Harrison Industrial Contracting Ltd.

Health and Safety Program

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Acknowledgement

Harrison Industrial Contracting (Harrison) would like to acknowledge the following for information used in this Health and Safety Manual and programs:

WorkSafeBC
The Health and Safety Reclamation Code for Mines in BC
The International Brotherhood of Electrical Workers
Canadian Center for Occupational Health and Safety
Government Agencies which provide Health and Safety information
Excerpts from other Health and Safety manuals of our industry
Individuals and our employees for comments, suggestions and input

The information in this manual does not take precedence over applicable government legislation with which all workers should be familiar.

Management Statement

Welcome to Harrison Industrial Contracting (Harrison), a company that takes pride in believing that our success is due to quality of workmanship, recognition of industry safe work practices, and safe job procedures specific to our work. Safety is recognized as a personal, positive attitude.

Harrison is of the opinion that productivity does not supersede safety. Being as productive as possible, while maintaining a good quality product/service in a safe manner, is a recipe for a safe workplace.

This company will continue to strive to achieve that which has always been a part of our operation, a good quality of work life.

The Occupational Health and Safety (OH&S) of the total workforce at our work sites, is a shared accountability by each and every employee, subcontractor, vendor, and visitor.

As an employee, please do not hesitate to address any concerns with your supervisor. Harrison's goal is to continue to develop a culture of safety where a good quality of work life for all its employees is a prime objective.

Thank you,
Management

Note: References to subjects and information may be repeated in different elements of this manual. Due to the subject matter, some references require repeating to satisfy that element.

Harrison Industrial Contracting Health and Safety Policy

Harrison has developed a health and safety policy that establishes a clear set of values and objectives for the effective management of this health and safety program. The policy is consistent with all good practices of company business and regulatory requirements relative to health and safety.

Management's approach includes a health and safety policy that is appropriate to the nature of the activities being managed and level of hazard/risk exposure. This policy is committed to:

1. The prevention of incidents that may lead to, or have the potential to lead to: injuries, illnesses, property or equipment damage, security threats, process losses and product quality impacts. (Management's commitment to provide a safe and healthy work environment.)

2. Compliance with all legal, regulatory and other requirements, including international accords and external requirements to which Harrison subscribes.

3. The effective management and mitigation of health and safety risks.

4. Adopting leading and best practices in key health and safety areas through continual improvement.

5. Establishing measurable objectives and targets for improving health and safety performance.

6. Providing appropriate resources, expertise and commitment needed to meet performance objectives.

7. Encouraging worker and contractor participation and promoting employee awareness of Health and Safety threats and opportunities for improvement.

8. Respecting the standards of conduct defined by company policy.

Objectives of this Manual

1. To ensure that all workers are provided with adequate and appropriate safety information and training to allow them to do their work safely.

2. To clearly define, for all workers, their accountabilities and responsibilities for the development and delivery of Harrison's safety program.

3. To ensure the appropriate resources are used for the maintenance and continual improvement of this Health and Safety Program.

Management Acknowledgement

Responsibility and accountability towards achieving our overall safety goal of zero incidents begins with upper management. All levels of employees, including visitors, vendors, and subcontractors share in our goal of Zero Incidents.

The management of Harrison is committed to and agrees with industry standards that the Health and Safety of employees is necessary to generate a Safe Work Environment. Harrison is of the belief that Productivity, Workmanship and Safety are equal partners.

Training and education is supported by management to its employees for all areas of activity and equipment used by them. Safety training and ongoing education in the understanding of safe work practices, procedures and the legislative acts and regulations that affect our industry will be provided.

Supervisors must show leadership by example and are expected to monitor that all rules and safe work requirements are followed. Positive reinforcement to be given for good attitude toward safety and positive correction taken when substandard acts or conditions are noticed

Employees are encouraged to participate in improving all safety measures or safe work practices and procedures. They are responsible for following and using these safe work practices and procedures and also watching out for their fellow workers. They have the right to have all known hazards identified and controls in place to eliminate loss. Their right to be involved in all aspects of health and safety is expected.

Subcontractors, suppliers and visitors will be made aware of Harrison's commitment towards a safe work environment and will be expected to comply with these requirements.

By participating with management in the ongoing revision of this Safety Program, it will become a partnership with mutual benefits

Signature: _____ **Date: March 25, 2016**

Name: _____

Position: General Manager

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Element 1: Accountability and Responsibility for Health & Safety

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1.0 Accountability and responsibility for health and safety

Harrison is of the belief that accountability for actions are to be addressed in a positive corrective manner.

Management accepts the responsibility for leadership of the health and safety program for its effectiveness and ongoing improvement and for providing the safeguards required to ensure safe workplace conditions.

Management will convey good leadership by example.

1.1 Roles for accountability and responsibility for health and safety

The following descriptions of responsibilities and accountability for each individual are just an overview of their roles. Each individual of this company should review the responsibilities outlined in Part 3 Rights and Responsibilities of the Occupational Health and Safety Regulations. This will be made available to each employee and is available online. www.worksafebc/publications/OHSRegulation/Part3.asp

1. **Management**

a) Provide a policy statement which details the commitment and philosophy of Harrison in regard to health and safety.

b) Administer and control the safety program ensuring that it is consistently and equally enforced at all levels.

c) Provide all supervisory staff with an understanding of the safety program and relevant Workplace Health and Safety Regulation and Act so that both can be enforced.

d) Monitor the safety program as it pertains to the work site and make management personnel accountable for individual safety performance in their areas.

e) To ensure that all subcontractors are made aware of Harrison's safety program at the time of bidding.

f) When implementing the site safety program, develop a clear understanding of safety responsibilities and specific duties for each foreman or supervisor.

g) Ensure that all training required for a good quality of work life and a safe work place is provided.

2. General Foreman/Supervisors

a) Know and understand Harrison's' safety program and relevant government safety legislation.

b) Ensure the implementation and maintenance of the established Harrison safety policies.

c) Ensure that all employees and other workers on the site work in a safe manner.

d) Chair at least one safety meeting weekly, encourage worker participation, and review any substandard act/condition or incidents.

e) Develop a clear understanding of safety responsibilities and specific duties.

f) Ensure that all employees and other workers are aware of Harrison's safety program and the requirement for the use of personal protective equipment.

g) Ensure all workers new to the work site have received a safety orientation before they start work to familiarize them with the safety program and any potential or existing hazards that may exist.

h) Arrange for medical treatment as required in the case of injury or illness including transportation to a doctor or hospital.

i) Ensure that adequate, trained first aid persons are on site as required.

j) Report all incidents immediately, to investigate all incidents and recommend positive preventative measures to prevent similar incidents in the future.

k) Carry out work site inspections as per the policy set out in the Safety Manual.

l) Accompany any government safety inspector while on site.

3. Health and Safety Manager

a) The health and safety person should have a direct line of communication with the most senior company administrator or whoever has the power to make effective changes immediately.

b) This person should have a good understanding of the work that this company is involved with. They must be able to recognize unsafe acts or conditions and suggest corrective actions to be applied.

c) Training in the field of Occupational Health, Safety and Environmental is a must in order to understand and apply the ever changing regulations.

4. Health and Safety Designate

a) Revisions of all safety related documents, forms and manuals.

b) Assisting in all incident investigations.

c) Working closely with the safety committee.

d) Following up on recommendations to prevent re-occurrence.

e) Keeping updated records on all safety related statistics and ongoing communications with associations including WorkSafeBC.

f) Involvement in the ordering, evaluation, and distribution of PPE.

g) Ensuring management is aware of all hazards and the controls that should be in place.

h) Assisting in all safety meetings.

i) Working closely with injured employees. (Disability management program.)

j) Completing random shop walk-arounds and informal inspections.

k) Completing random field site safety inspections and informal inspections.

l) Preparing monthly reports for the operations manager regarding safety programs.

m) Documenting employee certificates and training pertaining to safety.

n) Ensuring that all documentation and safety data is audit ready.

5. Supervisors

a) Must show leadership by example and are expected to monitor that all rules and safe work requirements are followed.

b) Positive reinforcement to be given for good attitude toward safety and positive correction taken when substandard act/conditions are noticed.

6. Employees

a) Carry out their work in a manner that will not create a hazard to their own safety and health, and the health and safety of other workers.

b) Ensure that they are aware of the “worker” responsibilities for safety as set out in the Workplace Health and Safety Act and Regulations.

c) When required, the worker shall use every item made available to prevent any type of incident to themselves or others.

d) Attend and participate in all safety meetings, co-operate with the workplace health and safety committee.

e) Assist site supervision in the reduction and controlling of incident producing conditions and unsafe acts on the work site.

f) Report any unsafe acts or conditions.

g) Report all incidents immediately to their supervisor.

