing. Such devices are to be reinstalled before equipment is put back into service.
- n. Anyone working on or around a piece of equipment is to be made aware of any problem with the equipment until repairs are made or it is removed from service.
- o. No person is to be allowed to ride on a piece of equipment unless it is specifically designed for such purpose.

- p. Equipment found to be unsafe is to be removed from service and tagged out of service for repair or termination of use.
- q. Tags are to be secured at the location where a machine is started. Information on this tag will include date, nature of problem, and name of the installer.
- r. If a machine is "tagged" out, no one is allowed to remove the tag except a mechanic making repairs or the person that installed the tag.
- s. The tag must remain in place until all repairs are completed and the equipment is fully serviceable.
- t. Anyone assigned to a Contractor vehicle should receive and adhere to the "Vehicle Operators Manual".
- u. Ground and traction conditions should be addressed in equipment selection and as conditions change.
- v. Transportation of equipment shall always be done by professional drivers or employees trained to do so.
- w. Cell phones shall not be used when operating equipment. If a call must be taken, cease equipment operation. Use hands free devices when operating a motor vehicle. If additional hazards, conditions, or other factors create increased hazards, cease phone use.

## 17.0 EXCAVATION, SHORING, & TRENCHING

### 17.1 Scope.

- a. Covers all open excavations and defines excavation to include trenches. Refer to *29CFR 1926, Subpart P - Excavations* for Information in Appendices.
- b. Competent Person is defined as someone who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

### 17.2 General Requirements:

#### a. Protection of employees in excavations:

1. Employees must be protected against cave-ins except when the excavation is in stable rock or less than five (5) feet deep and examination by a Competent Person provides no evidence that a cave-in should be expected.
2. Employees must also be protected against falling rock, soil or material by use of an adequate system. This system includes scaling to remove loose rock or soil, installation of protective barricades, and other equivalent protection.
3. Material or equipment which might fall or roll into an excavation must be kept at least two (2) feet from the edge of excavations, have retaining devices, or be prevented from falling with a combination of both precautions with notice posted of the hazard.

#### b. Daily inspections:

1. Excavations, adjacent areas, and protective systems must be inspected daily by a Competent Person and documented. Exposed employees must be removed if there is evidence of possible cave-ins, failure of protective systems, hazardous atmospheres, or other hazardous conditions until necessary precautions have been taken.
2. Daily inspections of excavations shall be made by a Competent Person. Inspections shall be made after a rain or other changing conditions as to the stability of the walls or sides of the excavations.

#### c. Underground installations:

Sewer, telephone, electric, water, fuel storage tanks, and other lines must be located prior to digging by calling:

**Utility Notification Center of Colorado (UNCC)  
1-800-922-1987.**

More than this one number may need to be called. The UNCC can give you the additional numbers or the names of the utilities in the location.

Daily Actual locations will be pinpointed as estimated locations are approached. Records of locates shall be maintained at the job site or home office.

d. Access / Egress:

Ramps, runways, ladders, or stairs as means of entrance and exit must be within 25 feet of an employee work area if a trench is four (4) feet or more deep.

e. Warning System for Mobile Equipment:

Including barricades, hand or mechanical signals, or stop logs must be in place.

f. Hazardous Atmospheres Testing:

Hazardous Atmospheres Testing and controls must include emergency rescue equipment and daily inspections for potentially hazardous conditions by a Competent Person. Controls include respirators or additional ventilation, if needed, and individually attended lifelines during descent into bell-bottom pier holes or similar excavations.

g. Stability of Adjacent Structures:

Such as, buildings, walls, or sidewalks must be insured through support systems, such as, shoring, bracing, or underpinning.

17.3 Specific Trenching and Excavation Requirements:

- a. If the walls or faces of the excavation are deeper than five (5) feet, the walls must be sloped if another form of protection is not used (see pages 72-77 for correct sloping and benching).
- a. The walls and faces of the excavation shall be shored or shielded if they are not sloped. The only vertical cut allowed is in solid rock.
- b. A combination of sloping and trench shields may be used.
- c. A slope or angle of repose that measures  $\frac{3}{4}$  to 1 is acceptable for Type A soils. Type A soil has an unconfined compression strength of 1.5 ton per square foot or greater.
- e. A slope or angle of repose that measures 1 to 1 is acceptable for soils classified as Type B. Type B soil has an unconfined compression strength greater than 0.5 ton per square foot, but less than 1.5 ton per square foot.
- f. A slope or angle of repose that measured  $1\frac{1}{2}$  to 1 is acceptable for soils classified as Type C. Type C soil has an unconfined compression strength of 0.5 ton per square foot or less.

- g. The thumb penetration test can be used in the field to estimate the unconfined compression strength of cohesive soils.
  - 1. Type A soils - can be readily indented by the thumb, however, they can be penetrated by the thumb only with great effort.
  - 2. Type C soils - can be easily penetrated several inches by the thumb, and can be molded by light finger pressure.
- h. Another strength test for the estimates of unconfined compression strength of soils can be obtained by the use of a pocket penetrometer.
- i. Employees shall be provided ladders to exit the trenches or excavations; and they shall be located so that no more than 25 feet of lateral travel is required.
- j. Excavated materials (spoils) shall be effectively stored and retained at least two (2) feet or more from the edge of the excavation at the correct angle of repose for the material being excavated.
- k. Any excavations greater than 20 feet deep shall have the sloping or trenching approved by a Registered Professional Engineer (RPE).
- l. Any water seepage or water in the trench reduces Type A soil to Type C.

#### 17.4 Requirements for Protective Systems:

##### a. Sloping and Benching Systems.

- 1. A slope of 34 degrees or less, in lieu of soil classification is considered safe for any type of soil.
- 2. Maximum allowable slopes and allowable configurations for sloping and benching systems will be determined through use of Appendices A (Soil Classification) and B (Sloping and Benching).
- 3. Designs of sloping or benching shall be selected from and be in accordance with data provided in written form. The text will identify criteria that affect the selection, the limits of use of the data, and sufficient explanatory data as necessary to assist in making a correct choice of protective system.
- 4. Excavations can be designed by an RPE, put in written form, and kept at the worksite, but must include at least the magnitude and configuration of the slopes determined to be safe for the project and the name of the RPE who approved the plan.

##### b. Support, Shield, and Other Protective Systems:

- 1. Designs for timber shoring in trenches set in accordance with the conditions and requirements determined by using Appendices A and C (timber shoring for

trenches). For aluminum hydraulic shoring, Appendices A and D can be used if manufacturers' tabulated data is not available.

2. Designs using manufacturers' tabulated data may be used and deviation allowed only with specifications written approval of the manufacturer.
3. Designs using other tabulated data may be used provided the data is in writing and includes explanatory information to aid the user in making a selection, the criteria determining the selection, and the limits on the use of the data. At least one copy of the information, including the identity of the RPE, must be kept at the worksite during construction of the protective system.
4. Design by a Registered Professional Engineer (RPE), Design systems not using any of the three previously cited options must be approved by an RPE, shall be in writing and include the identity of the RPE and details such as sizes, types, and configurations of the materials to be used. At least one copy of the plan to be at the job site during construction.

c. Other:

1. The standard allows an employer to use a trench box or shield that is either designed or approved by a registered professional engineer (RPE) or is based on tabulated data prepared or approved by an RPE.
2. The standard allows construction workers to remain inside trench shields that are being repositioned, provided that the shields are moved horizontally only and the shields are not lifted.

17.4 Shoring Protection:

- a. All workers in a trench shall be protected by a shoring system (or shield) when depths exceed 4 feet unless proper sloping as referred to in 1926 Subpart P App B – Sloping and Benching contained in this program is used.
- b. Any shoring system used below 20 feet in depth must be designed by a registered professional engineer.
- c. The placement of shores must be done promptly before anyone enters an excavation.
- d. Backfilling should take place as soon as the shoring is removed.
- e. All workers should be provided protective equipment dictated by the environment in which work is being performed. For example, hard hats should be worn at all times by workers in excavations.

### 17.5 Installation of Shoring Protection:

- a. The installation of shoring should be in a top down method.
- b. Struts should be in a true horizontal position with ends secured to prevent slipping or displacement.
- c. If possible shoring should be done from outside the trench thereby not exposing workers to the possibility of collapse.
- d. Shoring installation should follow the excavation work as soon as possible. Soil walls are very likely to deteriorate if left unsupported for long periods of time.

### 17.6 Removal of Shoring Systems:

- a. Removal of shoring should proceed by the bottom up method.
- b. A worker removing shoring must always remain in the protected zone.
- c. Premature removal of the shoring leaves a worker totally unprotected.
- d. Hydraulic shoring must be removed from outside the excavation.
- e. Timber or steel jacks are usually removed by the worker from inside the trench.
- f. Bottom and intermediate studs should not be removed until they have been effectively replaced by backfill material.

### 17.7 Factors Affecting Trench Systems:

#### a. Weather Conditions:

1. Changing weather conditions can affect the water content of the soil.
2. Excess water from rain or melting snow can liquefy firm soil and increase pressure on protective systems.
3. Beware of shoring in frozen ground where a sudden thaw can undermine a shoring system and cause its failure.
4. Provisions must be made in the design of a shoring system to consider these increased loads.

b. Soil Changes:

1. Some soils change their properties merely from exposure to air.
2. This Softening is called air-slaking and will turn hard, solid soil to loose, deteriorating material.
3. To prevent slaking, the time a trench is left open should be limited. This will also limit exposure to detrimental weather changes.

c. Vibrations:

1. Vibration from nearby machinery, automobiles, or explosives will cause increased loads on a shoring system and extra sheeting and shoring may be needed.
2. Loose rocks and chunks of earth or other equipment that could fall in the trench should be removed, supported, or retained by an effective barrier as necessary to protect workers.

d. Spoil Bank Location:

- a. Where the spoil is deposited can also affect the pressure on a shoring system.
- b. To not be considered in a surcharge load calculation the soil must be placed outside the affected zone.
- c. This distance should be increased when site conditions warrant, but no less than 2 feet from the edge of the trench.

e. Trench Access:

1. Some means of access (most often ladders) shall be within 25 feet of every worker in an excavation 4 ft. or more in depth.
2. Ladders shall be inspected by a competent person certifying it is in good conditions, extends 3 feet over the trench top, and is secured in such a manner as to prevent movement while in use.
3. Walkways, runways, and ramps shall be kept clear of all materials and obstructions.

1. Edge Protection:

1. The edge of all open trenches must be protected. Barricades may also be necessary for the protection of employees and the public.
2. Adequate methods shall be incorporated to prevent equipment from falling in; additionally, excavated material, tools, and machinery must be secured or stored far enough away to assure they won't fall into the trench (2 feet minimum).

3. Good housekeeping creates a clean and safer job-site.
4. Workers should not walk close to edges as their weight may cause localized failures and they may fall into the excavation.
5. Trenches must be crossed only where safe crossings have been provided. Jumping across an excavation is prohibited.

2. Inspections:

1. Daily inspection of the excavations shall be made by a competent person.
3. Checks of shoring system, soil conditions, and construction methods help to detect unsafe conditions before they cause injury.
4. Should an unsafe condition be discovered, work must stop immediately in the affected area and corrective action must be taken.
5. Inspections should also be done after rainstorms or any change in conditions that would increase the possibility of a cave-in or landslide.

6. Excavation Equipment:

1. All equipment must be operated only by trained personnel, and never at a speed greater than it was designed for or than is safe.
2. Equipment must always have the implement lowered, brake set, placed in park or neutral, and be shut off when the operator steps down or out of the equipment.
3. If the operator does not have total view of the operation, a signalman should be used, who knows the standard signals used in construction.
4. No person shall be allowed under loads handled by powered shovels, derricks, or hoists.

**Remember:**

1. Every shovel of material dug from an excavation helps to create an unnatural/unstable condition in the ground.
2. This situation can be remedied by using protective systems properly and promptly.
3. Proper trenching and shoring methodology requires careful attention to details.
4. The design of a trenching and shoring system should consider hidden obstructions, disturbed ground, soil type, water conditions, weather conditions, soil changes, vibrations, and equipment usage.
5. All concerned must plan ahead, have adequate materials available, and be on the lookout for unforeseen conditions!
6. Doing a job right means doing it safely.
7. Plan what you dig, dig what you planned!



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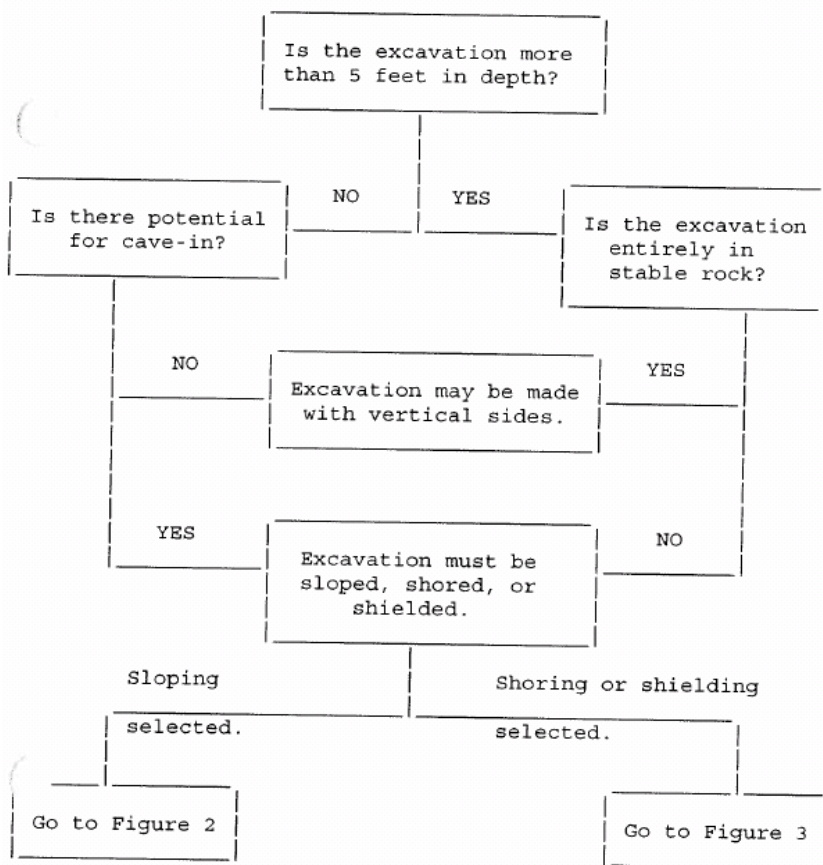
Regulations (Standards - 29 CFR)

**Selection of Protective Systems - 1926 Subpart P App F**

Regulations (Standards - 29 CFR) - Table of Contents

- **Part Number:** 1926
- **Part Title:** Safety and Health Regulations for Construction
- **Subpart:** P
- **Subpart Title:** Excavations
- **Standard Number:** 1926 Subpart P App F
- **Title:** Selection of Protective Systems

The following figures are a graphic summary of the requirements contained in subpart P for excavations 20 feet or less in depth. Protective systems for use in excavations more than 20 feet in depth must be designed by a registered professional engineer in accordance with 1926.652(b) and (c).



*add this figure*

Selection of Protective Systems - 1926 Subpart P App F

FIGURE 1 - PRELIMINARY DECISIONS

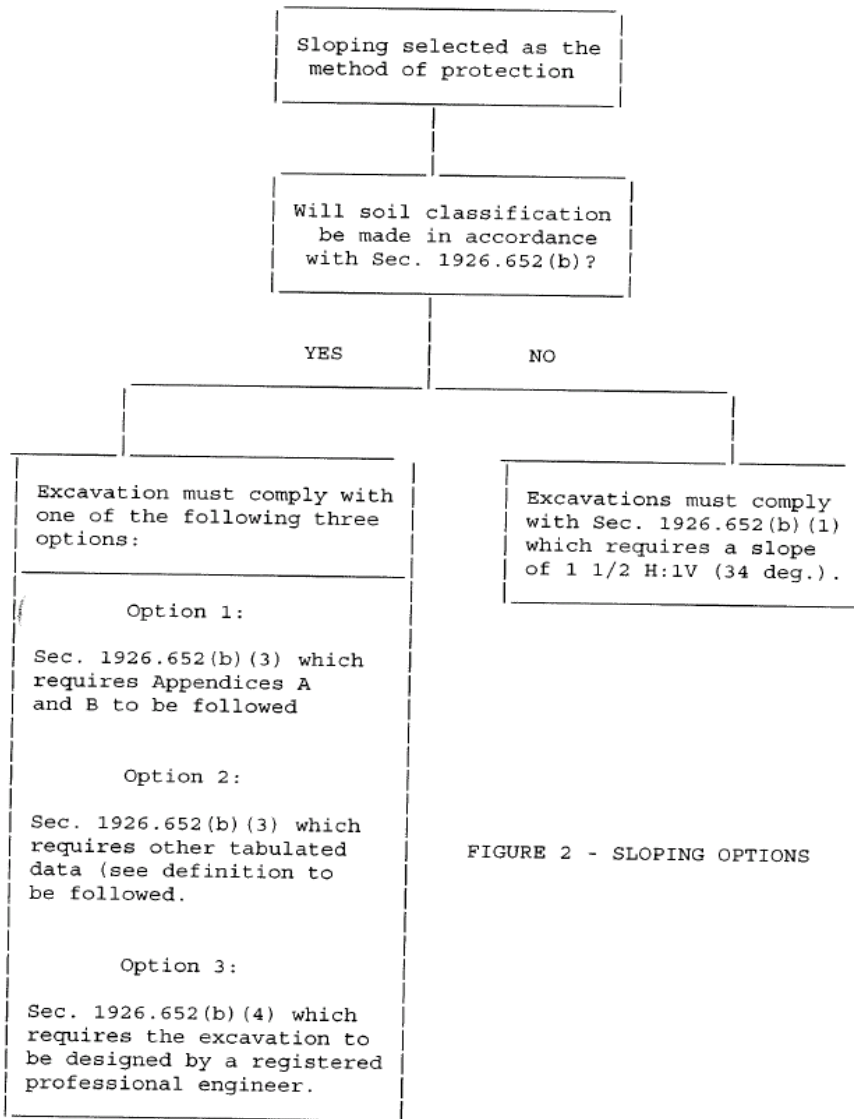
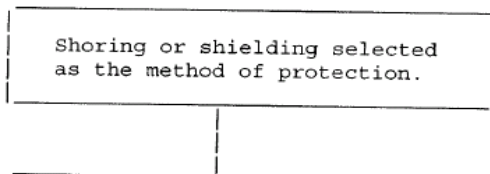


FIGURE 2 - SLOPING OPTIONS



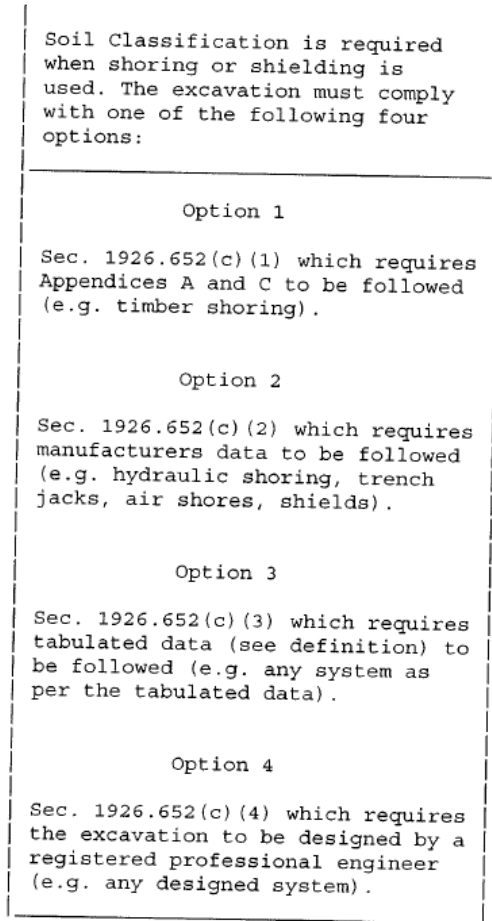


FIGURE 3 - SHORING AND SHIELDING OPTIONS

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[Next Standard \(1926 Subpart Q\)](#)

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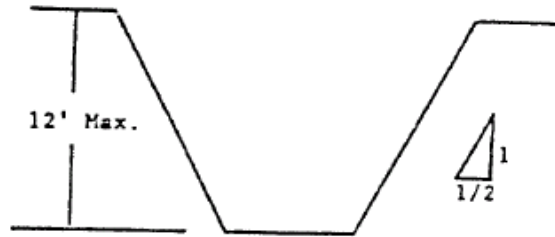
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Occupational Safety & Health Administration  
200 Constitution Avenue, NW  
Washington, DC 20210

## Subpart P—Excavations

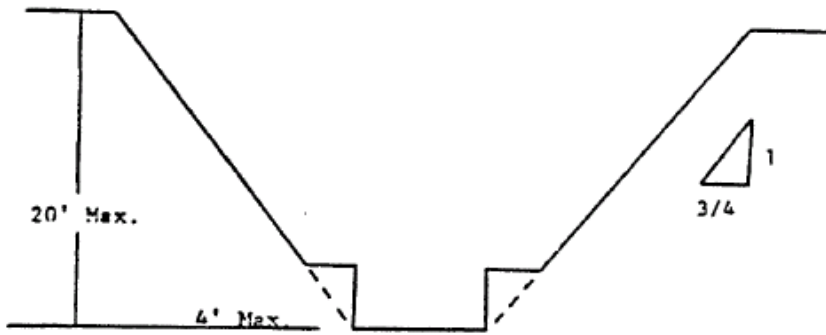
### SIMPLE SLOPE—GENERAL

Exception: Simple slope excavations which are open 24 hours or less (short term) and which are 12 feet or less in depth shall have a maximum allowable slope of 1½:1.

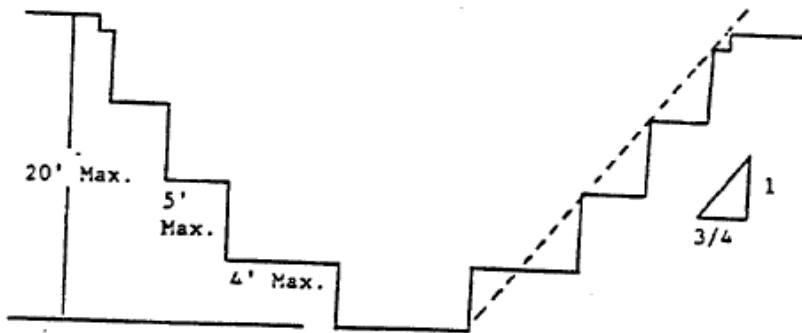


### SIMPLE SLOPE—SHORT TERM

2. All benched excavations 20 feet or less in depth shall have a maximum allowable slope of ¾ to 1 and maximum bench dimensions as follows:



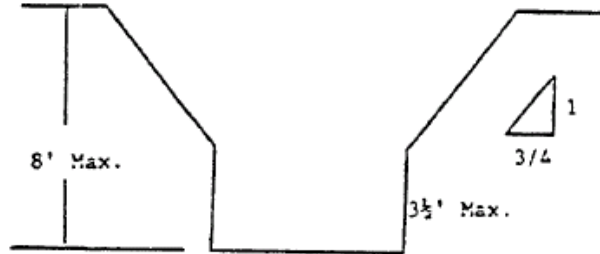
### SIMPLE BENCH



# Construction Standards

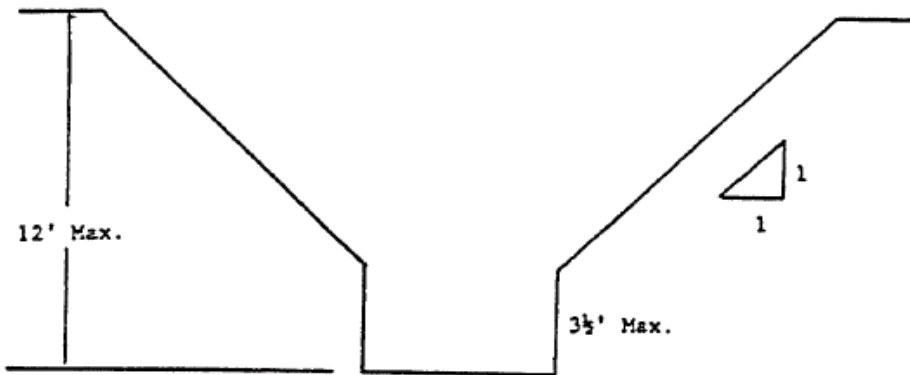
## MULTIPLE BENCH

3. All excavations 8 feet or less in depth which have unsupported vertically sided lower portions shall have a maximum vertical side of  $3\frac{3}{4}$  feet.



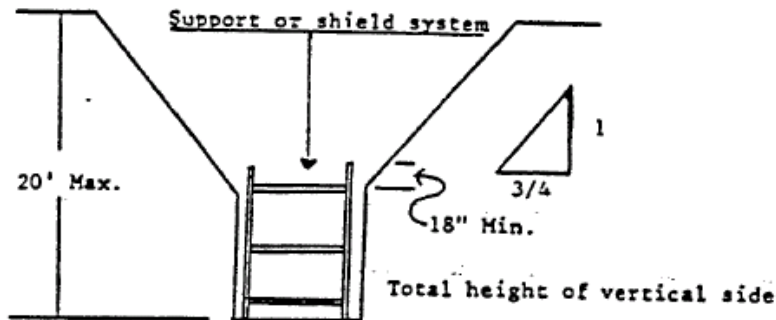
## UNSUPPORTED VERTICALLY SIDED LOWER PORTION—MAXIMUM 8 FEET IN DEPTH

All excavations more than 8 feet but not more than 12 feet in depth which unsupported vertically sided lower portions shall have a maximum allowable slope of 1:1 and a maximum vertical side of  $3\frac{3}{4}$  feet.



## UNSUPPORTED VERTICALLY SIDED LOWER PORTION—MAXIMUM 12 FEET IN DEPTH

All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of  $\frac{3}{4}$ :1. The support or shield system must extend at least 18 inches above the top of the vertical side.



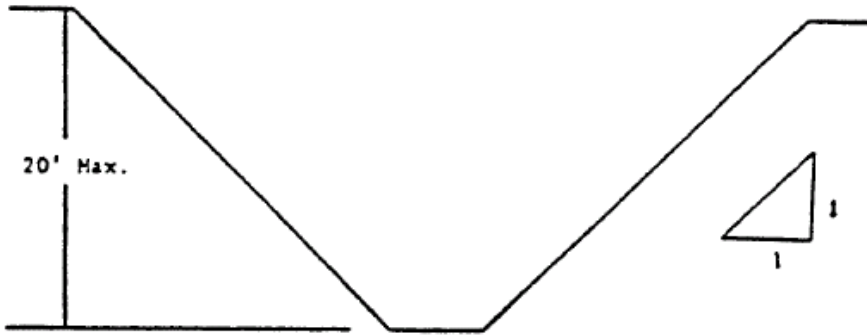
## Subpart P—Excavations

### SUPPORTED OR SHIELDED VERTICALLY SIDED LOWER PORTION

4. All other simple slope, compound slope, and vertically sided lower portion excavations shall be in accordance with the other options permitted under §1926.652(b).

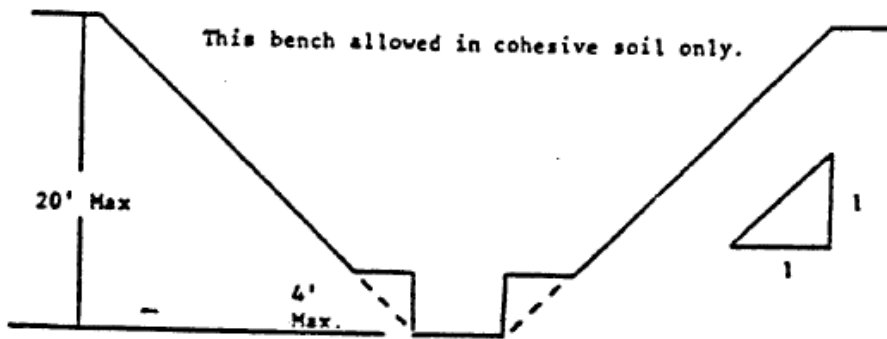
### B-1.2 Excavations Made in Type B Soil

1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1.

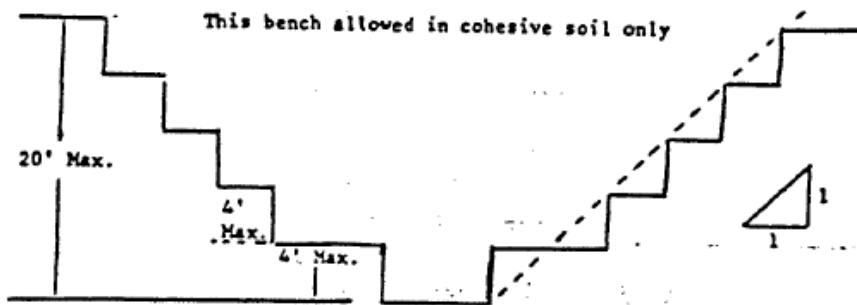


SIMPLE SLOPE

2. All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1 and maximum bench dimensions as follows:



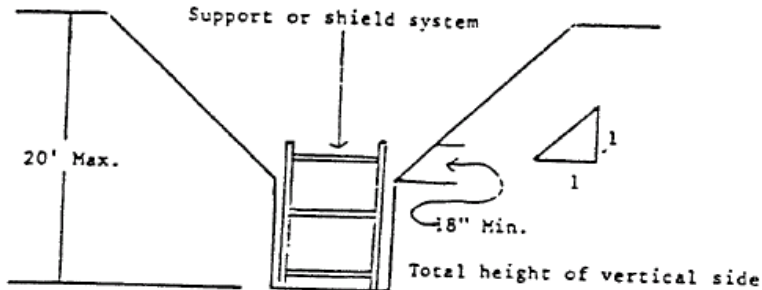
SINGLE BENCH



## Construction Standards

### MULTIPLE BENCH

3. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1:1.

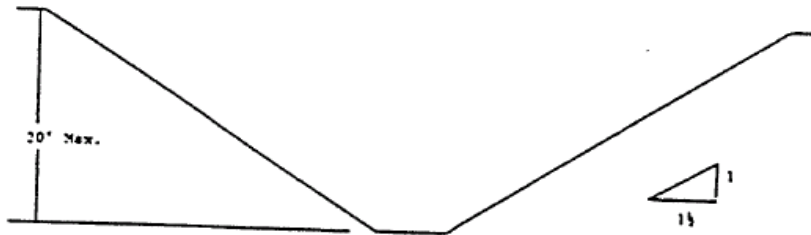


### VERTICALLY SIDED LOWER PORTION

4. All other sloped excavations shall be in accordance with the other options permitted in §1926.652(b).

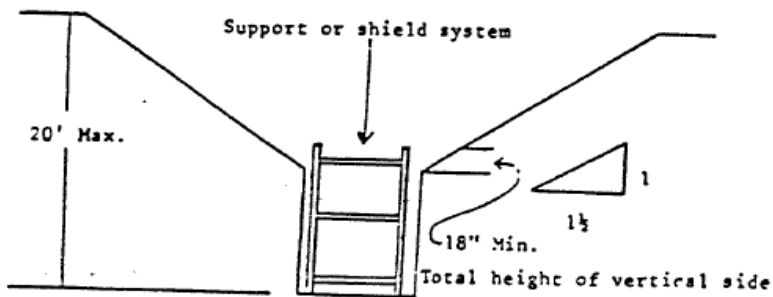
### B-1.3 Excavations Made in Type C Soil

1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of  $1\frac{1}{2}$ :1.



### SIMPLE SLOPE

2. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of  $1\frac{1}{2}$ :1.



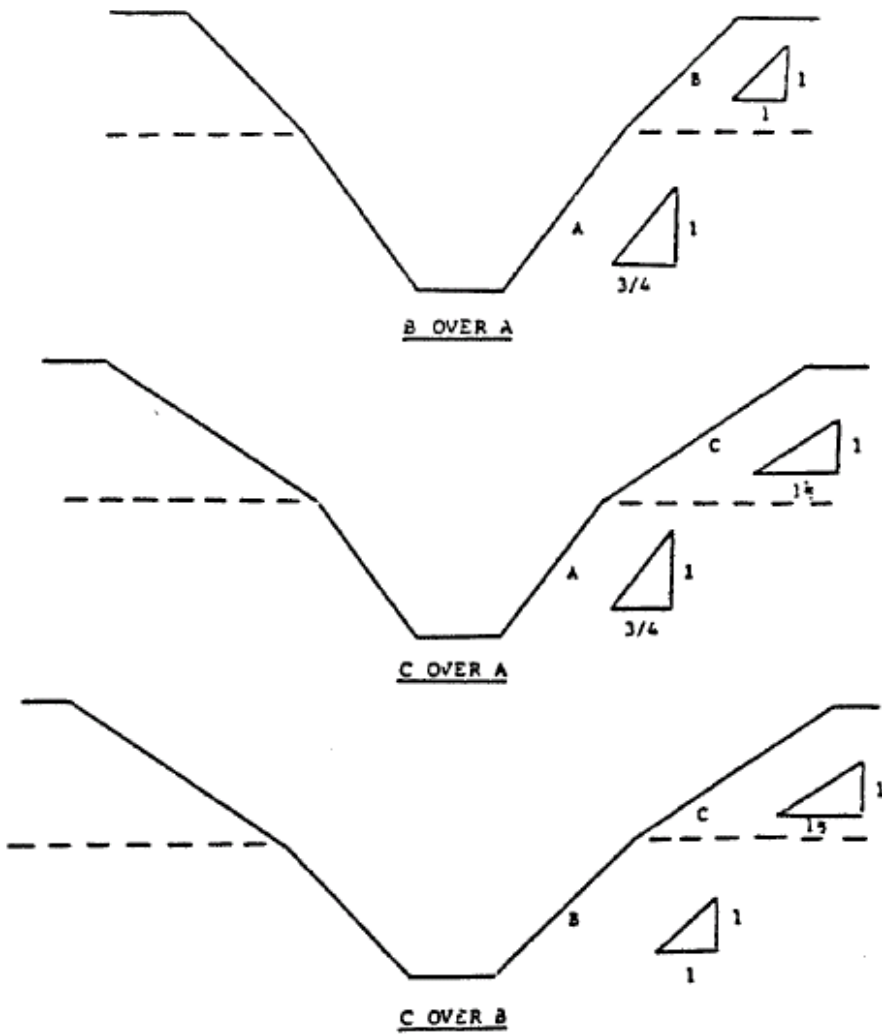
### VERTICAL SIDED LOWER PORTION

3. All other sloped excavations shall be in accordance with the other options permitted in §1926.652(b).

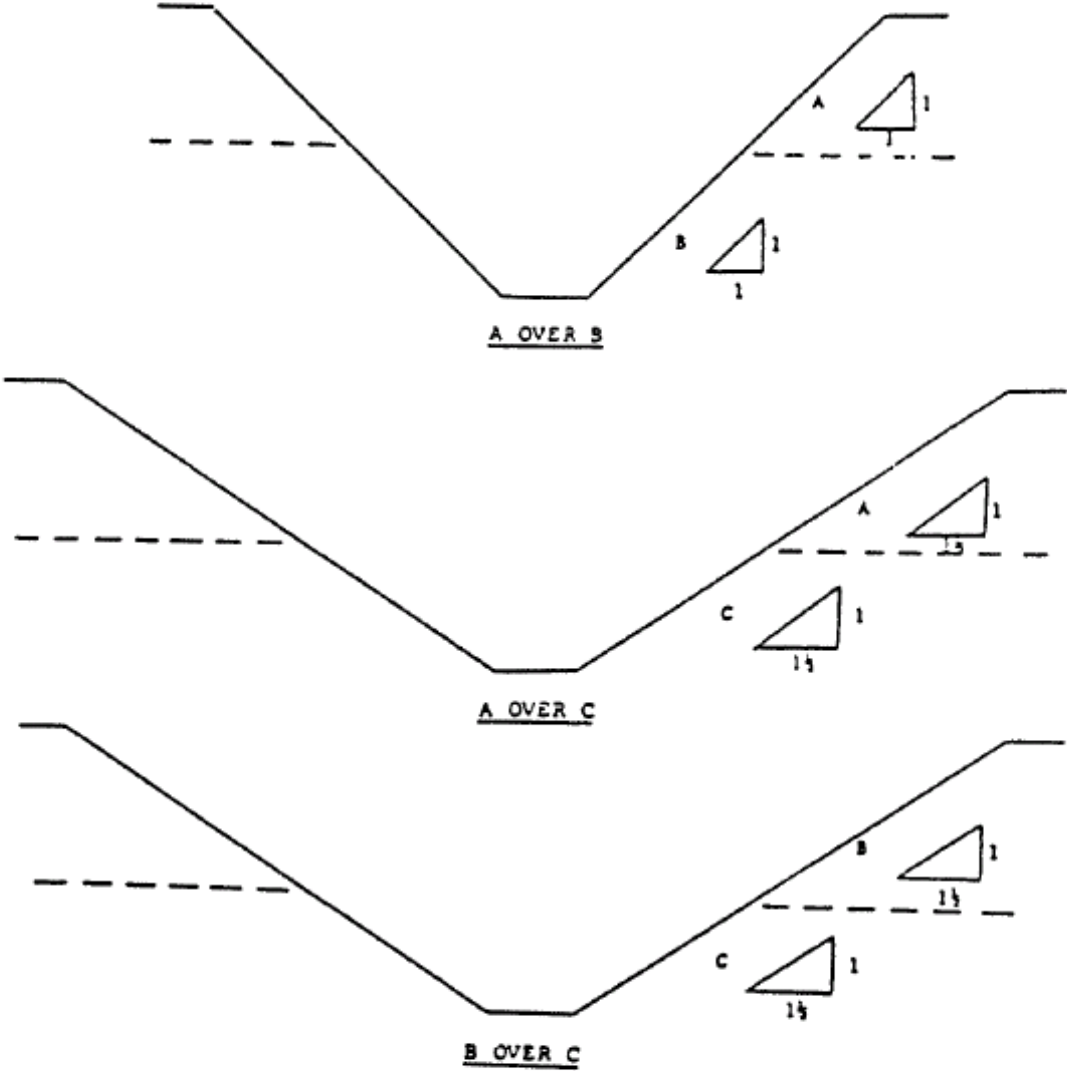
### B-1.4 Excavations Made in Layered Soils

1. All excavations 20 feet or less in depth made in layered soils shall have a maximum allowable slope for each layer as set forth below.