7. Subcontractors

a) Subcontractors are obliged to comply with all Federal, Provincial and Municipal laws, regulations and codes, and to comply and cooperate with Harrison’s Safety Policy. In all job site matters, they will be responsible to Harrison’s management and shall comply in all respects to Harrison’s Safety Policies, Safe Work Practices, and Procedures.

b) Subcontractors shall actively promote safe working performance on the part of their employees. Their site supervisor shall participate in activities such as safety meetings and safety inspections. If a contractor has no formal safety program, they shall be orientated to Harrison’s program and agree to abide by it.

c) Subcontractors may use their own regular system of inspections to detect and correct hazardous conditions, safety rule violations and unsafe working practices in their work areas. (Upon review and acceptance by Harrison.) Inspections will include subcontractor areas and will be reviewed with the project general foreman.

d) Harrison shall provide an orientation so as to achieve a consistent indoctrination.

e) Subcontractors shall hold or participate in daily toolbox meetings with their workers and hold a weekly safety meeting which will review the past week’s activities, address any incidents, review positive corrective actions taken, and review the upcoming week’s work.

f) Documented minutes and attendance of these meetings will be forwarded to Harrison’s general foreman.

g) Subcontractors shall ensure that all employees are equipped with all personal protective equipment as required by applicable laws and the job site.

h) Subcontractor's site supervision or their representatives shall give their current address and telephone number to Harrison's site general foreman so that they may be contacted after hours in case of emergency.

8. Suppliers and Visitors

a) Report directly to Harrison's onsite general foreman prior to accessing any work site.

b) Be orientated as to the site specific rules and requirements for personal protective equipment to be worn at each site.

c) Suppliers and visitors shall not be allowed to enter the worksite unless all requirements have been met.

d) The supervisor assigned to a contractor will ensure all Harrison's safe work practices will be followed.

1.2 Due Diligence

The availability of due diligence defense depends upon the creation, implementation and enforcement of appropriate health and safety policies, safe work practices and procedures in the workplace.

Due Diligence requires that the party charged be able to establish that they took all reasonable care to avoid the particular charge as presented by the prosecution.

What is meant by due diligence?

Due diligence is the level of judgment, care, prudence, determination, and activity that a person would reasonably be expected to do under particular circumstances.

Due diligence applied to occupational health and safety:

Due diligence means that employers shall take all reasonable precautions, under the particular circumstances, to prevent injuries or accidents in the workplace.

This duty also applies to situations that are not addressed elsewhere in the occupational health and safety legislation.

To exercise due diligence, an employer must implement a plan to identify possible workplace hazards and carry out the appropriate corrective action to prevent accidents or injuries from arising.

Why does due diligence have special significance?

"Due diligence" is important as a legal defense for a person charged under occupational health and safety legislation. If charged, a defendant may be found not guilty if he or she can prove that due diligence was exercised. In other words, the defendant must be able to prove that all precautions, reasonable under the circumstances, were taken to protect the health and safety of workers.

The conditions for establishing due diligence includes several criteria:

1. The employer must have in place, written OH&S policies, practices, and procedures. These policies, etc. would demonstrate and document that the employer carried out workplace safety audits, identified hazardous practices and conditions, made necessary changes to correct these conditions, and provided employees with information to enable them to work safely.

2. The employer must provide the appropriate training and education to the employees so that they understand and carry out their work according to the established polices, practices, and procedures.

3. The employer must train the supervisors to ensure they are competent persons, as defined in legislation.

4. The employer must monitor the workplace and ensure that employees are following the policies, practices and procedures. Written documentation of progressive disciplining for breaches of safety rules is considered due diligence.

5. There are obviously many requirements for the employer, but workers also have responsibilities. They have a duty to take reasonable care to ensure the safety of themselves and their coworkers. This includes following safe work practices and complying with regulations.

6. The employer should have an incident investigation and reporting system in place. Employees should be encouraged to report "near misses" and these should be investigated also. Incorporating information from these investigations into revised, improved policies, practices and procedures will also establish the employer is practicing due diligence.

7. The employer should document, in writing, all of the above steps. This will give the employer a history of how the company's occupational health and safety program has progressed over time. Second, it will provide up-to-date documentation that can be used as a defense to charges in case an accident occurs despite an employer's due diligence efforts.

8. All of the elements of a "due diligence program" must be in effect before any accident or injury occurs. If employers have questions about due diligence, they

should seek legal advice for their jurisdiction to ensure that all appropriate due diligence requirements are in place.

Due diligence is demonstrated by your actions before an event occurs, not after.
“BE PROACTIVE NOT REACTIVE”

1.3 Element 1 Revision Table

Date	Revisions/Additions/Deletions	Page #	Initials

Element 2: Workplace Hazard/Risk Assessment, Control and Change Management

Table Contents

2.0 Introduction to field level hazard assessments (FLHA)

FLHA is a proactive practice that supervisors and crew will complete at the work site prior to start of work.

This practice will:

1. Allow the crew to identify hazards and discuss the best controls for each task.
2. Decrease risk.
3. Improve productivity. (Knowing they participated in making a safer work place.)

Harrison supports the use of FLHA on a daily basis prior to the start of each task and as the task changes.

2.1 Objective

To ensure that there are processes to assess and manage health and safety hazards and risks and their controls. To communicate changes within the workplace using a standardized approach across the company.

2.2 Process for assessment and management

The process may include, but is not limited to:

1. Establishing the context, including acceptability criteria for the risk analysis/assessments.

2. Hazard and risk identification to determine risk scenarios and select a suitable level of risk evaluation.

3. Evaluating risks by qualitative or quantitative assessment and assigning risk ownership.

4. Recording the risk assessments.

2.3 Definitions

Hazard – Any circumstance that poses the risk of an incident.

Hazard Assessment – A thorough examination, of job site, shop, workplace, etc., for the purpose of identifying what actual or potential hazards exist.

Incident – Any unplanned and unwanted event, which results in damage or injury or could have resulted in damage or injury. (Close call, near miss.)

Inspection – An observational walk through of the workplace for the specific purpose of identifying unsafe acts or conditions. Also, to determine the levels of compliance with safe work practices, procedures and safety rules.

2.4 Components and concerns regarding hazard assessments

1. Workplace Components

a) People at the work site.
b) Environment they work in.
c) Material they work with.
d) Equipment/tools they use.
e) All four of the above components will assist in determining what risks are present.

2. People Concerns

a) Competent or adequately trained.
b) Aware of hazards involved with their work.
c) Physically or emotionally stable.
d) Potential for being struck, caught between, slips, falls, strains etc.
e) Unhealthy work environment.
f) Follow established safe work practices/procedures.
g) Management committed.
h) Orientations. (Worker, suppliers, visitors, subcontractors.)
i) Worker supervision.

3. Environmental Concerns

A) Potential housekeeping problems.
b) Exposure to heat, cold, wind, dust, snow, rain etc.
c) Constant noise over 80 dB.
d) Sufficient lighting.
e) Exposure to radiation, chemical fumes, mists.
f) Does the work environment pose a potential hazard to the public?

4. Material Concerns

a) Potential exposure to harmful agents. (Chemical or biological.)
b) WHMIS/TDG regulations in place.
c) Problems with moving or handling or moving materials.
d) Storing or stockpiling material.

5. **Equipment/Tools Concerns**

a) Maintenance policy in place?
b) PPE policy in place?
c) Is the right tool for the job being used?
d) Are equipment and tools being inspected regularly?
e) Worker training for the correct use of equipment or tools
f) How could tools or equipment affect safety, quality or productivity?

2.5 Conducting a Hazard Assessment

1. Assemble persons involved.
2. Tour the entire workplace.
3. Look for possible hazards or substandard conditions
4. Review the findings with supervisors and workers.
5. Rank the hazards on a worst first basis.
    a. Imminent danger (i.e. Death, widespread occupational illness, loss of facilities.)
    b. Serious (i.e. Severe injury, serious illness, property/equipment damage.)
    c. Minor (i.e. Non-serious injury, illness or damage.)
    d. OK (Area or observation is satisfactory, no further action required (NFAR)
6. Take positive corrective action and put control measures in place.
7. Monitor and follow up to ensure actions have been taken and they are working.

Identifying hazards and placement of controls is an accepted way of lessening the potential of an incident, but once the hazards are identified there are five basic methods of controls that may be utilized in the control of risks.

2.6 Five approaches that will assist in the control of our risk

1. Elimination
2. Substitution
3. Administration Controls
4. Engineering Controls
5. Personal Protective Equipment

2.7 Good practices to help eliminate workplace hazards

1. Prior to starting work, take a few minutes to evaluate the area and the work activities around you. Field Level Hazard Assessment (FLHA)
2. Inspect tools and equipment before using.
3. Maintain good housekeeping standards.
4. Maintain PPE in good clean condition.
5. Follow established procedures. DO NOT take short cuts.
6. Report hazards and incidents as soon as possible.

2.8 Strategies for control of hazards

1. Supervisory and worker involvement with the hazard identification process.
2. Itemize all hazards priority of worst, first.
3. Discuss controls that may be used.
4. Review potential hazards and controls with all crewmembers.
5. Ensure that recommended approved controls are implemented.
6. Use the five approach system where and when applicable.
7. Use industry standard best practices and procedures.