## Subpart P—Excavations



# Construction Standards



2. All other sloped excavations shall be in accordance with the other options permitted in §1926.652(b).

## 18.0 FALL PROTECTION

Harrison Western abides by *29CFR 1926 Subpart M Fall Protection Standard*. OSHA regulations require protection when workers are exposed to falls of six (6) feet or more under OSHA Requirements and where exposed to a risk of falling under MSHA. Employees are expected to have fall protection in any of the following areas of construction, unless guarded by handrail, or fall prevention device:

- a. Unprotected sides and edges
- b. Leading edges
- c. Hoist areas
- d. Holes or gap 2" or more in dimension must be covered.
- e. Formwork and reinforcing steel
- f. Ramps, runways, and other walkways
- g. Shafts, wells, pits, and similar excavations
- h. Dangerous equipment (even if less than 6 feet; i.e. rebar, sharp objects, uneven surface).
- i. Overhand bricklaying and related work
- j. Roofing work on low-slope roofs (slope less than or equal to 4 in 12 vertical to horizontal)
- k. Steep roofs (slope greater than 4 in 12 - vertical to horizontal)
- l. Precast concrete erection
- m. Wall openings less than 39 inches high require a guard rail to be in place.
- n. Walking / working surfaces not otherwise addressed

### 18.1 Definitions:

a. Qualified Person:

A person with a recognized degree or professional certificate or extensive knowledge and experience in fall protection who is capable of design, analysis, evaluation and specifications for fall protection, the work, the project or the product.

b. Competent Person:

A person trained in the following areas:

1. The nature of fall hazards in the work area.
2. The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used.
3. The use and operation of guardrail systems, safety net systems, personal fall arrest systems, warning line systems, controlled access zones, safety monitoring systems, and other protection to be used.
4. The role of each employee in the safety monitoring system when this system is used.

5. The limitations on the use of mechanical equipment during the performance of roofing work on low-sloped roofs.
6. The correct procedures for the handling and storage of equipment and materials and the erection of overhead protection.
7. The role of employees in fall protection plans. The standards contained in *1926 Subpart M*.

c. Anchorage:

An anchorage is a secure point of attachment for lifelines, lanyards or deceleration devices with a minimum of 5,000 lbs. of force standard.

d. Body Harness:

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

e. Controlled Access Zone (CAZ):

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

f. Free Fall:

The act of falling before a personal fall arrest system begins to apply force to arrest the fall.

g. Free Fall Distance:

The vertical displacement of the fall arrest attachment point on the employee's body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline / lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline / lanyard extension before they operate and fall arrest forces occur with not more than a 2 foot free fall.

h. Guardrail System:

A barrier erected to prevent employees from falling to a lower level and it can withstand 200 lbs. of impact force.

i. Hole:

A hole is a gap or void two (2) inches or more in its least dimension, in a floor, roof, or other walking / working surface.

j. Lanyard:

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

k. Leading Edge:

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

l. Lifeline:

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

m. Lower Levels:

Lower levels are the areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.

n. Opening:

A gap or void 30 inches (76 cm) or more high and 18 inches (48 cm) or more wide in a wall or partition, through which employees can fall to a lower level.

o. Personal Fall Arrest System:

A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt or body harness, and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.

p. Positioning Device System:

A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning. (*Body Belts* as a Fall Protection System are not permitted.)

q. Rope Grab:

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

r. Safety-Monitoring System:

Safety monitoring system means a safety system in which a Competent Person is responsible for recognizing and warning employees of fall hazards.

s. Snap hook:

A connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snap hooks are generally one or two types:

*1926.500(Fb) (1)*

1. The locking type with a self-closing, self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection; or
2. The non-locking type with a self-closing keeper which remains closed until pressed open for connection or disconnection.

t. Toe board:

A toe board is a low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.

u. Unprotected Sides and Edges:

Any side or edge (except at entrances to points of access) of a walking / working surface (e.g., floor, roof, ramp, or runway) where there is no wall or guardrail system at least 39 inches (10m) high.

v. Walking / Working Surface:

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

w. Blaming Line System:

A barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail, , or safety net systems to protect employees in the area and tagged every 6 feet with high visibility flagging.

x. Work Area:

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

18.3 Guidelines:

a. Guardrail System:

1. Top edge height of top rails shall be approximately 42 inches, above the walking / working level.
2. Top edge height of mid-rails is midway between top edge of top rail and walking / working level.
3. Top rail capable of withstanding 200 pounds in any downward or outward direction.
4. Mid-rail capable of withstanding 150 pounds in any downward or outward direction.
5. Guardrails shall have a maximum deflection of 3 inches.
6. Top and mid-rails at least ¼ inch diameter or thickness.
7. Flag wire rope at maximum 6 foot intervals with high visibility material.

2. Safety Net System:

1. Maximum 30 feet below any walking / working surface.
2. Outward extension as follows:
  - a. Up to 5 feet below - extend eight (8) feet
  - b. 5 feet to 10 feet below - extend 10 feet
  - c. More than 10 feet below - extend 13 feet

3. Drop test using a 400 pound bag of sand.
  4. Inspection at least once a week with documentation of inspection.
  5. Maximum size of each safety net opening is 36 (6 x6 inches) square inches and no longer than 6 inches on any side.
  6. Border rope for webbing shall have a minimum breaking strength of 5,000 pounds.
1. Personal Fall Arrest Systems:
    1. Dee-rings and snap hooks shall have a minimum tensile strength of 5,000 pounds
    2. Dee-rings and snap hooks shall be proof tested to a minimum tensile load of 3,600 pounds.
    3. Only locking snap hooks shall be used.
    4. Lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds.
    5. Anchorage for attachment of Personal Fall Arrest Systems shall be capable of supporting 5,000 pounds per employee attached.
    6. Free fall shall be limited to six (6) feet without contact on any lower level.
    7. Limit maximum arresting force on an employee to 900 pounds when using a body belt and 1,800 pounds when using a body harness.
    8. Attachment point of the body harness shall be located in the center of the wearer's back near shoulder level.
    9. Personal Fall Arrest Systems shall be inspected prior to each use.
    10. All personnel fall arrest components need to be inspected and recertified after any shock load to the system.
  2. Positioning Device System:
    1. Free fall shall be limited to not more than two (2) feet.
    2. Connecting assemblies shall have a minimum tensile strength of 5,000 pounds.
  - e. Warning Line System:
    1. The rope, wires, or chains shall be flagged at no more than six (6) foot intervals with high-visibility material.

2. The lowest point (including sag) is no less than 34 inches and the highest point is no more than 39 inches from the walking / working surface.
  3. When mechanical equipment is not being used, the warning line shall be erected not less than six (6) feet from the roof edge.
  4. The rope, wire, or chain shall have a minimum tensile strength of 500 pounds.
- f. Controlled Access Zones:
1. Control lines shall be erected not less than six (6) feet, nor more than 25 feet from the unprotected or leading edge, except when erecting precast.
  2. The ropes, wires, tapes, or equivalent material shall be flagged at not more than six (6) foot intervals with high visibility material.
  3. The lowest point (including sag) is no less than 39 inches and no more than 45 inches from the walking / working surface.
  4. Each line shall have a minimum tensile strength of 200 pounds.
- g. Covers:
1. Covers located in roadways and vehicle aisles shall support at least twice the maximum axle load of the largest vehicle expected to cross over the cover.
  2. All other covers shall support at least twice the weight of employees, equipment, and materials.
  3. All covers shall be firmly attached to the surface.
  4. All covers shall be marked "Hole, Do Not Remove."
- h. Protection from Falling Objects:
1. Toe boards shall be capable of withstanding a force of at least 50 pounds.
  2. Toe boards shall be a minimum of 3½ inches above the walking / working surface.
  3. Toe boards shall not have openings over one (1) inch in greatest dimension.
- i. Training Program:
1. Provide a training program for each employee who might be exposed to fall hazards.
  2. Trained, as necessary, by a Competent Person.
  3. A Competent Person must be qualified in eight (8) specific areas of training.

4. Training to be site-specific.
  5. Maintain a written certification record (1926.503(b)).
  6. Retraining as required.
- j. Fall Protection Plan:
1. This option is available only to employers engaged in leading edge work, precast concrete erection work, or residential construction work who can demonstrate it is infeasible or creates a greater hazard to use conventional fall protection methods. The fall protection plan should conform to the following provisions:
    - a. fall protection plans should be prepared and developed by a qualified person specifically for the site where leading edge work, precast concrete work, or residential construction work is being performed, and the plan should be kept up to date;
    - b. changes to the fall protection plan should be approved by a qualified person;
    - c. a copy of the fall protection plan with approved changes should be maintained at the job site; and
    - d. implementation of the fall protection plan should be under supervision of a Competent Person.
  2. Fall protection plans should:
    - a. document reasons why use of conventional fall protection systems (guardrail systems, Personal Fall Arrest Systems, or safety nets systems) are infeasible or why their use would create a greater hazard;
    - b. include a written discussion of other measures to be taken to reduce or eliminate fall hazards for workers who cannot be provided with protection from conventional fall protection systems;
    - c. identify each location where conventional fall protection methods cannot be used. These locations are classified as Controlled Access Zones; and
    - d. include a statement which provides the name or method of identifying each worker designated to work in Controlled Access Zones, and no other workers should enter Controlled Access Zones.

Where no other alternative measures have been implemented, the employer should implement a safety monitoring system.

In the event a worker falls, or some other related, serious incident occurs (*e.g.*, near miss), the employer should investigate the circumstances of the fall or other incident to determine if the Fall Protection Plan needs to be changes (*e.g.*, new practices, procedures, or training) and should implement those changes to prevent similar types of falls or incidents.

## 19.0 FIRE PROTECTION & EXTINGUISHER

### 19.1 Fire Protection:

The primary objective of a fire protection program is that of fire prevention. This means don't let fires get started. Recognition of existing and potential hazards along with frequent inspection of the work sites are two major steps we can take in our fire protection program.

The following list of controls and / or rules will assist you in reaching our primary objective, that of fire prevention.

- a. **NO SMOKING** signs should be posted in restricted areas and must be strictly enforced.
- b. Housekeeping is a major fire hazard. Regular clean-up of combustible materials and debris is mandatory.
- c. Open Yard Storage:
  1. Combustible materials, such as lumber, shall be piled with due regard to the stability of the piles and in no case higher than 20 feet or closer than 10 feet to a building or structure.
  2. Lumber and other combustible material shall be stored beyond the reach of welding or flame-cutting operations.
  3. Driveways between and around combustible storage piles shall be at least 15 feet wide and maintained free from accumulation of rubbish, equipment, or other articles or materials.
  4. The entire storage site shall be kept clear of rubbish, weeds, and tall grass.
  5. At least one 2A, 10B:C 5 pound fire extinguisher shall be conspicuously located within the storage yard. Reach of extinguisher should not exceed 100 feet of travel.
- d. Temporary Structures:
  1. No temporary structure shall be erected where it will adversely affect any means of exit.
  2. No temporary structure shall be located a distance of less than 10 feet from another building or structure.
  3. Each temporary structure shall have a 2A, 10 B:C 5 pound fire extinguisher.
- e. Inspection of electrical equipment shall be a daily task. All loose, frayed, or defective electrical equipment must be removed from service, tagged, and either repaired or replaced.

- f. Use only U/L approved flammable liquids safety can containers for fuel storage.
- g. Metal refuse cans with lids should be provided in convenient locations, especially where oily waste is produced, such as, shop areas and fuel storage.
- h. All motors and engines must be shut off during refueling operations.
- i. Temporary heating devices should not be used unless with proper authorization. These devices must be monitored during all hours in which they are used.
- j. Open flame devices should not be used in a shaft or tunnel.
- k. The burning of scrap materials on the construction site is prohibited (e.g., burning of scrap wood for heating during the winter).
- l. On all construction sites, access to fire hydrants must be maintained at all times.
- m. Fire extinguishers should be placed in convenient locations throughout the construction sites and storage areas. Mounting should be unobstructed and for immediate use with a travel distance not more than 50 feet.

1. Vehicles:

- Pickup trucks ..... 1A, 10 B:C, 2½ lbs.
- Other trucks ..... 1A, 10 B:C, 2½ lbs.
- Fuel trucks ..... 20 B:C, 5 lbs.
- Cranes ..... 1A, 10 B:C, 2½ lbs.

2. Temporary Structures:

- Office trailer .....2A, 10 B:C, 5 lbs.
- Storage trailer ..... 2A, 10 B:C, 5 lbs.
- Storage shed ..... 2A, 10 B:C, 5 lbs.

Any storage shed containing more than 60 gallons of flammable or combustible liquids shall have one 20 B 5 pound extinguisher located outside but not more than 10 feet from the door opening.

3. LP-Gas Cylinders:

Storage location shall be provided with one accessible portable fire extinguisher rated 40 B:C and located not less than 25 feet nor more than 75 feet from the container.

4. Welding and Cutting Equipment:

- a. Each welder or cutting unit shall be equipped with a 1A, 10 B:C, 2½ pound fire extinguisher.

- b. A 2A, 40 B:C, 5 pound fire extinguisher shall be provided in the immediate vicinity of the welding or torch operation whenever combustible material is exposed to heat, sparks, or slag.
  - c. Refer to the fire protection section under "Welding and Cutting" for further safety procedures involving welding and cutting.
5. Flammable and Combustible Storage Area. One 20 B 5 pound portable fire extinguisher will be located not less than 25 feet, nor more than 75 feet from the flammable and combustible liquid outside storage area.
  6. Open Yard Storage. One 2A, 10 B:C, 5 pound fire extinguisher shall be conspicuously located within the yard.
  7. Building and Structure:  
One 2A, 10 B:C, 5 pound fire extinguisher shall be provided at each stairway on each floor throughout the permanent building or structure.
- n. Signs and Their Locations:
1. Fire Extinguisher:  
All fire extinguisher locations will be conspicuously marked by the appropriate Fire Extinguisher signs.
  2. Flammable and Combustible Storage Area:  
The flammable and combustible storage area shall be posted on all sides with:  
  
**DANGER - NO SMOKING OR OPEN FLAMES**
  3. Temporary Structures Used to Store Flammables:  
The door of any temporary structure containing flammable or combustible liquids shall be posted by:  
  
**DANGER - NO SMOKING OR OPEN FLAMES**
- o. Fire extinguishers must be inspected regularly and certified annually, and accessibility must be maintained at all times (MSHA & NFPA 10 require monthly inspections).
  - p. Flammable / Combustible spillage in the storage areas should not be allowed to accumulate, but must be cleaned up as soon as possible.
  - q. All employees should be instructed in the care and use of fire extinguishers. Training should be conducted annually.

## 19.2 Emergency Plan:

The Company Emergency Plan should be posted at each job site, doctor available in job HASP, and reviewed with all employees semi-annually or start of projects.

- a. All foremen and supervisors shall have immediate knowledge of telephone numbers and locations of all appropriate emergency response units (*i.e.*, hospitals, fire, police, rescue, etc.).
- b. Evacuation and escape routes shall be kept free of obstructions at all times (tunnel and confined spaces).

### 19.3 Portable Fire Extinguisher:

a. Description:

1. **CLASS A** - Class A extinguishers are for ordinary combustibles, such as wood, paper, cloth, some plastic, and garbage fires.
2. **CLASS B** - Class B extinguishers must limit the air (oxygen) reaching the fire and inhibit combustion (interrupt the flame) in order to be effective. These units combat fires of flammable liquids such as gasoline, oil, grease, and paint. Dry chemical, carbon dioxide (CO<sub>2</sub>) or foam agents are most useful on Class B fires.
3. **CLASS C** - Class C fire extinguishers are for use on fires in / or near operating electrical equipment. Foam or water are not acceptable on Class C fires as they are not non-conductive agents. Carbon dioxide (CO<sub>2</sub>) dry chemical or halogenated agents are recommended.
4. **CLASS D** - Class D fires are those that occur in combustible metals such as sodium, titanium, magnesium, and potassium.
5. **Class K** – Class K fires are those types of fires generally associated with cooking oils or shortening with deep fat fryers. A sodium bicarbonate base firefighting agent is commonly used.

b. Usage:

1. Make sure you are familiar with the location of a fire extinguisher.
2. Never tamper with a fire extinguisher.
3. Never re-use an extinguisher; once the pin has been pulled and the unit discharged, the extinguisher must be recharged.
4. Use the right type of extinguisher for the class of fire you are attempting to extinguish.
5. Hold a portable unit upright.

6. Use a sweeping motion and extend the charge at least six (6) inches on each side of the near edge of the flames.
7. Never start too close to a flammable liquid fire; the fuel could splash and cause the fire to spread.
8. Don't attack the top of the flames; always attack the source or base.
9. Don't start and stop the flow of the agent from the extinguisher; this could allow the flames to re-ignite.
10. Fire extinguishers on equipment inspected as part of pre-operation checks. Inspection includes:
  1. Dial or gauge in green.
  2. Current monthly and annual tags.
  3. Keeper pins.
  4. Clean and clear discharge hose.
  5. General condition of canister.
11. Fire extinguisher tags shall be punched monthly.

19.4 Procedures for When a Fire is Discovered:

- a. Turn on an alarm (no matter how small the fire).
- b. Alert other employees and evacuate the area.
- c. If trained to do so, use the available fire-fighting equipment.

## 20.0 FLAMMABLE LIQUIDS AND GASES

High on the list of sources for fire and explosion in construction are flammable and combustible liquids. All gases and liquids should be considered as flammable unless their label clearly indicates that no such exposure exists. Flammable liquids can be ignited by open flames, sparks, or excessive heat. Therefore, it is necessary for you to consider these factors for the safe storage, handling, use, and disposal of flammable liquids and gases.

### 20.1 Storage of Flammable Liquid And Gas:

- a. Storage: Compressed gases and petroleum products should not be stored within the same area. No other equipment or materials should be contained in the area where flammable gases or liquids are stored.
- b. Signage: All areas that are to be used for the storage of liquids or gases should be designated as such, and "No Smoking" signs posted. No smoking must be enforced.
- c. Outside Storage:
  1. Keep flammables in isolated or non-combustible storage away from other operations by a minimum distance of 25 feet.
  2. Surround the storage area by an earthen lined dike at least 12 inches high with provisions for draining away from the building area, ground water, rain water, or spills of flammable or combustible liquids.
  3. Provide a 15-foot wide access way to permit the approach of fire control apparatus.
  4. Storage of containers (not more than 60 gallons each) shall not exceed 1,100 gallons in any one pile or area.
  5. Piles or groups of containers (not more than 60 gallons each) shall be five (5) feet apart and no closer than 20 feet from a building or structure.
- d. Inside Storage:
  1. No more than 25 gallons of flammable or combustible liquids shall be stored in a room outside of an approved storage cabinet.
  2. Quantities of flammable and combustible liquids in excess of 25 gallons shall be stored in an acceptable or approved cabinet meeting the requirements of *article 1926.152 paragraph b.2* of the construction industry OSHA regulations.
- e. Fuel Tanks:
  1. Fuel will be stored in storage tanks designed for fuel storage.
  2. The tanks will be complete with stands, vents, and dispensing hoses and will meet DOT and / or NEPA design standards.

3. Tanks will be located within the dikes of the outside storage area.
  4. All tanks, vessels, bottles and containers shall be labeled to describe contents.
- f. Fire Controls:
1. One 20 B 5 pound portable fire extinguisher shall be located not less than 25 feet, nor more than 75 feet from the flammable and combustible liquid outside storage area.
  2. Smoking and other sources of ignition will not be permitted within 50 feet of the outside storage area.
  3. The outside storage area and the doors of temporary structures containing flammable or combustible liquids will be conspicuously posted:

**DANGER - NO SMOKING OR OPEN FLAMES**

4. Dry brush and grass should be cleared back to a minimum distance of 100 feet from all flammable gas and liquid storage areas.
5. All areas to be used for the storage of flammable liquid or gases should be located away from equipment, materials, or other structures. A distance of 20 feet from any building or structure and the storage area must be maintained.
6. Structures to be used for the storage of flammable liquids or gases should be of fire-resistive construction and located away from burning, welding, and other operations involving flames or the generation of heat.
7. All storage structures must be well ventilated.

20.2 Handling of Flammable Liquid and Gas:

- a. During refueling, all equipment must be shut off.
- b. Never completely fill a fuel tank or container. Allow for expansion of the fuel.
- c. Absolutely NO SMOKING shall be permitted within fueling areas.
- d. Only trained personnel shall be allowed to handle flammable liquids and gases.
- e. Health hazards of flammable liquids and gases shall be communicated to all employees.
- f. Solvents, gasoline, and other fuels shall never be used as a cleaning agent or disinfectant.

- g. Spills shall be cleaned up immediately to prevent accumulation of vapors. All jobs shall have a spill containment kit consisting of at least 200 lbs. of oil-sorb and a containment boom. NEVER allow electrical switches or devices to be turned on until the vapors have dispersed and air quality checked.
- h. Transportation of flammable liquids and gases shall comply with all applicable federal, state, and local regulations.
- i. All components of OSHA Hazard Communication Standards must be observed (1910.1200).

## 21.0 HAND TOOLS

### 21.1 General Conditions:

- a. All hand tools, whether furnished by Harrison Western or the employee, shall be maintained in safe working condition and inspected frequently.
- b. Harrison Western will not issue or permit the use of unsafe hand tools.
- c. When not in use, tools should be stored in suitable boxes or containers.
- d. Cutting edges should be protected and tools should not be placed where they will roll off benches or tables.
- e. When the tools are in storage, the storage area must be moisture free to prevent corrosion. Heavier tools shall be stored and secured where they will not become a tripping hazard.
- f. The weight, size, and type of tool should be selected to fit the job at hand. Do not substitute pliers for hammers, screwdrivers for pinch bars, chisels, etc.
- g. All handles should be tightly fitted. Check wood handles carefully, and tighten with wedges when necessary. Also check the wood for splitting and cracking.
- h. All damaged or worn tools should be promptly repaired or replaced. Temporary and makeshift repairs are prohibited. Discard all tools that cannot be repaired into a safe working condition.
- i. Homemade tools are not allowed.

### 21.2 Safe Use of Specific Tools:

- a. Wrenches: Select the correct size and type of wrench for each job. Do not extend the wrench handle with pipe or other "cheaters", as the jaws will be spread. Wrenches shall not be used when jaws are sprung to the point that slipping occurs. Wrenches should always be placed on nuts with the jaw opening facing the direction the handle will move. Pull, do not-push.
- b. Punches: Punches should be straight, and should be suitable and heavy enough for the work. Punches should be accurately ground at all times.
- c. Chisels: The chisel should be large enough for the job, and should be driven with a hammer of sufficient weight. Use the proper chisel for the material being cut. Keep eyes on the cutting edge of the chisel. Chisels being struck by others should be held by tongs or other device. Goggles should be worn when chipping and always chip away from yourself. Repair or replace mushroomed chisels and cracked or broken handles. When sharpening, maintain the original shape and angle.
- d. Hatchets, Axes: Be careful to avoid rebound of hatchet or axe toward workmen. Clear sufficient space for swinging and watch for rebounding into your body. Wood handles should never be repaired with tape.

- e. Screwdriver: Do not use a screwdriver as a chisel, pry-bar, or for any purpose other than that intended. Select a screwdriver to fit the size of the screw being driven. Do not grind to a fine point to fit all sizes of screw heads. Keep tip ground properly, squared across. Handles should fit shank tightly. NEVER DRIVE A SCREW WITH A HAMMER.
- f. Hand Saws: Use a saw of proper shape and size with correct teeth for size of cut and material to be sawed. Keep teeth and blades sharp. Protect teeth when not in use. Check material being cut for nails, knots, and other objects that may damage the saw or cause it to buckle. Pieces being cut should be firmly held in place. If long pieces are being cut, a helper or supporting bench should be used to prevent pinching at the cut.
- g. Hacksaws: The blade should be selected for the material being cut. Blade teeth should be rigid and the frame properly aligned. Always direct the strokes away from yourself. Thin flat pieces should not be cut from edge to edge, but should be securely clamped, and cut so that several teeth are cutting at all times.
- h. Pliers: Pliers should be used only when no other tool will do the job. Never use pliers as wrenches. Use cutting pliers only for cutting soft metals, never hardened metals or as nail pullers. Use insulated pliers for electrical work.
- i. Picks: Pick handles should be free of splinters, splits, or cracks. The head should be firmly affixed to the handle. Be sure areas in back and to the sides are clear when swinging. Wood handles should never be repaired with tape.
- j. Shovels: Shovel handles should be free of splinters, cracks, or splits. The blade should be sharp and free of jagged and split edges.
- k. Jacks: Select jacks heavy enough to raise and hold the load. Be sure swivel heads and caps are in good condition and function properly. Jacks should rest on firm, level foundation, adequate to support the load. Be sure the jack cannot tip, and is in line with the vertical movement of the load. After raising a load, securely block before removing the jack. It is advisable to shore up any load that must remain in a raised position for any length of time. Lubricate jacks frequently and store where protected from moisture and damage. Inspect frequently and always repair promptly. Compliance with *OSHA Standard 1910.244* is mandatory.
- l. Power Tools: Inspect cords and plugs for damage. Grounding lugs or internally grounded tools only will be allowed. Guards shall be in place and in good order. Trigger locks are not allowed. Body position, balance and proper technique shall always be used. Consider bounce back, throw of sparks and drop when routing cords. Do not place power tools or cords in water.

## 22.0 HAZARD COMMUNICATION PROGRAM

### 22.1 Purpose:

To communicate the Harrison Western Hazard Communication Program to all company personnel. Harrison Western is firmly committed to providing all their employees and subcontractors with a safe and healthy work environment. It is a matter of company policy to provide our employees and subcontractors with information about hazardous chemicals on the worksite through our Hazard Communication Program, which includes container labeling, Material Safety Data Sheets (SDS's), and employee information and training.

The Job Superintendent, with the assistance of the Company Safety Coordinator, will have the overall responsibility for coordinating the Hazard Communication Program. The job superintendent will make our Hazard Communication Program available, upon request, to employees, subcontractors, and their designated representatives.

### 22.2 Objective:

- a. To protect the health of our employees.
- b. To provide the employees with the necessary information concerning health and physical hazards of the material used in their operations.
- c. To comply with *Title 29, Part 1926.59 Subpart D of the Code of Federal Regulation (CFR): OSHA Hazard Communication or 30 CFR Part 47 MSHA Hazardous Communication.*
- d. To include flexibility in the compliance program so that changes can be made to comply with possible state and local right-to-know laws.

### 22.3 Scope:

This compliance program will provide information to the employees of Harrison Western about the chemicals to which they are exposed. It will be accomplished by the following:

- a. Listing of all chemical products on the property.
- b. Appropriate labeling on containers of all chemical materials used.
- c. Making available Safety Data Sheets (SDS) for all chemical products on the property.
- d. Employee training to interpret label warnings, color coding signs, etc., that are affixed to containers so that they can properly protect themselves against potential hazards.
- e. Employee training to understand the elements of the SDS and to recognize possible risks to health and physical harm.

- f. This written compliance program will be made available, upon request, to employees, their designated representative(s), and to all local, state, and federal officials who have proper authority.

#### 22.4 Listing of Chemical Products:

- a. A master list of hazardous chemicals will be maintained for reference at Harrison Western office. The list will be expanded as new chemicals are ordered and / or received. All new chemical products will be appropriately labeled, and an SDS obtained before receiving material at Harrison Western construction site. It is suggested that all SDS's be kept though the product is no longer used.
- b. Since we are not a chemical manufacturer, importer or distributor, Harrison Western is not required to assess the hazards or evaluate chemicals. We will always evaluate to the best of our ability the potential health exposure of a particular chemical product before we decide to use it.
- c. When ordering chemical products request an SDS from all suppliers of chemical products or request copies from safety coordinator. This system will include the following:
  - 1. A form letter for requesting SDS is below.
  - 2. A flagging system to insure that SDS's are received and kept current.
  - 3. Maintenance of SDS files that would be available to employees, their representatives, local jurisdictional authorities, and health or medical officers as required by the regulations.
  - 4. Forward a copy of all SDS to safety coordinator.
- d. The jobsite superintendent will compile a list of all hazardous chemicals that will be used on the worksite by reviewing container labels, collecting SDS's, and from information received from other contractors. The list will be updated as necessary.

#### 22.5 Labeling:

- a. It is the policy of this company to ensure that each container of hazardous chemicals used by Harrison Western and its subcontractors on a jobsite be properly labeled. Information on labels must not conflict with federal, state, or local laws and / or regulations in labeling requirements. These labels should provide the following information:
  - 1. Identity of the chemical products or substances in the container.
  - 2. Hazard warnings such as words, pictures, symbols, or combinations.
  - 3. Name and address of the manufacturer or other responsible party.

- b. All containers of chemical products, including laboratory bottles, solvent cans, and dispensers must be labeled. For smaller containers (less than one gallon or 3.7 liters), labels must be consistent with the standards that are specified above. Only those chemicals that can be classified as "**immediate use**", which means that the hazardous chemicals are under control of and used only by the person who transfers it from the labeled container and only within the work shift in which it is transferred, are exempted from the labeling procedures described above.
- c. The labels must not be removed and will be replaced if illegible.
- d. In storage areas where similar chemical products are stored, we will post signs or place cards to identify the material and transmit the required information in lieu of individual container labels.
- e. If any materials are to be transferred from a storage tank or container through a pipeline, labels with the required information will be affixed to the line at the discharge point (valve).
- f. In those cases where a chemical product other than that specified on the container label is placed in the container and it must re-labeled for the container to accurately reflect the hazards of the chemical product that has been substituted. Consider metal tags as a sturdier label.

## 22.6 Training:

All employees in the regulated areas will receive training in the handling of chemical products. The training program will provide instruction in the following areas:

- a. The requirements of the Hazard Communication Program.
- b. The operations of the work area where chemical products are present including both routine and non-routine jobs.
- c. The location and availability of the SDS's.
- d. Interpretation of SDS's data and of the labeling system.
- e. Methods and observations that the employee may use to detect the presence or accidental release or spill of chemical products in the work area.
- f. Measure(s) that employees can take to protect themselves from these hazards (*i.e.*, work practices, personal protective equipment, and emergency procedures).
- g. When a new employee is assigned or transferred to a work area in which chemical products are used, his or her orientation will include all of the training required. Contractors, vendors, and service personnel who have employees assigned to work on our job premises in areas where potential exposure to chemical products exist, must be informed of chemical hazards, availability of SDS's, and appropriate protective measures.

- h. When employees are required to perform hazardous non-routine tasks (e.g., entering confined spaces, using epoxy, etc.), a training session will be conducted to inform them regarding the hazardous chemicals to which they might be exposed and the proper precautions to take to reduce or avoid exposure.
- i. Review methods for labeling temporary containers.

#### 22.7 Contractor Employers:

The safety and health officer or the responsible job superintendent will advise outside contractors in person of any chemical hazards that may be encountered in the normal course of their work on the premises, the labeling system in use, the protective measures to be taken, and the safe handling procedures to be used. In addition, they will help notify these individuals of the location and availability of SDS's. Each contractor bringing chemicals on-site must provide us with the appropriate hazard information on these substances, including the labels used and the precautionary measures to be taken in working with these chemicals.

#### 22.8 Additional Information:

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

**EMPLOYEE TRAINING RECORD**

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Field office information: Harrison Western

Job Superintendent: \_\_\_\_\_

Project Name: \_\_\_\_\_ No. \_\_\_\_\_

Address \_\_\_\_\_

Phone: \_\_\_\_\_

Substance Covered / Special Procedures Required:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Employees' Signatures attesting to the training:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Project Superintendent Signature \_\_\_\_\_

**SUBCONTRACTOR HAZCOM INFORMATION LOG**

Field office information: Harrison Western

Job Superintendent: \_\_\_\_\_

Project Name: \_\_\_\_\_ No. \_\_\_\_\_

Address \_\_\_\_\_

Phone: \_\_\_\_\_

Harrison Western's HazCom File is located at: \_\_\_\_\_

\_\_\_\_\_

Harrison Western's Written Hazard Communication Program is located on the "Written Hazard Communication Program" folder of the HazCom file.

All SDS's kept by Harrison Western are located in the "Material Safety Data Sheet" folder in the HazCom File.

The safety representative for \_\_\_\_\_ acknowledges the following:

- That Harrison Western HazCom program has been fully explained and understood.
- That he / she has trained his / her people in the HazCom program for this project. Checking the content of \_\_\_\_\_ HazCom folder to ensure it contains information on all hazardous material presently maintained on the project by Harrison Western.
- That the location and filing system of SDS's has been explained and is fully understood.
- Understanding that it is my responsibility to routinely check the \_\_\_\_\_ folder for new information, and make a new copy of the hazardous material list.
- Agreeing to supply the job superintendent for Harrison Western with one copy of each SDS received by \_\_\_\_\_ while working at the project site.

Subcontractor Representative's Signature:

\_\_\_\_\_

Date: \_\_\_\_\_

**FOLLOW-UP TO PURCHASE ORDER REQUEST FOR  
SAFETY DATA SHEETS**

Date: \_\_\_\_\_

Field office information: Harrison Western

Job Superintendent: \_\_\_\_\_

Project Name: \_\_\_\_\_ No. \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Recently we requested current and complete Material Safety Data Sheets for the following items purchased pursuant to Purchase Order Number \_\_\_\_\_.

ITEM NUMBER:

PRODUCT NAME:

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

In Order for our firm and yours to be in compliance with the federal Hazard Communication Standard, you must provide us with current, accurate SDS's for all chemicals we have purchased from you. Your prompt attention to this matter is appreciated.

**LETTER REQUESTING A SAFETY DATA SHEET AND / OR LABEL**

\_\_\_\_\_ SDS \_\_\_\_\_ Additional Labels (No.) \_\_\_\_\_

Date: \_\_\_\_\_

Field office information: Harrison Western

Job Superintendent: \_\_\_\_\_

Project Name: \_\_\_\_\_ No. \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_

Supplier / Manufacturer

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

In order to comply with the *OSHA Hazard Communication Standard*, we will need an accurate and current Material Safety Data Sheet (SDS) / Label for all hazardous products purchased from your company. The enclosed list shows the product(s) for which we do not have an SDS / Label.

Please send us the SDS / Label concerning these products. All correspondence should be directed to the address above. If you have any questions concerning this matter, please contact our Company Safety Officer. Thank you for your timely response to the request.

PRODUCT NAME:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**SECOND REQUEST FOR A MATERIAL SAFETY DATA SHEET / PRODUCT LABEL**

Request for: \_\_\_\_\_ SDS \_\_\_\_\_ Label

Date: \_\_\_\_\_

Field office information: Harrison Western

Job Superintendent: \_\_\_\_\_

Project Name: \_\_\_\_\_ No. \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_

Supplier / Manufacturer

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Recently we sent you a request for Material Safety Data Sheets / Product Labels on products purchased from your company. To date, we have not received the requested information. A second copy of the list of products for which we need SDS's / Product Labels is below: In Order for our firm and yours to be in compliance with the federal Hazard Communication Standard, we need to be provided with current, accurate SDS's / Labels for all hazardous products we have purchased from you. Your prompt attention to this matter is appreciated.

PRODUCT NAME:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Section I: Identification

**Manufacturer's Name and Address:** Self-explanatory, however, if source of data is provided by other than that of the manufacturer of the substance or mixture, the actual source of the data should also be listed.

**Emergency Telephone Numbers:** Entries here include those telephone numbers which can be used in the event of an emergency to obtain further information about the hazardous substance or mixture.

<b>U.S. DEPARTMENT OF LABOR</b> Occupational Safety and Health Administration <b>SAFETY DATA SHEET</b>		Form Accrual OMD NO.
Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (20 CFR 1915, 1916, 1917)		
<b>SECTION I</b>		
MANUFACTURER'S NAME		EMERGENCY TELEPHONE NO.
Address (Number, Street, City, State, and Zip Code)		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
CHEMICAL FAMILY	Formula	

**Chemical Family:** Listed will be the general class of compounds to which the hazardous substance or mixture belongs: *i.e.*, ethers, acids, ketenes, etc.

**Formula:** Entries here will generally include the chemical formula for single elements and compounds, not the formulation of a mixture. Examples of chemical formulas are: Sulfur Dioxide = SO<sub>2</sub>; Sulfuric Acid = H<sub>2</sub>SO<sub>4</sub>; Formaldehyde = HCHO. etc.

**Chemical Name and Synonyms:** Generally includes the name that the product is sold by.

# Section II: Hazardous Ingredients/ Identity Information

**Hazardous Ingredients:** By definition, a hazardous ingredient is a substance or form of a substance in a mixture in sufficient concentration to produce a flammable vapor or gas, or to produce acute or chronic adverse effects in persons exposed to the product either in normal use or predictable mixture of it.

The % (percent) column is intended to show the approximate percentage by weight or volume, each

hazardous substance is present when compared to the total weight or volume of the product. Normally, percentages will be listed to the nearest whole number.

When a substance normally considered to be hazardous exists in its pure form as part of a solution or mixture at levels constituting less than one (1) percent, or exists as an impurity in a mixture at levels less than two (2) percent, the substance will be so listed.

**Percentage:** See above. Exception for mixtures such as filler metals and their coatings, and core fluxes, in which the hazardous substance constitutes a very small proportion of the mixture, the hazardous substance shall be stated to the nearest 0.5 percent, and any ingredient constituting less than 0.5 percent should be indicated as such.

**Note:** TLV stands for threshold level value, a term used to express the highest airborne concentration of a substance to which nearly all persons (adults) can be repeatedly exposed, day after day, without experiencing adverse effects. TLVs may be expressed in parts of material per million parts (PPM) of air by volume for gases and vapors, or as milligrams of material per cubic meter (mg/M<sup>3</sup>) of air for dust and mist, as well as gases and vapors.

SECTION III – HAZARDOUS INGREDIENTS / IDENTITY INFORMATION					
PAINTS, PRESERVATIVES, AND SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			CASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)

**Hazardous Mixtures of Other Liquids, Solids or Gases:** Entries here will include such hazards as abrasive blasting materials and items not covered elsewhere in Section II.

**Alloys and Metallic Coatings:** Entries under this general heading include coatings such as plating, cladding, and metalizing. Filler metal is any metal added in making a brazed, soldered or welded joint. Filler metals will be considered with the ingredient of rod doting and core fluxes as a single mixture.

**Paints, Preservatives and Solvents:** The six (6) categories under this heading are self-explanatory.

# Section III: Physical / Chemical Characteristics

**Vapor Density (Air=1):** A comparative relationship between the weight of a unit volume of the vapors of a material and that of air. Will the vapors rise or sink?

**Vapor Pressure:** The pressure exerted by a saturated vapor above its own liquid in a closed container, usually stated in millimeters (mm) of mercury (Hg) at 68 degrees Fahrenheit (°F).

**Boiling Point:** The temperature at which a liquid changes to a vapor state, at a given pressure; usually stated in degrees Fahrenheit (°F) at sea level pressure of 760 millimeters (mm) of mercury (Hg). For mixtures, the initial boiling point or the boiling range may be given.

**Percentage Volatile by Volume:** The percentage of a liquid or solid (by volume) that will evaporate at an ambient temperature of 70 Fahrenheit (°F).

**Specific Gravity:** The ratio of the weight of a volume of material to the weight of an equal volume of water at 39.2 degrees Fahrenheit (°F).

SECTION III – PHYSICAL / CHEMICAL CHARACTERISTICS			
BOILING POINT (°F)		SPECIFIC GRAVITY (M <sub>2</sub> =1)	
VAPOR PRESSURE (mm Hg)		PERCENT VOLUME BY VOLUME (mg)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE ( =1)	
SOLUBILITY IN WATER			
APPEARANCE AND COLOR			

**Appearance and Color:** A brief description of the material at normal room temperature and atmospheric conditions (*i.e.*, viscous, colorless, liquid with an aromatic hydrocarbon odor).

**Evaporation Rate:** The rate at which a particular material will vaporize (evaporate) when compared to the rate of vaporization of a known material, usually butyl acetate. If another known material is used for comparison, that information shall be provided.

**Solubility in Water:** The amount of material which can be dissolved in a given volume of water. Expressed either in terms of milligrams per liter or general terms (*i.e.*, negligible or totally miscible).

# Section IV: Fire and Explosion Hazard Data

**Flash Point and Method Used:** Self-explanatory, however, if source of data is provided by other than that of the manufacturer of the substance or mixture, the actual source of the data should also be listed. The methods used most extensively include: Tag closed Cup (TCC); Pensky-Martens Closed Cup (PMCC); and Setaflash (SETA).

**Flammable or Explosive Limits:** The range of concentrations over which a flammable vapor mixed with proper proportions of air will flash or explode if an ignition source is present. The range extends between two (2) points designated lower explosive limit (LEL) and the upper explosive limit (UEL) and are expressed in percent of volume of vapor in air.

SECTION III – FIRE AND EXPLOSION HAZARD DATA			
FLASHPOINT (METHOD USED)	FLAMMABLE LIMITS	LEL	UEL
EXTINGUISHING MEDIA			
SPECIAL FIRE RIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

**Unusual fire and Explosive Hazards:** Under this heading should be listed hazards which might occur as the result of overheating or burning of the specific material, including any chemical reactions or change in chemical form or composition. It should also include any special hazards which may need to be considered while extinguishing a fire with one of the available types of extinguishing substances.

**Extinguishing Media:** The firefighting substances determined to be suitable for use on the specific material that is burning. The firefighting substances should be indicated by its generic name (*i.e.*, water, fog, foam, alcohol foam, carbon dioxide (CO<sub>2</sub>), dry chemical, etc.)

**Special firefighting Procedures (and Precautions):** When certain firefighting substances are determined to be unsuitable or unsafe if used to control a specific type of burning material, they should be listed. Special handling procedures and personal protective equipment should also be used.

# Section V: Reactivity Data

**Incompatibility:** A list (if any) of those common materials or contaminants with which the specific material could reasonably be expected to come in contact with and produce a reaction or decomposition which would release large amounts of energy, flammable vapor or gas, or to produce toxic vapor or gas. Conditions to avoid (if any) should be listed (*i.e.*, extreme temperatures, jarring, inappropriate storage, etc.). If no common incompatible materials, contaminants or conditions are applicable, the box should indicate "none"

**Stability:** The checked box will indicate whether the subject material is stable or unstable under any reasonably foreseeable conditions of storage, handling, use or misuse. If checked unstable, those conditions which could result in a dangerous reaction or decomposition should be listed including temperatures above 150 °F, etc.

SECTION V: REACTIVITY DATA			
STABILITY	UNSTABLE	<input type="checkbox"/>	CONDITIONS TO AVOID
	STABLE	<input type="checkbox"/>	
INCOMPATIBILITY ( <i>Materials to avoid</i> )			
HAZARDOUS DECOMPOSITION PRODUCTS			
HAZARDOUS POLYMERIZATION	MAY OCCUR	<input type="checkbox"/>	CONDITIONS TO AVOID
	WILL NOT OCCUR	<input type="checkbox"/>	

**Hazardous Polymerization:** Polymerization is a chemical reaction in which two (2) or more molecules of a substance combine to form repeating structural units of the original molecule and resulting in an energy level change. A hazardous polymerization is a reaction, with an extremely high or uncontrolled release of energy. The box should indicate whether or not a hazardous polymerization can occur and, if so, the reasonable foreseeable conditions which could start the polymerization should be listed. The list should also include the expected time period in which the polymerization inhibitors in the products may be used

**Hazardous Decomposition Products:** A list (if any) of the hazardous materials that may be produced in dangerous amounts if the subject material is exposed to burning, oxidation, heating, or allowed to react with other chemicals.

# Section VI: Health Hazard Data

**Effects of Overexposure:** List of most common sensations or symptoms a person could expect to experience from overexposure to a specific material or its components.

**Threshold Limit Value:** The most current figures of the American conference of Governmental Industrial Hygienists (ACGIH) used to express airborne concentration of a material to which nearly all persons can be exposed day after day, without adverse effect. Threshold Limit Values (TLV) may be expressed in three (3) ways:

- Time Weighted Average (TWA), based on an allowable concentration exposure averaged over a normal 8-hour workday or 40-hour workweek;
- Short-Term Exposure Limit (STEL), or maximum concentration for a continuous 15-minute exposure period (not to exceed four (4) such exposures per day); and
- Ceiling (C) Exposure Limit, that exposure concentration

SECTION VI – HEALTH HAZARD DATA	
→	THRESHOLD LIMIT VALUE
→	EFFECTS OF OVEREXPOSURE
→	EMERGENCY AND FIRST AID PROCEDURES

**Emergency and First Aid Procedures:** The instructions for treatment of a victim of acute inhalation, ingestion and skin or eye contact with a specific hazardous substance or its component. The listed items should be for emergency procedures only as the victim should be examined by a doctor as soon after exposure as possible.

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# Section VII: Precautions for Safe Handling and Use

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**Steps to be Taken in Case the Material is Released or Spilled:**

List should include the methods to be used to control and clean up spills and leaks, applicable precautions, such as:

- avoiding breathing of gases or vapors,
- contact with liquids and solids;
- removing sources of ignition, etc.

The list should also list the need (if any) for special equipment to be used for cleanup (*i.e.*, glass or plastic scoops, etc.).

SECTION VII – PRECAUTIONS FOR SAFE HANDLING AND USE
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
WASTE DISPOSAL METHOD

**Waste Disposal Methods:** Should describe the acceptable as well as prohibited methods for disposing of spilled solids or liquids (*i.e.*, flushing with water, returning to container, burning, etc.) Should also alert the user of any potential danger to the environment, (*i.e.*, effects on general population, crops, water supplies, etc.)

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# Section VII: Precautions for Safe Handling and Use (cont'd.)

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**Precautions to be Taken in handling or Storage:** Any additional or special precautions not addressed elsewhere in the SDS should be listed here. List may include:

- handling or storing to avoid reaction hazards,
- safe storage life of the product in relation to reactivity,
- special packaging requirements, temperature control,

SECTION VII – PRECAUTIONS FOR SAFE HANDLING AND USE	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	
OTHER PRECAUTIONS	

**Other Precautions:** A catchall category for any other precautions not covered elsewhere in the SDS.

**NOTE:** Although the Federal OSHA Form 20 does not provide a box for indicating the date the Material Safety Data sheet (SDS) was developed, each SDS should include the month and year the information was compiled.

# Section VIII: Control Measures

**Ventilation:** Whenever ventilation is needed to capture or contain contaminants at their source as a means of controlling personal exposure to a specific substance or to prevent the buildup of an explosive atmosphere, the appropriate ventilation systems should be listed along with any appropriate conditions of use or limitation.

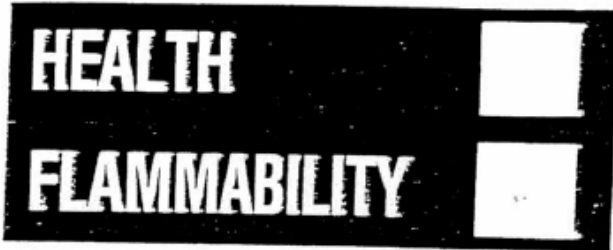
**Respiratory Protection:** Whenever respiratory protective devices may be needed during routine or unusual conditions to protect persons from overexposure to a specific substance, the class of device acceptable for use, and any special conditions of use or limitation should be listed.

SECTION VIII – CONTROL MEASURES		
RESPIRATORY PROTECTION ( <i>Specific Type</i> )		
VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL ( <i>General</i> )	OTHER
PROTECTIVE GLOVES		EYE PROTECTION
OTHER PROTECTIVE EQUIPMENT		

**Protective Gloves:** Many solvents can easily penetrate through rubber or neoprene, so whenever gloves are necessary to prevent skin exposure while handling a specific substance or material, special glove design, construction, and material requirements should be listed, if appropriate.

**Eye Protection:** There are many types of eye and face protective devices on the market and for almost any type hazard encountered, there is a suitable type available. When eye or face protection beyond that of general use industrial safety glasses is necessary, while handling or otherwise exposed to the specific substance or mixture, such special protective devices should be listed along with any conditions of use or limitations.

## APPENDIX C LABEL SYSTEMS



**REACTIVITY**

**PERSONAL PROTECTION**

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**HEALTH HAZARD**  
4 Deadly  
3 Extreme  
  danger  
2 Hazardous  
  Slightly  
  hazardous  
1 Normal material

**SPECIFIC HAZARD**  
Oxidizer  
Acid  
Alkali  
Corrosive  
Use NO WATER  
Radioactive

OX  
ACID  
ALK  
COR  
W  
R

**FIRE HAZARD**  
Flash Points  
4 Below 73°F  
  (Boning pt. below 100°)  
3 Below 73°F  
  (Boning pt. above 100°  
  and/or  
  above 73°F not  
  exceeding 100° F  
2 Above 100° F  
  Exceeding 20  
1 Above 20  
0 Will not

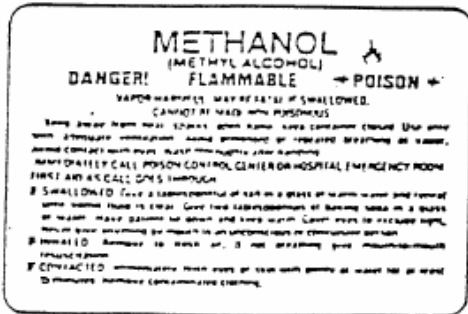
**REACTIVITY**  
4 May detonate  
3 Shock and heat  
  may detonate  
2 Violent  
  chemical  
  change  
1 Unstable if  
  heated  
0 Stable

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Hazardous Material Information System

National Fire Protection Association

Printed by LABELMASTER, Div. of AMERICAN LABELMARK CO.



CHICAGO, IL 60646  
8046  
8046

**ACID, LIQUID, N.O.S.  
NA 1760**

Department of Transportation

# Blue-Health Risk

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<b>Number Rating</b>	<b>Word Rating</b>	<b>Description of the Fire Risk</b>
0	MINIMAL	Little or no damage, even with heavy exposure
1	SLIGHT	Irritation or minor injury that can be cured
2	MODERATE	May cause permanent minor injury or make you unable to function
3	SERIOUS	Short exposure may cause serious injury and needs quick medical attention
4	SEVERE	SHORT EXPOSURE MAY CAUSE DEATH OR SERIOUS INJURY EVEN WITH MEDICAL ATTENTION

# Red-Flammability

<b>Number Rating</b>	<b>Word Rating</b>	<b>Description of the Fire Risk</b>
0	MINIMAL	Doesn't normally burn even when heated to 1500 degrees Fahrenheit (1500 °F)
1	SLIGHT	Will burn but must be preheated. Most substances that can burn fall in this rating. FP = above 200 °F
2	MODERATE	Must be heated somewhat before burning or may form harmful gases if heated. FP = 100 °F to 200 °F
3	SERIOUS	Can be ignited easily, burns rapidly or ignites on exposure to air. FP = (liquids) below 100 °F
4	SEVERE	GIVES OFF EXPLOSIVE VAPORS AT ROOM TEMPERATURE (73 °F) FP = (liquids or gas under pressure as liquid) below 73 °F and boiling below 100 °F

# Yellow-Reactivity

Number Rating	Word Rating	Description of Change / Energy
0	MINIMAL	Usually does not change even during fire conditions
1	SLIGHT	Usually doesn't change but may release some energy at high temperatures
2	MODERATE	Usually changes easily, may undergo strong changes (not releasing energy suddenly / not exploding) although it may be explosive with water
3	SERIOUS	May explode but needs a strong start ( <i>example</i> - high temperature, pressure, or shock)
4	SEVERE	SLIGHT SHOCK, PRESSURE, OR TEMPERATURE MAY CAUSE AN EXPLOSION

## GLOSSARY OF TERMS

**ACGIH** - American Conference of Governmental Industrial Hygienists, which develops and publishes recommended occupational exposure limits for hundreds of chemical substances and physical agents. See TLV.

**Acid** - Any chemical with a low pH that in water solution can burn the skin or eyes. Acids turn litmus paper red and have pH values of 0 to 6.

**Action level** - Term used by OSHA and NIOSH to express the level of toxicant which requires medical surveillance, usually one half of the PEL.

**Activated charcoal** - Charcoal is an amorphous form of carbon formed by burning wood, nutshells, animal bones, and other carbonaceous materials. Charcoal becomes activated by heating it with steam to 800-900°C. During this treatment, a porous, submicroscopic internal structure is formed which gives it an extensive internal surface area. Activated charcoal is commonly used as a gas or vapor adsorbent in air-purifying respirators and as a solid sorbent in air sampling.

**Acute Effect** - Adverse effect on a human or animal which has severe symptoms developing rapidly and coming quickly to a crisis. Also see "chronic effect."

**Adsorption** - The condensation of gases, liquids, or dissolved substances on the surfaces of solids.

**AIHA** - American Industrial Hygiene Association.

**Air** - The mixture of gases that surrounds the earth; its major components are as follows: 78.08% nitrogen, 20.95% oxygen, 0.03% carbon dioxide, and 0.93% argon. Water vapor (humidity) varies.

**Air-line respirator** - A respirator that is connected to a compressed breathing air source by a hose of small inside diameter. The air is delivered continuously or intermittently in a sufficient volume to meet the wearer's breathing requirements.

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

**Alkali** - Any chemical with a high pH that in water solution is irritating or caustic to the skin. Strong alkalis in solution are corrosive to the skin and mucous membranes. Example: sodium hydroxide, referred to as caustic soda or lye. Alkalis turn litmus paper blue and have pH values from 8 to 14. Another term for alkali is base.

**Allergy** - An abnormal response of a hypersensitive person to chemical and physical stimuli. Allergic manifestations of major importance occur in about 10 percent of the population.

**ANSI** - The American National Standards Institute is a voluntary membership organization (run with private funding) that develops consensus standards nationally for a wide variety of devices and procedures.

**Asphyxiant** - A vapor or gas which can cause unconsciousness or death by suffocation (lack of oxygen). Asphyxiation is one of the principal potential hazards of working in confined spaces.

**ASTM** - American Society for Testing and Materials.

**Atmosphere-supplying respirator** - A respirator that provides breathing air from a source independent of the surrounding atmosphere. There are two types: airline and self-contained breathing apparatus.

**Atmospheric pressure** - The pressure exerted in all directions by the atmosphere. At sea level, mean atmospheric pressure is 29.92 inches Hg, 14.7 psi, or 407 inches w.g.

**Base** - A compound that reacts with an acid to form a salt. It is another term for alkali.

**Benign** - Not malignant. A benign tumor is one which does not metastasize or invade tissue. Benign tumors may still be lethal, due to pressure on vital organs.

**Biohazard** - A combination of the words biological and hazard. Organisms or products of organisms that present a risk to humans.

**Boiling point** - The temperature at which the vapor pressure of a liquid equals atmospheric pressure.

**Carbon monoxide** - A colorless, odorless toxic gas produced by any process that involves the incomplete combustion of carbon-containing substances. It is emitted through the exhaust of gasoline powered vehicles.

**Carcinogen** - A substance or agent capable of causing or producing cancer in mammals, including humans. A chemical is considered to be a carcinogen if: a) it has been evaluated by the International Agency for Research on Cancer (IARC) and found to be a carcinogen or potential carcinogen; or b) it is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition); or c) it is regulated by OSHA as a carcinogen.

**CAS** - Chemical Abstracts Service is an organization under the American Chemical Society. CAS abstracts and indexes chemical literature from all over the world in "Chemical Abstracts." "CAS Numbers" are used to identify specific chemicals or mixtures.

**Ceiling limit (C)** - An airborne concentration of a toxic substance in the work environment, which should never be exceeded.

**CERCLA** - Comprehensive Environmental Response, Compensation and Liability Act of 1980. Commonly known as "Superfund." (U.S.EPA).

**Chemical cartridge respirator** - A respirator that uses various chemical substances to purify inhaled air of certain gases and vapors. This type respirator is effective for concentrations no more than ten times the TLV of the contaminant, if the contaminant has warning properties (odor or irritation) below the TLV.

**CHEMTREC** - Chemical Transportation Emergency Center. Public service of the Chemical Manufacturers Association that provides immediate advice for those at the scene of hazardous materials emergencies. CHEMTREC has a 24-hour toll-free telephone number (800-424-9300) to help respond to chemical transportation emergencies.

**Chronic effect** - An adverse effect on a human or animal body, with symptoms which develop slowly over a long period of time or which recur frequently. Also see "acute."

**Combustible liquid** - Combustible liquids are those having a flash point at or above 37.8°C (100°F).

**Concentration** - The amount of a given substance in a stated unit of measure. Common methods of stating concentration are percent by weight or by volume, weight per unit volume, normality, etc.

**Corrosive** - A substance that causes visible destruction or permanent changes in human skin tissue at the site of contact.

**CFR** - Code of Federal Regulations. A collection of the regulations that have been promulgated under United States Law.

**Cutaneous** - Pertaining to or affecting the skin.

**Degrees Celsius (Centigrade)** - The temperature on a scale in which the freezing point of water is 0°C and the boiling point is 100°C. To convert to Degrees Fahrenheit, use the following formula: °F = (°C x 1.8) + 32.

**Degrees Fahrenheit** - The temperature on a scale in which the boiling point of water is 212°F and the freezing point is 32°F.

**Density** - The mass per unit volume of a substance. For example, lead is much denser than aluminum.

**Dermatitis** - Inflammation of the skin from any cause.

**Dermatosis** - A broader term than dermatitis; it includes any cutaneous abnormality, thus encompassing folliculitis, acne, pigmentary changes, and nodules and tumors.

**Dose-response relationship** - Correlation between the amount of exposure to an agent or toxic chemical and the resulting effect on the body.

**DOL** - U.S. Department of Labor. OSHA and MSHA are part of the DOL.

**DOT** - U.S. Department of Transportation.

**Dusts** - Solid particles generated by handling, crushing, grinding, rapid impact, detonation, and decrepitating of organic or inorganic materials, such as rock, ore, metal, coal, wood and grain. Dusts do not tend to flocculate, except under electrostatic forces; they do not diffuse in air but settle under the influence of gravity.

**Dyspnea** - Shortness of breath, difficult or labored breathing.

**EPA** - U.S. Environmental Protection Agency.

**Evaporation** - The process by which a liquid is changed into the vapor state.

**Evaporation rate** - The ratio of the time required to evaporate a measured volume of a liquid to the time required to evaporate the same volume of a reference liquid (butyl acetate, ethyl ether) under ideal test conditions. The higher the ratio, the slower the evaporation rate. The evaporation rate can be useful in evaluating the health and fire hazards of a material.

**Federal Register** - Publication of U.S. government documents officially promulgated under the law, documents whose validity depends upon such publication. It is published on each day following a government working day. It is, in effect, the daily supplement to the Code of Federal Regulations, CFR.

**Fire point** - The lowest temperature at which a material can evolve vapors fast enough to support continuous combustion.

**First Aid** - Emergency measures to be taken when a person is suffering from overexposure to a hazardous material, before regular medical help can be obtained.

**Flammable limits** - Flammables have a minimum concentration below which propagation of flame does not occur on contact with a source of ignition. This is known as the lower flammable explosive limit (LEL). There is also a maximum concentration of vapor or gas in air above which propagation of flame does not occur. This is known as the upper flammable explosive limit.

**(UEL)** - These units are expressed in percent of gas or vapor in air by volume.

**Flammable liquid** - Any liquid having a flash point below 37.8°C (100°F), except any mixture having components with flashpoints of 100°F or higher, the total of which make up 99 percent or more of the total volume of the mixture.

**Flammable range** - The difference between the lower and upper flammable limits, expressed in terms of percentage of vapor or gas in air by volume, and is also often referred to as the "explosive range."

**Flash point** - The minimum temperature at which a liquid gives off vapor within a test vessel in sufficient concentration to form an ignitable mixture with air near the surface of the liquid. Two tests are used - open cup and closed cup.

**Fume** - Airborne particulate formed by the evaporation of solid materials, e.g. metal fume emitted during welding. Usually less than one micron in diameter.

**Gage pressure** - Pressure measured with respect to atmospheric pressure.

**Gas** - A state of matter in which the material has very low density and viscosity; can expand and contract greatly in response to changes in temperature and pressure; easily diffuses into other gases; readily and uniformly distributes itself throughout any container. A gas can be changed to the liquid or solid state only by the combined effect of increased pressure and decreased temperature. Examples include sulfur dioxide, ozone, and carbon monoxide.

**Gram (g)** - A metric unit of weight. One ounce equals 28.4 grams.

**HEPA filter** - (High Efficiency Particulate Air Filter) A disposable, extended medium, dry type filter with a particle removal efficiency of no less than 99.97 percent for 0.3µm particles.

**IARC** - International Agency-for Research on Cancer.

**IDLH** - Immediately Dangerous to Life and Health. An atmospheric concentration of any toxic, corrosive or asphyxiant substance that poses an immediate threat to life or would cause irreversible or delayed adverse health effects or would interfere with an individual's ability to escape from a dangerous atmosphere.

**Ignition source** - Anything that provides heat, spark or flame sufficient to cause combustion/explosion.

**Ignition temperature** - The minimum temperature to initiate or cause self-sustained combustion in the absence of any source of ignition.

**Impervious** - A material that does not allow another substance to pass through or penetrate it. Frequently used to describe gloves.

**Inches of mercury column** - A unit used in measuring pressures. One inch of mercury column equals a pressure of 1.66 kPa (0.491 psi).

**Inches of water column** - A unit used in measuring pressures. One inch of water column equals a pressure of 0.25 kPa (0.036 psi).

**Incompatible** - Materials which could cause dangerous reactions from direct contact with one another.

**Ingestion** - Taking in by the mouth.

**Inhalation** - Breathing of a substance in the form of a gas, vapor, fume, mist, or dust.

**Insoluble** - Incapable of being dissolved in a liquid.

**Irritant** - A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact.

**Latent period** - The time that elapses between exposure and the first manifestation of damage.

**LC<sub>50</sub>** - Lethal concentration that will kill 50 percent of the test animals within a specified time. See LD<sub>50</sub>.

**LD<sub>50</sub>** - The dose required to produce the death in 50 percent of the exposed species within a specified time.

**Liter (L)** - A measure of capacity - one quart equals 0.9L.

**Lower explosive limit (LEL)** - The lower limit of flammability of a gas or vapor at ordinary ambient temperatures expressed in percent of the gas or vapor in air by volume. This limit is assumed constant for temperatures up to 120°C (250°F). Above this, it should be decreased by a factor of 0.7 because explosibility increases with higher temperatures.

**Malignant** - As applied to a tumor. Cancerous and capable of undergoing metastasis, or invasion of surrounding tissue.

**Metastasis** - Transfer of the causal agent (cell or microorganism) of a disease from a primary focus to a distant one through the blood or lymphatic vessels. Also, spread of malignancy from site of primary cancer to secondary sites.

**Meter** - A metric unit of length, equal to about 39 inches.

**Micron (micrometer,  $\mu\text{n}$ )** - A unit of length equal to one millionth of a meter, approximately 1/25,000 of an inch.

**Milligram (mg)** - A unit of weight in the metric system. One thousand milligrams equals one gram.

**Milligrams per cubic meter (mg/m<sup>3</sup>)** - Unit used to measure air concentrations of dusts, gases, mists, and fumes.

**Milliliter (mL)** - A metric unit used to measure volume. One milliliter equals one cubic centimeter.

**Millimeter of mercury (mmHg)** - The unit of pressure equal to the pressure exerted by a column of liquid mercury one millimeter high at a standard temperature.

**Mists** - Suspended liquid droplets generated by condensation from the gaseous to the liquid state or by breaking up a liquid into a dispersed state, such as by splashing, foaming, or atomizing. Mist is formed when a finely divided liquid is suspended in air.

**SDS** - Material Safety Data Sheet.

**MSHA** - Mine Safety and Health Administration, U.S. Department of Labor.

**Mucous membranes** - Lining of the hollow organs of the body, notably the nose, mouth, stomach, intestines, bronchial tubes, and urinary tract.

**NFPA** - The National Fire Protection Association is a voluntary membership organization whose aim is to promote and improve fire protection and prevention. The NFPA publishes 16 volumes of codes known as the National Fire Codes.

**NIOSH** - The National Institute for Occupational Safety and Health is a federal agency. It conducts research on health and safety concerns, tests and certifies respirators, and trains occupational health and safety professionals.

**NTP** - National Toxicology Program. The NTP publishes an Annual Report on carcinogens.

**Nuisance dust** - Have a long history of little adverse effect on the lungs and do not produce significant organic disease or toxic effect when exposures are kept under reasonable control.

**OSHA** - U.S. Occupational Safety and Health Administration, U.S. Department of Labor.

**Oxidizer** - A substance that gives up oxygen readily. Presence of an oxidizer increases the fire hazard.

**Oxygen deficiency** - That concentration of oxygen by volume below which atmosphere supplying respiratory protection must be provided. It exists in atmospheres where the percentage of oxygen by volume is less than 19.5 percent oxygen.

**Oxygen-enriched atmosphere** - An atmosphere containing more than 23.5 percent oxygen by volume.

**Particulate matter** - A suspension of fine solid or liquid particles in air, such as dust, fog, fume, mist, smoke or sprays. Particulate matter suspended in air is commonly known as an aerosol.

**PEL** - Permissible exposure limit. An exposure limit that is published and enforced by OSHA as a legal standard.

**Personal protective equipment (PPE)** - Devices worn by the worker to protect against hazards in the environment. Respirators, gloves, and hearing protectors are examples.

**pH** - Means used to express the degree of acidity or alkalinity of a solution with neutrality indicated as seven.

**Polymerization** - A chemical reaction in which two or more small molecules (monomers) combine to form larger molecules (polymers) that contain repeating structural units of the original molecules. A hazardous polymerization is the above reaction, with an uncontrolled release of energy.

**Ppm** - Parts per million parts of air by volume of vapor or gas or other contaminant. Used to measure air concentrations of vapors and gases.

**Psi** - Pounds per square inch (for SDS purposes) is the pressure a material exerts on the walls of a confining vessel or enclosure. For technical accuracy, pressure must be expressed as psig (pounds per square inch gauge) or psia (pounds per square absolute; that is, gauge pressure plus sea level atmospheric pressure, or psig plus approximately 14.7 pounds per square inch).

**RCRA** - Resource Conservation and Recovery Act of 1976. (U.S.EPA)

**Reactivity (chemical)** - A substance's susceptibility to undergo a chemical reaction or change that may result in dangerous side effects, such as an explosion, burning, and corrosive or toxic emissions.

**Respirable size particulates** - Particulates in the size range that permits them to penetrate deep into the lungs upon inhalation.

**Respirator (approved)** - A device which has met the requirements of 30 CFR Part 11 and is designed to protect the wearer from inhalation of harmful atmospheres and has been approved by the National Institute for Occupational Safety and Health (NIOSH) and the Mine Safety and Health Administration (MSHA).

**Respiratory system** - Consists of (in descending order) - the nose, mouth, nasal passages, nasal pharynx, pharynx, larynx, trachea, bronchi, bronchioles, air sacs (alveoli) of the lungs, and muscles of respiration.

**Route of entry** - The path by which chemicals can enter the body. There are three main routes of entry: inhalation, ingestion, and skin absorption.

**SARA** - Superfund Amendments and Reauthorization Act of 1986. (U.S.EPA).

**SCBA** - Self-contained breathing apparatus.

**Sensitizer** - A substance which on first exposure causes little or no reaction but which on repeated exposure may cause a marked response not necessarily limited to the contact site. Skin sensitization is the most common form of sensitization in the industrial setting.

**Short-term exposure limit (STEL)** - ACGIH-recommended exposure limit. Maximum concentration to which workers can be exposed for a short period of time (15 minutes) for only four times throughout the day with at least one hour between exposures.

**"Skin"** - A notation (sometimes used with PEL or TLV exposure data) which indicates that the stated substance may be absorbed by the skin, mucous membranes, and eyes - either airborne or by direct contact - and that this additional exposure must be considered part of the total exposure to avoid exceeding the PEL or TLV for that substance.

**Solubility in water** - A term expressing the percentage of a material (by weight) that will dissolve in water at ambient temperature. Solubility information can be useful in determining spill cleanup methods and re-extinguishing agents and methods for a material.

**Solvent** - A substance, usually a liquid, in which other substances are dissolved. The most common solvent is water.

**Sorbent** - (1) A material that a removes toxic gases and vapors from air inhaled through a canister or cartridge. (2) Material used to collect gases and vapors during air-sampling.

**Specific gravity** - The ratio of the mass of a unit volume of a substance to the mass of the same volume of a standard substance at a standard temperature. Water at 4°C (39.2°F) is the standard usually referred to for liquids; for gases, dry air (at the same temperature and pressure as the gas) is often taken as the

**Stability** - An expression of the ability of a material to remain unchanged. For SDS purposes, a material is stable if it remains in the same form under expected and reasonable conditions of storage or use. Conditions which may cause instability (dangerous change) are stated. Examples are temperatures above 150°F, shock from dropping.

**Synergism** - Cooperative action of substances whose total effect is greater than the sum of their separate effects.

**Systemic** - Spread throughout the body, affecting all body systems and organs, not localized in one spot or area.

**Threshold** - The lowest dose or exposure to a chemical at which a specific effect is observed.

**Time-weighted average concentration (TWA)** - Refers to concentrations of airborne toxic materials which have been weighted for a certain time duration, usually 8 hours.

**TLV. Threshold Limit Value** - A time-weighted average concentration under which most people can work consistently for 8 hours a day, day after day, with no harmful effects. A table of these values and accompanying precautions is published annually by the American Conference of Governmental Industrial Hygienists.

**Toxicity** - A relative property of a chemical agent and refers to a harmful effect on some biologic mechanism and the conditions under which this effect occurs.

**Upper explosive limit (UEL)** - The highest concentration (expressed in percent vapor or gas in the air by volume) of a substance that will burn or explode when an ignition source is present.

**Vapor pressure** - Pressure (measured in pounds per square inch absolute - psia) exerted by a vapor. If a vapor is kept in confinement over its liquid so that the vapor can accumulate above the liquid (the temperature being held constant), the vapor pressure approaches a fixed limit called the maximum (or saturated) vapor pressure, dependent only on the temperature and the liquid.

**Vapors** - The gaseous form of substances that are normally in the solid or liquid state (at room temperature and pressure). The vapor can be changed back to the solid or liquid state either by increasing the pressure or decreasing the temperature alone. Vapors also diffuse. Evaporation is the process by which a liquid is changed into the vapor state and mixed with the surrounding air. Solvents with low boiling points will volatilize readily. Examples include benzene, methyl alcohol, mercury, and toluene.

**Viscosity** - The property of a fluid that resists internal flow by releasing counteracting forces.

**Volatility** - The tendency or ability of a liquid to vaporize. Such liquids as alcohol and gasoline, because of their well-known tendency to evaporate rapidly, are called volatile liquids.

**Water column** - A unit used in measuring pressure. See also Inches of water column.

## 23.0 Hearing Conservation Program

### 23.1 Purpose:

To establish minimum standards to preserve and protect the hearing of workers exposed to noise, in order to minimize hearing loss.

### 23.2 Scope:

This standard applies to all Harrison Western operations and their contractors, and defines all of the Harrison Western requirements for a comprehensive Hearing Conservation Program (HCP) that includes:

- a. Noise exposure assessment and monitoring protocol
- b. Hearing protection program
- c. Audiometric testing criteria and procedures
- d. Training requirements for employees
- e. Records management and reporting

### 23.3 Responsibilities:

#### a. Site Management:

1. To ensure that all employees comply with the HCP in terms of HPD use and compliance with audiometric surveillance.

#### b. Industrial Hygiene and Occupational Health Management:

1. Assist, Project Managers in reviewing report findings and evaluating engineering and/or administrative controls for employees with overexposures to noise.
2. Ensure a systematic approach, utilizing site HASP tools, to identify and evaluate potential noise sources that will contribute to overexposures.
3. Ensure noise related risks present at the site are evaluated and documented on the sites' risk registers.
4. Ensure industrial hygiene surveys are done to evaluate noise hazards and assist in developing and implementing controls for known exposures.
5. Ensure that industrial hygiene reports and recommendations are communicated to all levels of the operating unit.

6. Ensure a program for audiometric testing is established.

c. Site Project Supervisor:

1. Assist, when necessary, Department Managers in reviewing report findings and evaluating engineering and/or administrative controls for employees with overexposures to noise.
2. Assist with resources to collect noise samples and conduct audiometric testing.

d. Site Industrial Hygienist or Assigned HASP Representative:

1. Ensure that requirements of this Hearing Conservation Program Standard are being met.
2. Provide timely written notification to employees and management of exposure monitoring results.
3. Participate in safety management system audits to ensure that appropriate exposure monitoring and control procedures are in place and being maintained and provide assistance where deemed necessary by these audits.
4. Conduct workplace noise exposure assessments as outlined in the site's annual monitoring plan.

23.4 Noise Exposure Assessment and Monitoring:

- a. Initial and periodic noise monitoring is required to determine compliance with noise exposure standards. Typically employee full-shift noise exposures exceeding 85 dBA for an 8-hour period or exceeding a ceiling of 115 dBA require corrective action to control or reduce noise levels.
- b. Area noise assessments shall be conducted and updated at a minimum of once per year and as new equipment and processes are put in place. Noise assessments will be used to evaluate effectiveness of engineering controls, changes in noise due to aging equipment and to substantiate work group classifications.
- c. Employee noise exposure monitoring will be conducted on a regular basis. The rate at which an employee is monitored will depend on the Similar Exposure Group (SEG) classification the employee falls into. The formation of a SEG is based on exposure potential and frequency of exposure.

- d. Employee noise exposure monitoring will be representative of the employee work shift.
- e. Personal noise monitoring equipment will conform to ANSI S1.25-1991 or ISO 1999 standards.
- f. Results of employee noise monitoring will not be adjusted for use of hearing protection.
- g. Results of noise monitoring will be communicated in writing to the employee:
  - 1. New exposures >OEL, notification must be made within 15 calendar days & must include all corrective actions.
  - 2. All other monitoring results must be reviewed with employee within 30 days. Results of noise monitoring will remain on file for at least 30 years after the employee leaves employment.
- h. All employees exposed to the TWA8 action level of 82 dBA (50% Dose) must be enrolled in a hearing conservation program.
- i. Sites are responsible for implementing feasible engineering and administrative noise controls for any job classification with a noise exposure equal to or exceeding an 8-hour TWA of 85 dBA.
- j. Areas where it is likely that the 8 hr Leq exceeds 85 dBA must be identified and mapped, signposted or otherwise clearly communicated to employees working in the area.
- k. The use of engineering and administrative controls will be continually evaluated and implemented. Administrative control measures implemented will be posted and reviewed with affected crews at the time of implementation. Training will be conducted annually on administrative controls. Administrative controls must remain posted for the duration they are in use.

### 23.5 Use of Hearing Protection:

- a. Any employee/contractor or other visitor entering an area posted for hearing protection will be required to use hearing protection.
- b. Employees will be trained before use and annually on the selection, use, care and maintenance of hearing protectors. A variety of plugs and muffs shall be available to all employees. All hearing protection will be provided at no cost to employees.

- c. Supplies of plugs should be made available at most entranceways to hearing protection-required areas to be used by anyone.
- d. Site HASP personnel and supervisors will randomly audit the use of and condition of hearing protection used by employees and others.
- e. Double hearing protection is required at exposures  $\geq 100$  dBA TWA.
- f. As a general practice, the Noise Reduction Rating (NRR) on the HPD must be derated at 50%.