2.9 Factors to be used in identifying the need for a JHA

1. The incident frequency and severity – jobs where incidents occur frequently or where incidents are infrequent, but results in serious or disabling injuries.
2. Potential of severe injuries – the consequences of the incident is potentially severe.
3. New jobs where hazards are not readily identified.
4. Jobs where multiple workers are performing simultaneous tasks at the same time.
5. Modified jobs – new hazards may be associated with change in job procedures.
6. Infrequently preformed jobs - workers may be at risk when undertaking a non-routine job. A JHA is a good way of reviewing hazards and controls.
7. Jobs that may be affected by new standards or legislation.

2.10 Basic steps of a JHA.

1. **Break the job/task into basic steps (A-Z approach). Each step is a sequence of what is to be done.**

2. **Identify the potential hazards of each step, consider the following when identifying hazards:**

a) Potential for body parts to be caught in, on or between items at the job site?
b) Are the tools or equipment used the best for the job?
c) Any potential under, around, or above the worker(s)?
d) Does the work area present a potential for slips, trips, or falls?
e) Any objects that require movement within the capacity of the worker(s)?
f) What are the environmental conditions (heat, cold, noise, etc.)?
g) Is there a potential hazard from dust, fumes, mist, or vapors?
h) Is the lighting adequate?
i) Determine the controls for each hazard are identified.

3. **Identify the tools and equipment to be used.**

a) Check that tools and equipment are in good working order.
b) Choose the proper tool for the job.

4. **Identify the Personal Protective Equipment to be used.**

2.11 5X5 Table and Matrix for determining risk ranking

STEP 1 DETERMINE LIKELIHOOD

Likelihood (L)			
A	Almost Certain	Happens Often	More than 1 event per month
B	Likely	Could easily happen	More than 1 event per year
C	Possible	Could happen and has occurred here or elsewhere	1 event per 1 to 10 years
D	Unlikely	Hasn't happened yet, but could	1 event per 10 to 100 years (within a single mine life)
E	Rare	Conceivable but only in extreme circumstances	Less than 1 event per 100 years (within life of New Gold Inc)

STEP 2 DETERMINE CONSEQUENCES

Consequence / Severity (C)						
Rank	Consequence	People	Damage / Loss	Environment	Business	Reputation
1	Catastrophic	Fatality(s).	Extreme financial loss (> US$500,000)	Irreparable Damage, very serious long term impairment of eco-systems	> 48 hours production delay	Major damage to reputation receiving national or international negative media OR production to cease as a result of statutory body concerns.
2	Major	Permanent and total disability	Major financial loss (US$100 - 500k)	Major Impact, serious medium term environmental impact affecting whole ecosystem	24 hr to 48 hr production delay	Major damage to reputation receiving state wide negative media OR Non-compliance with statutory requirements resulting in major fine.
3	Moderate	Lost Time Injury	Moderate financial loss (US$50 - 100k)	Minor Impact Moderate short term effects affecting part but not affecting whole of eco-system	12 to 24 hr production delay	Moderate damage to reputation localised to the regional media OR Non-compliance with statutory requirements resulting in minor fine.
4	Minor	Disabling Injury	Minor financial loss (US$5 - 50k)	Minor impact on biological or physical environment	6 to 12 hr production delay.	Minor impact to reputation localised to community near mine OR technical divergence that may attract attention from statutory authorities.
5	Low	First Aid / Medical Treatment injury with no time lost or change of duties	Low financial loss (<$5k)	Limited damage to minimal area of low significance or previously disturbed areas.	< 6 hour production delay	No impact on stakeholders or reputation

STEP 3 CALCULATE RISK

		Consequence / Severity (C)				
Likelihood (L)		1 Catastrophic	2 Major	3 Moderate	4 Minor	5 Low
A	Almost Certain	1 (Ex)	2 (Ex)	4 (Ex)	7 (H)	11 (H)
B	Likely	3 (Ex)	5 (Ex)	8 (H)	12 (H)	16 (M)
C	Possible	6 (H)	9 (H)	13 (H)	17 (M)	20 (M)
D	Unlikely	10 (H)	14 (M)	18 (M)	21 (L)	23 (L)
E	Rare	15 (M)	19 (M)	22 (L)	24 (L)	25 (L)

Table and matrix for determining hazard/risk level

2.12 Critical task list specific to our work

The following tasks are listed as critical, due to the potential of serious loss if procedures for completing these tasks were to fail.

List tasks - highest to lowest risk

All potential hazards and controls in the above task list should be identified in each step of the task Safe Work Plan (SWP) and discussed on daily Field Level Hazard Assessment forms.

Use the 5X5 matrix to determine hazard level.

NUMBER	DESCRIPTION	HAZARD LEVEL
1	Moving equipment	1
2	Working with live voltage	2
3	Working with battery banks	2
4	Arc flash	2
5	Lifting transformers	2
6	Working in open trenches	2
7	Working in manholes	2
8	Working in electrical vaults	2
9		
10		
11		
12		
13		
14		
15		
16		

All potential hazards and controls in the above task should be identified in each step of the task (JHA) and discussed on daily Field Level Hazard Assessment forms.
The above tasks are a continual part of this type of work and are considered routine. Any new or different task will be reviewed through a safe work plan and identified on FLHA, and added to list

2.13 Element 2 Revision Table

Date	Revisions/Additions/Deletions	Page #	Initials

Element 3: Safe Work Practices

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3.0 Element 3 Safe Work Practices (SWP)

3.1 Objective

To ensure there is a process for the development of safe work practices, safe job procedures and work instructions that detail the controls required to remove health and safety risks associated with all work activities. These practices and procedures must be communicated, available to the appropriate users, and followed.

Controls to be documented in procedures that reflect regulatory and/or legal requirements to ensure compliance. Where new or non-routine tasks and activities are conducted, the controls identified during the pre-job hazard assessment must be implemented.

Standard Safe Work Practices (SWP) and Safe Job Procedures (SJP) will be downloaded from the safety associations of our specific industry ensuring all workers are on the same page when discussing their use.

Any SWP and SJP cannot be referenced from industry will be developed with the work force, management, and in conjunction with the Joint Health & Safety Committee if applicable.

All are responsible for the revision and development of safe operating procedures and practices.

Supervisors are responsible for ensuring all employees understand and comply with these.

Employees must follow them and ask questions if they do not understand procedures.

All new, inexperienced employees will be trained in the use of these practices and procedures.

3.2 Promoting safe work practices and safe job procedures

Management is required to:

1. Put them in writing and provide appropriate training.
2. Make them available to all employees and contractors by keeping a copy at each work site.
3. Ensure equipment and material are safe to work with.
4. Provide management support.
5. Ensure supervisors enforce the use of these procedures and practices.

Job procedures developed must comply with or exceed legislated requirements and manufacturer's specifications. Job procedures will change from time to time due to new

methods and products being introduced. An annual review will be done of selected job procedures and where indicated, changes will be made.

Where work is performed using contractor or third party specified procedures and/or subcontractor safe work procedures, these procedures shall be used unless the procedure specified is of a lower standard. Where this occurs, the higher standard will be used.

Each operation must have appropriate operating procedures for all work activities, including the identification of training, equipment, manpower and logistical requirements. Operating procedures should, as a minimum requirement, address the following:

- Personal Protective Equipment
- Housekeeping
- Confined Space Entry
- Tools Communication
- WHIMS
- Fitness for Duty
- Trenching & Excavation
- Transportation of Workers
- Hot Work
- Working at Heights
- Equipment and Job Specific
- Heat & Cold Stress
- Fatigue Management
- Guarding & Barricading
- Working Alone

3.3 Safe Work Practices (SWP) Introduction

Get the jobs done efficiently, on time and safely! To help accomplish this, we have taken from industry some safe work practices that are related to our work.

Employees have contributed in the development of specific safe work practices used in our work and fully endorse them. The majority of Harrison's employees are journeyman certified. Any apprentices will be paired with a journeyman for training.

Safe work practices will:

1. Be put in print.
2. Be made available to all employees by keeping a copy readily available.
3. Provide safe equipment and material to work with.
4. Give management support.
5. Enforce the use of these safe work practices.

It is to be noted here that not all situations can be addressed as they are varied and could require specific practices for specific situations encountered. Much of the material presented in this section is by design, accurate and brief in nature. For more detailed information, contact your supervisor for guidance or reference material.

3.4 Working in cold or heat

The work crew will complete a job hazard assessment identifying the controls for this work (refer to SWP working in cold or heat).

3.5 Ground disturbance including snow removal

Any ground disturbance will be reviewed by the client in a job hazard assessment. (See ground disturbance permit.)

3.6 Scaffolding

All scaffolding will be erected by others with knowledge and expertise to do so. Our employees will not use scaffolding that does not display a “safe to use tag” signed and dated by responsible persons. (See safe use of scaffolds.)

All our employees are aware that the use of any and all equipment that require them to be tagged as good to use will be attached prior to use. As well any equipment or tool that is not in good working condition will be tagged out and removed from service. If that item is not the property of Harrison, the substandard condition will be brought to the attention of owner.