### 23.6 Audiometric Testing:

- a. Audiometry shall be conducted annually for all employees enrolled in the HCP.
- b. Audiometric testing shall be conducted by pure tone audiometry in an audiometry booth or quiet room, with measured background noise levels as per ANSI standard S3.1-1999 or latest revision.
- c. Hearing tests shall be provided by a physician, CAOCH certified or other recognized licensed audiologist or a certified technician under the direction of a physician or audiologist.
- d. Results and interpretation of hearing tests, excluding any specific medical findings, will be provided to the respective site HSLP department within 30 days of hearing testing.
- e. A retest will be conducted within 30 days in the event that an employee's test is invalid or results demonstrate an unconfirmed STS or major hearing loss.
- f. The pre-employment audiogram can be used as the base line audiogram for all employees provided the conditions meet the requirements of 5.3.2. Sites affected by regulatory HCP requirements should use the promulgation date as the baseline for audiograms for employees hired prior to the promulgation date. Baseline tests will be adjusted on the direction of physician or audiologist whenever:
  - 1. A Standard Threshold Shift (STS) is permanent or a significant improvement in hearing is detected.
  - 2. A Reportable Threshold Shift (RTS) is permanent.
- g. When a valid hearing test cannot be obtained due to a suspected medical problem of the ear, the employee will be referred to a physician or audiologist for medical evaluation.

- h. Within 30 calendar days of receiving evidence or confirmation of a STS or RTS, the affected employee will receive retraining including the use of hearing protection. The effectiveness of any engineering and administrative controls will be evaluated with the employee to identify and correct any deficiencies.
- i. When a retest confirms a STS, the affected employee will be referred to an audiologist for a follow-up evaluation.
- j. When a retest confirms a RTS, the affected employee must be seen by the audiologist to determine if the shift is occupationally noise induced and if the baseline should be revised.
- k. The audiologist shall not report any specific findings or diagnoses unrelated to the employee's hearing loss due to occupational noise or the wearing of hearing protectors.
- l. The Baseline Audiogram will be conducted after at least 14 hours free of noise.
- m. The Periodic (screening), and Confirmatory/Retest Audiogram can be conducted during the course of the employee's normal duties and does not have to be done after 14 hours noise free. However, hearing protection shall be worn prior to testing if employee is working in a noisy environment.

23.7 Training shall include:

- a. effects of noise on hearing
- b. the purpose and value of wearing hearing protection
- c. advantages and disadvantages of wearing hearing protection
- d. types of hearing protection offered by mine and instructions on fit
- e. maintenance and care, requirements for hearing protectors
- f. mine operator's and miners responsibilities in maintaining noise controls
- g. purpose and value of hearing tests
- h. summary of test procedures
- i. Hearing Conservation Program requirements.

### 23.8 Training shall be conducted:

- a. At the time the employee is enrolled in the Hearing Conservation Program and annually thereafter.
- b. Whenever a confirmed STS or RTS is encountered.

### 23.9 Records:

- a. Sites will provide access to employee or with the employee's written consent, the employee's designee all their records within 15 calendar days of the request.
- b. Sites will provide former employees access to their records.
- c. Test records that include employee name and job classification, hearing test, evidence of a scientific and valid protocol, noise monitoring results, and results of any follow-up examinations will be kept on file as outlined in the document control standard.

### 23.10 Definitions:

- a. A-Weighting (dBA) – setting on sound level meters/dosimeters to determine the actual impact of sound on a human's ear. Because the human ear does not weight all sounds equally; it becomes necessary to weight the sound as a human ear would, thus the A-weighting is used.
- b. Action Level – An 8 hour time-weighted average sound level ( $TWA_8$ ) of 82 dBA, or equivalently a dose of 50%, integrating all sound levels from 80 dBA to at least 140 dBA. This is not correctable for hearing protection device (HPD) use. At this level the worker must be enrolled in the HCP and Hearing Protection Devices (HPDs) are mandatory.
- c. Baseline Audiogram – The audiogram recorded in which subsequent audiograms are compared to determine the extent of hearing loss. The baseline is established when the employee is hired. It can be adjusted as directed by a qualified health professional (audiologist or physician). The baseline audiogram should only be recorded after 14 noise free hours.
- d. CAOHC – Council for Accreditation in Occupational Hearing Conservation.
- e. Criterion Level – The sound level which if constantly applied for 8 hours results in a dose of 100% of the OEL (85 dBA).
- f. Dose - % Dose =  $100 (C_1/T_1 + C_2/T_2 + \dots C_n/T_n)$ .

- g. Exchange Rate – The amount of increase in sound level, in decibels, which would require halving of the allowable exposure time to maintain the same noise dose. i.e. When the ER is set to 3 dB, the % dose doubles with each increase of 3 dB. For the purpose of this standard two exchange rates shall be used. An exchange rate of 3 dB shall be used to monitor under Harrison Western criteria, and an exchange rate of 5 dB shall be used to monitor for compliance criteria.
- h. Hearing Conservation Program – A formal program established to prevent occupational Noise Induced Hearing Loss (NIHL). All employees exposed at or above the action level must be enrolled in the program. Employees enrolled in the program must receive annual audiograms and training as outlined in this HCP.
- i. LAVG - LAVG is the average sound level measured over the run time. LAVG will integrate all sound levels at or over the threshold. LAVG will be used for Harrison Western and MSHA dosimeter sampling.
- j. LEQ - The true equivalent sound level measured over the run time. The term LEQ is functionally the same as LAVG except that it is only used when the exchange rate is set to 3dB and the threshold is set to none. LEQ will not be used for Harrison Western or MSHA sampling.
- k. Minor Hearing Loss / Standard Threshold Shift (STS) – A change in hearing sensitivity for the worse relative to the baseline audiogram, or relative to the most recent revised baseline audiogram where one has been established by a qualified professional, of an average of 10 dB or more at 2000, 3000 and 4000 Hz in either ear. All confirmed Minor Hearing Loss cases shall be reported annually to Harrison Western as an Occupational Illness.
- l. Noise Induced Hearing Loss (NIHL) – Hearing loss due to excessive exposure to noise.
- m. Occupational Exposure Limit (OEL) – The maximum allowable exposure limit established by the company. The 8 hr OEL is 85 dBA or equivalently, a dose of 100% integrating all sound levels from 80 dBA to at least 140 dBA.
- n. Permissible Exposure Limit (PEL) – The maximum allowable exposure limit established by a regulatory agency. The 8 hr. PEL established by the Mine Safety and Health Agency (MSHA) is a TWA8 of 90 dBA or equivalently a dose of 100% of that permitted by the standard, integrating all sound levels from 90dBA to at least 140 dBA.

- o. Reportable Hearing Loss – A change in hearing sensitivity for the worse relative to the baseline audiogram, where one has been established by a qualified professional, of an average of 25 dB or more at 2000, 3000 and 4000 Hz in either ear. All confirmed Reportable Hearing Loss cases shall be reported annually to Harrison Western Corporate HASP as an Occupational Illness.
- p. Slow Response Measuring Mode – A sound level meter time constant which integrates sound pressures every second. This mode should be used when evaluating compliance with OELs, PELs, and HCP.
- q. Threshold Level – The equivalent A-weighted continuous noise level at which a dosimeter begins to integrate noise into a measured exposure. For purposes of this standard, Harrison Western threshold levels should be set to 80 dB and MSHA threshold levels should be set to 90 dBA
- r. Time Weighted Average (TWA) - TWA represents a constant sound level lasting eight hours that would result in the equivalent sound energy as the noise that was sampled. The time weighted average always averages the sampled sound over an 8 hour period. TWA starts at zero and grows. The TWA is less than the LAVG for a duration of less than eight hours, exactly equal to the LAVG at eight hours, and grows higher than LAVG after eight hours.

## Hearing Conservation Program Training Record

Harrison Western Construction Corp. MSHA ID#: J35

This is not an official MSHA training form. This form is being provided to assist Harrison Western Construction Corp in documenting "Hearing Conservation Program" training requirements. 30 CFR Part 62 does not specify what form to use for documenting training.

Miner's Full Name (print): \_\_\_\_\_

Job Title: \_\_\_\_\_

30 CFR Part 62.180 Training §62.180(a) The Harrison Western Construction Corp must, within 30 days of a miner enrollment into a hearing conservation program, provide the miner with training. Harrison Western Construction Corp. must give training every 12 months thereafter if the miner's noise exposure continues to equal or exceed the action level. Training must include:	Check 4 if completed	Miner's Initials (optional)
§ 62.180(a)(1) The effects of noise on hearing;		
§ 62.180(a)(2) The purpose and value of wearing hearing protectors;		
§ 62.180(a)(3) The advantages and disadvantages of the hearing protectors offered;		
§ 62.180(a)(4) The various types of hearing protectors offered by the Harrison Western Construction Corp operator and the care, fitting and use of each type;		
§ 62.180(a)(5) The general requirements of this part;		
§ 62.180(a)(6) Harrison Western Construction Corp and miner's respective task in maintaining mine noise controls; and		
§ 62.180(a)(7) The purpose and value of audiometric testing and a summary of the procedures.		
Optional Training List all additional training provided on the companies "Hearing Conservation Program" in the space below.		Harrison Western Construction Initials (optional)
1)		
2)		
3)		
4)		

As required by §62.180(b), I certify that the above training has been completed.

\_\_\_\_\_  
(Signature of person responsible training)

\_\_\_\_\_  
(Date training provided)

## Notification Letter - - Exposure at or above AL

This is not an official MSHA form. CFR 30 Part 62 does not specify the format for notification letters. Harrison Western Construction Corp operators may use any format they wish for such letters.

Date

John Jones  
Employee Number 24689753  
Loader Operator

RE: You're Workplace Noise Exposure

On Thursday, August 3, 2015, you were sampled for noise exposure while you operated the #4 Cat loader feeding the plant hopper. Your full shift noise exposure did not exceed MSHA's Permissible Exposure Level; however your noise dose of 85 dba did exceed MSHA's Action Level for noise exposure. The Action Level for noise exposure is one-half of the Permissible Exposure Limit.

Because of this noise exposure, you have been enrolled in the company's Hearing Conservation Program (HCP). By following the provisions of the HCP, your chances of sustaining a serious hearing loss as a result of on-the-job noise exposure will be greatly reduced. Within the next 30 days, you will be provided with hearing conservation training, be offered audiometric testing and offered your choice of either ear muffs or ear plugs.

If you have any questions, please feel free to contact me or your supervisor.

Sincerely,

John Smith  
General Manager

NOTE: The following person was exposed at or above the Action Level, Permissible Exposure Level, or Dual Hearing Protection Level must be notified in writing within 15 days of:

1. The exposure determination, and
2. The corrective action being taken.

**References**

NIOSH (1998); Criteria for recommended Standard – Occupational Noise Exposure, Revised Criteria 1998; NIOSH Pub. No. 98-126

MSHA (1999); Health Standards for Occupational Noise Exposure, Final Rule; 30 CFR Part 62

OSHA (2002); Occupational Injury and Illness Recording and Reporting Requirements, Final Rule; 67:44037-44048

## 24.0 HOISTING EQUIPMENT

### 24.1 General:

1. Prior to initial on-site operation, at 12-month intervals, and following major repairs or modifications, power cranes and other hoisting systems shall be thoroughly inspected by a certified state crane inspector and satisfactorily complete a performance test that demonstrates the equipment's ability to safely handle and maneuver rated loads.
  1. Performance test of crawler, truck, and wheel mounted cranes shall demonstrate the strength, stability, capability, and adequacy of power, brakes, clutches, and controls to safely maneuver 125 percent of the ANTICIPATED load.
  2. A braking system capable of stopping, lowering, and holding a load of at least 110 percent of the rated maximum capacity shall be provided on all hoisting equipment.
  3. Adequate clearance shall be maintained between moving and rotating structures of crane and fixed objects to allow the passage of employees without harm.
  4. A standard signal system shall be used on all hoisting equipment.

### 24.2 Crane Operation:

- a. The operator shall not perform any other work nor shall they leave the operator's position while a load is suspended in the air.
- b. Riding on loads, hooks, hammers, buckets material hoists, or other hoisting equipment not meant for personnel handling is prohibited.
- c. Crane booms shall be lowered to ground level or secured against displacement by wind loads or other outside forces when not in use.
- d. All windows in crane cabs shall be of distortion-free safety glass, or equivalent, that will not interfere with the safe operation of the machine.
- e. Auxiliary load-handling devices, such as, buckets, magnets, load falls, slings, calculation load blocks, hooks, and pile-driver leads shall be included as part of the load and be inspected for safe operation.
- f. A means shall be provided for the crane operator to visually determine the levelness of the crane.
- g. A boom angle or radius indicator shall be provided within operator's view.

- h. Hoisting equipment with telescopic or extendible booms shall have an indicator that shows the boom length from minimum to maximum and is visible to the operator from the operator's position at the controls.
- i. Taglines for controlling loads shall be used whenever necessary for protection of personnel, equipment, and structures.

### 24.3 Personnel Hoists:

- a. All personnel hoists shall be designed by a registered professional engineer competent in the field and fully cognizant of the applicable ANSI standards.
- b. Rated load capacities, recommended operating speeds, and special hazard warnings shall be posted on cages, platforms, and at the operator's station.
- c. Lift controls shall be tested each day prior to use, to determine that such controls are in safe working condition.
- d. Only authorized persons shall operate an aerial lift.
- e. Belting or tying off to an adjacent pole, structure or equipment while working from an aerial lift shall not be permitted.
- f. Employees shall always stand firmly on the floor of the basket or platform, and shall not sit or climb on the edge or use planks, ladders, or other devices for an elevated work position.
- g. A personnel hoist shall not be moved while elevated unless it is specifically designed to be used in this manner.
- h. Fall protection will be used when performing tasks from an elevated platform, bucket, basket, or work deck.

## 25.0 HOUSEKEEPING

- 25.1 Scrap and debris must be removed from the jobsite at regular intervals.
- 25.2 All debris must be cleared from the buildings and work areas daily.
- 25.3 Nails, wire ties, and other accessories will be promptly removed from lumber or any other used lumber at the time of stripping or dismantling. If it is not practical to remove or bend nails in used lumber to avoid tripping hazards and nail traps, the lumber must be stacked for cleaning and reuse. Lumber must not be scattered.
- 25.4 The work site, especially stairways and walkways, shall be kept clear of obstructions which may create tripping or other hazards. This includes ice over travel ways used for task / job access (MSHA 57.11016).
- 25.5 Tools must be stored in tool boxes. If laid aside temporarily, the tools must be placed where they will not present a hazard. (Tools must not be placed in a position to fall on someone at a lower level.)
- 25.6 Oily rags, waste, etc., that are combustible, will not be permitted to accumulate in work areas, but shall be placed in metal containers equipped with covers for removal or re-use.
- 25.7 Employees, while cleaning up, will not throw or drop materials from upper levels to lower levels or to the ground if the materials are dropped more than 20 feet. (See 29 CFR 1926.252 for specific requirements.)
- 25.8 Employees are to dispose of lunch wrappings, excess food, water cups, etc., by placing such in trash receptacles provided for that purpose.
- 25.9 Vehicle cabs shall be kept in a manner consistent with good housekeeping practices (MSHA 57.14103 (c) (1) and 57.20003).
- 25.10 Broken pallets shall be disposed of and all protruding nails be rendered safe from causing injury (OSHA 1926.25 (a) & MSHA 57.14100(b)).
- 25.11 If required on specific job sites, trash and scrap will be sorted, as specified on the particular site, for recycling or other disposal procedures.

## 26.0 OSHA INSPECTION PROCEDURES

### 26.1 OSHA Policy On Arrival of a Compliance Officer:

- a. Verify the Compliance Officer's credentials. Make sure the credentials are current. Obtain a business card from each Compliance Officer, or record the name, address, and phone number of each one. If the Compliance Officer is accompanied by any individual who does not have such credentials, that individual should be denied access.
- b. Determine why the Compliance Officer wants to inspect the project (*i.e.*, complaint, fatality, general, imminent danger, follow-up).
- c. If a complaint inspection, ask to have a copy of the complaint.
- d. Call company safety official or VP of Operations immediately after the information in Nos. 1, 2, and 3 is obtained.
- e. If the inspection is the result of a complaint, we will allow them on site. If it is a drop-in inspection, a warrant may be required.
- f. The following are to be done if the company safety representative cannot be at the job when the inspector returns with a warrant:
  1. Request an opening conference if the Compliance Officer does not call for one.
  2. Have the project superintendent and the project manager present.
  3. Take detailed notes of everything discussed. If photos or videos are being taken by inspector take duplicates of our own.
  4. Keep all publications and documents given to you by the Compliance Officer and note who gave it to you and the date of its receipt.
  5. Determine the Compliance Officer's length of time with OSHA, education, prior work experience, and knowledge of construction work.
  6. If more than one Compliance Officer is involved, find out if they plan to make the inspection in one group or split into two or more groups to make the inspection. If they want to divide into two or more groups, tell the Compliance Officer you will have an employer representative with each group, call your office.

7. Be cooperative with the Compliance Officer. At all times, prior to, during, and after the inspection; act in a professional, businesslike manner. Never enter into personal arguments with the Compliance Officer.
8. Tell the Compliance Officer that you expect him/her to advise the company of all suspected violations and the standard involved. Tell the Compliance Officer that you will be taking notes of all the suspected violations he/she informs you of so that there will be no dispute as to whether the company was informed.

## 26.2 Company Records:

- a. Allow the Compliance Officer to look only at the OSHA or MSHA records required to be kept by us -- OSHA 300 forms, OSHA 301 forms (Injury & Illness Incident Report), crane inspection records, etc., unless the warrant specifically states all records or includes reference to other specific records. MSHA 700-1, 500-23, MSHA quarterly reports, workplace exams or equipment pre-operation checks.
- b. Do not volunteer to give or let the Compliance Officer look at any safety inspection reports made by your safety department personnel, insurance carrier, etc. other than those reports required by OSHA. This includes not giving or letting the Compliance Officer look at any such reports that have been made on subcontractor's activities.
- c. Do not provide employee files such as: disciplinary records, resumes or HR info.

## 26.3 During the Inspection:

### a. General:

1. Have the designated employer representative accompany the Compliance Officer at all times. Never leave the Compliance Officer to have free and unlimited access to your work without an employer representative.
2. Control the inspection. He or she is there with permission and will be expected to follow all instructions given him and will be required to conduct the inspection in such a manner that it does not disrupt the scheduled work. Remember, it is our construction project, not OSHA's. The Compliance Officer is to be treated as any other visitor -- under your control while on our project. Tell him/her that you need to take your own notes, pictures, and gather information at the same time. Take the time to do so, even if it slows down the inspection.
3. Take detailed notes of everything seen, discussed, and done by the Compliance Officer.

4. Take photographs of everything the Compliance Officer photographs. If the equipment, work area, etc., can be photographed from a more favorable position (different angle, greater distance, etc.), photograph it from the different position.
  5. Do not volunteer any information. The Compliance Officer is trained to obtain admissions from companies. Be careful answering questions. When in doubt, refuse. It is ok to keep answers brief and to the point.
  6. Do not issue orders, such as, "clean up the trash", during the inspection to have conditions corrected that have not been noticed by the Compliance Officer. The immediate abatement of an alleged violation will not preclude being cited by the Compliance Officer and may alert him to the condition.
  7. Make sure you fully understand everything the Compliance Officer does or comments on. If you do not understand everything he says and does, ask him questions. Insist on having time to record all facts, even if the inspection is slowed down.
- a. Employee Interviews:
1. The Compliance Officer may interview any employee privately.
  2. For interviews held with employees in our presence, record the names and companies of all employees interviewed. Record the content of the conversations with the employees.
  3. We have the right to be in attendance with management personnel.
- c. At the Closing Conference:
1. Have the designated employer representative and the project superintendent present.
  2. Take notes of everything discussed and record what documents were distributed by the Compliance Officer.
  3. Make sure that no questions you have concerning the inspection go unanswered. If the Compliance Officer cites a specific violation and that violations exist on the project, find out exactly why he/she feels that way. Tell him/her that you are noting every potential violation that he/she advises may exist so there will be no dispute at a later conference or hearing. Hand the list back and ask if that is everything, ask what other items may exist. If

he/she is unsure or does not list any others, tell him/her that you are noting that no additional items were included in response to your questions.

4. Don't give any estimates of abatement time needed to correct any alleged violations.

## 27.0 Laser Safety

27.1 Lasers are used in excavations, survey and construction with different application of devices and configurations. It is important to be properly tasked trained in order to prevent epidermal and optical burns.

a. Laser Use Safety Practices:

1. Avoid looking into the primary beam at all times.
2. Do not aim the laser with the eye; direct reflections could cause retinal damage.
3. Clear all personnel from the anticipated path of the beam.
4. Before operating the laser, warn all personnel and visitors of the potential hazard, and assure all safety measures are taken.
5. Do not wear bright, reflective jewelry or other potentially reflective items.
6. As appropriate wear the proper eye protection (1926.102(b)(2)).
7. Laser standards are ANSI Z136.6 if more compliance is required for the type of laser being used.

## 28.0 RISK HAZARD ASSESMENT

28.1 Maintaining safe working conditions requires controlling the surroundings and conditions that influence the day to day operation of your work. The Job Hazard Analysis form is designed to aid you in this area.

28.2 Nearly every job can be broken down into steps. List each step in the order of occurrence. Be sure to describe each job action. After you have recorded each step of the job, examine them to determine the hazards that might exist for each phase of work. After you have listed the potential hazards and reviewed them, determine whether or not the job can be done in another way to eliminate the hazard. If safer and better job steps can be used, list them and describe the new method for doing the task. Remember to be specific in your instructions.

28.3 The Risk Hazard Assessment form is a means whereby work practices are reviewed and potential safety problems uncovered. Once potential hazards are known, preventive steps can be taken to eliminate the problem. To make a hazard analysis you should:

- a. Know what work is to be analyzed.
- b. Break the work down into successive steps.
- c. Identify the hazards and potential accidents for each step.
- d. Eliminate the hazards to prevent the potential accidents.

### 28.4 Risk Hazard Assessment Efficiency Check:

The following list is to be used to check the efficiency of your hazard analysis:

- a. Break the job down into an orderly sequence of steps (tasks).
- b. Determine the potential for downgrading the risks associated with the task:
  1. Why is the task necessary?
  2. What is the importance of the task?
  3. Where should the task be done?
  4. When should the task be done?
  5. Who is best qualified to perform the task?
  6. How is the best method for doing the task?
- c. To make a Risk Hazard Assessment efficiency check of each task, use these guidelines:

1. Personnel:

- a. Are there factors present that could result in injury or illness?
- b. Are there factors present that could cause fire or explosion?
- c. Do the job personnel understand and follow all rules, regulations and precautions?
- d. Has the proper protective equipment been provided and is it being used properly?
- e. Are the right number of people assigned to the job and are they being utilized fully?

2. Equipment:

- a. Are the tools and equipment being utilized best suited to this job from a safety, quality, and productivity stand point?
- b. Could tools be provided that would improve efficiency?
- c. Could mechanical or power tools be applied more safely and economically than hand tools?
- d. Is the machinery and equipment being used within the recommended safe capacity?
- e. Is all equipment and machinery in good operating condition and has it been inspected prior to beginning the job?
- f. Are all tools readily available and properly positioned for effective use?

3. Material:

- a. Can better, safer, less expensive, or more readily available material be used?
- b. Can material waste be reduced and is there any use for the scrap?
- c. Is material being transported and handled in the safest and most efficient manner?
- d. Is the material arranged for the safest and most efficient access?
- e. Is there enough material to complete the job?

4. Environment:

- a. Are the working areas and related storage areas clean and orderly?
- b. Is junk occupying space that could be used to advantage by people, equipment, or material?
- c. Is there anything in the work area that could be considered unnecessary to the job to be performed?
- d. What in the work area could be changed or altered to improve work conditions?

5. Developing Recommended Controls:

- a. Eliminate all unnecessary details.
- b. Combine details where practical.
- c. Rearrange the work to get better sequences.
- d. Simplify all necessary details.

<b>Harrison Western Construction Corp</b>	Prepared by:	Approved by:	Page: 1 of 5
Attachment 1 - Hazard Analysis Form	Effective Date:	Revision number: 0	Document number:
Applicability:			

### Hazard Analysis

Project Name/Number:	Date:
Superintendent:	Foreman:
Operation:	

#### Step-by-Step Plan:

1.	8.
2.	9.
3.	10.
4.	11.
5.	12.
6.	13.
7.	14.

#### SPECIAL HAZARD CONSIDERATION

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

#### Access/Egress Identification:

Type (Ladder, Ramp, Scaffold, Etc.)	Location (Equipment, Area, Etc.)
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

#### List Attachments:

--

Project Name/Number:

Operation:

--	--

Note: Assign priority to each potential hazard – A-Extreme, B-Moderate, C-Slight

Step No. 1

Priority/Potential Hazard	Precautionary Plan

Step No. 2

Priority/Potential Hazard	Precautionary Plan

Step No. 3

Priority/Potential Hazard	Precautionary Plan

Step No. 4

Priority/Potential Hazard	Precautionary Plan

Step No. 5

Priority/Potential Hazard	Precautionary Plan

--	--

Project Name/Number:

Operation:

--	--

Note: Assign priority to each potential hazard – A-Extreme, B-Moderate, C-Slight

Step No. 6

Priority/Potential Hazard	Precautionary Plan

Step No. 7

Priority/Potential Hazard	Precautionary Plan

Step No. 8

Priority/Potential Hazard	Precautionary Plan

Step No. 9

Priority/Potential Hazard	Precautionary Plan

Step No. 10

Priority/Potential Hazard	Precautionary Plan


Project Name/Number:

Operation:

--	--

**INCLUDE PHOTOS WHERE  
NECESSARY**

## Hazard Analysis Signature Sheet

This hazard analysis has been reviewed by the following supervision, foreman and crew members:

Name (Print)	Signature	Dates Reviewed				
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
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19.						
20.						
21.						
22.						
23.						
24.						
25.						
Foreman:						
Superintendent:						

## 29.0 LADDERS, STAIRWAYS, AND RAMPS

### 29.1 General :

- a. Ladders present one of the major hazards in construction work and their improper use is the cause of many serious accidents. An analysis of accidents involving ladders revealed that the four (4) major causes of such accidents are:
  1. Ascending or descending improperly.
  2. Failure to secure ladder at top and/or bottom.
  3. Structural failure of the ladder itself.
  4. Carrying objects in hands while ascending or descending.
- b. Great care should be used in the selection of the proper size and Type of the ladder to be used, the proper maintenance and storage of a ladder when not in use, and frequent inspections should be made on all ladders. Harrison Western Construction Corp. will use Type I ladders with a load capacity of 300 lbs.
- c. Ladders of all types should be carefully inspected if accidentally dropped or otherwise damaged in use. Ladders found to be defective will be repaired or, if necessary, tagged out of service as scraped.
- d. Frequent inspection of all ladders is recommended. All parts should be checked for wear, corrosion, and structural failure.

### 29.2 General Use:

- a. Except where either permanent or temporary stairways, ramps, man hoists, or runways are provided, ladders meeting the requirements of this subsection shall be used to provide access to all elevations.
- b. Only type I extra heavy duty industrial ladders are acceptable.
- c. The use of ladders with broken or missing rungs or steps, broken or split side rails, or other faulty or defective construction is prohibited.
- d. Portable ladder feet shall be placed on a substantial base and the area around the top and bottom of the ladder shall be kept clear.
- e. Ladders shall not be placed in access ways or other locations where they may be displaced unless protected by barricades or guards.

- f. In ascending or descending ladders, workmen should face the ladder and use both hands to hold on to side rails, always keeping three points of contact. Material should not be carried on ladders.
- g. Portable ladders shall 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. The acute angle with the horizontal must not be less than 75 degrees.
- h. Ladders will not be used as work platforms or scaffolding or as structured members of scaffolds or work platforms or walkways.
- i. The length of single ladders or individual sections of ladders shall not exceed 30 feet. Two-section ladders shall not exceed 48 feet in length and over two-section ladders shall not exceed 60 feet in length.
- j. The side rails shall extend not less than 36 inches above the landing. When this is not practical, grab rails, which provide a secure grip for an employee moving to or from the point of access, shall be installed.
- k. Portable stepladders shall not exceed 20 feet in height.
- l. Portable ladders shall rest on a firm foundation capable of supporting the load without displacement in any direction.
- m. Ladders shall be equipped with safety shoes, spurs, spikes, tread feet, or other approved slip-resistant devices at the base section of each rail.
- n. Portable ladders in use shall be tied, blocked, or otherwise secured to prevent their being displaced.
- o. Portable metal ladders shall not be used for electrical work where they may contact electrical conductors.
- p. Extension ladder sections shall not be used as independent ladders.
- q. Portable ladders are approved for one-man use only.
- r. Fall protection will be used if the ladder work is over a dangerous condition (i.e. rebar, sharp protruding edges or similar hazards- OSHA 1926.1053).

### 29.3 Job-Made Ladders:

- a. Job-made ladders shall be constructed as outlined under *Subpart L of the 2015 OSHA Standards for the Construction Industry*.

- b. Job-made ladders shall be constructed for intended use. If a ladder is to provide the only means of access or exit from a working area for 25 or more employees, or simultaneous two-way traffic is expected, a double cleat ladder shall be installed.
- c. Double cleat ladders shall not exceed 24 feet in length.
- d. Single cleat ladders shall not exceed 30 feet in length between supports (base and top landing). If ladders are to connect different landings, or if the length required exceeds this maximum length, two or more separate ladders shall be used, offset with a platform between each ladder. Guard rails and toe-boards shall be erected on the exposed sides of the platform.
- e. The width of single cleat ladders shall be at least 15 inches, but not more than 20 inches, between rails at the top.
- f. Side rails shall be parallel or flared top to bottom by not more than one-quarter of an inch for each 2 feet of length.
- g. Wood side rails of ladders having cleats shall not be less than 1½ inches thick and 3½ inches deep (2 inches by 4 inches nominal).
- h. It is required that side rails be continuous. If splicing is necessary to attain the required length, however, the splice must develop the full strength of a continuous side rail of the same length.
- i. 2-inch by four (4) inch lumber shall be used for side rails of single cleat ladders up to 16 feet long; three (3) inch by six (6) inch lumber shall be used for single cleat ladders from 16 to 30 feet in length.
- j. Two (2) inch by four (4) inch lumber shall be used for side and middle rails of double cleat ladders up to 12 feet in length; two (2) inch by six (6) inch lumber for double cleat ladders from 12 to 24 feet in length.
- k. Cleats shall be inset into the edges of the side rails one-half inch (½”), or filler blocks shall be used on the rails between the cleats. The cleats shall be secure to each side rail with three (3) 10d common wire nails or other fasteners of equivalent strength.
- l. Cleat spacing should be uniform and not over 12 inches or less than 10 inches on centers. The wood for rungs or cleats should be clear, straight-grained, and entirely free of knots.
- m. All surfaces should be planed and free of splinters, and edges where hand-rails are used should be beveled.

- n. Long ladders should be braced at intermediate points as necessary to prevent spring.
- o. Ladders stored horizontally should be supported at both ends and at intermediate points to prevent sagging of the middle section, which tends to loosen the rungs and warp the rails.

#### 29.4 Fixed Ladders:

- a. Fixed ladders shall not have a length of climb over 20 feet unless equipped with a cage, well, or ladder safety device or offset landings at 20 foot intervals.
- b. Ladders equipped with cages shall have a maximum length of climb of 30 feet between ground floors, or offset landings.
- c. Bottom of cages will start a minimum of seven (7) feet or maximum of eight (8) feet from the base of each section of ladder.
- d. Climbing devices will be installed so employee can attach or detach safety belt while standing on ground, floors, or platforms.
- e. Provisions shall be made for a landing at the top of all fixed ladders by extending the side rails, stanchions, or other supports at least 42 inches above the landing.
- f. At least four (4) inches toe space shall be provided between the inside face of the rung or step and wall or other obstructions.
- g. Two separate ladders or double-cleat ladders shall be provided for access to and from work areas for 25 or more employees, or where simultaneous two-way traffic is necessary.

**NOTE: The attached pages give illustrations for the construction and installation of single and double-cleat job-made ladders.**

#### 29.5 Stairways:

- a. General:
  - 1. Temporary or permanent stairways shall be provided to work areas of buildings or structures 20 feet or more in height.
  - 2. Stairways shall be constructed for access to fixed scaffolds, walkways, and work platforms affixed to buildings and structures for access over extended periods of construction, or when employees routinely carry tools and materials.

3. This provision does not apply to access to work areas where it is established practice to use ladders.
4. Temporary stairways and handrails shall be constructed of selected materials, free of imperfections and hazardous projections, and shall be rigidly supported.
5. Stair treads shall be securely fastened in place.
6. Where permanent metal pan stairs are set for temporary use, treads of wood filler pieces shall be installed flush with the pan rims.
7. Stairwells and platforms shall be protected on all open sides with standard guardrails and toe boards.
8. Debris shall not be permitted to accumulate on stairs.

b. Design:

1. Stairways shall be designed and constructed with a live load safety factor of five but never less than a moving concentrated load of 1000 pounds. Temporary stairway design shall conform to OSHA Subpart 1926.1052 (b) (c).
2. They shall be installed at angles to the horizontal of between 30 and 50 degrees.
3. Any uniform combination of rise/tread dimensions between 6½ to 9½ inch rise and 8 to 11 inch tread run can be used to obtain a stairway with this permissible range.
4. No flight of stairs shall have an unbroken rise of more than 12 feet without a standard landing extending not less than 30 inches in the direction of travel.
5. Vertical clearance above any stair tread shall be at least seven (7) feet measured from the leading edge.

c. Stair Railings and Handrails:

1. Stairs having four or more risers or greater than 30 inches shall be equipped with standard railings and handrails as specified in the following:
  - a. Less than 44 inches wide and both sides enclosed: At least one handrail on right side descending.

- b. Less than 44 inches wide and one side open: One stair railing on the open side.
- c. Less than 44 inches wide and both sides open: A stair railing on each side.
- d. More than 44 inches but less than 88 inches wide: One handrail on each enclosed side and a stair rail on each open side.
- e. More than 88 inches wide: One handrail on each enclosed side and a stair rail on each open side plus a standard stair railing located midway of the width.

## 2. Standard Gaurdrails:

### a. Design:

- 1. A standard guardrail shall consist of a top rail, intermediate rail, and posts.
- 2. Vertical height shall be not more than 37 inches not less than 30 inches, measured from top of the forward edge of the tread to the upper surface of the top rail.
- 3. There shall be a 3 inch clearance between the hand rail and an obstacle that could cause hand injuries.

### b. Wooden Railing:

- 1. Wooden posts and top rails shall be a minimum 2x4 inch, construction grade or equivalent lumber.
- 2. Post spacing shall not exceed eight (8) feet on centers.
- 3. Intermediate rails shall be a minimum of 1x6 inch.

### c. Pipe Guardrail:

- 1. Posts, top rails, and intermediate rails shall be a minimum 1.5-inch-nominal diameter steel pipe.
- 2. Posts shall be spaced not to exceed eight (8) feet on centers.

d. Metal Guardrails:

1. Posts, top rails, and intermediate rails shall be 2 by  $\frac{3}{8}$  inch angle iron, or equivalent.
2. Posts shall be spaced not to exceed eight (8) feet on centers.

e. Standard Handrail:

1. A standard handrail shall be securely mounted no less than three (3) inches from the wall or partition enclosing the stairs.
2. Material and strength requirements shall be equivalent to the stair railing.
3. Handrail shall be mounted the same height as the top rail of a standard stair railing.

29.6 Ramps:

a. General:

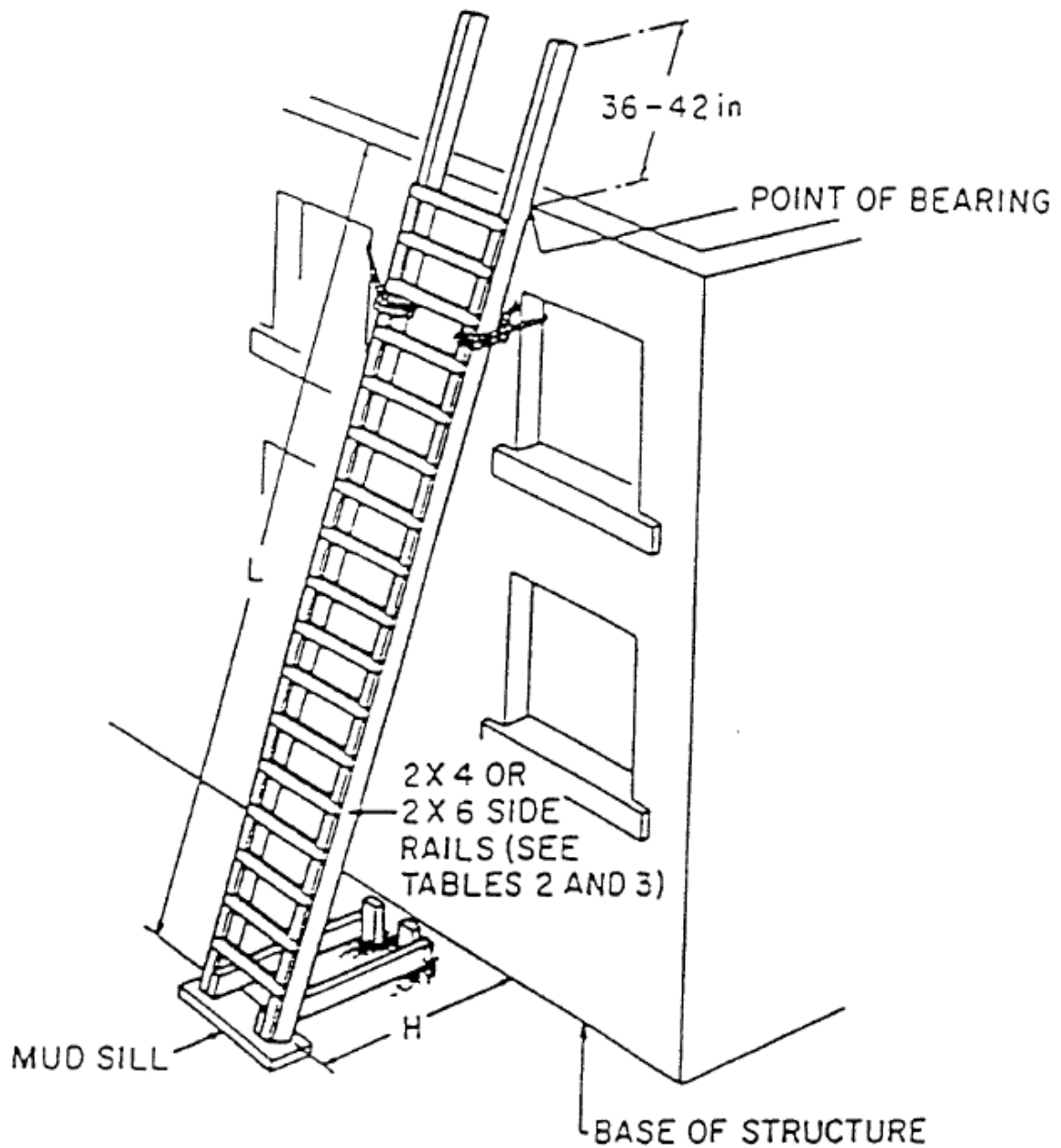
1. Temporary access ramps may be substituted for stairways when the slope or incline does not exceed 15 degrees.
2. Cleated ramps may, with prior approval, be used for access on slopes up to 20 degrees from the horizontal.
3. Overhead protection shall be provided as needed to protect the public, employees, or property from falling objects.
4. Overhead protection shall be of sufficient strength to withstand the potential impact and shall be installed not less than seven (7) feet nor more than nine (9) feet above the ramp.

b. Design:

1. Ramps shall be designed with a safety factor of five (5) with a minimum 11 lb./sq. ft. live load.
2. Ramp width shall be sufficient to prevent congestion of persons, materials, or equipment but never less than 18 inches wide.
3. Ramps shall be equipped with standard guardrails on open sides and with a minimum of one handrail.
4. Cleated ramps shall have a 2x4 inch cleats spaced at equal intervals not exceeding 12 inches.