In compiling these safe work practices, the following reference material was consulted to ensure accuracy:

1. Canadian Center for Occupational Health and Safety
2. Occupational Health and Safety Act and Regulations
3. Recognized safety procedures manuals
4. Worksafe BC
5. Health and safety code for mines in BC
6. Employees input and contributions

3.7 Excavation and trenching

Harrison’s trenching and excavating is mainly limited to minimal depths and size of excavations and trenching. For all scopes of work our employees and subcontractors will follow the listed WorkSafeBC regulations for safe work practices.

Excerpt from WorkSafeBC regulations

20.78 Work standards

(1) Subject to this section, excavation work must be done in accordance with the written instructions of a qualified registered professional if:

(a) the excavation is more than 6 m (20 ft) deep,

(b) an improvement or structure is adjacent to the excavation,

(c) the excavation is subject to vibration or hydrostatic pressure likely to result in ground movement hazardous to workers, or

(d) the ground slopes away from the edge of the excavation at an angle steeper than a ratio of 3 horizontal to 1 vertical.

(2) Despite subsection (1), excavation work described in that subsection must be done in accordance with the written instructions of a professional engineer if the excavation requires or uses support structures.

(3) The written instructions required by this section must

(a) be certified by the qualified registered professional concerned,

(b) be available at the site, and

(c) specify the support and sloping requirements, and the subsurface conditions expected to be encountered.

20.79 Underground utility services

(1) Before excavating or drilling with powered tools and equipment, the location of all underground utility services in the area must be accurately determined, and any danger to workers from those utility services must be controlled.

(2) Excavation or drilling work in proximity to an underground utility service must be undertaken in conformity with the requirements of the owner of that utility service.

(3) Pointed tools must not be used to probe for underground petroleum and electrical utility services.

(4) Powered equipment used for excavating must be operated so as to avoid damage to underground utility services, or danger to workers.

20.80 Removing nearby hazards

Trees, utility poles, rocks and similar objects adjacent to an area to be excavated must be removed or secured if they could endanger workers.

20.81 Sloping and shoring requirements

(1) Subject to section 20.78, before a worker enters any excavation over 1.2 m (4 ft) in depth or, while in the excavation, approaches closer to the side or bank than a distance equal to the depth of the excavation, the employer must ensure that the sides of the excavation are
(a) sloped as specified in writing by a qualified registered professional,

(b) sloped at angles, dependent on soil conditions, which will ensure stable faces, but in no case may the slope or combination of vertical cut and slope exceed that shown in Figure 20-1,
(c) benched as shown in Figure 20-2,
(d) supported as specified in writing by a professional engineer,

(e) supported in accordance with the minimum requirements of section 20.85, or
(f) supported by manufactured or prefabricated trench boxes or shoring cages, or other effective means.

(2) If the end of a trench over 1.2 m (4 ft) in depth is not adequately sloped, end shoring must be installed unless

(a) a worker in the trench is not required to approach closer to the end of the trench than a distance equal to the depth of the trench at that end,

(b) where, for the prevailing soil conditions at the end of the trench, the permissible spacing of uprights equals or exceeds the width of the trench, or

(c) otherwise authorized in writing by a professional engineer or professional geoscientist.

(3) If end shoring is required, the walers for the end shoring must be installed to bear against the walers that extend along the sides of the trench, or in a manner that will provide equivalent structural restraint.

(4) End shoring must be designed by a professional engineer if the end shoring waler length exceeds 1.8 m (6 ft).

(5) Shoring must extend from at least 30 cm (1 ft) above ground level to as close to the bottom of the trench as the material being installed will allow, but in no case more than 60 cm (2 ft) from the bottom.

(6) Shoring need not extend above ground level where traffic crossing plates need to be used, provided that other measures are taken to prevent excavated or other material from entering the excavation.

20.82 Timber shoring and grades

(1) Timber shoring materials must be lumber graded Number 2 or better from the following species groups: Douglas fir-larch, hemlock-fir, spruce-pine-fir or coast-Sitka-spruce.

(2) All lumber must be graded to the National Lumber Grades Authority *Standard Grading Rules for Canadian Lumber*.

[Amended by B.C. Reg. 312/2003, effective October 29, 2003.]

20.83 Safe shoring procedures

(1) Shoring materials must be installed from the top down and removed in reverse order.

(2) Workers must not enter an excavation to remove shoring materials if ground conditions have deteriorated so as to make entry for shoring removal unsafe.

(3) Shoring or manufactured or prefabricated support systems must be installed in firm contact with the faces of the excavation, and in a manner which ensures no loss of soil from behind or below the bottom of the shield or shoring while the excavation is open.

(4) Unless otherwise indicated by the manufacturer or a professional engineer, in writing, voids between the shoring and the excavation face must be backfilled or blocked.

20.84 Manufactured shoring

20.85 Trench support structures

(1) Trench support structures, other than those designed by a professional engineer, must comply with Table 20-1 for the following relevant soil conditions:

(2) If Table 20-1 is to be used for a combination of supporting and sloping, the selection of shoring elements must be based on the overall depth of the excavation, and the arrangement must conform to Figure 20-3.
(3) Cross braces and trench jacks must be installed in a horizontal position and must be secured against dislodgment.

(4) The minimum number of cross braces at each cross bracing location is determined by the trench depth as follows:

Depth at location	Number of braces
up to 2.4 m (8 ft)	2
2.4 m to 3.7 m (8 ft to 12 ft)	3
3.7 m to 4.6 m (12 ft to 15 ft)	4
4.6 m to 6 m (15 ft to 20 ft)	5

(5) At each cross bracing location the cross braces must be less than 1.2 m (4 ft) apart, and the uppermost cross brace must be within 60 cm (2 ft) of ground level.

(6) Repealed. [B.C. Reg. 312/2003, effective October 29, 2003.]

(7) Hydraulic or pneumatic trench jacks must have a means of ensuring that they will not collapse in the event of loss of internal pressure.

(8) Uprights must not spread outwards more than 15 degrees from the vertical when viewed along the trench.

(9) Plywood may be substituted for two inch thick shoring elements provided that

(a) the plywood is not less than 19 mm (3/4 in) thick,

(b) the trench is not over 2.7 m (9 ft) in depth,

(c) uprights are installed at not over 60 cm (2 ft) centres,

(d) cross braces do not bear directly on plywood, and

(e) cross braces bearing on uprights or walers are located at all joints in plywood sheathing.

20.86 Spoil piles

If the average depth of a spoil pile which is adjacent to a supported excavation exceeds 60 cm (2 ft), the selection of the shoring or shielding must take into account the resulting increase in lateral soil pressure.

Note: Table 20-1 includes an allowance for 60 cm (2 ft) of spoil pile adjacent to the excavation. In such cases shoring or shielding will be deemed acceptable if rated adequate for a tabulated depth equal to the depth of the excavation plus the average depth of the spoil pile minus 60 cm (2 ft). For other systems consult the manufacturer's instructions.

20.87 Entry and exit

(1) Safe means of entry and exit must be provided for an excavation a worker enters.

(2) If workers are required to enter a trench over 1.2 m (4 ft) deep, the safe point of entry and exit must be located within 8 m (25 ft) of the workers and the excavation must be safely supported or sloped to the entry and exit location.

(3) Walkways must be secured to prevent dislodgment.

(4) The open side of an access route into an excavation used by mobile equipment must have a curb.

20.88 Guarding

If an excavation is a hazard to workers, it must be effectively covered or guarded.

20.89 Excavation crossings

A walkway across an excavation must be at least 50 cm (20 in) wide, and if crossing an excavation over 1.2 m (4 ft) deep, be equipped with guardrails, meeting the requirements of Part 4 (General Conditions), on both sides.

20.90 Excavated materials

(1) Excavated material must be kept back a minimum distance of 60 cm (2 ft) from the edge of a trench excavation and 1.2 m (4 ft) from any other excavation.

(2) Under no circumstances may excavated material be piled so that it endangers workers.

20.91 Use of skips or buckets

If a skip or bucket is used to remove material from an excavation, horizontal shoring members must be shielded from dislodgment with vertical planking.

20.92 Scaling and trimming

The sides of an excavation must be scaled and trimmed or otherwise stabilized to prevent slides of material or falls of rock which could endanger workers.

20.93 Height limitations

In pits, quarries and similar excavations the height of unstable faces must not exceed the maximum safe reach of the excavating equipment being used.

20.94 Positioning equipment

Whenever possible, power machines excavating banks must be positioned so that the operator is on the side away from the bank and with the boom positioned closest to the side of the excavation.

20.95 Water accumulation

(1) Water must not be allowed to accumulate in an excavation if it might affect the stability of the excavation or might endanger workers.

(2) Erosion of slopes by surface water must be prevented if workers may be endangered.

Table 20-1: Trench support structures

Size and spacing of members[1] (metric figures)								
UPRIGHTS			**WALERS**		**CROSS BRACES**			
Trench depth (m)	**Minimum dimen-sions (mm)[2]**	**Max-imum spacing (m)**	**Minimum dimen-sions (mm)[2]**	**Max-imum vertical spacing (m)**	**width of trench (m) Up to 1.8 1.8-3.7 Minimum dimensions (mm)[2]**		**Maximum spacing (m)**	
					Vert-ical	**Hori-zontal**		
Type A: Hard and solid soil								
1.2-3 [3]	38 x 235	1.8	89 x 140	1.2	89 x 89	140 x 140	1.2	1.8
3-4.6	38 x 235	1.2	140 x 140	1.2	89 x 140	140 x 191	1.2	1.8
4.6-6	38 x 235	Close tight	140 x 140	1.2	140 x 191	191 x 191	1.2	1.8
Type B: Soil likely to crack or crumble								
1.2-3 [3]	38 x 235	1.2	89 x 140	1.2	89 x 140	140 x 140	1.2	1.8
3-4.6	38 x 235	0.9	140 x 191	1.2	140 x 140	140 x 191	1.2	1.8
4.6-6	38 x 235	Close tight	140 x 191	1.2	140 x 191	191 x 191	1.2	1.8
Type C: Soft, sandy, filled or loose soil								

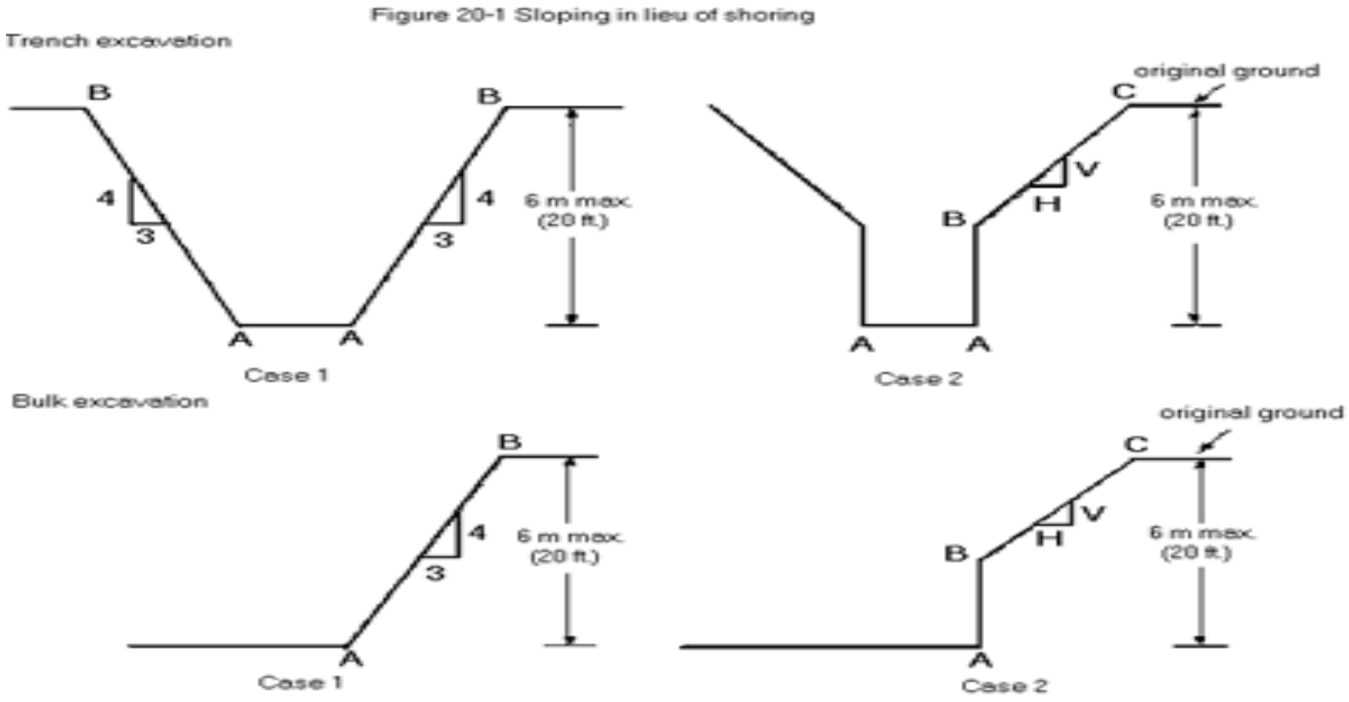
1.2-3 [3]	38 x 235	Close tight	140 x 191	1.2	140 x 140	140 x 191	1.2	1.8
3-4.6	38 x 235	Close tight	191 x 191	1.2	140 x 191	191 x 191	1.2	1.8
4.6-6	64 x 235	Close tight	191 x 241	1.2	140 x 191	191 x 241	1.2	1.8
Size and spacing of members[1] (imperial figures)								
UPRIGHT			**WALERS**		**CROSS BRACES**			
Trench depth (feet)	Minimum dimensions (inches)[2]	Max-imum spacing (feet)	Minimum dimensions (inches)[2]	Max-imum vertical spacing (feet)	width of trench (feet) Up to 6 6-12 Minimum dimensions (inches)[2]		Maximum spacing (feet) Vertical	Hori-zontal
Type A: Hard and solid soil								
4-10 [3]	2 x 10	6	4 x 6 [4]	4	4 x 4	6 x 6	4	6
10-15	2 x 10	4	6 x 6	4	4 x 6	6 x 8	4	6
15-20	2 x 10	Close tight	6 x 6	4	6 x 8	8 x 8	4	6
Type B: Soil likely to crack or crumble								
4-10 [3]	2 x 10	4	4 x 6	4	4 x 6	6 x 6	4	6
10-15	2 x 10	3	6 x 8	4	6 x 6	6 x 8	4	6
15-20	2 x 10	Close tight	6 x 8	4	6 x 8	8 x 8	4	6
Type C: Soft, sandy, filled or loose soil								
4-10 [3]	2 x 10	Close tight	6 x 8	4	6 x 6	6 x 8	4	6
10-15	2 x 10	Close tight	8 x 8	4	6 x 8	8 x 8	4	6
15-20	3 x 10	Close tight	8 x 10	4	6 x 8	8 x 10	4	6

The dimensions shown are minimum and must be increased if necessary to meet job conditions.

[2] The dimensions of members in millimetres are actual dimensions for surfaced dry materials. The dimensions in inches are the nominal values for surfaced dry materials.

[3] Trenches less than 1.2 m (4 ft) deep must be shored when hazardous ground movement may be expected, as in ground subject to hydrostatic pressure or vibration.

[4] Walers may be omitted in trenches not exceeding 2.4 m (8 ft) in depth provided that it has been confirmed that the soil is sufficiently hard and solid to safely permit waler deletion, and provided that the trench is not in proximity to previously excavated ground.



Case 1 (trench or bulk excavation) - maximum slope of excavated face, shown as line AB, in hard and solid soil is 3 horizontal to 4 vertical.

Case 2 (trench or bulk excavation), maximum height of vertical portion, shown as line AB is 1.2 metres (4 feet).

For Case 2 (trench or bulk excavation), the maximum permissible slope of the excavated face BC for the corresponding height of the lower vertical cut AB is as follows:

Height of line AB		**Maximum slope of line BC (in hard and solid soil)**
centimetres	**feet**	
up to 30	up to 1	1 horizontal (H) to 1 vertical (V)
30 to 60	1 to 2	3H to 2V
60 to 90	2 to 3	2H to 1V
90 to 120	3 to 4	3H to 1V