5. Cleats shall be equal in length to the width of the ramp and secured with nails driven through the decking and clinched on the underside.

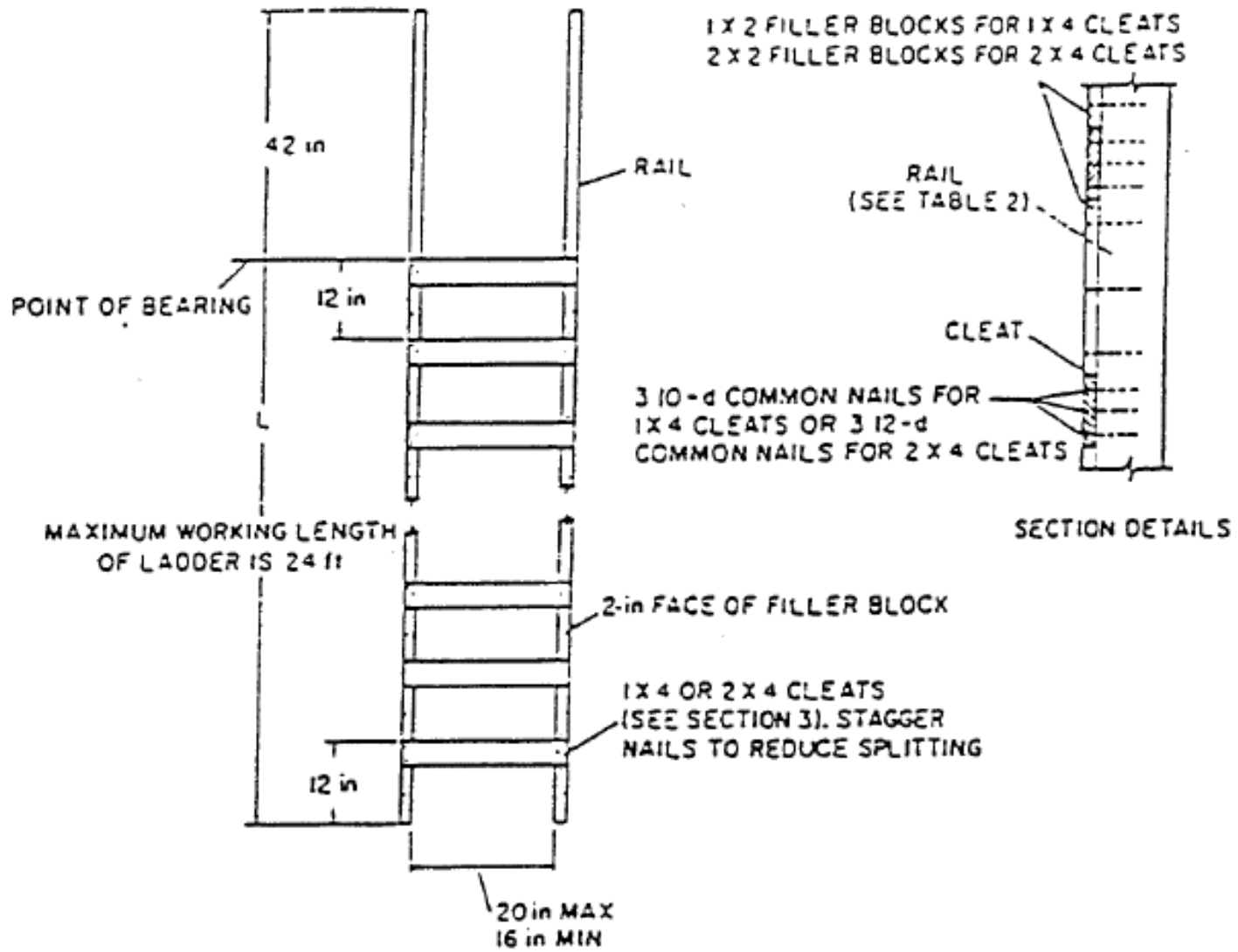
## LADDER PITCH



### NOTES:

- (1) Rails shall extend 42 inches above point of bearing.
- (2) The top of the ladder shall be tied off as near the point of bearing as possible.
- (3) The base shall be secured against displacement.
- (4) The pitch,  $H$  divided by  $L$ , shall not exceed 1 in 4 (see tables Q-2 & Q-3).
- (5) Security attachments shall be affixed directly to the rails and *not* to the cleats.
- (6) An alternate method of securing the base is shown in fig. Q-6.

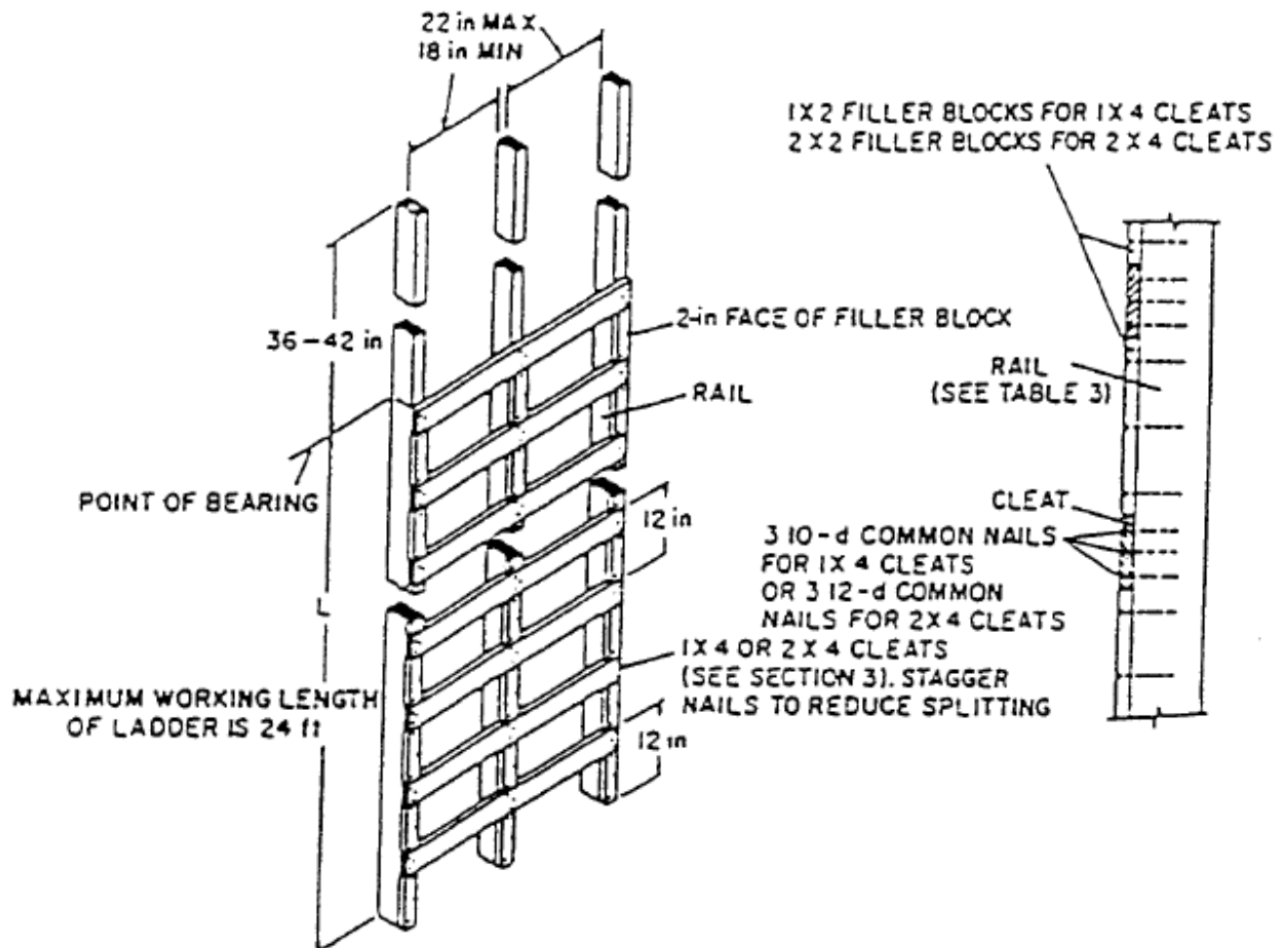
## CLEAT ATTACHMENT SINGLE CLEAT LADDERS



### NOTES:

- (1) All material shall comply with Section 2 & 3.
- (2) All lumber sizes shown are nominal.
- (3) 1 1/2-inch end distance shall be provided for top and bottom nails on filler blocks.
- (4) For woods with high splitting tendency, use Lead Holes.

## CLEAT ATTACHMENT DOUBLE-CLEAT LADDERS



**NOTES:**

- (1) All material shall comply with Section 1.
- (2) All lumber sizes shown are nominal.
- (3) Cleats shall extend full width of ladder.
- (4) 1/4-inch end distance shall be provided for toe and bottom nails on filler blocks.
- (5) For woods with high splitting tendency use Lead Nails.

### MINIMUM RAIL SIZES

Table Q-2.—Minimum Rail Size for Single-Cleat Ladders (Nominal Dimension Lumber)

Working length (feet)	Vertical	Pitch (H/L) (See Note 1)			
		1/10	1/8	1/6	1/4
12	2 x 4	2 x 4	2 x 4	2 x 4	2 x 4
14	2 x 4	2 x 4	2 x 4	2 x 4	2 x 4
16	2 x 4	2 x 4	2 x 4	2 x 4	2 x 6
18	2 x 4	2 x 4	2 x 4	2 x 6	2 x 6
20	2 x 4	2 x 4	2 x 6	2 x 6	2 x 6
*22	2 x 4	2 x 6	2 x 6	2 x 6	2 x 6
*24	2 x 4	2 x 6	2 x 6	2 x 6	2 x 6

\*Require cage or climbing device when used vertical.

Table Q-3.—Minimum Rail Size for Double-Cleat Ladders (Nominal-Dimension Lumber)

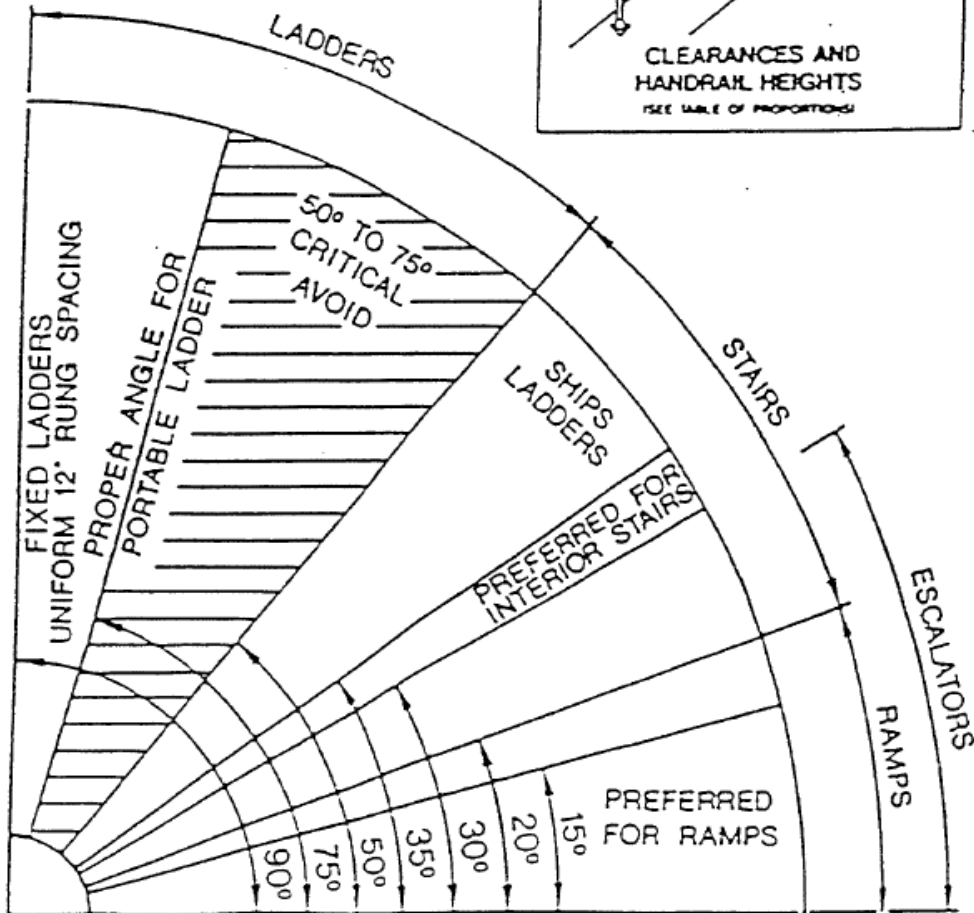
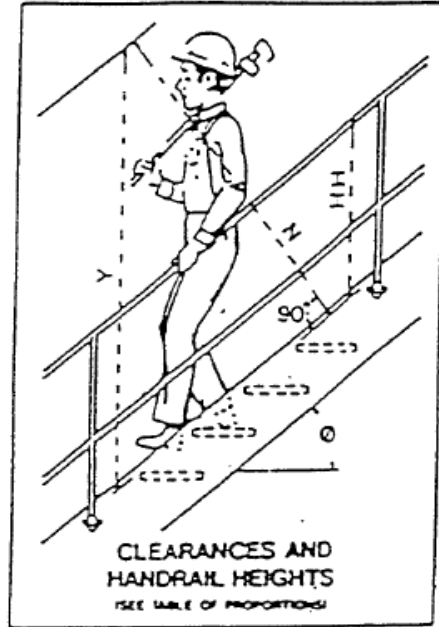
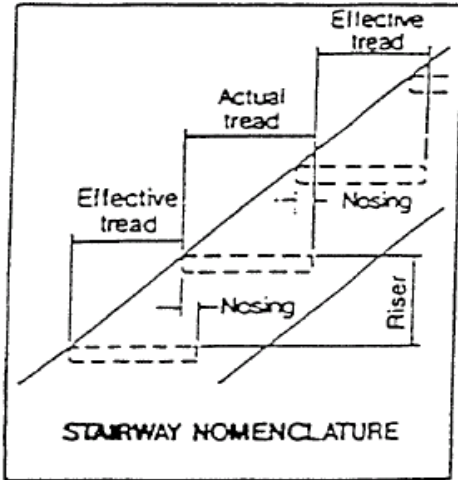
Working Length (feet)	Vertical	Pitch (H/L)			
		1/10	1/8	1/6	1/4
12	2 x 4	2 x 4	2 x 4	2 x 4	2 x 4
14	2 x 4	2 x 4	2 x 4	2 x 4	2 x 6
16	2 x 4	2 x 4	2 x 6	2 x 6	2 x 6
18	2 x 4	2 x 6	2 x 6	2 x 6	2 x 6
20	2 x 4	2 x 6	2 x 6	2 x 6	(Note 2)
*22	2 x 4	2 x 6	2 x 6	2 x 6	(Note 2)
*24	2 x 4	2 x 6	2 x 6	2 x 6	(Note 2)

\*See note table Q-2

**NOTES for Table Q-2 and Q-3:**

- (1) Pitch is defined as H, the horizontal distance from base of ladder to supporting surface divided by working length L, length of rail from base to point of bearing at the top.
- (2) Stresses exceed capacity of 2 x 6 rails for this combination of height and pitch.

## STAIRS AND RAMPS



Graphic analysis.

STAIRS AND RAMPS

TABLE OF PROPORTIONS								
BASED ON FORMULA: $T = \frac{R}{\tan [(R-3)8^\circ]}$								
	HH Handrail Height (Inches)	Riser (In.)	Effective Tread (Inches)	Angle ( $\beta$ ) (Degrees)	Head Clearances			
					Y Vertical (Inches)	N Normal to Slope (In)		
RAMPS	39	-	-	2°	84			
		-	-	4°	84			
		-	-	6°	84			
MONUMENTAL OR EXTERIOR	36	4.00	28.5	8°	84			
		4.25	24.1	10°	84			
	35	4.50	21.2	12°	85			
		4.75	19.1	14°	85			
	34	5.00	17.4	16°	85			
		5.25	16.2	18°	86			
	33	5.50	15.1	20°	86			
		5.75	14.2	22°	86			
INTERIOR	32	6.00	13.5	24°	87			
		6.25	12.8	26°	87			
		6.50	12.2	28°	88			
	33	6.75	11.7	30°	89			
		7.00	11.2	32°	90			
		7.25	10.7	34°	91			
		7.50	10.3	36°	92			
		7.75	9.9	38°	93			
		FIXED INCLINED (STEPLADDER, SHIP'S LADDER)	34	8.00	9.5	40°		72
				8.25	9.2	42°		71
8.50	8.8			44°		69		
8.75	8.5			46°		68		
33	9.00		8.1	48°		66		
	9.25		7.8	50°		64		
	9.50		7.4	52°		62		
	9.75		7.1	54°		59		
32	10.00		6.7	56°		57		
RAIL AND RUNG LADDER				12.00 Max.	76° 82° 90°		36 32 30	

## 30.0 LOCKOUT / TAGOUT / TIE-OUT

### 30.1 Purpose:

The purpose of this procedure is to assure that all employees are protected from unintended machine motion or unintended release of energy that is either or a combination of mechanical, electrical, thermal, fluid, hydraulic, or pneumatic; which could cause injury when set up, adjust, repair, service, install, or maintenance work is performed on equipment, machinery, or processes. This procedure applies to all employees performing any of the above tasks.

### 30.2 Management and Supervisory Responsibilities:

- a. Each supervisor is responsible to guarantee that employees are trained on appropriate lockout / tag out procedures. This training may be conducted by themselves or coordinated with the safety representative, equipment owner, manufacturing or other competent or appropriate party.
- b. Each supervisor shall effectively enforce compliance of this lockout procedure including the use of corrective disciplinary action where necessary.
- c. Each supervisor shall assure that the locks, devices, and tags required for compliance with the lockout procedure are provided to their employees.

### 30.3 Employees' Responsibility:

- a. Employees shall comply with the lockout procedure.
- b. Employees shall consult with their supervisor or other appropriate knowledgeable management personnel whenever there are any questions regarding their protection.
- c. Employees shall obtain and care for the locks and other devices required complying with the lockout procedure.

### 30.4 General:

- a. The power/energy source of any equipment, machine, or process to be set-up, adjusted, repaired, serviced, installed, or where maintenance work is to be performed and unintended motion or release of energy would cause personal injury, such an energy source shall be locked out by each employee doing the work. Prior to starting the work, sources of energy, such as, springs, air, hydraulic, and steam shall be evaluated to insure that a zero energy state has been achieved.
- b. Safety locks, adapters, and "Danger Tags" can be obtained from the site superintendent

- c. Personal locks shall be appropriately labeled for employee identification.
- d. The keys of every lock issued shall be retained only by the employee to whom it was issued.
- e. All personnel will receive training before being assigned to the task of Locking Out & Tagging Out stored energy (OSHA 1910.147(c) (7)).
- f. Any questions concerning the lockout procedure should be directed to the employee's supervisor.
- g. If multiple pieces of equipment or energy must be locked out or isolated, each person shall lock out each potential energy source.

### 30.5 Procedures For Isolation:

#### a. General:

1. Machinery or equipment capable of movement shall be stopped and the power source de-energized, disengaged dissipated or released. Where necessary, the moveable parts shall be physically blocked to prevent inadvertent movement during servicing or adjusting.
2. Any electrical equipment undergoing service, repair, or adjustment shall be DE-ENERGIZED and locked out.
3. Every prime mover or power driver machine shall be locked out or positively sealed in the off position during maintenance work.

Where lockable controls are not available, compliance with this section shall be met through the use of positive means, such as, de-energizing or disconnecting the equipment from its energy source, or other positive action which will prevent inadvertent movement of the equipment. In all cases, signed and dated tags of an appropriate type shall be affixed to the controls of the machine or equipment during repair work.

4. During repair or maintenance, equipment, machines, and/or prime movers shall be effectively blocked, locked, or otherwise secured to prevent advertent movement.
5. After locking out the source, and ensuring that no personnel are exposed, the employee shall try the equipment, machine, or process controls to ensure no unintended motion will occur, or test the equipment to determine that the energy isolation has been effective.

6. When two or more employees work on the same equipment, each is responsible for attaching his/her lock. Safety locks and adaptors are to be fixed on levers, switches, valves, etc., in the non-operative (off) position.
  7. An employee who is assigned to a job, upon arrival, finds an "Equipment Lock", "Adaptor", or "Danger Tag" affixed to the equipment, shall take the following action:
    - a. Affix his/her lock to the "Equipment Adaptor".
    - b. Clear the area of all personnel.
    - c. Try the controls to ensure no unintended activation will occur before starting work to determine that the energy isolation has been effective.
  8. On machinery or equipment where repair, adjustment, or testing cannot be performed with the prime mover or energy source disconnected, such operations may be performed under the following conditions:
    - a. The operating station where the machine may be activated shall be under the control of a qualified operator at all times.
    - b. All participants in the repair, adjustment, etc. shall be in clear view of the control operator or in positive communication with him or her.
    - c. All participants must be beyond reach of equipment which may present a hazard to them.
- b. Electrical Equipment:
1. Equipment, machines, or processes' main disconnect switches shall be turned off and locked in position only after the electrical power is shut off at the point of operation control. Failure to follow this procedure may cause arcing, and possibly an explosion. Lock out control circuits only when it is impossible or impractical to lock out the main power.
  2. Make all lockouts with a padlock and tag. Each employee working on or exposed to the hazard shall add his/her lock to the lockout.
  3. A machine connected to more than a 120 volt source of power by a plug-in cord shall have a locking device applied or, the plug disconnected and isolated in order for the machine to be considered locked out.
  4. A machine connected to less than a 120 volt source of power by a plug-in cord shall be considered locked out if the plug is disconnected and tagged with a "do not start" tag.
  5. The control switch or valve shall be tested after the lockout has been made in order to assure that it cannot be operated.

c. Piping:

1. Pipelines may be Isolated by Misalignment:

- a. Pipelines may be misaligned by unbolting them at a flange and then re-bolting them in the misaligned position.
- b. A "Danger" tag and a seal must also be attached to the pipeline.
- c. Misalignment may be used for liquid lines, to enter vessels, etc. IT SHOULD NOT BE USED ON GAS LINES.

2. Pipelines may be Isolated by Blinding:

- a. Pipelines may be isolated by the use of blinds in the piping system at flanges.
- b. On gas pipelines when double block and bleeds are not available for use, blinds shall be the primary method of isolation. When the blind is installed, sufficient bolts shall be replaced around the blind to keep it in place. The blind shall be rated no less than the operating pressure of the line. A "Danger" tag shall also be attached to the blind.

d. Valves:

1. Double Block and Bleed Procedures:

- a. Since blocked valves may leak by, the technique of the double block and bleed shall be used whenever possible.
- b. When using double block and bleed procedures, both valves shall be locked and tagged.
- c. If the double block and bleed cannot be used, then a blind shall be used if possible. However, if blinding is impractical, a single block valve may have to be utilized to isolate piping system. Testing to verify isolation should occur and potential lead should be check as often as required to assure safety.

2. Isolation by Valves:

If it is necessary to isolate piping systems using valves, they shall be locked and tagged with "Danger" tags. Pneumatic or electrically operated valves shall have the activation systems on the valves disconnected.

3. Pneumatic Operated Valves:

When pneumatic operated valves are used as block valves, the pneumatic systems shall have the makeup air system blocked and the bleed valve of the air system shall be left open and tagged with a "Danger" tag.

4. Motor Operated Valves:

- a. When motor operated valves are used as block valves, the motor operated valves shall be locked into position by locking out the electrical activation switch and/or circuit breaker.
- b. If these measures are not possible, the fuses for the system, if any, shall be pulled or the electrical leads to the motor operated valves disconnected and properly secured so no accidental contact can be made.
- c. A "Danger" tag and if possible other lockout or isolation of leads shall be attached to the disconnected electrical leads.

5. Block-out Procedures for Equipment:

- a. Air-operated, gear-driven, hydraulically-operated units, or suspended parts of machine or equipment shall be physically blocked out to prevent movement.
- b. Steam, air, gas, hydraulic cylinders, etc. shall be bled down.
- c. Gears and other mechanisms shall be blocked out.
- d. Blocks shall be placed under raised parts, lifts, or any equipment that might descend, slide fall, or roll.
- e. Coiled springs, spring-loaded devices, and securing cams shall be released prior to commencement of work.
- f. Blocks or stands shall be utilized under raised vehicles, machines, or equipment to prevent failure or slippage of the jack or elevating device.
- g. Blocks should be of sufficient strength or construction to assure they cannot fail.

**CAUTION:** UNDER NO CIRCUMSTANCES IS ANYONE ALLOWED TO REMOVE A LOCK AND TAG OTHER THAN THE EMPLOYEE WHO INSTALLED THEM, UNLESS SPECIFICALLY AUTHORIZED IN WRITING TO DO SO BY THAT EMPLOYEE'S SUPERVISOR, AND THEN ONLY AFTER CAREFUL INSPECTION OF THE WORK AREA AND THE EQUIPMENT WHICH HAS BEEN DE-ENERGIZED.

### 30.6 Removal Of Locks And Restoring Power Source:

- a. Upon completion of the work, each employee will remove his/her lock, rendering the machine operable when the last lock is removed.
- b. Power may be turned on when it is required to perform tests or adjustments. All of the rules pertaining to removing locks and restoring power shall be followed. The equipment or process shall again be locked out if it is necessary to continue work after completing the test or adjustments.
- c. The employee responsible for removing the last lock, before doing so, shall assure that all guards have been replaced, the equipment, machine or process is cleared for operation, and appropriate personnel notified that power is being restored.
- d. In the event that a lock must be removed by someone other than the employee who is working on the equipment, machine or process, the following steps must be taken:
  1. Verify that it is essential to remove the locks and tags.
  2. Verify the identity and location of the employee to whom the work and lock were assigned.
  3. If the employee is away from the jobsite, have them return to remove the lock or verify they are not present and get permission from the supervisor to forcefully remove the lock.
  4. Verify that the supervisor has been notified, and has acknowledged that the locked out and tagged system can be released.
  5. Ensure that all personnel and equipment are cleared from the boundaries of operation.
  6. Follow all rules pertaining to removing locks, and restoring power as indicated above.

**NOTE:** Each employee who has locked out equipment is responsible for removing his/her lock when the job is finished or he/she has been released from the job. If an employee cannot be reached to remove a lock/tag and equipment must be started, his/her supervisor, after thoroughly checking equipment, area, and conditions, will have the lock(s) removed after determining that the equipment can safely be started.

Measures will then be taken to ensure that the employee whose lock was removed is informed of the situation before they begin work.

If LO/TO/TO must occur across shifts, new or oncoming crews should place their own locks, off going should remove locks or other suitable and effective procedure should be established.

## 31.0 MATERIAL HANDLING

Material for construction, and to support the construction, must be ordered, received, and stored in a systematic fashion. The placement of materials within the storage areas, whether inside or outside storage; must be planned around the sequence of the construction. Material deliveries should be planned so as to minimize the amounts of materials stored on the project-site, yet facilitate material availability for the most expedient means of construction.

Accidents while handling material are a leading cause of accidents. If one such accident can be avoided by simply organizing material storage and movement, the minor amount of time and money invested would be well spent.

Every employee uses material on the construction site, therefore, every employee is a part of the safety program. Each project crew shall assure safe material handling protocol as recommended by OSHA Handbook 2236. The following are some guidelines which must be followed for safe and efficient material storage and handling.

### 31.1 General:

- a. Material shall not be stored on scaffolds or runways in excess of needs for normal placement operations, or in excess of safe load limits.
- b. Materials will not be moved over or suspended above personnel unless positive precautions have been taken to protect the personnel from falling objects.
- c. Where the movement of materials may be hazardous to persons, non-conductive taglines shall be used to control the loads being hoisted.
- d. Materials shall not be placed or stored so as to interfere with access ways, doorways, or hoist ways.
- e. Aisle width shall be adequate to accommodate firefighting equipment and jurisdictional requirements. In most cases 24 inches are required at a minimum except yard storage which requires 10 foot drive through to accommodate fire apparatus.
- f. When moving equipment under or near energized lines, a designated person shall assure that required clearance is maintained.
- g. Material manufactures storage guidelines should be followed.

### 31.2 Bagged Material:

Bagged materials shall be stacked by stepping back the layers and cross-keying the bags at least every 10 bags high and covered to minimize moisture absorption and UV exposure.

### 31.3 Lumber:

- a. Lumber shall be stacked level, stable, and self-supporting on stable sills.
- b. Lumber piles shall not exceed 16 feet.
- c. Reusable lumber shall be cleaned of nails and cement before being stacked.

### 31.4 Bricks and Masonry Blocks:

- a. Brick and masonry block shall be stacked on level and solid surfaces.
- b. Brick stacks shall not exceed six (6) feet in height.
- c. When a loose brick stack reaches a height of four (4) feet, it shall be stepped back at least two (2) inches in every foot of height above the 4-foot level.
- d. Masonry blocks stacked higher than six (6) feet shall be stepped back one-half block per tier above the 6-foot level.

### 31.5 Cement and Lime:

- a. Workmen handling bulk cement or lime shall wear protective gloves, clothing, respirators, and goggles. They shall be provided with washing facilities, hand cream, petroleum jelly, or similar preparations for protection from dermatitis.
- b. Unless laterally supported, sacked cement and lime shall not be stacked over 10 bags high without stepping back the layers and cross-keying the bags.
- c. Bags around the outside of the stack shall be placed with the mouths of the bags facing the center of the stack.
- d. During unstacking, the top of the stack shall be kept nearly level and the necessary setback maintained.

### 31.6 Reinforcing, Sheet, and Structural Steel:

- a. Reinforcing steel shall be stored in orderly piles away from sidewalks and roadways.

- b. Sheet and structural steel shall be securely piled to prevent members sliding off or the pile toppling over.
- c. Structural steel should be stored in a fashion which will facilitate the erection or placement of the steel.

### 31.7 Cylindrical Material:

- a. Pipe, conduit, bar stock, and other cylindrical materials, unless placed in racks, shall be stacked on a firm, level surface and shall be blocked to prevent spreading, rolling, or falling; either a pyramided or battened stack shall be used. Battened stacks shall be stepped back at least one unit per tier and securely chocked on both sides of the stack.
- b. Removal of pipe or conduit from a stack shall be done from the ends of the pipe or conduit.
- c. Unloading from a carrier shall be done in such a manner that no person shall be exposed to the unsecured load.

### 31.8 Flammable and Combustible Liquids:

Covered under Section 18.0 - FIRE PREVENTION AND PROTECTION.

#### 1. Paints, Varnishes, and Thinners:

- a. Paints, varnishes, lacquers, thinners, and other volatile paints or coatings shall be stored and dispensed in accordance with their flammability characteristics.
- b. Containers shall be tightly closed when not in use and not more than a one-day (1-day) supply shall be stored in buildings under construction.
- c. Adequate ventilation shall be provided to prevent hazardous concentrations of flammable vapors.

## 32.0 MSHA

32.1 Immediately report accidents – All mine operators are required to report to MSHA for reportable accidents. HWCC reports all accidents & injuries to HWCC home office and our mine operators immediately.

32.2 Be prepared at all times for scheduled & unscheduled inspections. The following shall be available at all times on MSHA project:

- a. Training Records on hand and readily accessible
- b. Quarterly Reports current & readily accessible
- c. 7000-1 Forms current & readily accessible.
- d. Machinery pre-shift sheets available & current
- e. Housekeeping & orderliness in good shape.
- f. Damaged Tools/Equipment – No homemade tools on MSHA sites
- g. Fire Extinguishers inspected and in proper locations and monthly / annual inspections.
- h. Cable / Sling / Chain tags
- i. Damaged tools & equipment not on-site and/or in-use.
- j. Damaged or inadequate electrical cords, lighting and grounding test inspection documents.
- k. O2 & Acetylene property storage, use and secured
- l. Machine guarding

**NOTE 1:** Be prepared to defend practices & conditions if conflicting opinions during the inspection before the citation is written (much harder to argue afterwards).

**NOTE 2:** Maintain a good working relationship with inspectors. Harrison Western is committed to Customers', Operators' & MSHA compliance & safety.



**SLAM** = **S**top **L**ook **A**nalyze **M**anage

**RISKS** = **R**emember **I**dentify **S**hare **K**now **S**afety

### 33.0 NEW EMPLOYEE SAFETY

**NOTE: THE MAJORITY OF ACCIDENTS & INJURIES OCCUR TO WORKERS IN THEIR FIRST 90 DAYS OF HIRE!**

1. When hired, the Jobsite Management must:
  - a. Review Harrison Western's New Employee Orientation Program.
  - b. Issue required Safety Equipment.
  - c. Review and provide the employee with the Company Safety Rules via the Harrison Western Construction Corp. 'Safe Practices Handbook'. Make sure the employee understands the Company commitment to safety.
  - d. Stress to the employee the importance of performing their work safely.
  - e. Stress to the employee the importance of asking questions regarding anything he/she is unsure of.
  - f. Assign the employee to a 'mentor' on his/her crew.
  - g. Pay close attention to new workers as they become familiar with their work & work places.

#### 33.2 Company Policies:

- a. Harrison Western employees will be required to adhere to the following rules under penalty of discharge or other discipline. If you have any questions about these rules, please contact the Site Superintendent or Harrison Western's Safety Representative.
- b. No list can include all instances of conduct which can result in discipline, including dismissal. However, our guidelines herein are based on common sense and are not meant to replace our expectation that each employee will exercise sound judgment and common courtesy, which everyone should apply while at work. The following list of misconduct will result in disciplinary action:
  1. Violating Company safety policies or performing work in an unsafe manner dangerous to oneself or other personnel, property, or equipment.
  2. Destroying or removing without permission any property of the Owner, Engineer, Contractor(s), or other employees.
  3. Provoking or engaging in a fight, disturbance, or horseplay.
  4. Reporting for work under the influence of alcohol or controlled substances.

5. Possession or use of alcoholic beverages or controlled substances on the job site, other than prescribed medication and any prescriptions from a medical provider that may impair equipment safe operation.
6. Gambling or possession of gambling paraphernalia, such as, cards, dice, parlay cards on the work site.
7. Insubordination or refusal to work as directed, or interfering with the work of any other employee.
8. Sleeping on the job / fatigue.
9. Possession of firearms or other deadly weapons on the site.
10. Falsifying reports involving attendance, absence, sickness, or termination.
11. Submitting false claims for injury or compensation.
12. Deliberately restricting output of work.
13. Refusal to work the scheduled hours, leaving work early without supervisory approval.
14. Smoking in prohibited areas at any time.

**NEW EMPLOYEE ORIENTATION PROGRAM**

**EMPLOYEE INFORMATION**

NAME OF EMPLOYEE: \_\_\_\_\_  
(PRINT NAME)

DATE OF HIRE: \_\_\_\_\_ SS#: \_\_\_\_\_

POSITION: \_\_\_\_\_ JOB NO. \_\_\_\_\_

**YES** **NO**

1) Can new employee read and comprehend ?.....

**Reviewed:**

2) Harrison Western Safety Policies .....

3) Safety Manual .....

4) Accident Procedures.....

5) Safety Equipment .....

6) Personal Protective Equipment .....

7) Project Safety Rules and Regulations .....

8) Locations of First Aid Stations.....

**Instructed Employee:**

9) To ask questions if not familiar with operations .....

10) To review and check out equipment before using .....

11) To report any unsafe condition or act.....

**Informed Employee:**

12) Of State and Federal Right to Know/HazCom Laws .....

13) Drug and Alcohol Program and Policy .....

14) Trenching and Excavations .....

I have reviewed, been instructed and informed of all the preceding items.

Signature \_\_\_\_\_ Date \_\_\_\_\_

## 34.0 OXYGEN & ACETYLENE CYLINDERS

### 34.1 Storage:

1. Keep cylinders away from sources of heat. If stored in buildings, keep away from highly combustible materials, stoves, radiators, etc.
2. Store securely. Cylinders should be securely placed, to prevent tipping over, and should not be piled near elevators, gangways, or other places where they are likely to be knocked over.
3. Cylinders should be stored at least 35 feet from the nearest building or structure.
4. Cylinders stored in the open should be protected from accumulations of ice and snow, and should be shielded from the direct rays of the sun where temperatures are high.
5. Valves on empty cylinders should be closed.
6. All cylinders should be capped when not in use.
7. Cylinders should be stored so as to avoid possible destruction or obliteration of coloring, tags, or other means of identifying the contents.
8. Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease), a minimum distance of 20 feet or by a noncombustible barrier at least five (5) feet high having a fire resistance rating of at least one-half (½) hour.
9. If necessary, proper storage shall be constructed on the job site.
10. When unattended all valves shall be secured and hoses de-pressurized.

### 34.2 Use:

1. Select a location for setting up cylinders which will be exposed to as little contact as possible from moving equipment, materials, and the like.
2. Cylinders should be placed in a rack, chained, or otherwise positively secured against tipping over.
3. While in use, valve key wrench should be kept in place on valve spindle.
4. Cylinders should be used in the order received from the supplier. When empty, valves should be closed and cylinder marked accordingly.