Figure 20-2: Benching in lieu of shoring

Figure 20-2: Benching in lieu of shoring

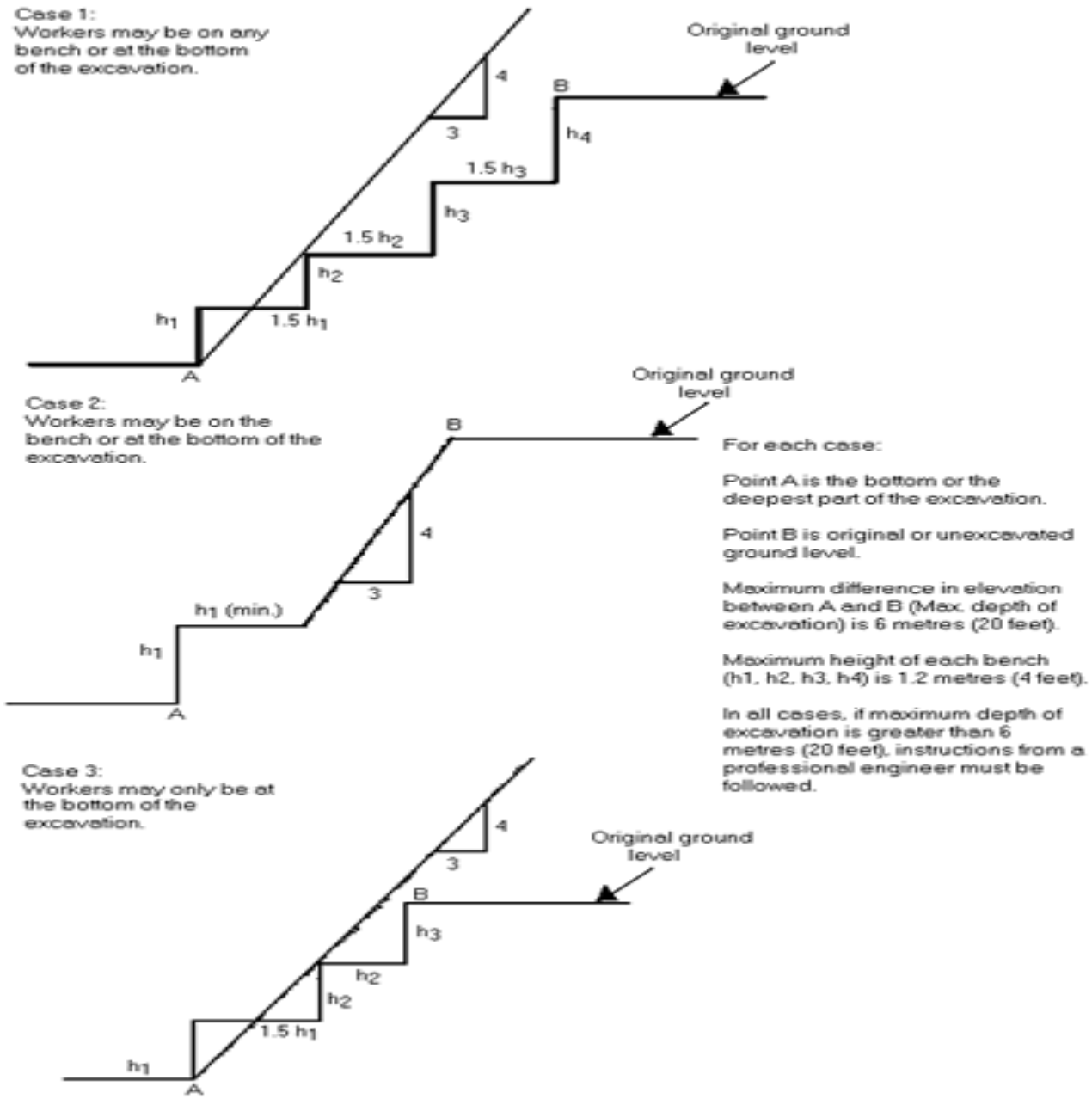
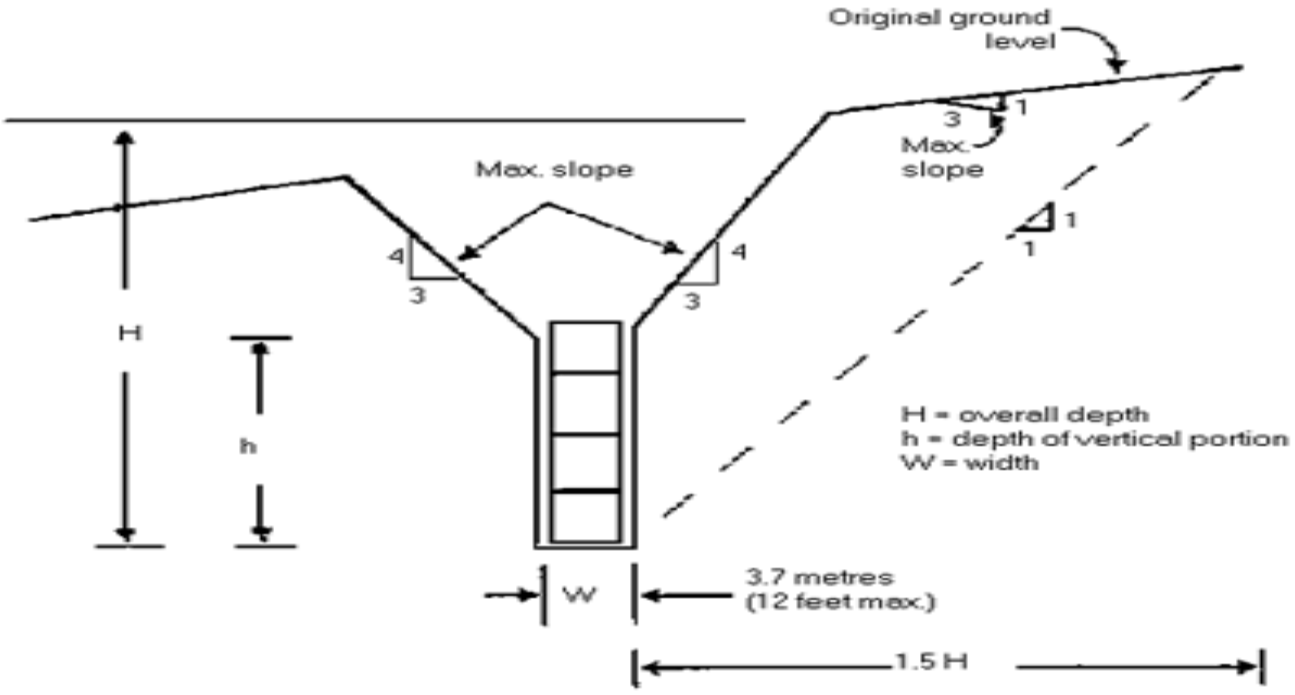


Figure 20-3: Combined supporting and sloping



Shoring must be adequate for excavation depth H.
Depth H cannot exceed 6 metres (20 feet).

3.8 Safe work practices updates and annual review

Safe Work Practices will change from time to time because of new methods and products, so an annual review will be done of all safe work practices. When changes occur, the practice shall be noted, and dates recorded on the Safe Work Practices Annual Review sheet.

All work related to electrical components, connections and placement of equipment shall be completed by competent electricians. These individuals shall use:

1. All required PPE.
2. Ground fault indicators.
3. Verify de-energized status.
4. Complete a job hazard assessment.
5. Use local lock out when required.
6. Ensure that all electrical cords are in good condition.

NOTE: Due to the amount, only a representation of the safe work practices will be kept in the corporate manual. The entire collection of safe work practices will be kept in a binder, for quick reference by employees at the work site when necessary. Binders will be accessible to all employees.

SAFE WORK PRACTICES

DEVELOPMENT/ANNUAL REVIEW

Safe Work Practices	Development			By Whom	Review			By Whom
	Date				Date			
	M	D	Y		M	D	Y	
Aerial Work Platforms								
Backfilling								
Batteries, Charging and Servicing								
Care & Handling of Propane Cylinders								
Cell Phone Usage								
Driving (general and winter)								
Electrical Safe Work Practices								
Excavating and Trenching								
Fall Protection								
Hazard Control Signage								
Hydrovac Operations								
Manual Lifting								
Office Safety								
Office Safety								
Open Holes/ Man Holes								
Operation of Air Tools								
Operation of Man Lifts/Scissorlifts								
Pipe Bending								
Portable Arc Welders								
Portable Equipment								
Portable Ladders								
Refuelling Equipment								
Restricted Work Areas								
Rigging								
Thawing of Frozen Ground Using Artificial Heating Methods								
Truck and Tractor Trailer Operation								
Use of Portable Fire Extinguishers								
Use of Tiger Torches								
Use of Respiratory Care Equipment								
Working Around Heavy Equipment								

3.9 Element 3 Revision Table

Date	Revisions/Additions/Deletions	Page #	Initials

Element 4: Safe Job Procedures

Table of Contents

4.0 Safe job procedures (SJP) introduction

A safe job procedure is a step by step description of how to do a job from beginning to end.

For the purposes of the work that is done by our workers, most functions are repetitious in nature, only the materials used (i.e. shape of) and the position of placement (configuration of structure) changes.

When a safe job procedure is required, a Job Hazard Analysis (JHA) will be used. All crew members should participate in this procedure.

There are some critical tasks in our work description that qualify for written procedures. Those that do will be placed in a binder and readily available for the workers review at the job site.

The safe job procedures that are identified for our work have been produced using the knowledge and input from the workers and supervisors.

Safe job procedures are in a binder and made readily available to all employees and will be reviewed by the supervisor to ensure its accuracy for the task.

4.1 Fall protection awareness Introduction

The purpose of this standard is to ensure that employees are afforded protection in the event of a fall regardless of where, or on what job, they are working. Refer to Working at Heights standard.

Definitions

Qualified person
A person who has completed fall protection training and testing and is capable of identifying hazards or dangerous conditions in the personal fall system or any component thereof, as well as in the application and use of related equipment.

Anchorage point
A secure point of attachment for lifelines, lanyards or deceleration devices that is independent of the means of supporting or suspending the person.

100% tie-off
A person must be properly tied-off at all times while exposed to a fall hazard. The use of two lanyards is required if a person must move or relocate a tie-off point while exposed to a fall hazard to ensure a positive tie-off connection at all times during the move

Requirements

All employees who are required to use fall protection shall receive approved training regarding the care and use of the fall protection devices.

Personnel who are required to work at 1.4 meters or more above a working level, and are not working on a standard railed platform, must ensure that they are equipped with, and properly use, adequate fall protection.

Wherever practical, a safe working area must be provided by means of approved handrails, work platforms or scaffolds. In all other cases, fall protection (100% tie-off) must be used. This includes situations in which work is being carried out from an elevated work platform or man lift.

Where overhead work is being conducted, there must be toolboxes and tie-offs in place to prevent tools and equipment from falling and barricades must be erected in the work area to protect others below from falling objects.

Full body safety harnesses are required for use together with lanyards that provide shock-absorbing protection in the event of a fall. All fall protection equipment must meet or exceed CSA and ANSI Z359.1 requirement.

Before each use, the harness and lanyard must be inspected by the user for cuts, breaks, loose rivets, torn threads, excessive wear, etc. Fall protection equipment that has shown evidence of excessive wear or mechanical malfunction or has been exposed to a fall must be removed from service. At no time shall a harness or lanyard that appears unsafe be used. All harnesses and lanyards will be individually assigned to an employee and identified using a numerical system. An Inspection Logbook will be developed and implemented for each harness and lanyard.

4.2 Lockout/Tag out Awareness

The purpose of this document is to establish standard procedures to ensure that energized equipment is brought to a zero energy state and is properly locked out to prevent inadvertent restarting while employees working on the equipment are at risk. These procedures apply to all Harrison employees and subcontractor's operations.

1. **Responsibilities**

Manager
Ensure that this procedure is established and maintained.

Supervisor
Ensure that this procedure is communicated to affected employees and implemented.

Company health and safety representative
Monitor the implementation of this procedure.

Employees

1. Take part in appropriate training programs.
2. Follow this procedure.
3. Report unsafe or hazardous conditions.

This process is to be followed by all Harrison employees and subcontractors.

Purpose

The purpose of the lockout program is to ensure that all sources of energy and material that flow to a process have been brought to a zero state and are locked out and tagged to prevent unexpected mechanical movement, energizing, or material flow in a process during maintenance or set-up.

2. Sources of Energy

Machines and equipment may have one or several different sources of energy inherent in their operation. It is essential to identify all sources of energy.

Electrical
Machines and equipment may have several sources of electrical energy supplying different controls and motors. The sources may be operated locally, remotely, manually, or through automatic controls.

Hydraulic
Every hydraulic cylinder, hydraulic line, pump, or reservoir tank has the potential of releasing liquid under high pressure.

Pneumatic
Pneumatic cylinders, valves, lines, reservoir pressure tanks, and compressors are all energy sources.

Steam
High and low pressure steam lines may release steam causing serious burns.

Radiation
Radiation energy may be in the form of gamma radiation, x-ray, microwave, or lesser forms of radiation. Potential sources could include thickness gauges, bin level gauges, presence sensing devices, dryers, cutters, and alignment devices.

Springs
Spring loaded equipment could release as the equipment is dismantled for maintenance.

Gravity
Parts of equipment that are moveable and elevated could fall or move while other energy sources are shut off.

Chemical
Reactive chemicals left in a process could continue to react even after all other energy sources have been shut off.

3. Sources of Material Flow

Many processes have a number of sources of material that flow to and through the process. This material may be fed to the process from other areas not included in the lockout. Each source of material flow must be identified.

Natural Gas Lines
There may be several different natural gas lines serving a process.

Water Lines
An unexpected release of water during maintenance could be both dangerous and damaging.

Material Pipe Lines
Material may be piped to a process from remote areas through pumps located at and controlled from locations remote from the confined space.

Chutes
Chutes feeding solid material to a process may be operated by a gate located at and controlled from locations remote from the confined space.

Conveyors
Conveyor systems feeding a process must be identified and the power sources located.

4. Locks

Selection
Use only sturdy keyed locks made by a reputable company for locking out. Combination locks are not acceptable and will not be used.

Keys
Each lock must have only one key. No locks will be keyed alike so that one key opens two or more locks. Do not make or use master keys. Do not make duplicate keys.

Assignment for Single Lockout
Assign a personal lock to every employee working on a piece of equipment or entering a confined space that requires a single lockout. The employee will attach his or her lock

and a lockout tag with the required information to the appropriate switch or valve. The employee will keep the key in his or her possession until they have completed their work on the job or until they have left the job at the end of their shift.

The supervisor will also apply a **"Supervisor Lock"** on the lockout. The supervisor lock will be the first one on and the last on off.

5. Lock Removal

The employee who attaches a personal lock is responsible for removing it at the completion of the project or the end of the shift. They are the only person authorized to remove their own personal lock. If an employee leaves the project site and forgets to remove a lock, the following steps must be taken:

a) The supervisor will attempt to contact the employee to determine his or her whereabouts.

b) If the employee is contacted and they are able to return to the work site in a reasonable period of time, they will do so and remove the lock.

c) If the employee is contacted and cannot return to the work site in a reasonable period of time, they will give the supervisor their payroll number, social insurance number, and authorization to remove the lock.

d) The supervisor will record this information on an "Authorization to Remove a Lock" form.

e) The supervisor will then contact the manager and together they will inspect the lockout job site in the presence of an employee member of the joint SHE committee to ensure no employees remain on the lockout job site.

f) Upon finding no employee remaining on the lockout job site, the manager is then authorized to cut off and destroy the lock, enabling start-up of the process.

g) The names of the persons conducting the inspection and the time the lock was cut off will also be recorded on the "Authorization to Remove a Lock" form. (See "Request for Removal/Lock Replacement" form.)

6. Shift Change Lockout

At the end of the shift all employees leaving the project will remove their personal locks and tags. However, the supervisor lock will be left in place. The supervisor of the finishing shift will personally brief the supervisor of the starting shift and exchange locks. A supervisor's lock will always be present.

7. Lockout Tags

Each lock used to lock out an energy or material flow source will have a lockout tag attached. The tag will have the following information:

a) Employee name.
b) Employee number.
c) Date and time lock attached.
d) Reason for lockout.

The tag will be removed when the lock is removed.

8. Identification of Switches and Valves

Identify all switches and valves controlling energy sources or material flow sources with a unique code number. Mark the code number on or near the switch or valve to clearly indicate its identity. Ensure that the code number is clear, legible, and durable.

9. Checklists (when commissioning)

Develop a checklist for each machine or operation identifying all energy and material flow sources to be locked out by appropriate code number. The checklist will serve as part of the record for lockout. Mark the checklist appropriately as each lockout is applied. The individual applying the locks will sign the checklist.

10. Lockout Procedures

The following procedures are a guideline for developing a lockout procedure for various energy sources.

a) Electrical

i. Alert the operator that the machine or process is about to be locked out.
ii. Turn off all operating switches before turning off the main disconnect switch. **CAUTION! Turning off a main disconnect switch under load may cause an explosion!**
iii. Stand to the right side of the main disconnect switch. Turn your face away from the switch. Use the left hand to operate the switches.
iv. Turn off the main disconnect switch.
v. Lock out the main disconnect switch. Be sure to lock the switch and not just the box cover.
vi. Attach a completed lockout tag to the lock.
vii. Test the disconnect switch to be sure it cannot be moved to the ON switch.
viii. Test the switch contact points with a voltage meter to be sure that the down side of the switch is not energized. The up side of the switch must test energized.

NOTE: If the up side of the switch is not energized, then a test on the down side of the switch cannot ensure that the switch is open and de-energized.

ix. Test the operating switch start/stop buttons to ensure that the power is off.
x. At the completion of the project notify the operator before turning on the power.

b) Hydraulic, Pneumatic, and Steam

i. Alert the operator that the machine or process is about to be locked out.
ii. Slowly turn off valves.
iii. Place a chain through the valve handle and around the pipe in such a manner that the valve cannot be opened. Secure it in the closed position with a lock.
iv. Attach a completed lockout tag to the lock.
v. Block any moving parts which may fall or move when pressure is released.
vi. Release any stored energy or pressure in the line through the bleed-off valve.
vii. Some shut off valves may have automatic bleeders.
viii. Test the operating switch to ensure that the pressure has been released.
ix. Notify the operator before pressurizing the system following completion of the project.

c) Springs, Gravity and Flywheels

i. Before shutting down any source of energy, determine if parts of the machine or process may move either due to spring action or gravity when the energy is shut off.
ii. Ensure that the blocks used are sufficient to hold the part securely without crushing.
iii. Block all machine parts that may move while ensuring that no body parts are endangered.
iv. Attach a completed lockout tag to each block.
v. After completing a project and before removing the blocks, notify the operator.

11. Employee lockout training

All employees who may be assigned to conduct maintenance on machines or processes having energy sources or material flow sources will receive training on the following subjects:

a) Purpose of lockouts.
b) Sources of energy.
c) Sources of material flow.
d) Locks.
e) Lockout tags.
f) Identification of switches and valves.
g) Checklists.
h) Lockout procedures.

4.3 Overhead powerlines

When working under overhead power lines, these lines will be de-energized If possible.
Signage will be placed and a job hazard assessment will be completed.