5. Keep cylinders from making contact with electric wires.
6. Shield cylinders from sparks or flames from welding and cutting.
7. Do not allow storing, temporary or otherwise, of tools, materials, or anything else on top of cylinders.
8. Cylinders should not be used for anything other than what they were designed for, not as rollers, as supports, or anything else.
9. When being transported in a vehicle, the cylinders must be in an upright position, secured in place, caps on, and should never be connected to the pressure-regulator.
10. Cylinders may be moved by tilting and rolling on bottom edge; avoid dragging and sliding.
11. When hoisting cylinders by crane or other lifting device, a rack or cage designed specifically for that purpose must be used. Slings, electromagnets, or chokers must not be used. Do not use cylinder caps to lift bottles.

## 35.0 PERSONAL PROTECTIVE EQUIPMENT

### 35.1 General:

**PPE IS CONSIDERED THE LAST LINE OF DEFENSE AGAINST HAZARDS. FIRST TRY TO ENGINEER OUT THE HAZARD. SECOND UTILIZE EFFECTIVE TRAINING AND ADMINISTRATIVELY CONTROL EXPOSURES TO HAZARDS – ESPECIALLY AIRBORN/ENVIRONMENTAL.**

#### a. Requirements:

1. This section sets forth minimum personal protective equipment requirements and standards applicable to all Harrison Western's activities.
2. Anyone refusing or repeatedly failing to use the required equipment and/or comply with safety procedural requirements shall be subject disciplinary action up and including termination.
3. Personal protective equipment shall conform to NIOSH or ANSI and MSHA standards. Where applicable, those referenced in American National Standards Institute (ANSI) publications.

#### b. Maintenance:

1. Personal protective equipment in use shall be inspected daily and maintained in serviceable condition.
2. Items of personal issue shall be cleaned, sanitized as appropriate, and repaired prior to being re-issued to another employee.

### 1. Head Protection:

#### a. Requirements:

1. All employees will wear approved hard hats as directed by the superintendent when on the construction site. This includes visitors, subcontractors, engineers, inspectors, and anyone else who has authorization to be on the site.
2. Hard hats that have been altered by drilling or cutting will not be permitted. Headband assemblies must be in good repair, properly adjusted, and should be exchanged whenever they become broken or weakened.

b. Hardhat Areas:

Hardhat areas shall include all areas where construction work could cause a head injury. The entire jobsite, with the exception of offices and parking areas, may be considered HARDHAT AREAS and or includes other types of PPE required.

c. Posting of Hardhat Areas:

All entrances of jobsite should be posted with hardhat area signs.

d. Design:

Hardhats shall comply with Type I or II E,G, or C design specifications of the current edition of *ANSI Z89.1- 2009* and shall bear a manufacturer's label displaying the class.

35.3 Eye and Face Protection:

a. Requirements:

Employees exposed to potential eye or face injury from physical, chemical, or radiation agents shall be furnished and required to wear eye and/or face protection specifically designed for the exposure.

b. Design:

Eye and face protection required by this section shall comply with the standards published in the current *ANSI Z87.1, Practice for Occupational and Educational Eye and Face Protection*.

c. Corrective Lenses:

Employees whose vision requires the use of corrective lenses, when required to wear eye protection, shall be protected by one of the following:

1. Protective spectacles whose lenses provide optical correction.
2. Protective goggles or face shields that can be worn over corrective glasses.
3. Goggles that incorporate corrective lenses mounted behind protective lenses.

d. Full Face Shields:

Full face shields must be used when doing such work as grinding, chipping or wire wheel use.

e. Electric Arc Welding:

1. Employees engaged in electric welding operations shall wear non-flammable welding helmets with lift front or stationary front helmets.
2. Prescription safety glasses or flash goggles shall be worn under the helmet to provide protection when the helmet is raised for scaling operations.
3. Helmet filter lens shades shall conform to the "Required Shades for Filter Lenses and Glasses" found in Section 46.0 – Welding and Cutting.

f. Gas-Torch Cutting and Welding:

1. Employee engaged in gas-torch cutting and welding shall wear a welding mask, weld-view or cover-glass goggles, or similar goggles providing equivalent eye and face protection.
2. The eye protectors shall be equipped with filter lenses conforming to the attached "Required Shades for Filter Lenses and Glasses" found in Section 45.0 – Welding and Cutting or OSHA 1926.102.

g. Welder Helper or Inspector:

1. Welder helpers or welding inspectors shall wear flash goggles with a minimum lens shade of two (2) in the general welding area.
2. Helpers or inspectors observing actual welding operations shall wear the same protection as the welder.

h. Selection Guide:

The "Eye and Face Protection Selection Guide" found in Section 46.0 – Welding and Cutting, shall be used as a guide in the selection of eye and face protection for the hazards and operations noted.

35.4 Hearing Protection:

If it is not possible to hear a normal conversation, hearing protection is required:

- a. Wherever it is not feasible to reduce the noise levels or duration of exposures to those specified in the OSHA or MSHA standard for permissible noise exposures (1926.52 or MSHA Part 62), ear protective devices shall be provided and used.
- b. Ear protective devices which can be inserted in the ear or protective muffs which cover the ear shall be used for reduction of noise levels.

- c. Plain cotton is not an acceptable protective device.

### 35.5 Protective Clothing:

- a. The minimum work clothing that is acceptable and appropriate for the work activity for all employees working on a Harrison Western construction project, is long pants, good/sturdy safety boots, and a shirt that completely covers the workers' shoulders and provides adequate protection against the sun's rays.
- b. The employee should wear clothing that is reasonably snug, particularly about the neck, wrists, and ankles. Workers should be cautioned against wearing loose clothing, rings, watches, necklaces, all of which may catch in power driven equipment.

#### 1. Welding Leathers:

- 1. Employees engaged in overhead welding or burning shall wear leather gloves, combinations of coats, sleeves, pants, etc., if severe burn hazards exist.
- 2. Leather gloves and aprons shall be worn by employees performing routine welding and burning.

#### 2. High-Visibility Apparel:

All employees exposed to vehicular traffic, including surveyors, inspectors, spotters, signalmen, Flagging Personnel, and servicemen, shall wear high visibility florescent apparel with a minimum reflective area for type I or II vests.

#### 3. Gloves:

Where needed, employees should wear work gloves in good condition which are suited to the type of work involved. Suitable impervious gloves shall be furnished by the contractor and worn by employees handling acids, caustics, solvents, herbicides, and other toxic materials. However, employees who are required to operate or work around drill presses, power saws, and similar rotating machinery should not wear gloves.

#### 4. Foot Protection:

- 1. Employees engaged in work having an inherent danger to feet or requiring special foot protection shall wear protective footwear meeting the requirements contained in ANSI Z41, 1910.136 or MSHA 56/57.15003.

2. All such footwear shall be boots and meet the basic I/75 "impact" and C/75 "compression" standards for the protective toe box.
3. Rubber footwear including boot and pacs shall meet the sole puncture resistance requirements.
4. Heavy duty footwear shall meet the Mt75 metatarsal requirements.
5. Oxfords, sandals, canvas, tennis or deck shoes are not acceptable for construction work.
6. Footwear should be of sturdy construction, in good repair and appropriate for the task being performed.

1. Protective Equipment for Specific Use:

a. Wet Condition Clothing:

When employees are required to work in wet conditions, the company will provide some type of neoprene or other water resistant clothing. Whenever possible, this clothing should be either a bright yellow or orange in color.

b. Life Vests & Buoys:

1. Employees working over or near water, where the danger of drowning exists, shall be provided with U. S. Coast Guard-approved life vests or buoyant work vests.
2. Ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations. Distance between ring buoys shall not exceed 200 feet. 1926.106.

35.7 Skin Protection:

1. Where irritants or toxic substances may come in contact with the skin or clothing, employees shall be protected by the following:
  1. Protective clothing and/or barrier creams and necessary eye and face protection and/or approved protective ointment or other remedies approved by the consulting physician.
  2. Emergency eye flush station.
  3. Emergency deluge showers.

1. Respiratory Protection (ALSO SEE SECTION 40.0):
2. Cartridge or Filter-type Respirators:
  1. Employees working in atmospheres containing toxic gases, fumes, mists, vapors, or dust shall use respirators approved for the exposure encountered. If assistance is required for determining the appropriate mask or filter type see company safety representation.
  2. This type of respirator shall not be used in atmospheres that are oxygen deficient or contain airborne contaminants that:
    1. Exceed recommended concentrations for the respective respirator.
    2. Area of high toxicity.
    3. Can be absorbed through the skin.
    4. Cannot be detected by the human senses.
3. Air Line Respirators and Hose Masks:
  1. All employees working in confined areas where high concentrations of toxic substances are present in the atmosphere, but not immediately hazardous to life, shall wear airline respirators, hose masks or SCBA's.
  2. Air-line respirators shall also be worn by employees engaged in:
    1. Abrasive blasting.
    2. Spray painting with lead or toxic material based paints.
    3. Applying clear resin curing compound, coal-tar enamels or other toxic coatings.
    4. Applying carcinogens or suspected carcinogens.
    5. Welding in confined spaces

6. Safety Harness and Lines:

1. Requirements:

1. Employees working on slopes steeper than 1 1/2:1 or subject to falls from heights of 6 feet or greater, not protected by fixed scaffolding, guardrails, or safety nets, shall be secured by safety harnesses and lanyards or expected to be exposed to a potential fall (MSHA 30 CFR Part 56/57 15005).
2. Lifelines, lanyards, harnesses, hardware, and anchorages shall be inspected each day prior to use.
3. Questionable devices will be discarded.
4. Lifelines left in place during freezing weather shall be allowed to completely thaw and dry and be inspected for damage prior to use.
5. Only approved ANSI fall protection and arresting devices shall be used.

3. Lanyards:

1. Lanyards shall be attached to anchor points capable of supporting a minimum dead weight of 5000 pounds.
2. On steep slopes or vertical faces, in high scaling and movable scaffolding operations, the lanyard(s) will be attached to a lifeline.
3. Lanyard shall be constructed of nylon, manila, or wire rope with a nominal breaking strength of at least 5,000 pounds.
4. Wire rope lanyards will be equipped with adequate end fittings and connections that maintain the required minimum breaking strength.
5. Use of chains or job-fabricated wire rope lanyards is prohibited.
6. The lanyard(s) shall not permit a fall over six feet.
7. High-scalers or employees working on vertical faces or steep slopes where balance cannot be safely maintained without support shall use two synthetic fiber lanyards independently attached to the lifeline.

8. Safety Belts:

Safety harness shall meet the design specifications published in 29 CFR 1926.104, with compliance certified by the manufacturer.

9. Lifelines:

1. Lifelines shall be at least 3/4-inch manila rope with a breaking strength of 5,000 pounds.
2. Lifelines used for high scaling operations or exposed to cutting or abrasion shall be 7/8-inch-minimum-diameter manila rope with wire core.
3. Lifelines shall be secured above the point of operation to at least two independent anchorages, each capable of supporting a dead weight of 5000 pounds.
4. Anchorages shall not be made from drill steel or reinforcing bar, nor located within 4 feet of each other.

1. Safety Nets:

2. Requirements:

1. Safety nets shall be installed to protect employees when workplaces are more than 25 feet above adjoining surfaces where use of scaffolding, catch platforms, temporary floors, safety belts and/or lifelines are impractical.
2. Nets shall be inspected daily for damage, and necessary replacement or repairs shall be made before work above the net is resumed.
3. Debris shall be removed from the nets at least daily.
4. Safety nets shall be installed as close under the work surface as practical, but not over 25 feet below the working level.
5. Nets shall extend at least 8 feet beyond the perimeter of the work area.

1. Net Specifications and Testing:

1. The mesh size of safety nets shall not exceed 6 inches by 6 inches.
2. Nets shall meet accepted performance standards of 17,500 foot-pounds minimum impact resistance and shall bear a manufacturer's label of proof of testing.
3. Edge ropes shall withstand a minimum breaking strength of 5000 pounds.

4. Safety nets shall be field tested immediately following installation, repositioning, or major repair.
5. The test shall be conducted by dropping a 400-pound bag of sand, not over 30 inches in diameter, from a height of at least 25 feet, into the center of the net.

## 36.0 POWER TOOLS

### 36.1 General:

The use of portable power tools is necessary in our work. The majority of power tool accidents are caused by improper handling of the tools, poor maintenance of the equipment and the improper training of the workers using the equipment, or altering its intended use. The following list applies to all types of power tools (MSHA 56/57.14205).

1. All power tools, whether furnished by the employer or the employee, shall be maintained in a safe working condition. All damaged power tools are to be taken out of service and tagged.
2. When power operated tools are designed to accommodate guards, they shall be equipped with such guards when in use.
3. Electric power tools shall either be of the approved double-insulated type or grounded and annual resistance checks that are documented.
4. The use of electric cords for hoisting or lowering shall not be permitted.
5. Electric tools shall be disconnected when changing attachments, making minor adjustments, or repairing. When electric tools are used in wet areas, the operator may be exposed to a shock hazard. All insulation should be sound and clean.
6. Hand-held power tools, such as circular saws, chain saws and percussion tools without positive accessory holding means, shall be equipped with a constant pressure switch that will shut off power when the pressure is released. Continuous operation devices shall not be permitted on MSHA sites (57.14116).
7. Employees using power tools and exposed to the hazard of falling, flying, abrasive and splashing objects, or exposed to harmful dusts, fumes, mist vapors or gases shall be provided with the particular personal protective equipment necessary to protect them from the hazard.
8. Gasoline or Diesel engine-driven tools should not be used in unvented areas. Gasoline should be stored in approved safety cans which are equipped with "flash back screens," vents and pouring spouts. Gasoline engine driven tools are prohibited underground. Gasoline driven engines are forbidden in confined spaces.

1. Specific Tools:

2. Portable Hand Saws:

All hand saws should be equipped with a fixed guard over the upper half of the blade and a moveable guard covering the lower half of the blade. Both of these guards must be left in place at all times. Blocking of the lower guard is prohibited. Use only the recommended blade for the material being cut. Green or wet material should be cut slowly and with extra caution. Personal protective equipment shall be used while operating portable power saws. All material being cut should be checked for nails and knots and should be secured before cutting. Personal protective equipment must be used.

3. Table Or Bench Saws:

The electrical connection shall have no splices in the feed cable. The operating table and surrounding area should be kept clean and clear of all debris. Blade guards should be in place and should operate freely. Operators must wear approved eye protection. When ripping short stock, the use of a pusher stick is required. The saw should be turned off when not in use and the switch should be locked to prevent unauthorized use. Personal protective equipment must be used.

4. Chain Saws:

Chain saws should be used with extreme caution in order to prevent personal injury, as the cutting mechanism is unguarded. Operators should be carefully instructed in the use of this tool. Depth limit guards are provided by many manufacturers, and should be used to prevent binding at the point of engine contact with the material being cut. The saw shall be shut off before refueling and when moving the saw from one position to another. Personal protective equipment must be used, including face guards and chaps.

5. Drills:

Always provide a prick punch or pilot hole for the drilling point and always select the correct bit for the material being drilled and cutting lubricant in metal drilling. If the bit is long enough to pass through the material, protect against damage or injury on the far side. Small pieces should be secured to prevent spinning by the drill. Care should be taken to prevent sleeves or other clothing from being wound around the drill. Personal protective equipment must be used.

6. Portable Grinders:

All portable grinders shall have safety guards if the wheel is 2-inches in diameter or larger. Portable grinders should be equipped with hood guards, and wheels should be inspected regularly. A cracked wheel may fly to pieces and should be discarded if a crack is detected. Use wheels of proper rpm ratings with the ratings of the grinder being used. Eye protection shall be worn by all employees using portable grinders. Personal protective equipment must be used. Use the appropriate wheel for the surface being worked.

7. Bench Grinders:

Bench grinders should be equipped with hood guards, and wheels should be inspected regularly. Grinding wheels shall fit freely on the spindle and shall not be forced on. All wheels must match the rpm ratings of the grinder and should be ring-tested before mounting to ensure that they are free from cracks or other defects. Bench grinders shall be provided with tool rests which are rigidly supported and readily adjustable. **Such tool rest shall be kept at a distance not to exceed (1/8) one-eighth inch from the surface of the wheel. Tongue guards are a requirement.**

8. Pneumatic Tools:

A variety of tools, including hammers, drills, saws, tampers, paving-breakers and vibrators are powered by compressed air, usually provided by a compressor at the worksite. The same precautions regarding the use and care of pneumatic tools should be followed as for electric and gasoline driven equipment. Pneumatic power tools shall be secured to the air hose by whip checks to prevent the tool from becoming accidentally disconnected. All air-supply lines should be protected from damage by vehicles inspected regularly and maintained in good condition. Whip checks should be used on airlines and connection, and connection to the tool.

9. Hydraulic Jacks:

The manufacturer's rated capacity shall be legibly marked on all jacks and shall not be exceeded. All jacks shall have a positive stop to prevent over travel. When it is necessary to provide a firm foundation, the base of the jack shall be blocked or cribbed. Where there is a possibility of slippage of the metal cap of the jack, a wood block shall be placed between the cap and the load. The manufacturer's safe operating pressures for hose, valves, pipes, filters and other fittings shall not be exceeded on any hydraulic power tools.

## 37.0 OSHA RECORDKEEPING

### 1. Overview:

1. *The Occupational Safety and Health (OSHA) Act of 1970 and 29 CFR part 1904* requires employers to prepare and maintain records of occupational injuries and illnesses. The records provide statistics used by OSHA to identify industries which need assistance in improving their safety and health programs. The records are also helpful to employers and employees in identifying many of the factors which cause injuries or illnesses in the workplace.
2. An injury or illness is considered work-related if it occurs in the work environment -- defined as any area on the employer's premises (e.g., worksite, company cafeteria or company parking lot). The work environment also surrounds workers whenever and wherever they are involved in work-related activities.

### 1. What's Required:

2. Recordkeeping is not complicated. Only two forms must be maintained: the *Employer's First Report of Injury* as a substitute for *OSHA Form 301* and *OSHA log (OSHA Form No. 300)*.
3. *The First Report of Injury* should be filled out and a copy sent to the Home Office Safety Coordinator immediately upon notification of an injury or illness. *The First Report of Injury* describes how the injury or illness exposure occurred. All injuries must be reported immediately. Main office personnel will help decide if medical attention is required.
3. The *OSHA log* lists all recordable injuries on a calendar year basis. The employer must enter the injury information within six (6) working days of notification of the recordable injury.
4. All records must be retained in each establishment for five calendar years following the end of the year to which they relate.
5. The summary portion of the *OSHA log* must be posted February 1, and remain in place until March 1, of the year following completed year.
6. Employers with seasonal operations or with employees without a fixed jobsite should present a copy of the annual summary to all permanent employees.
7. Some states have their own safety and health laws which may impose different or additional obligations. Employers should consult their state safety and health laws concerning these requirements.

1. Recordable and Non-Recordable Injuries:

Each case is distinguished by the treatment provided. However, medical treatment is not the only criterion for determining recordability. The injury is recordable regardless of treatment if the injury involves loss of consciousness, death, restriction of work or motion, transfer to another job, termination of employment, or a work-related illness.

2. Recordable:

If the injury requires medical treatment, such as:

1. Antiseptics applied on second or subsequent visits to a doctor or nurse.
2. Second or third degree burns.
3. Hot or cold compresses or soakings on second or subsequent visits to a doctor or nurse.
4. Cutting away dead skin (surgical debridement).
5. Diathermy or whirlpool treatment.
6. Foreign bodies, if removal from wound requires a physician.
7. Prescription medications administered.
8. Sutures (stitches).
9. X-ray related to a recordable injury.

1. Non-Recordable:

If the injury only requires first aid, such as:

1. Antiseptics applied on first visit to a doctor or nurse.
2. Bandaging on any visit to a doctor or nurse.
3. First degree burns.
4. Hot/ cold compresses or soakings on first visit to a doctor or nurse.
5. Elastic bandages used only on first visit to a doctor or nurse.

6. Foreign bodies removed from wound by tweezers or irrigation. Non-prescription medications.
  7. Observation of injury on second or subsequent visits.
  8. Ointments applied to abrasions to prevent drying or cracking.
- 
1. Procedures Not Considered Medical Treatment:  
The following, by themselves, are not considered medical treatment.
    1. Tetanus shots:  
Initial or booster alone; other injections are considered medical treatment.
    2. Hospitalization for observation; with no treatment other than first aid.
    - c. X-ray not related to a recordable injury.

## 38.0 RESPIRATORY PROTECTION PROGRAM

### 38.1 Scope:

It is Harrison Western's goal to maintain a working environment consistent with the highest standards of health and safety. Pursuant to this goal, it shall be policy to protect employees against exposures to occupational dusts, fumes, mists, radionuclides, gases, and vapors through means of:

1. Determining what specific applications require use of respiratory equipment, and also providing proper respiratory equipment to meet the needs of each specific application.
9. Determining the physical capability of employees assigned to tasks requiring the use of respiratory equipment.
10. Training to insure that employees are completely knowledgeable of the respiratory protection requirements and also insuring that they comply with all facets of this respiratory program, including respirator inspection and maintenance.
11. Maintaining appropriate surveillance, regular inspections and evaluations to determine the continued effectiveness of the program. Fit Test Standards 1910.134.

### 38.2 Procedures:

#### 1. Monitoring/Respirator Selection:

1. Suspect work areas will be evaluated to determine whether PELs equal or exceed an eight (8) hour time weighted average (TWA).
2. In areas where exposure measurements equal or exceed PELs, threshold limit values (TLVs), and/or short term exposure limits (STELs), personal sampling equipment will be used in accordance with accepted industrial hygiene protocol to sample each work area.
3. Respirator selection will be based on the physical and chemical properties of the air contaminants and the concentration level likely to be encountered by the employees.
4. A "Respirator Issuance and Training" card (see Example 1 attached) will be available for each job where respirators are required. This card will specify what type of respirator is required for each application.

5. The company will immediately make a respirator available to each employee who is placed as a new hire or as a transferee in a job that requires respiratory protection.
6. Replacement respirators/filter cartridges will be made available as required.
7. Surveillance, Inspection and Evaluation:
  1. Appropriate surveillance of work area conditions and degree of employee exposure or stress shall be maintained by the job foreman and work area supervisors.
  2. It will be the duty of job superintendent to regularly inspect and evaluate the effectiveness of the Respiratory Protection Program.
3. Employee Medical Monitoring:
  1. Physical examinations will be conducted on all qualifying respirator users to assure that they are in adequate health to use respiratory equipment as required. The respirator user's medical status will then be reviewed accordingly.
  2. Periodic physical examinations (as required by Local, State, and/or Federal regulations) will be given to regular respirator users in order to assist them in maintaining their health as required by 1910.134 medical questioner.
  3. Biological monitoring in the form of blood and/or urinary analysis will be conducted on a periodic basis if determined appropriate by the Employer/Physician.
4. Employee Training:
  1. Each employee, upon assignment to a job requiring respirators, must be instructed by a respirator trainer as to their responsibilities in the respiratory protection program. The training will include:
    1. Discussion of the hazard(s) for which the respirator was chosen. This will involve review of the "Respirator Issuance and Training" card with each employee (see Example 1.)
    2. Discussion of how the respirator works (air filtration, chemical absorption, air supplied, etc.)
    3. Discussion of the need and limitations of the respirator.

4. Discussion of the intent of OSHA standard 29 CFR 1910.134(e)(5)(I) on respirator use and facial hair. OSHA's enforcement position, along with ANSI's position Z88.2-1980, prohibits beards or other facial hair from being permitted in the sealing area of a respirator or allowed to interfere with respirator valve function and respirator fit testing will not be conducted on these people.
5. Employee fit testing which includes instruction on how to wear the respirator, adjust the respirator for a proper face seal, and determine proper fit by performing a qualitative or quantitative fit test as appropriate. The fit test method used will be recorded on the "Respirator Issuance and Training" card (see Example 1 attached), and if it is determined that individual cannot obtain an adequate fit or face seal with any negative pressure respirator, an alternative choice or decision will be required (i.e.-not wearing a respirator if the concentration level of air contaminant is below the PEL, TLV, or STEL; wearing a powered air purifying or supplied air respirator, or transferring to another job).
6. Discussion of the following points for respirator inspection and maintenance:
  1. The wearer of a respirator will inspect it daily whenever it is in use. Worn or deteriorated parts shall be replaced, with parts from the same manufacturer.
  2. Management will periodically spot check respirators for fit, usage, and condition.
  3. Respirators not discarded after one shift use will be cleaned and disinfected as frequently as necessary to insure proper protection. This will be performed by the assigned employee or other designated person.
  4. Respirators not discarded after one shift will be stored in a suitable container away from areas of contamination. Do not store cartridges with the respirator device.
  5. Whenever feasible, respirators not discarded after one shift use will be marked or stored in such a manner to assure that they are worn only by the assigned employee. If use by more than one employee is required, the respirator will be cleaned and disinfected between uses.

**EXAMPLE 1**

**RESPIRATOR ISSUANCE AND TRAINING CARD**

<b>RESPIRATOR ISSUANCE AND TRAINING</b>			
EMPLOYEE	EMPLOYEE NUMBER	TITLE	DATE
<b>RESPIRATOR:</b> <input type="checkbox"/> Self-Contained <input type="checkbox"/> Applied Air <input type="checkbox"/> Chemical Cartridge with pre-filter <input type="checkbox"/> Mist/Fume/Mist Filter <input type="checkbox"/> Powered Air <input type="checkbox"/> Chemical Cartridge <input type="checkbox"/> Mist/Mist Filter <input type="checkbox"/> EPA Filter			
MODEL	APPLICATION	NIOSH APPROVAL NUMBER	
<b>LIMITATIONS:</b> <input type="checkbox"/> Hard <input type="checkbox"/> Intense <input type="checkbox"/> Gases <input type="checkbox"/> None EXPLAIN: _____			
<b>FITTING:</b> <input type="checkbox"/> Satisfactory Negative Pressure Test <input type="checkbox"/> Satisfactory Isopropyl Acetate Test <input type="checkbox"/> Satisfactory Negative Pressure Test <input type="checkbox"/> Satisfactory Betaner Test <input type="checkbox"/> Satisfactory Instant Smoke Test			
<b>MAINTENANCE:</b> Cleaning: <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Other _____ <input type="checkbox"/> Individual <input type="checkbox"/> Joint <input type="checkbox"/> Other Disposal: <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Other _____			
INDICATOR			
EMPLOYEE SIGNATURE			DATE
APPROVED			DATE

### 38.3 Fitting the respirator or SCBA's:

#### 1. Wearing an Air Purifying Respirator:

Respirators come in a variety of sizes. The employee should try to select a face piece size that is relatively comfortable but will produce the best face to face piece seal. A quarter-mask, respirator should cover the mouth and nose; the half mask should fit over the nose and under the chin. Full face piece respirators should cover the face from the hairline to below the chin.

#### 2. Donning Procedure for an Air Purifying Respirator:

1. Place face piece over bridge of nose with exhalation valve under chin. (¼ mask will not fit under the chin but will fit under the lower lip).
2. Engage upper headband above the ears.
3. Attach lower headband behind the neck and below the ears.
4. Adjust straps for fit and comfort.
5. The face piece of the respirator should sit as low as possible on the bridge of the nose to avoid obstructing view. Once the straps have been adjusted, ensure that the respirator is properly seated. There should not be any up and down movement of the respirator. Turning your head from side to side should not cause the respirator to move.

#### 1. Testing Method Performed Each Time the Respirator is Donned:

1. Negative pressure test protocol: The wearer dons and adjusts the respirator. The inlets of the cartridge(s) or filter(s) are then closed off using the palm(s). This may be difficult to do with the palms of the hands and may require the use of something air tight, such as, surgical gloves to cover the inlets. The wearer inhales gently but deeply and holds his/her breath for about 10 seconds. The face piece should collapse slightly. If the wearer cannot maintain a negative pressure for 10 seconds, adjustment or replacement of the respirator is required.
2. Positive pressure test protocol: The wearer covers the exhalation valve of the respirator with the palm of the hand. The wearer then gently exhales. A slight positive pressure should build up inside the face piece without any outward leakage.

1. Procedures for cleaning and disinfecting cartridge respirators:

1. Remove cartridges and the gaskets or seals. Discard cartridge.
2. Remove elastic head bands.
3. Remove exhalation valve cover. Carefully remove and inspect the exhalation valve assembly.
4. Remove inhalation valves.
5. Clean the respirator components by soaking in a sanitizer solution for two minutes. Do **not** soak respirator cartridge(s), canister(s), or filter(s). (Two tablespoons of bleach to one gallon of water makes a good, cheap disinfecting solution. Quaternary ammonium compounds may also be used for disinfection purposes.)
6. Rinse all soaked parts in clean warm water.
7. Air dry parts in a designated clean area.
8. Reassemble respirator when dry.

38.5 Respirator storage:

After cleaning, inspection, and necessary repair, respirators shall be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture or damaging chemicals. Routinely used respirators, such as dust respirators, may be placed in plastic bags. Respirators should not be placed in lockers or tool boxes unless they are in carrying cases or cartons. Respirators should be packed or stored so that face piece and exhalation valve rest in a normal position so their function will not be impaired by the elastomer setting in an abnormal position.

38.6 Respirator inspection:

9. Exhalation and inhalation ports:

Check threads for wear. If threads are worn, cartridges will not attach to the face piece properly.

10. Exhalation and inhalation valves:

These thin, flexible part are subject to wear and tear. Check valves for tears, deterioration, soap scum, dirt and anything else that would affect the valves ability to seal properly.

11. Protective exhalation port cover:

Check threads for wear.

12. Upper and lower headband:

Check straps for elasticity. Worn straps will cause the respirator to not seal properly.

3. Face piece:

The face piece is made of a soft, flexible material such as silicon rubber. Check for cracks or tears in the face piece. Stretching and manipulating rubber parts (the face piece) with a massaging action will keep them pliable and flexible and prevent them from taking a “set” during storage.

1. Respirator repairs:

2. Most parts of the respirator are replaceable. The replacement part must be exactly the same (type, size, manufacturer, etc.) as the part being replaced. Substitution of parts from a different manufacturer or brand or type of respirator invalidates the approval of the respirator.

1. Cartridges which contain filters utilized for removal of particulate ((dust, fume, mist) contaminants shall be replaced when there is an indication of increased resistance upon inhalation. This also applies to dust/fume/mist respirators.
2. Cartridges and dust/fume/mist respirators which contain an adsorbent (generally activated carbon) or a chemical are used to remove gases and vapors. These cartridges and respirators shall be replaced when a taste, irritation, or odor warns the individual that the adsorbent material is overloaded.
3. Air supplying respirators, with the exception of the SCBA, can be repaired if parts are replaced by a qualified individual with the aid of the manufacturer’s literature.
4. Maintenance of SCBA equipment is more difficult due primarily to the valve and regulator assembly. The standard requires that reducing or admission valves or regulators be returned to the manufacturer or to a trained technician for adjustment or repair.

## 39.0 SAFETY INSPECTIONS

Because job conditions are constantly changing and hazards may develop because of these changes, it is important that safety inspections are conducted constantly to see that unsafe conditions are corrected, that safe practices are followed, and that company policy and standards are being complied with. Periodically, the Company Safety Representative will inspect each operation, grading each on a checklist form, and will provide the Job Superintendent with these checklists together with the suggested corrective measures to be taken.

### 39.1 Basic Guidelines:

1. Periodic inspections should be made by a qualified project staff member either daily or weekly (depending on job size and the type of work being performed). Don't do a lackadaisical job of inspection; be methodical and thorough.
4. All unsafe conditions and unsafe acts should be noted with sufficient explanation of the problems and locations of any hazards.
5. Normally, corrective action should be completed by going through the chain of command by providing inspect observation to site personnel, but when a safety violation is serious and lives are in jeopardy, direct action is called for without delay.
6. When conditions are extremely serious, they should be corrected at once, either by instructing the employee how to work in a safe manner or by having the physical condition that could result in injury to personnel, equipment, or property immediately corrected.
7. Upon completion of the inspection, be sure the job superintendent is made aware of any unsafe conditions on the jobsite.
8. Periodic safety inspections will be made by the insurance carrier and other concerned parties. Copies of all such inspections should be obtained and filed, with copies kept on the jobsite.

**NOTE: 96% OF ALL ACCIDENTS AND INJURIES ARE CAUSED BY UNSAFE ACTS NOT CONDITIONS!**

**SOME ITEMS TO CHECK FOR:**

<b><u>HAZARDOUS CONDITION TO CHECK FOR REGULATION</u></b>	<b><u>C</u></b>	<b><u>F</u></b>	<b><u>R</u></b>
A. Oxygen and acetylene stored together			1926.253(b)(4)9 iii)
B. Flammable and combustible liquids areas need warning signs			1926.152
C. Drum needs bonding			1926.401

<b><u>REGULATION</u></b>	<b><u>C</u></b>	<b><u>F</u></b>	<b><u>R</u></b>
D. Whip checks are required on all air lines (hose)			1926.803
E. Pipes stored improperly			1926.250
F. Trailer needs cleaning			1926.250
G. Crane needs barricading			1926.550
H. Crane needs grounding			1926.401
I. Garbage cans need dumping			1926.250
J. Safety latch on headache ball of all cranes and boom trucks needs replacing			1926.550
K. Fire extinguisher needed on all cranes			1926.550
L. Glass broken on any equipment			1926.550
M. Barricading of work areas			1926.662
N. Man cage needs load limit signs & warning signs			1926.552
O. Any unsafe activity or OSHA violation			

## 40.0 SCAFFOLDING – COMPETENT PERSON REQUIRED

### 40.1 General:

Scaffolding accidents, in most cases, are caused by careless maintenance and improper use. Help keep your scaffolds safe for your safety by observing these simple requirements:

1. Scaffolds, platforms, or temporary floors shall be provided for employees engaged in work that cannot be performed safely from the ground.
9. All equipment should be inspected prior to use. Never use damaged or deteriorated equipment.
10. The footing or anchorage for scaffolds should be sound, rigid, and capable of carrying the maximum intended load, without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks should not be used to support scaffolds or planks.
11. Any scaffold including accessories such as braces, brackets, trusses, screw legs, ladders, etc., damaged or weakened from any cause shall be immediately repaired or replaced.
12. All planking shall be scaffold grades or the equivalent.
13. Don't stockpile materials on scaffolds; remove all materials and tools at the end of the day.
14. Never overload scaffolds. Pile materials being worked over ledger and bearer points to minimize platform loadings.
15. Don't work on scaffolds during storms or high winds, and clear platforms of all ice and snow before using. Sand wet planking to prevent slipping.
16. Protect scaffolds; don't bump or strike against scaffolds with vehicles or materials; control hoisted material from ground with taglines.
17. Keep platforms and area around scaffold cleared of debris, un-needed equipment, material, and other possible tripping hazards.
18. The use of shore or lean-to scaffolds is prohibited.
19. Ladders or makeshift devices shall not be used to increase height of scaffolding.
20. Scaffolding working surfaces shall be essentially level, with poles, legs, and uprights plumb and securely braced to prevent swaying and displacement.

21. Scaffolds and their components, except for wire or fiber rope suspension, shall be capable of supporting at least four times the maximum intended load.
22. Wire or fiber rope used for scaffold suspension shall be capable of supporting at least six (6) times the maximum intended load.
23. Access to scaffolding can be by separate or integral ladders or stairways meeting the requirements of the section covering ladders and stairways. Do not use the braces or scaffold end supports for access.
24. Employees working on suspended or movable scaffolding or scaffolding without standard guardrails shall be protected by nets, lifelines, lanyards, or belts.

#### 40.2 Scaffolding Planks:

##### 1. General:

1. The width of all scaffolds, ramps, runways, and platforms shall be sufficient to prevent congestion of persons, materials, or equipment, and in no case shall they be less than 18 inches wide.
2. Planking shall overlap each member a minimum of 12 inches.
3. Scaffold planks shall extend over their bearers not less than 6 inches or more than 12 inches.
4. When installed flush, the butt joints shall be at the centerline of a pole and the plank ends shall be supported by and secured to separate bearers.
5. When necessary to prevent dislodgement or excessive deflection, intermediate support shall be provided.
6. When a scaffold materially changes direction, diagonally installed bearers shall be used to support the intended loading and to prevent tipping.
7. When moving platforms or planking to another adjacent level, the old planking shall be left in place until the new bearers have been installed.

##### 1. Requirements:

1. Plank edges will be laid flush and planking will be secured in place to prevent displacement.
2. Planking used as a working surface on scaffolds, platforms, runways, or ramps shall not be less than two (2) inches nominal in thickness and

scaffold grade or equivalent lumber according to American Lumber Standards grading rules for species of wood used.

3. The maximum permissible spans for 2-inch by 10-inch or wider planking is as follows:

	Full thickness Undressed Lumber	Nominal Thickness
Working Load (lb./sq.in.)	25 50 75	25 50
Permissible span	10 8 6	8 6

4. Nominal thickness lumber is not recommended for heavy duty use.
5. The maximum permissible span for 1¼-inch by 9-inch or wider plank of full thickness shall be four (4) feet with medium duty loading.

#### 40.3 Standard Guardrails:

##### 1. General:

1. Guardrails and toe boards shall be installed on all open sides and ends of platforms more than 10 feet above the ground or floor.
2. Guardrails shall be 2-inches by 4-inches, or the equivalent, approximately 42 inches high, with a midrail, when required. Supports shall be at intervals not to exceed eight (8) feet. Toeboards shall be a minimum of four (4) inches in height.
3. Regardless of the material used, other than wire, the guardrail shall be capable of withstanding a minimum loading of 200 pounds supplied in any direction at any point on the top rail with a minimum of deflection.
4. Railings required to withstand greater stress due to the nature of use shall be designed with a minimum safety factor of four (4).

##### 1. Wooden Guardrail:

1. Wooden posts and top rails shall be a minimum of 2-inch by 4-inch, construction grade or equivalent lumber.
2. Post spacing shall not exceed eight (8) feet on centers.
3. Intermediate rails shall be a minimum of 1-inch by 6-inches.

4. Toeboards shall be a minimum height of four (4) inches installed flush with the planking or floor.
5. Pipe Guardrails:
  1. Posts, top-rails, and intermediate rails shall be a minimum 1.5 inch-nominal diameter steel pipe.
  2. Posts shall be spaced not to exceed eight (8) feet on centers.
3. Metal Guardrails:
  1. Posts, top rails, and intermediate rails shall be 2-inch by  $\frac{3}{8}$ -inch angle iron, or equivalent.
  2. Posts shall be spaced not to exceed eight (8) feet on centers.
- e. Rope Guardrails:
  1. Synthetic or natural fiber ropes shall not be used as guardrails.
  2. Wire rope having equivalent strength of pipe guardrails may be used for top and intermediate rails provided deflection is less than 12 inches under a 200-pound loading at center span.

#### 40.4 Tubular Welded Metal Frame Scaffolds:

##### a. General:

1. All metal scaffolds and towers shall be, or equivalent to, those listed by Underwriters Laboratories, Inc., or Factory Mutual Engineering.
2. A ladder or stairway shall be provided for access and exit, and shall be affixed or built into all metal scaffolds and so located that when in use it will not have a tendency to tip the scaffold.
3. Climbing of braces shall be prohibited.
4. A landing platform with guardrails will be provided at intervals not to exceed 30 feet.
5. Extreme caution shall be taken where metal scaffolds are used in the vicinity of energized electrical circuits.

b. Erection:

1. All scaffolds shall be erected in accordance with manufacturer's specifications and the load limits as recommended by the manufacturer shall not be exceeded.
2. All metal scaffolds and towers shall be plumb and level.
3. The sections of metal scaffolds shall be securely connected.
4. All braces shall be securely fastened.
5. To prevent movement, the scaffold shall be secured to the building or structure at intervals not to exceed 30 feet horizontally and 25 feet vertically.
6. A licensed professional engineer shall prepare drawings and specifications for metal frame scaffolds exceeding 125 feet in height.

c. Working Surface:

1. Work platforms and planking shall be firmly secured at both ends to the bearers.
2. Planks shall extend over their end supports not less than 6 inches or more than 12 inches.
3. Metal scaffolds and towers shall be enclosed on open side and ends with standard guardrails and toe boards.

40.5 Metal Bracket Form Scaffolds:

1. Requirements:

1. Metal brackets or scaffold jacks which are an integral part of the form shall be bolted or welded to the form.
2. "Clip-on" or "hook-over" metal brackets may be used, provided the form walers are bolted to the form or secured by snap ties or sheer-bolts extending through the form and securely anchored.
3. Metal brackets shall be spaced not more than eight (8) feet on centers.
4. Metal bracket form scaffolds shall be equipped with wood guardrails, intermediate rails, toeboards, and scaffold planks meeting the minimum dimensions shown in the table below.

<u>Member</u>	<u>Dimensions</u>
Uprights.....	2 x 4 in.
Guardrails.....	2 x 4 in.
Guardrail Height .....	Approx. 42 in.
Intermediate Guardrails ....	1 x 6 in.
Toeboards .....	4 in. (minimum)
Planking .....	2 x 9 in.

1. Suspension Scaffolds:

a. Design:

All parts and components of suspension scaffold systems, except the suspension rope, shall be designed and constructed with a minimum safety factor of four (4).

b. Suspension:

1. Suspension scaffolds shall be supported by wire, synthetic, or fiber ropes with a minimum safety factor of six (6) and secured to outrigger beams.
2. Suspension ropes shall have the fixed ends equipped with a proper size thimble secured by splicing or other equivalent means and attached to the supports by closed-type shackles.
3. Running ends of the suspension ropes shall be securely attached to the hoisting drums and at least four (4) turns of the rope shall remain on the drum at all times.
4. The suspension ropes shall be attached at the vertical centerline of the outrigger, and the attachment shall be directly over the hoisting drum.

c. Outrigger Beams:

1. Outrigger beams shall be structural steel, equivalent in strength to at least a standard 7-inch, 15.3-pound per foot steel I-beam, and shall be at least 15 feet long.
2. Unless designed by a professional engineer for a specific use, they shall not extend more than 6.5 feet beyond the fulcrum or bearing point.
3. The outrigger beams shall be set with their webs in the vertical position and anchored to the structure by the equivalent of U-bolts and anchor plates, washers, and nuts.
4. The beams shall rest on wood bearing blocks: a stop bolt shall be installed on each end of every beam.

d. Hoisting Devices:

1. All suspension scaffolds shall be equipped with either manual or powered hoisting machines.
2. The machines shall be either worm geared or powered both up and down, and designed to stop independently of manual braking and not move when the power is not being applied.
3. Power units and manually operated winches shall be of a type tested and listed by Underwriters Laboratories, Inc., or Factory Mutual Engineering.

e. Hoist Safety Controls:

1. Controls for powered scaffolds shall be of the deadman type with a non-locking switch or control.
2. A device to shut off the power shall be installed ahead of the operating control.
3. The speed control device shall be designed so that it cannot be manually released.

f. Scaffold Brackets:

1. Scaffold brackets shall be wrought iron or mild steel.
2. Reinforcing steel shall not be used as part of the support system.

g. Stability Control:

1. Suspension scaffolds shall be controlled by wire rope guides or equivalent means such as taglines to prevent sway.
2. Tiebacks of ¾-inch manila rope, or equivalent, shall be installed on suspension scaffolds for use as a secondary means of anchorage.

h. Platforms:

1. Platforms of two-point suspension scaffolds shall be either ladder type, plank type, beam type, or metal type, constructed in conformance with *Section 1926.451 of the 1990 OSHA Safety Standards for the Construction Industry*.
2. The platforms shall not be less than 20 inches or greater than 36 inches wide overall.

3. The platform shall be securely fastened to the hangers with U-bolts or other equivalent means.

i. Mobile / Powered Scaffold (Scissor Lift):

1. Only trained & qualified operators are allowed to operate this equipment.

**SCAFFOLDING DEFINITIONS**

Type of or Part of Scaffold	Definitions
Bearer	A horizontal member of a scaffold upon which the platform rests and which may be supported by ledgers.
Boatswain's Chair	A seat supported by slings attached to a suspended rope designed to accommodate one workman in a sitting position.
Brace	A tie that holds one scaffold member in a fixed position with respect to another member.
Bricklayers' Square Scaffold	A scaffold composed of framed wood squares which support a platform limited to light and medium duty.
Carpenters' Bracket Scaffold	A scaffold consisting of wood or metal brackets supporting a platform.
Coupler	A device for locking together the component parts of a tubular metal scaffold. (The material used for the couplers shall be of a structural type, such as a drop-forged steel, malleable iron, or structural grade aluminum.)
Crawling Board or Chicken Ladder	A plank with cleats spaced and secured at equal intervals for use by a worker on roofs; not designed to carry any material.
Double Pole or Independent Pole Scaffold	A scaffold supported from the base by a double row of uprights independent of support from the walls and constructed of uprights, ledgers, horizontal platform bearers at right angles to the span.  <i>[OSHA definition: A supported <b>scaffold</b> consisting of a platform(s) resting on cross beams (bearers) supported by ledgers and a <b>double</b> row of uprights independent of support (except ties, guys, braces) from any structure.]</i>
Float or Ship Scaffold	A scaffold hung from overhead supports by means of ropes and consisting of a substantial platform having diagonal bracing underneath, resting upon and securely fastened to two parallel plank bearers at right angles to the span.
Guardrail	A rail secured to uprights and erected along the exposed sides and ends of platforms.
Heavy Duty Scaffold	A scaffold designed and constructed to carry a working load not to exceed 75 pounds per square foot.
Horse Scaffold	A scaffold for light or medium duty composed of horses supporting a work platform.
Interior Hung Scaffold	A scaffold suspended from the ceiling or roof structure.
Ladder Jack Scaffold	A light duty scaffold supported by brackets attached to ladders.

Type of or Part of Scaffold	Definitions
Ledgers (Stringer)	A horizontal scaffold member which extends from post to post and which supports the putlogs or bearers forming a tie between the posts.
Light Duty Scaffold	A scaffold designed and constructed to carry a working load not to exceed 25 pounds per square foot.
Manually Propelled Mobile Scaffold	A portable rolling scaffold supported by casters.
Masons Adjustable Multiple-Point Suspension Scaffold	A scaffold having a continuous platform supported by bearers suspended by wire rope from overhead supports so arranged and operated as to permit the raising or lowering of the platform to desired working positions.
Maximum Raised Load	The total of all loads including the working load the weight of the scaffold and such other loads as may be reasonably anticipated.
Medium Duty Scaffold	A scaffold designed and constructed to carry a working load not to exceed 50 pounds per square foot.
Midrail	A rail approximately midway between the guardrail and platform secured to the uprights erected along the exposed sides and ends of platforms.
Needle Beam Scaffold	A light duty scaffold consisting of needle beams supporting a platform.
Outrigger Scaffold	A scaffold supported by outriggers or thrust outs projecting beyond the wall or face of the building or structure the inboard ends of which are secured inside of such building or structure.
Self-Propelled Mobile Scaffold (Scissor Lift)	A scaffold that is self-propelled that usually goes up & down only and then driven to its location.
Putlog	A scaffold member upon which the platform rests.
Roofing or Bearer Bracket	A bracket used in slope roof construction having provisions for fastening to the roof or supported by ropes fastened over the ridge and secured to some suitable object.
Runner	The lengthwise horizontal bracing or bearing member or both.
Scaffold	Any temporary elevated platform and its supporting structure used for supporting workmen or materials or both.
Single-Point Adjustable Suspension Scaffold	A manually or power-operated unit designed for light duty use supported by a single wire rope from an overhead support so arranged and operated as to permit the raising or lowering of a platform to desired working positions.
Stone Setters Adjustable Multiple-Point Suspension Scaffold	A swinging type scaffold having a platform supported by hangers suspended at four (4) points so as to permit the raising or lowering of the platform to the desired working position by the use of hoisting machines.
Toeboard	A barrier secured along the sides and ends of a platform to guard against the falling of materials.
Tube & Coupler Scaffold	An assembly consisting of tubing which serves as posts bearers braces lies and runners a base supporting the posts and special couplers which serves to connect the uprights and to join the various members.

## **41.0 SLINGS AND CHOKERS**

### **41.1 Slings and Chokers:**

1. Welded steel chain slings shall have permanently affixed durable identification stating size, grade, rated capacity, and sling manufacturer (load tags).
2. Hooks, rings, oblong links, pear-shaped links, welded or mechanical coupling links, or other steel chains, shall have a rated capacity at least equal to that of the chain.
3. Job or shop hooks and links, or makeshift fasteners, formed from bolts, rods, etc., or other such attachments, shall not be used.
4. The rated capacity of the chain shall not be exceeded.
5. All chain slings shall be inspected prior to use and during the shift if necessary and a record kept.

### **41.2 Synthetic Webbing (Nylon, Polyester, and Polypropylene):**

1. Nylon and Polyester are the most popular and best general purpose synthetic webbing slings. Polypropylene slings are intended for specific controlled applications, which require resistance to strong acids and alkalis and shall have load tags.
2. Each application must be evaluated, taking into consideration the following:
  1. Type of acid, alkali, or other chemical
  2. Exposure conditions
  3. Concentration
  4. Temperature
5. All synthetic webbing slings are subject to cutting when lifting items with sharp edges. Sharp edges in contact with the sling should be padded with material sufficient in strength to prevent damage to the sling. Wear pads give extra protection to the sling where the most wear occurs.

### **41.3 Ultra-Violet Light Exposure:**

1. Environments in which synthetic webbing slings are continuously exposed to ultraviolet light can affect the strength of synthetic webbing slings in varying degrees from slight to total degradation.

2. Suggested procedures to minimize the effects of ultra-violet light -- sunlight or arc welding flash:

1. Store slings in a cool, dry, and dark place when not being used for prolonged periods of time.
2. Inspect slings prior to use.

3. Visual Indications of Ultra-Violet Degradation:

1. Bleaching out of sling color.
2. Increased stiffness of sling material.
3. Surface abrasion in areas not normally in contact with the load.

4. Proof-Testing:

Slings used in environments where they are subject to continuous exposure to ultra-violet light should be proof-tested to two (2) times rated capacity annually, or more frequently depending on the severity of exposure. Also, all slings shall meet the OSHA requirement for capacity and safety inspections.

#### 41.4 Wire Rope:

1. Safe Operating Practices for General Use of Wire Rope Slings:

1. Slings that are damaged or defective shall not be used.
2. Slings shall not be shortened with knots or bolts or other makeshift devices.
3. Sling legs shall not be kinked.
4. Slings shall not be loaded in excess of their loaded capacities.
5. Slings used in a basket hitch shall have the loads balanced to prevent slippage.
6. Slings shall be securely attached to their loads.
7. Slings shall be padded or protected from sharp edges of their loads.
8. Suspended loads shall be kept clear of all obstructions.
9. All employees shall be kept clear of loads about to be lifted and suspended and use tag lines to control loads.

10. Hands or fingers shall not be placed between the sling and its load while the sling is being tightened around the load.
11. Shock loading is prohibited.
12. A sling shall not be pulled from under a load when the load is resting on the sling.
13. A wire rope sling will be removed from use if the following conditions are present:
  1. Ten randomly distributed broken wires in one (1) rope lay, or five (5) broken wires in one (1) strand in one (1) rope lay.
  2. Wear or scraping of one-third ( $\frac{1}{3}$ ) the original diameter of outside individual wires.
  3. Kinking, crushing, bird caging, or any other damage resulting in distortion of the wire rope structure.
  4. Evidence of heat damage.
  5. End attachments that are cracked, deformed, or worn.
  6. Hooks that have been opened more than 15 percent of the normal throat opening measured at the narrowest point or twisted more than 10 degrees from the plane of the unbent hook.
  7. Corrosion of the rope or end attachments.

## 42.0 TOOLBOX SAFETY MEETINGS, TOPICS, AND ATTENDANCE

### 42.1 Toolbox Safety Meeting - to be Conducted by the Site Supervisor:

1. One effective method of promoting on-the-job safety is the toolbox safety meeting; a brief meeting conducted on-the-job at the crew level by the immediate Supervisor or Site Superintendent.
2. Points to help make the toolbox safety meetings as effective as possible:
  1. First of all, hold a meeting at least once every day. Regular meetings will provide the opportunity to regularly discuss job tasks, risk changes and exchange information.
  2. A written record of the meeting will be kept on the form provided. All employees attending should both print and sign their names on this form. The topic(s) details and points, comments or points brought up by the crew should be recorded by the supervisor or project managers should sign the document.
  3. Hold the meeting right on the jobsite, preferably where the employees can sit and relax.
  4. Limit each meeting to 30 minutes and discuss only relevant topics. Acceptations are authorized to time limits if appropriate for the topic.
  5. Discuss only a single or minimal points or subjects. This is important in keeping the employees interested and not have prolonged discussions on unnecessary topics.
  6. Don't choose too broad a subject, or one that is of no interest to the employee. Gear the meeting to the specific project.
  7. Spend some time and thought before the meeting so that you are able to stimulate discussion. Toolbox meet subjects should be timely, thought-out, relevant and detailed.
  8. Open the meeting by stating the subject and presenting the hazard or problem, and get the group to join the discussion and work out a solution.
  9. Use positive approaches and conclusions whenever possible. Do not single out an employee when discussing a project problem. Be diplomatic in your approach to a problem.
  10. Before the start of any phase of work on the project, hold a meeting to discuss the hazards or problems that might develop with this new operation and the mitigation of those hazards.

11. In addition to discussion of the tasks at hand for the day, periodic discussion topics include special incidents, hazards, near misses on the job or other jobs, or specific topics sent to the project from the corporate office, other activities on the jobsite which may affect health or safety of crews.



## 43.0 TRAFFIC CONTROL

### 43.1 Traffic Control for Active Roadway Construction:

1. Active roadway or nearby construction poses a variety of safety problems not encountered in any other field of construction. The hazards normally associated with such construction are multiplied by the fact that the work area is either shared by or in close proximity to the moving stream of traffic. Our safety responsibility is fivefold. We must provide the safety of:
  1. The public - motorist, pedestrian, resident
  2. The workers
  3. The construction equipment
  4. The public utilities
  5. The completed work
1. In protecting against these hazards, the public interest and convenience must be weighed. It may be safer, more convenient, and less costly to the project to divert or interrupt the movement of traffic. Highways are productive facilities, and most users are on the highway as an essential part of getting their particular jobs done. Unnecessary inconvenience and delay to the highway user is often not only uneconomical in the overall view, but also poor public relations.
2. OSHA and the Department of Transportation require compliance with the Manual on Uniform Traffic Control Devices. In most cases, traffic control professionals are required for changes to traffic systems.
2. Construction activities on roads and streets often present motorists with unexpected and unusual situations. Traffic control principles and procedures which may enhance the safety of motorists and workers at these work areas include the following:
  1. Traffic safety should be an integral and high priority element of every project, from planning through design and construction.
  2. Traffic should be routed through work areas with traffic control devices comparable to those employed for normal situations whenever possible.
  3. Traffic movement should be inhibited as little as possible.
  4. Motorists should be guided in a clear and positive manner while approaching and traversing work areas.

5. Routine inspection of the traffic control elements should be performed to insure acceptable levels of traffic operations and device maintenance.
6. All persons responsible for the development, design, implementation, and inspection of traffic control should be adequately trained. Typically these functions should be overseen and affected by traffic control specialists.
7. Typical problems which may develop in a traffic control pattern are as follows:
  1. Insufficient advance warning
  2. Inadequate guidance through the work zone
  3. Unprotected hazards
  4. Distractions to the motorist
  5. Congestion and capacity problems

#### 43.2 Flagging Personnel:

1. Flagging Personnel or other appropriate traffic controls shall be used whenever there is any doubt that effective protection can be provided by signs, signals, and barricades.
2. Flagging Personnel shall wear a red or orange warning vest or other garment. Warning garments worn at night shall be of a reflectorized material.
3. Flagging Personnel using hand signaling equipment shall insure signals provide sufficient warning to protect themselves and the work site.
  1. Signal flags shall be red and at least 24 inches square.
  2. Sign paddles (Stop and Slow) shall be on a 6 foot staff.
  3. In periods of darkness or reduced visibility, red lights shall be used.
4. Flagging Personnel shall place themselves in a protected position to reduce possibility of injury from traffic.
5. Flagging Personnel shall insure they can fully observe the operation and shall guide vehicular traffic in such a manner as to minimize the possibility of accidents or injury.
6. When Flagging Personnel are used at both ends of a job site, reliable communications or prearranged signals shall be used to insure proper traffic flow.

7. Flagging Personnel shall face traffic when giving signals.
8. Flagging Personnel shall give positive, direct signals which leave no doubt as to their meaning.

1. Traffic Control Plan:

A traffic control plan is a plan for handling traffic through a specific highway or street work zone or project.

2. Work Site/Work Area:

The work area itself is that space set apart which is delineated for use by workmen and equipment performing work and which is protected, marked, or signed to exclude vehicular and pedestrian traffic.

3. Traffic Control:

Traffic control is the process of advising motorists as to detailed requirements or conditions affecting road use at specific places and times in order that proper action may be taken and accidents or delays avoided.

4. Traffic Control Devices:

Traffic control devices are used to slow or warn motorists of changes or possible changes in conditions. These devices are used to implement the traffic control process.

5. Traffic Control Zone:

A traffic control zone is the entire area of the roadway which encompasses all traffic control devices used to regulate or guide motorists' behavior.

6. Signs:

Signs are used to advise and warn the motorists and to instruct them as to how to proceed through the work site.

7. Types of Signs:

1. Regulatory Signs:

Regulatory signs may be used at construction and maintenance work sites to advise motorists of applicable laws and regulations. These signs are

typically rectangular in shape with the long dimension vertical. The standard color scheme is black lettering on a white background.

2. Guide Signs:

Guide signs show destinations, designations, directions, distances, services, points of interest and other geographical or cultural information. These signs are rectangular with their long dimension horizontal. The standard color is white legend upon a green background.

3. Warning Signs:

Warning signs are used to give notice of conditions that are potentially a hazard to traffic. These signs are typically diamond-shaped with one diagonal vertical. Permanent warning signs have a black legend on a yellow background. The orange color is used to indicate the temporary nature of the condition and the additional potential hazard of the work site.

4. Supplemental Warning Plates:

Supplemental plates may be added to warning signs to provide additional information. When used they shall be placed immediately below the diamond main sign. They are not to be used by themselves.

5. Description Plates:

Description plates are rectangular with the long dimension horizontal.

6. Advisory Speed Plates:

Advisory speed plates are square shaped.

8. Channelizing Devices:

1. Channelizing devices are used to guide the motorist through the work site, to indicate hazardous areas and to exclude traffic from the actual work zone. Channelization devices are placed in or adjacent to the roadway to control the flow of traffic. They have distinct purposes:

1. Taper:

Force movement of traffic from one lane to another.

2. Delineate:

Guide the motorist to and along the safe path of travel.

3. Cones:

Conical in shape with broadened base; minimum height is 18 inches (greater on high speed roads), orange or fluorescent red-orange or yellow-orange color.

4. Drums:

Approximately 36 inches in height and a minimum of 18 inches in diameter, horizontal, circumferential orange and white reflectorized stripes with a minimum of 2 orange and 2 white stripes.

5. Barricades:

8 to 12 inch width of rails reflectorized with orange and white stripes on a 45 degree angle; stripes slope downward towards the side on which traffic is to pass, minimum height is 3 feet.

6. Barrier Wall:

Portable concrete barriers may be used to provide a physical device which traffic cannot penetrate. The most widely-used concrete barrier is the precast New Jersey "safety shape." This device is usually 10 feet long and weighs approximately 5300 pounds.

7. Arrow Boards:

The arrow board is used when a lane is closed. It tells the motorist that he should merge into the adjacent lane as shown by the direction of the arrow.

1. Lighting or Barricade Lights:

Barricade lights are used to indicate hazards and to delineate the safe path of travel. There are three types of barricade lights:

2. Type A:  
Type A lights are low intensity flashing lights that are generally mounted on barricades. They are effective only at night.
3. Type B:  
Type B lights are high intensity flashers which are effective both day and night.
4. Type C:  
Type C lights are steady burning low-wattage lights which are used at night for delineation. They are commonly mounted on barricades or drums.

5. Standard Colors of Signs:

The color coding of traffic signs is as follows:

- a. Red: stop or prohibition
- b. Green: indicates movements permitted; guidance for direction
- c. Blue: motorist services guidance
- d. Black: regulation
- e. White: regulation
- f. Orange: construction & maintenance warning
- g. Brown: public recreation and scenic guidance

#### **44.0 UNDERGROUND LINES AND EQUIPMENT**

**NOTE: ONLY QUALIFIED / LICENSED WORKERS ARE ALLOWED TO PERFORM THIS WORK. CONTACT THE HOME OFFICE FOR INSTRUCTION.**

## 45.0 UNDERGROUND LOCATES

### 45.1 SB155 by Sen. Schroeder and Rep Anderson:

Establishes a one-call notification system for excavators as required by the National Pipeline Safety Act.

#### 1. Important Points of the New Law:

1. All owners of underground facilities, including cities, counties and special districts, must belong to the one-call system. (Owner does not mean railroad)
2. All contractors must call the system or the Tier Two members (cities, counties, special districts etc.) before they dig, otherwise they face penalties.
3. Notification by the excavator must be given at least TWO business days prior to excavation, NOT INCLUDING THE DAY OF THE NOTICE.
4. Notice must include name and phone number of the person giving notice, name and phone number of the excavator and the specific location, starting date and description of the excavation.

### 45.2 Markings:

1. Following the notice, the owner or operator shall then advise the excavator of the location and size of any underground facility by marking the location within 18 inches horizontally from the exterior sides of these facilities.
2. Marking are valid for 30 days.
3. If these markings become lost or invalid, the excavator shall notify the association or owner and request immediate reverification. The owner shall respond as quickly as practicable. The excavator shall CEASE excavation at the AFFECTED LOCATION until reverification.
4. If there is a mislocate, the excavator will notify the owner or operator and request a reverification. The excavator may continue excavation if he exercises due caution.
5. If the excavator requests locates, but it is not provided, the excavator shall give notice to the owner, operator or the association and may proceed. He will not be liable for damages except upon proof of his own negligence.

**CALL BEFORE YOU DIG!**  
**1-800-922-1987**  
**(Colorado only)**

EMERGENCIES - EXCAVATORS SHALL TAKE PRECAUTIONS TO AVOID DAMAGE TO THE FACILITIES AND NOTIFY THE OWNERS AND THE NOTIFICATION ASSOCIATION AS SOON AS POSSIBLE.

45.3 Penalties:

1. Owners or operators who do not join the notification association are liable for civil penalties of \$200.
2. If a facility is damaged because the owner or operator fails to comply by joining the association, he is liable for a civil penalty of \$1,000 for the first offence and \$3,000 for each subsequent offence. (Not applicable to homeowners).
3. Any person who fails to notify the association or owner or operator that they intend to excavate, shall be liable for a civil penalty to \$200. But if this person fails to notify and DAMAGES an underground facility during excavation, he shall be liable for a civil penalty of \$1,000 for the first offence and \$3,000 for each subsequent offence.
4. This act takes effect Sept. 1, 1993. However, certain deadlines for owners and operators do not take effect until later. Cities, counties, electric cooperatives and other Tier Two Members do not have to have their information filed with the association until Jan. 1, 1994; so these members will have to be contacted individually.

**CALL BEFORE YOU DIG!**  
**1-800-922-1987**  
**(Colorado only)**

1. Notification Association / Underground Facility Owner Responsibility:
  1. All underground facility owners and operators must join the Notification Association as a tier one or tier two member.
  2. Must respond within 48 hours (two business days), not including day of notification. Tier one member's locations are scheduled by the

Notification Association. Tier two members must be contacted directly by the excavator.

3. Must mark location within 18 inches horizontally from the exterior sides.
2. If locate not accomplished within 48 hours plus day of notification, or time agreed to, the excavator may proceed cautiously after giving notice to the Notification Association or owner and not be liable for damage - unless due to excavator negligence.
3. Must provide marks that are good as long as they are clearly visible, but not for more than 30 calendar days.
4. Will require that sites are located by address and will request that excavator be specific as possible. Excavator should meet with the locator if possible.
5. Will provide a signed written record (locate sheet) of the utilities located and if not the excavator should ask for it.
6. Facility owners and excavators are subject to civil penalties for non-compliance (refer to law for specific liability).
1. Excavator Responsibility:
  2. Must notify the Notification Association two business days, plus day of notification, prior to excavation. Notice may be given in person, by telephone or in writing if delivered.
  3. Should have all pertinent information ready before making call. Includes location (closest street address or section, range and township), type of construction, starting date and description of intended excavation activity.
  4. Should be ready to record information provided by the Notification Center. Includes ticket number, utility owner, meet time, tier 2 members and phone numbers. Note that tier two members should then be called directly to schedule locates.

**CALL BEFORE YOU DIG!**  
**1-800-922-1987**

5. Should request a signed written record of the utilities located.
6. Should maintain or preserve the marks provided by the locator.

7. In emergency situations (as defined by the law) should immediately notify the Notification Association and take reasonable precautions to protect the underground facilities.
  8. At the excavator's option, pre-marking the limits of the dig area with white paint can save the excavator and locator time. A meet can be arranged if pre-marking is not sufficient. Without a meet time the excavator will have to make arrangements for a written record of the locate.
  - h. **CAUTION:** The Company doing the excavation is responsible for obtaining its own locate information.
9. **SUGGESTED PROCEDURES WHEN FACILITIES ARE CUT:**
1. Call 911 if the situation warrants it (gas, fuel, electric lines).
  2. Call the Notification Association.
  3. Notify the facility owner, if known.
  4. Notify the appropriate person within your company.
  5. If appropriate, halt the work and secure the area.
  6. Document the following:
    1. Retrieve written record of locates.
    2. Check location of marks in relation to the facility hit.
    3. Take pictures of the area.
    4. Make sketches including measurements.
    5. Identify witnesses.

## 46.0 WELDING AND CUTTING

- 46.1 All Welding and cutting equipment and operations shall be in accordance with standards and recommended practices of the American Welding Society, Safety in Welding and Cutting, ANSI Z49.1, and the recommendations of the National Fire Protection Association.
- 46.2 Electric Arc Welding Apparatus shall comply with ANSI C33.2 and shall be installed, maintained, and operated in accordance with the National Electrical Code NEC 70.
- 46.3 Gas welding and cutting equipment shall be listed by Underwriters Laboratories.
- 46.4 All structural welding accomplished by the contractor or subcontractor on critical items such as scaffolding, shoring, forms, ladders, piling, etc., shall be performed by certified welders using qualified welding procedures.
- 46.5 Many industrial and construction property losses have been caused by cutting and welding, primarily with portable equipment in areas not specifically designed or approved for such work. The majority of these fires have been caused by sparks. The globules of molten metal will scatter horizontally as far as 35 feet, and can set fire to all kinds of combustible materials, including the clothing worn by the employee.
- 46.6 Utilize hot work permits (attached) for all cutting and welding, grinding or other work which may cause fire.
1. Protective Equipment:  
Protective clothing required for any welding or cutting operation will vary with the size, nature and location of the work. However, some suggested protective measures for welders and helpers are as follows:
    1. Flame-resistant gauntlet gloves:  
To be worn except where welder is engaged in light work.
    2. Flame-resistant aprons:  
Flame-resistant aprons of leather or other suitable material as protection against radiated heat and sparks.
    3. Oil and grease free:  
Clothing should be free of oil and grease.
    4. Pockets and cuffs:  
Pockets and cuffs invite sparks. Collars and cuffs should be buttoned, and cuffs turned up inside the pants. Pockets should be eliminated from fronts of vests, shirts, and aprons, or with buttoned

flaps.

5. Fire-resistant leggings:  
High boots or other leg protection should be required for very heavy work.
6. Safety shoes:  
Safety shoes are recommended. Low-cut shoes with unprotected tops should not be permitted.
7. Fire-resistant capes or shoulder covers:  
Fire-resistant capes or shoulder covers should be worn during overhead work.
8. Ear protection:  
Ear protection is sometimes desirable for overhead welding and welding in confined places.
9. Eye and head protection:  
High quality welding helmets of glass fiber, vulcanized fiber, chromed leather, or other suitable material should be required. The proper shade of welding lens should be required, and an adequate supply of cover lenses should be available. Hand Held shields are generally substituted for helmets on light, intermittent work. Anyone assisting the welder should also wear protective lenses equal to that of the cutter or welder to avoid "welding flash".
10. Safety goggles or spectacles:  
Safety goggles/spectacles should be worn under the helmet during chipping and cleaning. These goggles should have tinted lenses, affording ultra-violet and infra-red radiation protection, and lenses should be made of glass, not plastic.
11. Combination hard hats-welding helmets:  
May be required in special situations exposing welders to the hazard of falling objects.

#### 46.6 Safety:

1. All welding and cutting equipment shall be inspected daily prior to use and defective equipment shall be removed from service, replaced, or repaired and re-inspected before being placed back in service.
2. Cable, hoses, and other equipment shall be kept clear of passageways, ladders, and stairways.
3. Cylinders shall be kept beyond the range of sparks, hot slag, or flame.

4. Noncombustible barriers shall be installed below welding or burning operations in or over a shaft or raise.
  5. Workers and the public shall be shielded from welding rays, flashes, sparks, molten metal, and slag.
  6. No welding, cutting, or heating shall be done where the application of flammable paints, or presence of other flammable compounds, or heavy dust concentrations create a hazard.
  7. All toxic coatings shall be removed for a distance of at least 4 inches from the area of heat application.
1. Fire Prevention:
    1. Each welder or cutting unit shall be equipped with a 1A, 10 B:C, 2 1/2 pound fire extinguisher.
    2. A 2A, 40 B:C, 5 pound fire extinguisher shall be provided in the immediate vicinity of the welding or torch operation whenever combustible material is exposed or water based firefighting agents if the potential for igniting grass or brush.
    3. When practical, objects to be welded, cut, or heated shall be moved to a designated safe location or, if the objects cannot be moved, all fire hazards in the vicinity shall be removed or otherwise protected from the heat, sparks, and slag.
    4. 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.
    5. When coatings are determined to be highly flammable, they shall be stripped from the area to be heated.
    6. Hot Work Permit and a Fire Watch.
  1. Gas Equipment:
    1. Gas Welding Instructions:
      1. Keep oxyacetylene equipment clean, free of oil, and in good condition. Valves, couplings, regulators, hose, and torches should

never be lubricated. Oil or grease with oxygen catches fire spontaneously.

2. Avoid oxygen and acetylene leaks. Repair or replace leaky equipment immediately.
3. Crack valves to clear dust and dirt before installing regulating valves.
4. Do not open the fuel gas cylinder valve more than one and one quarter turns.
5. Torch valves shall be closed and gas supply shut off whenever work is suspended or unattended.
6. The torch and hose shall be removed from confined spaces whenever work is suspended.
7. All fuel gas-oxygen combinations used in cutting or welding equipment shall have reverse-flow check valves between the torch and regulator.
8. Acetylene regulators shall not be adjusted to permit a discharge greater than 15 psi (gage).
9. Keep heat, flame, and sparks away from combustibles.
10. Never draw gases from cylinders except through approved pressure regulators.
11. Never use oxygen anywhere as a substitute for compressed air or other gases.
12. Never use a torch when working on scaffolding suspended by manila rope.
13. Use a spark lighter or pilot-light to light torches. Never use matches or hot work to light a torch.
14. Wear goggles with filter lenses when using a torch. Wear a head-shield or helmet with suitable filter-plates when arc-welding. Wear flash goggles having side-shields at all times even when adjusting controls.
15. Wear leather or other protective gloves.
16. Be sure your own clothing is not oily and that pockets and cuffs are not open ready to receive sparks or hot slag.

17. Oxygen must never be used to blow off clothing for ventilating, for comfort purposes, or for cleaning work area.
18. Inspect union-nuts, connections, and all seating-surfaces on regulators and torches before use. Remove damaged connectors, repair faulty seats.
19. Never test or calibrate regulator pressure-gages with oil.
20. Use flash-back arresters at either the torch or at the regulators.
21. Never use a torch as a hammer or to knock slag from work. Use slag hammers and wire brushes.
22. Blow the talc out of a new hose before using it.
23. Use standard hose-fittings with right-hand threads for oxygen, and left-hand for acetylene, to prevent a mix-up.
24. Protect hoses from sparks, hot slag, hot objects, sharp edges, open flames, and grease and oil.
25. If a hose is burned by a flashback, discard it -- the inner walls are burned and may explode.
26. Check all hoses periodically for leaks, worn places, and loose connections. Test it by immersing it in water under normal working pressure. Repair it by cutting the hose and remaking the joint with standard fittings. Don't repair hose with tape.
27. Remove from service any cylinder that leaks, has a leaky valve, or is otherwise defective.
28. If the torch does not relight automatically, close the oxygen cutting- and pre heating-valves in that order immediately. Then close the acetylene valve, and purge your lines. Check your pressures. Relight.
29. Do not cut or weld on pressure vessels, tanks or other devices which are sealed, heat from cutting or welding can create enough pressure to cause an explosion or burst.

1. Electric Equipment:

1. Switching equipment for shutting down the welding machine shall be provided on or near the welding machine.

2. The noncurrent carrying metal parts of an electrically powered welding machine shall be grounded.
3. Neither terminal of the welding generator shall be bonded to the frame of the welder.
4. Pipelines containing gases or flammable liquids or conduits carrying electrical conductors shall not be used for a ground return circuit.
5. The equipment shall be shut down when the leads are unattended.
6. Cables with splices or repaired insulation within 10 feet of the holder shall not be used.
7. Welding supply cables shall not be placed near power supply cables or other high-tension wires.
8. Welding leads shall not be permitted to contact metal parts supporting suspended scaffolds.
9. Circuits from welding machines used for other than welding tools shall be grounded.
1. Inert-Gas Metal-Arc Welding:
  1. Application of chlorinated solvents shall not be done within 200 feet of the exposed arc.
  2. Surfaces prepared with chlorinated solvents shall be thoroughly dry before welding is permitted on such surfaces.
  3. Employees exposed to the arc shall be required to wear goggles with filter lenses shade II or higher.
  4. When two or more welders are exposed to each other's arc, filter lens goggles of suitable type shall be worn under the welding helmet.
  5. Hand shields designed to dissipate radiant energy shall be used when either the helmet is lifted or the shield is removed.
  6. Welders and persons exposed to radiation shall wear protective clothing completely covering the skin to prevent harmful effects of ultraviolet rays.



# HOT WORK PERMIT

**CAN THIS JOB BE DONE WITHOUT HOT WORK, OR IN THE SHOP?  
IF NOT, ENSURE PRECAUTIONS ARE IN PLACE!**

**MAKE SURE SPRINKLERS ARE IN SERVICE AND FIRE EXTINGUISHERS ARE READILY AVAILABLE!**

This Hot Work Permit is required for any operation involving open flames or producing heat and/or sparks. This includes, but is not limited to, Brazing, Cutting, Grinding, Soldering, Thawing Pipe, Torch-Applied Roofing, and Welding.

*Note: The Required Precautions are not optional. They are required for fire-safe hot work. Please explain all "No" responses below.*

### Instructions

- The Permit-Authorizing Individual must:
- Verify precautions listed at right (or do not proceed with the work)
  - Complete and retain this page
  - Give the second page to the person doing the work.

### Who, When, and Where?

#### Hot Work Being Done By

- Employee  
 Contractor

Date	Job/Work Order No.
------	--------------------

Location/Building and Floor

Nature of Job/Object

Name of Person(s) Doing Hot Work

I verify the above location has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for work.

Signature of Permit-Authorizing Individual

### Permit Expiration

Expiration Date	Expiration Time	<input type="checkbox"/> AM
		<input type="checkbox"/> PM

Name of Assigned Fire Watch

**THIS PERMIT IS GOOD FOR  
24 HOURS ONLY!**

### Required Precautions Checklist

- Available Sprinklers in Normal Automatic mode and valve open.  
 Hot Work equipment in good repair.

#### Assess 35 ft radial "sphere" of work for potential fire hazards:

- Floors, work level and below, cleaned or protected.  
 All other combustibles removed or shielded from sparks.
- Clean horizontal surfaces (e.g. building structures, equipment, ducts, cable trays, etc.) above and below where possible.
  - Remove flammable liquids, dust, lint, combustible waste, oil deposits, etc., where possible.
  - If removal/cleaning is impractical, protect with fire-retardant covers, or shield with fire-retardant guards and/or curtains.
- Transmission or conveying of sparks to adjacent areas eliminated or protected.
- Tightly cover wall/floor openings with fire-retardant material.
  - Where openings cannot be sealed, suspend fire-retardant tarpaulins to help protect areas beneath.
  - Isolate or shut down fans and conveyors to prevent the capturing and conveying sparks to other areas.
- Explosive atmosphere eliminated or potential not present.

#### Work on walls, ceilings or enclosed equipment:

- Construction materials verified as noncombustible and without combustible covering or insulation.  
 Combustibles on other side of walls relocated or protected.  
 Enclosed equipment cleaned and protected from all combustibles.  
 Containers purged of flammable liquids/vapors.

#### Fire watch/hot work area monitoring requirements:

- Continuous fire watch provided during and for *at least 30 minutes* after hot work, including all breaks.  
 Fire watch supplied with suitable extinguishers/hoses.  
 Fire watch trained in the use of fire equipment and sounding alarm.  
 Area to be monitored hourly for a *minimum 6 hours* after job is completed, or longer if required.

#### Other precautions that may be required:

- Fire watch provided for adjoining areas, above, or below.  
 Confined Space or Lock-Out-Tag-Out required/used.  
 Area smoke or heat detection disabled to eliminate false trip.

Other: \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## HOT WORK PERMIT

# WARNING! HOT WORK IN PROGRESS WATCH FOR FIRE!

### Instructions

1. **Person doing hot work:** Indicate time started and post permit at hot work location. After hot work, indicate time completed and leave permit posted for Fire Watch.
2. **Fire Watch:** Prior to leaving area, do final inspection, sign, leave permit posted and notify Permit-Authorizing Individual.
3. **Monitor:** After 6 hours, do final inspection, sign, and return to designated area.

### Who, When, and Where?

#### Hot Work Being Done By

- Employee  
 Contractor

<b>Date</b>	<b>Job/Work Order No.</b>
-------------	---------------------------

**Location/Building and Floor**

**Nature of Job/Object**

**Name of Person(s) Doing Hot Work**

I verify the above location has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for work.

**Signature of Permit-Authorizing Individual**

<b>Time Started</b>	<input type="checkbox"/> AM <input type="checkbox"/> PM	<b>Time Finished</b>	<input type="checkbox"/> AM <input type="checkbox"/> PM
<b>Expiration Date</b>	<b>Expiration Time</b>	<input type="checkbox"/> AM <input type="checkbox"/> PM	

Work area and all adjacent areas to which sparks and heat might have spread were inspected during the fire watch period and were found fire safe.

<b>Signature of Fire Watch</b>	<b>Time</b>
--------------------------------	-------------

Work area was monitored for a minimum of 6 hours following hot work and found fire safe.

<b>Signature of Monitor</b>	<b>Time</b>
-----------------------------	-------------

### Required Precautions Checklist

*(must be retained as record of hot work activity for 6 months minimum)*

- Available Sprinklers in Normal Automatic mode and valve open.
- Hot Work equipment in good repair.

#### Assess 35 ft radial "sphere" of work for potential fire hazards:

- Floors, work level and below, cleaned or protected.
- All other combustibles removed or shielded from sparks.
  - Clean horizontal surfaces (e.g. building structures, equipment, ducts, cable trays, etc.) above and below where possible.
  - Remove flammable liquids, dust, lint, combustible waste, oil deposits, etc., where possible.
  - If removal/cleaning is impractical, protect with fire-retardant covers, or shield with fire-retardant guards and/or curtains.
- Transmission or conveying of sparks to adjacent areas eliminated or protected.
  - Tightly cover wall/floor openings with fire-retardant material.
  - Where openings cannot be sealed, suspend fire-retardant tarpaulins to help protect areas beneath.
  - Isolate or shut down fans and conveyors to prevent the capturing and conveying sparks to other areas.
- Explosive atmosphere eliminated or potential not present.

#### Work on walls, ceilings or enclosed equipment:

- Construction materials verified as noncombustible and **without** combustible covering or insulation.
- Combustibles on other side of walls relocated or protected.
- Enclosed equipment cleaned and protected from all combustibles.
- Containers purged of flammable liquids/vapors.

#### Fire watch/hot work area monitoring requirements:

- Continuous fire watch provided during and for *at least 30 minutes* after hot work, including all breaks.
- Fire watch supplied with suitable extinguishers/hoses.
- Fire watch trained in the use of fire equipment and sounding alarm.
- Area to be monitored hourly for a *minimum 6 hours* after job is completed, or longer if required.

#### Other precautions that may be required:

- Fire watch provided for adjoining areas, above, or below.
- Confined Space or Lock-Out-Tag-Out required/used.
- Area smoke or heat detection disabled to eliminate false trip.

Other: \_\_\_\_\_

Comments:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# WARNING!

**HOT WORK IN PROGRESS  
WATCH FOR FIRE!**

IN CASE OF EMERGENCY:

CALL: \_\_\_\_\_

AT: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

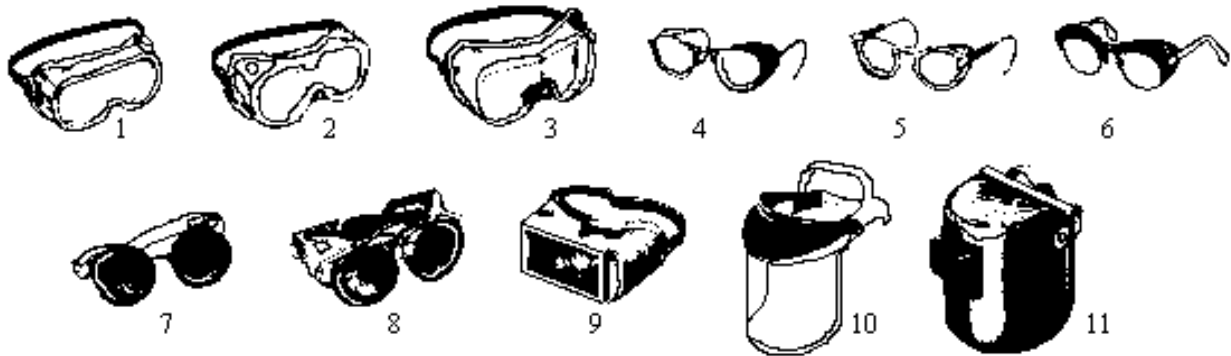
# WARNING!

## FIRE WATCH/MONITOR RECORD

Checked by (Initials)	Date	Time	Checked by (initials)	Date	Time

## Eye and Face Protector Selection Guide

(This guide offers general recommendations only. Final selection is responsibility of management and safety specialists.)



1. GOGGLES, Flexible Fitting - Regular Ventilation
2. GOGGLES, Flexible Fitting - Hooded Ventilation
3. GOGGLES, Cushioned Fitting - Rigid Body
4. SPECTACLES, Metal Frame, with Sideshields <sup>(1)</sup>
5. SPECTACLES, Plastic Frame - with Sideshields <sup>(1)</sup>
6. SPECTACLES, Metal-Plastic Frame - with Sideshields <sup>(1)</sup>
7. WELDING GOGGLES, Eyecup Type - Tinted Lenses <sup>(2)</sup>
- 7A) CHIPPING GOGGLES, Eyecup Type - Clear Safety Lenses
8. WELDING GOGGLES, Coverspec Type - Tinted Lenses <sup>(2)</sup>
- 8A) CHIPPING GOGGLES, Coverspec Type - Clear Safety Lenses
9. WELDING GOGGLES, Coverspec Type - Tinted Plate Lens <sup>(2)</sup>
10. FACE SHIELD (Available with Plastic or Mesh Window)
11. WELDING HELMETS <sup>(2)</sup>

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Footnote <sup>(1)</sup> Non-sideshield spectacles are available for limited hazard use requiring only frontal protection.

Footnote <sup>(2)</sup> See Table E-2, in paragraph (b) of this section, Filter Lens Shade Numbers for Protection Against Radiant Energy.

## Eye and Face Protector Selection Guide

### Eye and Face Protection Application Selection Guide

<b>APPLICATIONS</b>		
<b>Operation</b>	<b>Hazards</b>	<b>Recommended protectors:</b> Bold type numbers signify preferred protection
Acetylene-Burning,	Sparks, harmful rays,	7, 8, 9.
Acetylene-Cutting,	molten metal, flying	
Acetylene-Welding	particles	
Chemical Handling	Splash, acid burns, fumes	2, 10 (For severe exposure add 10 over 2).
Chipping	Flying particle`	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 severe exposure, add 10)
Laboratory	Chemical splash, glass breakage	2 (10 when in 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
<b>Caution:</b>		
<ol style="list-style-type: none"> <li>1. Face shields alone do not provide adequate protection.</li> <li>2. Plastic lenses are advised for protection against molten metal splash.</li> <li>3. Contact lenses, of themselves, do not provide eye protection in the industrial sense and shall not be worn in a hazardous environment without appropriate covering safety eyewear.</li> </ol>		

**REQUIRED SHADES FOR FILTER LENSES AND GLASSES**  
**FILTER LENS SHADE NUMBERS**  
**FOR PROTECTION AGAINST RADIANT ENERGY**

Welding Operation	Shade Number
Shielded metal-arc welding 1/16-, 3/32-, 1/8-, 5/32- inch diameter electrodes	10
Gas-shielded arc welding (nonferrous) 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes	11
Gas-shielded arc welding (ferrous) 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes	12
Shielded metal-arc welding 3/16-, 7/32-, 1/4-inch diameter electrodes	12
5/16-, 3/8-inch diameter electrodes	14
Atomic hydrogen welding	10-14
Carbon-arc welding	14
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1 inch to 6 inches	4 or 5
Heavy cutting, over 6 inches	5 or 6
Gas welding (light), up to 1/8-inch	4 or 5
Gas welding (medium), 1/8-inch to 1/2-inch	5 or 6
Gas welding (heavy), over 1/2-inch	6 or 8
<b>Note:</b> In gas welding or oxygen cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the operations spectrum.	

**SELECTING LASER SAFETY GLASS**

Intensity, CW Maximum Power Density (watts/cm <sup>2</sup> )	Attenuation	
	Optical density (O.D.)	Attenuation factor
10(-2)	5	10(5)
10(-1)	6	10(6)
1.0	7	10(7)
10.0	8	10(8)
Output levels falling between lines in this table shall require the higher optical density.		



**47.0 HELICOPTERSAFETY - OPERATIONS SECTION 500**

**NOTE: ONLY QUALIFIED / LICENSED WORKERS ARE ALLOWED TO PERFORM THIS WORK.**

## 48.0 Harrison Western Construction Corporation Site-Specific Safety Plan

Introduction			
<p>A complete, approved site-specific safety plan (SSSP) is required for all subcontracted projects at HWCC before operations commence. A separate SSSP is required for each contract or worksite.</p> <p>In conjunction with a job hazard analysis (JHA), a site-specific safety plan describes the methodologies for identifying and analyzing safety risks dealing with major process steps, operations, and facilities; approaches for mitigating identified risks; and the process for reporting safety events to the necessary parties.</p> <p>The plan must be kept current as part of the project and available to all persons involved, who must understand and comply with its requirements.</p> <p>The plan should be compatible with the subcontractor safety program(s), health and safety manual(s) and other safety documents (such as injury illness prevention plan, code of safe practices, heat illness prevention plan, etc).</p> <p><b>ALL EMPLOYEE ACTIONS should be in compliance with HWCC, subcontractor, project owner &amp; regulatory laws &amp; requirements – Whichever is more stringent. IF IN DOUBT ASK YOUR MANAGEMENT.</b></p>			
Project Description			
<b>Subcontract / Purchase Order Number</b>	Enter subcontract or purchase order number		
<b>Project Name</b>	Enter the name assigned to the project		
<b>Project Scope</b>	Enter the description of the project		
<b>Project Start / End Dates</b>	Enter as 9/19/1999	Enter as 9/19/1999	
<b>Project Location</b>	Enter the location of actual work area (building number, sector, IR)		
<b>Work Schedule</b>	Enter work hours/shifts		
<b>Anticipated Workforce</b>	Enter management, supervision and workforce		
<b>Seasonal / Geographical Concerns</b>	Describe wind, heat, rain, sun, etc. / hurricane, Earthquake, wildfire, snowfall, etc.		
<b>Public Protection</b>	Describe what's on the perimeter, site controlled by GC, storm water program, etc.		
<b>Project Contacts</b>	NAME	PHONE NUMBER	EMAIL
HWCC Project Manager	Enter the name of HWCC project manager (obtain from HWCC point of contact)	Enter number: xxx-xxx-xxxx	Enter: user@domain
HWCC Project Supervisor	Enter the name of HWCC Project Supervisor (obtain from HWCC point of contact)	Enter number: xxx-xxx-xxxx	Enter: user@domain
HWCC Safety Officer	Enter the name of subcontractor safety officer		Enter: user@domain
<b>OWNER</b>	<b>CONTACTS</b>		
Operations	Primary:	Secondary:	
Purchasing	Enter company name		
Safety	Enter company name		
HWCC SUBCONTRACTOR(S)	Enter company name		

**PROJECT MAJOR WORK ACTIVITIES (Roof Control, Grouting, Shaft Extension, Painting, etc)**

<b>Scope of Work</b>	Describe scope of work:	
<b>Job Safety Analysis</b>	Attach a completed job safety analysis for each of tasks listed below. Use HWCC Job Hazard Analysis Form (JHA)	
<b>Tasks</b>	<b>HAZARD</b>	<b>ACTIONS / EQUIPMENT</b>
Enter task	List associated hazards	List equipment that will be used
Enter task	List associated hazards	List equipment that will be used
Enter task	List associated hazards	List equipment that will be used
Enter task	List associated hazards	List equipment that will be used
Enter task	List associated hazards	List equipment that will be used
Enter task	List associated hazards	List equipment that will be used
Enter task	List associated hazards	List equipment that will be used
Enter task	List associated hazards	List equipment that will be used
Enter task	List associated hazards	List equipment that will be used
Enter task	List associated hazards	List equipment that will be used
Enter task	List associated hazards	List equipment that will be used
Enter task	List associated hazards	List equipment that will be used
Enter task	List associated hazards	List equipment that will be used

**PROJECT MAJOR WORK ACTIVITIES HAZARD KEY (List number in middle column above)**

#	HAZARD	HWCC RELATED ACTIVITIES
1	Blasting	Explosives, Primers, Gel
2	Caught-Between	Moving equipment, excavations, material handling
3	Chemical	Painting, Cleaning, Fueling,
4	Confined Space	Shaft bottom, Bins or Hoppers,
5	Electrical	Buried Utilities, overhead, temporary high voltage power, transformers
6	Falls From Elevation	Man-lifts, scaffold, work platform, top of structures, Ladders,
7	Mechanical	Belts & conveyors, articulating equipment
8	Struck-By	Grinding, drilling, moving equipment, excavation, material handling
9	Noise	Drilling, Hammering, equipment
10	Respirable Dust/Materials	Drilling, grinding, mine environment, post blast
11	Thermal	Cutting & Welding, temporary heating,
12	(LIST)	
13	(LIST)	
14	(LIST)	
15	(LIST)	
16	(LIST)	

<b>HWCC JHA DECISION MATRIX</b>		
<b>REQUIRED</b>	<b>STRONGLY SUGGESTED</b>	<b>OPTIONAL</b>
Activity resulted in serious accident	Routine tasks with HIGH HAZARDS	Routine tasks with LOW HAZARDS
Activity resulted in serious near-miss		
People working above the ground		
People working below the ground		
Confined Space Entry		
Cutting & Welding in hazardous environment	Non-Routine Tasks with HIGH HAZARDS	Non-Routine tasks with LOW HAZARDS
Working on Belts & conveyors		
Painting with non-water-based materials		
(LIST)		
(LIST)		
(LIST)		
(LIST)		

<b>Mobile Equipment Inventory (DAILY DOCUMENTED INSPECTIONS PER HWCC REQUIRED)</b>	
<b>Equipment</b>	<b>Remarks / Authorized Users / Task Trained</b>

<b>Chemical / Hazardous Material Inventory (SDS ON-SITE REQUIRED)</b>			
<b>Chemical / Material</b>	<b>Daily Inspection Required</b>		<b>Remarks / Authorized Users</b>
	<b>YES</b>	<b>NO</b>	
	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	

<b>HWCC Special Work Permits / Plans</b>			
<b>Permit / Plan</b>	<b>APPLICABLE</b>	<b>N/A</b>	<b>ACTION IF APPLICABLE</b>
<b>Blasting Permit</b>	<input type="checkbox"/>	<input type="checkbox"/>	Attach permit
<b>Hot Work (Welding) Permit</b>	<input type="checkbox"/>	<input type="checkbox"/>	Attach permit
<b>Confined Space Permit</b>	<input type="checkbox"/>	<input type="checkbox"/>	Attach permit (required whether permitted or non-permitted)
<b>Hoisting and Rigging Plan</b>	<input type="checkbox"/>	<input type="checkbox"/>	Attach plan
<b>Elevated Surface Work Plan</b>	<input type="checkbox"/>	<input type="checkbox"/>	Attach plan
<b>Energized Electrical Work Permit</b>	<input type="checkbox"/>	<input type="checkbox"/>	Attach permit
<b>Excavation Permit</b>	<input type="checkbox"/>	<input type="checkbox"/>	Attach permit
<b>Work Authorization Permit</b>	<input type="checkbox"/>	<input type="checkbox"/>	Attach permit
<b>Work in Radiation / Laser Area</b>	<input type="checkbox"/>	<input type="checkbox"/>	Attach permit
<b>Penetration Permit</b>	<input type="checkbox"/>	<input type="checkbox"/>	Attach permit
<b>Critical Lift Plan</b> (Required for lifting 75% of hoist capacity)	<input type="checkbox"/>	<input type="checkbox"/>	Attach plan
<b>Controlled Access Zones</b>	<input type="checkbox"/>	<input type="checkbox"/>	Attach Plan (use of particular barricade tape/signage in what hazard situations)
<b>Engineering Documents</b> (Job Built Tools & equipment)	<input type="checkbox"/>	<input type="checkbox"/>	REQUIRED for all job-built hoisting, rigging, material moving devices; or other safety critical items such as air manifolds.
<b>Trial Lift Plans</b>	<input type="checkbox"/>	<input type="checkbox"/>	REQUIRED for all suspended work platforms.

<b>HWCC Competent Persons Required</b>			
<b>Competency</b>	<b>APPLICABLE</b>	<b>N/A</b>	<b>ACTION IF APPLICABLE</b>
<b>Excavation</b>	<input type="checkbox"/>	<input type="checkbox"/>	Name / Issuer / Date of Certification
<b>Confined Space</b>	<input type="checkbox"/>	<input type="checkbox"/>	Name / Issuer / Date of Certification
<b>Personal Protective Equip (Respiratory)</b>	<input type="checkbox"/>	<input type="checkbox"/>	Name / Issuer / Date of Certification
<b>Personal Protective Equip (Fall Prevention/Protection)</b>	<input type="checkbox"/>	<input type="checkbox"/>	Name / Issuer / Date of Certification
<b>Scaffold Erection</b>	<input type="checkbox"/>	<input type="checkbox"/>	Name / Issuer / Date of Certification

## Training Documentation

Employer to certify that employees have been trained in the following safety procedure and in accordance with company safety program (e.g. manual, IIPP, etc.)

QUALIFICATION	YES	N/A	REFERENCE
Aerial Lift Operator	<input type="checkbox"/>	<input type="checkbox"/>	
Blasting License	<input type="checkbox"/>	<input type="checkbox"/>	
Confined Space Entry	<input type="checkbox"/>	<input type="checkbox"/>	
Crane Operator (NCCO Certification)	<input type="checkbox"/>	<input type="checkbox"/>	
Fire Extinguisher	<input type="checkbox"/>	<input type="checkbox"/>	
First Aid / CPR	<input type="checkbox"/>	<input type="checkbox"/>	
Forklift Operator Certification	<input type="checkbox"/>	<input type="checkbox"/>	
Heat Illness Prevention	<input type="checkbox"/>	<input type="checkbox"/>	
Certified Welder	<input type="checkbox"/>	<input type="checkbox"/>	
Powder Actuated Tool User	<input type="checkbox"/>	<input type="checkbox"/>	
HWCC New Hire Orientation	<input type="checkbox"/>	<input type="checkbox"/>	
Site Specific Orientation	<input type="checkbox"/>	<input type="checkbox"/>	
HAZCOM	<input type="checkbox"/>	<input type="checkbox"/>	
LOCKOUT / TAGOUT	<input type="checkbox"/>	<input type="checkbox"/>	
MSHA 40-Hour	<input type="checkbox"/>	<input type="checkbox"/>	
MSHA 8-Hour Refresher	<input type="checkbox"/>	<input type="checkbox"/>	
OSHA 10-Hour	<input type="checkbox"/>	<input type="checkbox"/>	

## Owner / Project Specific Concerns

CONCERNS	REMARKS
PPE (beyond HWCC)	
Site / Work Area Access	
Contract Work Hours (all others need prior authorization)	
Routine / Emergency Contact	
Accident/Injury Report Form (If different from HWCC)	
OTHER: (Fall Protection, CAZ, Material/Equipment Staging, temporary power, sanitation, parking, etc.)	

<b>MSHA Major Concerns (SEE HWCC CORP SAFETY MANUAL FOR ADDITIONAL TOOLS)</b>	
<b>CONCERNS</b>	<b>REMARKS</b>
Electrical equipment labeled	
GFCI / Temporary Power cords	
Tools / Machine Guarding	
Mobile Equipment Chocks/Back-up alarms	
Approved Equipment (III Mines)	
MSHA Report form 7000-1	
Diesel Particulate Matter	
OTHER	
<b>Other Concerns</b>	
<b>CONCERNS</b>	<b>REMARKS</b>
Submittals	Enter: safety requirements
Storm Water	Enter: flooding potential
Freeze Protection	Enter: water line breakage and possible flooding
Water Intrusion	Enter: collapse more prevalent in saturated soils

<b>Emergency Response</b>	
<b>Accidents / Injury Response</b> Trained responders, first aid supplies, use of EMS, nearest medical facility, radiation exposure procedures	List the medical facility that injured workers will be transported to, method of notifying EMS and what onsite resources are available. This might include first aid kits, fire extinguishers, trained responders etc. List:
<b>Fire Protection / Prevention</b> Building fire systems coordination, hot work, general construction, storage of flammable materials	List any fire system impairment needed for this project. Identify if hot work permits are needed and for what type of operation. List any combustible/flammable materials used and how they will be managed (coordinate with PM and UTR). List:
<b>Evacuation</b> Assembly areas, egress routes	Identify under what conditions evacuation of the immediate work site would occur. List: Specify who can issue evacuation notice or how evacuation will occur. List: List where assembly areas are located and who will be responsible for ensuring head count and accountability exists. List: Provide explanation or diagram. List:
<b>Hazardous Materials Release</b> Spoil piles, refrigerants, chemicals brought onsite, vehicles, product transfer, asbestos, etc	Describe what hazardous materials will be brought onsite or what may be generated as part of the work process. Describe: Attach current (no more than two (2) year old SDS for all materials brought onto HWCC property. Include methods to control release, spills, off gassing or other unwanted exposures to work crew or HWCC occupants.
<b>Other</b>	List any other emergency procedures that pertain to the are or type of work being done that are not covered under the above categories. List:

<b>Emergency Contacts</b>	Name	Mobile Phone	Pager	Work Phone
HWCC Project Manager	Enter name	Enter number: xxx-xxx-xxxx	Enter number: xxx-xxx- xxxx	Enter number: xxx-xxx- xxxx
HWCC Project Supervisor	Enter name	Enter number: xxx-xxx-xxxx	Enter number: xxx-xxx- xxxx	Enter number: xxx-xxx- xxxx
Subcontractor (including sub-tier)	Enter name	Enter number: xxx-xxx-xxxx	Enter number: xxx-xxx- xxxx	Enter number: xxx-xxx- xxxx

<b>Review and Acceptance</b>			
<b>POSITION</b>	<b>NAME</b>	<b>SIGNATURE</b>	<b>DATE</b>
Prepared By:	Enter name		ORIGINAL:
<b>REVISION HISTORY:</b>			
<b>HWCC ACCEPTANCE</b>			
Project Supervisor			
Project Manager			
One or more of the following: <input type="checkbox"/> Line Safety Coordinator <input type="checkbox"/> Division Safety Coordinator <input type="checkbox"/> Insurance Broker LC			
If plan is not accepted, explain			

<b>Conformance Assessment (Optional follow-up – Observations/Comments Separate Document)</b>		
<b>NAME:</b>	<b>SIGNATURE</b>	<b>DATE</b>

<b>TOOL USED BY</b>			
Estimating: <input type="checkbox"/>	Startup: <input type="checkbox"/>	Scheduled: <input type="checkbox"/>	Unscheduled: <input type="checkbox"/>

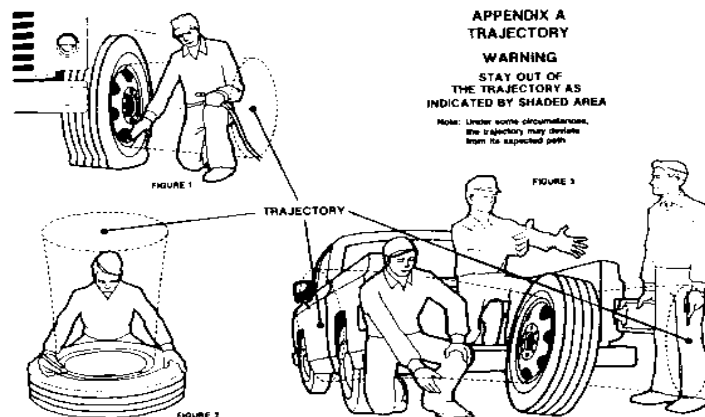
## 49.0 Tire Cage Use

### 49.1 Split Rim Tire and Cage Safety

Servicing Multi-Piece and Single Rim Tires Standards are 29 CFR Part 1910.177

### 49.2 Before using the cage, check the following:

- a. The cage must be free standing and at least three (3) feet from any other objects.
- b. Do not modify the cage in any way.
- c. Check the cage for damage, broken or cracked welds and wear.
- d. Use a clip on air check for remote inflation. Do not place your hands in or on the cage.
- e. Center the tire in the cage before inflation.
- f. Rotate the tire so the inflation valve is between cage bars.
- g. Fill with caution as rim assembly could separate at any time without warning.
- h. Failure may cause a sudden air release with significant force.
- i. See below the trajectory chart for areas not to be in.



**Note: Ensure that you have been tasked trained for this procedure and have PPE**

## 50.0 Waste Water Treatment Plant Safety

### 50.1 Pre Project Site Evaluation:

1. All waste water treatment plants shall have a pre-risk site familiarization and evaluation to note specific site hazards unique to that site. Communication and arrangements shall be made with the plant owner with an escort to define hazards.
2. Daily Field Level Risk Analysis shall be conducted per the protocol within the HWCC HASP section 29 page 150 Risk Hazard Analysis.

### 50.2 Project Site Safety:

1. Any time confined space work is planned and required the HWCC Confined Space protocol and confined space plan will be implemented as outlined in section 10 page 35 of the HWCC safety and health plan (HASP). Only task trained personnel will make confined space entry.
2. If excavation or trenching is required the protocol and guidelines for utility location shall be used within section 48 page 242 of the HWCC HASP.
3. Any time trenching, excavation or confined space activity occur or is part of the scope of work adequate ventilation shall be maintained as required by 29 CFR Part 1926.800 at the minimum rate of 200 CFM. Gas monitoring and documentation shall be required along with continuous atmospheric monitoring. Gas monitors shall be maintained and kept charged with calibration documentation maintained on the project site. SCBA units shall be checked daily for rescue readiness.
4. Chemical hazards on the project site shall be determined and the health exposure hazards be part of the project site specific training topics. All SDS for those chemical hazards shall be reviewed by all personnel assigned to the project. SDS documents for all HWCC materials, compounds, aerosols, and fluids shall be maintained on site. Reference the HWCC HASP for Hazardous Communication within section 22 page 97.
5. Fire extinguishers shall be placed and mounted or placed on stands as appropriate for the potential fire hazards noted or expected on the project site. Extinguishing agents shall be determined by HWCC safety. Fire extinguishers shall be inspected and maintained as required by the HWCC HASP within section 19.0 page 86.

6. A site specific evacuation plan shall be in place prior to the project starting and all personnel trained as to evacuation routes and travel ways and all exit points determined. Muster points for all HWCC personnel shall be identified for personnel accountability.
7. All water hazards shall be identified and precautions taken to assure that water hazard safety protocol is instituted for specific areas to prevent accidental drowning with at a minimum that positive floatation devices are in place, safety harnesses are used with safety ropes. No HWCC personnel will be assigned to work alone where water hazards are present.
8. Fall protection will be used when required as outlined within the HWCC HASP section 18 page 77. All fall protection shall be maintained and inspected for defects or discrepancies before being used.
9. Communication devices shall be deployed as appropriated or as the need is determined by the project engineer.
10. Electrical safety will be followed as prescribed by section 14 page 57. This includes communication with the plant operators to assure critical process systems are not taken off line by accident. Procedures for lock out / tag out shall be used as outlined within the HWCC HASP section 31 page 172. Systems will not be returned to operational status until cross checking with plant personnel to restore system operation. This will allow for system double checks for normal operation of systems.
11. Personal Protective Equipment we be used at all times while within the project site work areas or as the treatment plant policy is in place. HWCC PPE standards are within section 36 page 188 for references. Specialized PPE on site will be SCBA's and only task trained personnel shall be authorized to use this equipment.
12. Personal hygiene standards shall be maintained while within the treatment plant areas. This includes avoiding direct contact with waste water liquids and solids associated with water borne pathogens. Washing hands before consuming any consumable food products or liquids. Do not reuse sewage contaminated clothing and beware of cross contamination with others. It is recommended that a complete change of clothes and footwear be maintained on site. If you are working on a system that exposure has the potential for sewage products contact appropriate PPE will be determined along with engineering and administrative controls implemented.

## **APPENDIX A – Environmental**

## **SECTION 1: ENVIRONMENTAL REQUIREMENTS - GENERAL**

### **1.1 KEY REQUIREMENTS**

1.1.1 Harrison Western (HW) will review and comply with all applicable environmental permits and conditions, laws, regulations, and Company requirements prior to the start and during work.

1.1.2 HW must participate in and comply with all applicable project-specific environmental training prior to commencing work.

1.1.3 For projects on which the HW has designated an Environmental Inspector, HW shall recognize that the Environmental Inspector has the authority to stop activities that violate environmental conditions, state/provincial or federal environmental permit requirements, or landowner requirements; and to order appropriate corrective action.

1.1.4 HW shall use only approved access roads and stay within approved and designated working, staging, temporary use, and parking area boundaries. HW will stay out of exclusion zones. All motorized vehicles must be cleaned to prevent the spread of weeds.

1.1.5 HW must handle, treat, characterize and dispose of all waste in accordance with all applicable federal and state/provincial regulations and any specific contract requirements.

1.1.6 HW shall maintain a clean and safe worksite. Trash and debris will be collected at the end of each day. Cigarette butts must be disposed of in the receptacles provided and not in garbage bins or bags.

1.1.7 HW shall maintain equipment to prevent leaks. HW shall take appropriate measures to contain potential leaks and repair leaks promptly.

1.1.8 HW shall perform refueling and equipment maintenance activities only in approved areas.

1.1.9 HW must not make any discharges to water that are not permitted or otherwise approved by law.

1.1.10 HW must perform work in a manner that prevents effects of soil erosion and sedimentation in compliance with applicable laws, regulations, permits, and Company requirements. Clear and grade only areas necessary for construction and within the approved construction boundaries. Separate and replace topsoil in accordance with project requirements. Erosion and sediment control must be installed, inspected, and maintained to contain soil on the construction site and away from wetlands and water bodies. Disturbed areas must be stabilized and re-vegetated where applicable, as soon as possible following construction in compliance with permit conditions and Company requirements or in accordance with landowner requirements.

1.1.11 HW must not collect or disturb indigenous plants, wildflowers, cultural artifacts, fossils or human remains in compliance with historic preservation laws, regulations,

permits or Company requirements. If artifacts, fossils or remains are discovered, work must stop immediately in the areas of the discovery and a Company Representative must be notified. The site must be protected from incursion. Work in the area may resume only after the Company provides approval.

1.1.12 HW must not agitate, take, feed or otherwise harm wildlife (mammals, birds, snakes, etc.), or livestock. If wildlife or livestock are affected by the construction activity, HW must notify a Company Representative.

1.1.13 Company must not agitate, take, feed or otherwise harm species protected by federal, state/provincial, local statutes or permits or their habitat, or migratory birds or their nests. If protected species and/or their habitat or migratory birds and/or nests are affected by the construction activity, HW must stop activity in the area and notify a Company Representative. Work in area may resume only after the Company provides approval.

1.1.14 If HW meets the requirements for needing a Spill Prevention Control and Countermeasure plan (SPCC) one will be developed and HW must comply with all plan requirements.

1.1.15 Spills resulting from HW activity must be reported to a Company Representative immediately. Immediate actions will be taken to safely stop the discharge, contain it, and clean it up in accordance with applicable statutory and Company requirements. Spills include but are not limited to small quantities of hydraulic fluid, motor oil and fuel spilled during equipment refueling operations.

1.1.16 HW facility/premise may be required to follow applicable Air Permit requirements. HW will review the permit with Company Representative to ensure all Air Permit requirements are followed.

1.1.17 HW will properly train their workers on their responsibilities regarding spill notification requirements and have all notification numbers available at all times.

## **SECTION 2: ENVIRONMENTAL – HAZARDOUS WASTE MANAGEMENT**

### **2.1 GENERAL INFORMATION**

2.1.1 HW is responsible for the safe use and disposal of chemicals and hazardous materials brought onto Company property in compliance with applicable laws and regulations, and for complying with the applicable requirements for generation of hazardous waste.

2.1.2 HW does not generate hazardous waste, but in the event HW does, we will comply with all regulations.

### **2.2 KEY REQUIREMENTS**

2.2.1 In the US, do not store more than 55 gallons / 208 liters of hazardous waste or one quart of acutely hazardous waste without written approval from Company. Waste containers must be clearly be labeled as to their contents.

2.2.2 The disposal of waste materials such as asbestos, lead paint, hazardous construction debris, or contaminated soil resulting from demolition or excavation must be approved by the Company.

### **SECTION 3: ENVIRONMENTAL – SPILL PREVENTION AND CONTROL**

#### **3.1 GENERAL INFORMATION**

3.1.1 HW must minimize the risk of spills or releases to the environment by implementing appropriate protective procedures such as secondary containment, double containment, employee training, overflow protection, and other measures as part of activities involving the use, storage, or handling of petroleum products or hazardous materials on Company property.

#### **3.2 KEY REQUIREMENTS**

3.2.1 Containers of hazardous materials and petroleum products should be stored in a manner that prevents releases to the environment. This requires selecting locations and methods to minimize exposure to rainfall, surface water, and the ground. Enclosures, shelters, and secondary containment should be used where appropriate. Containment pans should be placed under equipment where there is the potential for a leak or discharge.

3.2.2 Prior to discharge from a containment system, inspect the primary container for signs of leakage, and inspect the containment system by visual observation for color, foam, outfall staining, visible sheens, and dry weather flow. The discharge from a containment system that has evidence of contamination is prohibited.

3.2.3 HW will maintain a log indicating the individual making the observations, description of accumulated stormwater, and the date and time of release. These logs must be maintained daily, monthly, and yearly as outlined in the regulation. Submit a copy of the log to the Company.

### **SECTION 4: ENVIRONMENTAL – DISCHARGES TO STORMWATER CONVEYANCE SYSTEMS**

#### **4.1 GENERAL INFORMATION**

4.2.1 All discharges to a permitted stormwater conveyance system must be performed in compliance with the applicable permit and Storm Water Pollution Prevention Plan (SWPPP).

4.2.2 Non-stormwater discharges are NOT permitted unless approved by Company. Examples of prohibited activities include:

- Discharging of rinse water from vehicle or equipment washing
- Discharging of treated water systems such as water fountains, cooling tower water
- Discharging groundwater from excavations

4.2.3 An unauthorized or unpermitted non-stormwater discharge is considered a release and must be reported and documented in accordance with the accident/incident and spill notification procedures.

## **SECTION 5: ENVIRONMENTAL – EROSION CONTROL**

### **5.1 GENERAL INFORMATION**

5.1.1 Appropriate erosion and sediment control measures must be in place prior to groundbreaking or any condition that could cause silt to enter a sewer, wetland, or water body.

5.1.2. If a construction activity involves ground disturbance, the work may be subject to an applicable permit. In the US, this is a construction storm water permit; if a permit is required, the project must have a SWPPP developed and implemented before starting the work and the construction must be performed in compliance with the SWPPP, or compliance with clients SWPPP.

## **SECTION 6: ENVIRONMENTAL – EXCAVATION ACTIVITIES IN ENVIRONMENTALLY RESTRICTED AREAS**

### **6.1 GENERAL INFORMATION**

6.1.1 In areas outlined in the general site drawings as environmentally restricted or areas identified as environmentally sensitive (i.e. – parks, water bodies, areas containing migratory birds, etc.), excavations are prohibited unless approved in writing by Company. If an area is marked on the drawings or delineated on site as an exclusion zone, HW will not enter the area without express authorization.

## **SECTION 7: ENVIRONMENTAL – OPEN BURNING**

### **7.1 GENERAL INFORMATION**

7.1.1 Unless otherwise specified, open burning of debris on Company property is prohibited.

## **SECTION 8: ENVIRONMENTAL – WORKING NEAR WATERBODIES AND WETLANDS**

### **8.1 GENERAL INFORMATION**

8.1.1 HW must minimize disturbance to water bodies and wetlands by ensuring that all proper permits have been obtained and reviewed prior to commencement of work activities and ensuring



**HARRISON WESTERN**



A Harrison Western Company

HARRISON WESTERN CONSTRUCTION CORPORATION

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