The table below will be used as a guideline

Safe Distance Table:

Operating voltage between conductors of overhead power line	Safe limit of approach distance for persons and equipment
0-750 volts Insulated or polyethylene covered conductors (1)	300 millimetres (12”)
0-750 volts bare, uninsulated	1.0 metre (39”)
Above 750 volts insulated conductors (1)(2)	1.0 metre (39”)
750 volts-40 kilovolts	3.0 metres (10 ft.)
69 kilovolts, 72 kilovolts	3.5 metres (11.5 ft.)
138 kilovolts, 144 kilovolts	4.0 metres (13 ft.)
230 kilovolts, 260 kilovolts	5.0 metres (16 ft.)
500 kilovolts	7.0 metres (22 ft.)

4.4 Workplace Hazardous Materials Information System (WHMIS)

The purpose of this section is to describe methods for implementing, maintaining and ensuring compliance with Workplace Hazardous Materials Information System (WHMIS) legislation. This procedure applies to all employees including independent contractors.

Under federal, provincial and territorial legislation, employers are required to accommodate all workers’ “Right to Know” about hazards in their workplaces. WHMIS is intended to ensure all personnel at a workplace have access to, and the ability to use, information regarding controlled products in their workplaces. This information includes the hazards, safe handling procedures, and emergency response procedures to protect employee’s safety and health, and that of their co-workers.

WHMIS has three primary elements: Container Labels, Material Safety Data sheets (MSDS) and Worker Education.

1. Labels

All employees and subcontractor personnel will ensure containers of hazardous materials and controlled products received at the site are adequately identified with Supplier Labels.

These labels identify the product contained, the risks of exposure, the personal protective equipment (PPE), which must be worn for safely handling the product, basic first aid and emergency procedures, and reference to the availability of MSDSs (Material Safety and Data sheets).

Suppliers are required to affix adequate labels to containers. The employee or contractor receiving the hazardous goods is responsible for ensuring that all containers received are properly labelled.

Each employee and subcontractor will also provide, and ensure the use of, Workplace Labels as required under WHMIS. Workplace Labels provide the same information as Supplier Labels and are affixed to containers in the local workplace. Workplace Labels are used for the identification of containers into which a hazardous material or controlled product has been transferred from an original, supplier labelled container.

Workplace Labels are also used to replace Supplier Labels that have been lost or defaced on the original container. Workplace labels or instructions are available from your supervisor.

WHMIS also requires the clear identification of process piping, as well as storage and process vessels. This identification must indicate the controlled product contained, and in the case of piping, the direction(s) of product flow. Tanks, and related piping and accessories, are labelled such that the content identifier is visible from all routes of approach.

Pipe markers must also be visible from all angles and applied such that no confusion can exist at valves, fittings and bends and in locations where piping passes through walls or floors. WHMIS legislation requires that each facility adopt a consistent, distinctive labelling protocol for any given workplace.

2. Material Safety and Data Sheets (MSDS)

Material Safety Data sheets are provided by suppliers of controlled substances, and contain much more complete and detailed information than is shown on Supplier or Workplace Labels. Each employee and contractor must ensure valid MSDSs are received from all suppliers for all controlled products. No product will be accepted unless MSDSs are pre-approved by HSE personnel. Harrison also has an obligation to produce suitable MSDSs for all intermediate and final products produced at the site that fall under WHMIS regulation.

The master file of original MSDSs from suppliers is maintained at the main Harrison office.

Harrison and all subcontractors must ensure copies of MSDSs are available for use by all employees and subcontractors.

Harrison will ensure every worker who works with, or is in proximity to, a hazardous or controlled product, is instructed in procedures for the safe use, storage, handling and disposal of hazardous material. This includes material that is contained or transferred in a pipe or piping system, valves, tank truck, conveyor belt, or spill of hazardous materials.

All hazardous materials must be stored in compliance with precautions listed on the respective MSDS and the Hazardous Materials and Handling procedures. All flammable and explosive materials must be stored in compliance with appropriate legislation.

All hazardous waste must be collected in compliance with the original material MSDS and the Storage and Handling of Hazardous Materials Procedures.

3. Responsibilities

a) Management

i. Ensure the Material Safety Data sheets (MSDS) master file catalogue is maintained.
ii. Ensure training and education is provided.

b) Supervisors Responsibilities

i. Provide guidance to employees.
ii. Ensure they have a good understanding of the WHIMIS process.

c) Employee Responsibilities

i. Follow WHMIS and TDG regulations, including proper storage, labelling and use.

d) Subcontractor Responsibilities

i. Ensure all workers are trained to understand and use all elements of WHMIS. The effectiveness of personnel training in WHMIS is evaluated through spot-checks conducted in the workplace.
ii. Ensure the possession of a valid WHMIS certification is a condition of continued employment.
iii. Ensure up-to-date MSDSs are provided prior to placing an order for any materials requiring MSDSs.

e) Health and Safety Designate Responsibilities

i. Ensure the implementation of this procedure is monitored.
ii. Ensure all subcontractors present on site have been checked for possession

of valid WHMIS certification.

iii. Ensure all subcontractors are storing and using chemicals and hazardous materials in compliance with WHMIS and Transportation of Dangerous Goods (TDG) regulations.

iv. Ensure the individual product MSDSs are tracked and replaced as necessary. Each controlled product must be updated as required in the regulations based on the expiry date of the MSDS product information sheets.

v. Monitor the implementation of this procedure.

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4. DEFINITIONS

TDG: Transportation of Dangerous Goods: A set of regulations governing the transportation of materials, chemicals, and substances that are recognised as being hazardous to people, animals or the environment.

WHMIS: Workplace Hazardous Materials Information System: A standardized system of identifying and providing information for recognized hazardous materials.

MSDS: Material Safety Data Sheet: A standard form outlining the characteristics and related safety and hazard information for a particular hazardous substance.

REFERENCES

CONSOLIDATION OF WORK SITE HAZARDOUS MATERIALS INFORMATION SYSTEM REGULATIONS. R.R.N.W.T. 1990, C.S-2

a) Federal Transportation of Dangerous Goods Act and Regulations – 1991 – SOR/85-77.
b) National Research Council of Canada – 1995 – National Fire Code of Canada.

4.5 Safe work procedures updates and annual review

SAFE WORK PROCEDURE

DEVELOPMENT/ANNUAL REVIEW

Safe Job Procedures	Development			By Whom	Review			By Whom
	Date				Date			
	M	D	Y		M	D	Y	
Aerial Work Platforms								
Backfilling								
Batteries/Charging and Servicing								
Circular Power Saws								
Confined Space Entry								
Cut-Off Saws								
Driving (General and Winter)								
Electrical Safety Work Procedures								
Electrical System Lockout								
Equipment Activities Near Overhead Powerlines								
Excavating and Trenching								
Fall Protection								
Hand and Portable Power Tools (General)								
Hazard Control Signage								
Hydrovac Operations								
Manual Lifting								
Office Safety								
Open Holes								
Opening and Guarding Manholes								
Operation of air tools								
Operation of Manlifts and Scissor Lifts								
Pipe Bending								
Portable Arc Welders								
Portable Step Ladders								
Pre-Trip Inspections								
Restricted Work Areas								
Refueling Equipment								
Rigging								
Tiger Torches								
Towing Portable Equipment With Light								

4.6 Element 4 Revision Table

Date	Revisions/Additions/Deletions	Page #	Initials

Element 5: Company Rules

Table of Contents

5.0 Company Rules

5.1 Objective

To ensure that all employees, subcontractors, venders and visitors understand that each individual is accountable for their actions.

5.2 Rules and regulations introduction

We all have rules to follow and regulations that set guidelines and parameters in most everything that we do. A safety program is no exception. When used effectively they will contribute to the overall success of the safety program.

5.3 Definitions:

Rules: A directive that governs and controls conduct or action and is instituted by an organization.

Regulation: An ordinance, a law or a directive set by an outside organization or agency, such as government, for control of people and their environment.

The rules in this program are, for the most part, standard for most companies and their workplaces. These rules are basic “YOU SHALL or YOU SHALL NOT” statements. There is no room for discretion or argument.

Rules must be enforceable and enforced. Action will be taken every time a rule is broken.

Disregard for rules or regulations, will not be tolerated by Harrison.

Health and Safety Enforcement Statement:

Harrison is committed to the health and safety welfare of its workers. All workers must adhere to the company rules, safe work practices, and safe job procedures. Infractions will be managed in a positive and direct manner.

5.4 Disciplinary guidelines for safety infractions

FIRST INFRACTION	Verbal warning. Note is made in the employee file.
SECOND INFRACTION	Written warning. Formal disciplinary form is signed by the supervisor and employee.

THIRD INFRACTION — One day suspension of work without pay or possible dismissal.

Depending on the seriousness of the infraction, the worker may be sent home without pay or dismissed without prior notice.

In all cases the offender should be made aware of why the disciplinary action was taken and the potential outcome that may have resulted from the non-compliant act.

5.5 Examples of safety violations that will result in immediate dismissal

1. Failure to rectify or notify supervisor of a hazardous situation.
2. Failure to replace handrails, barriers, covers or protective devices including safety sign.
3. Failure to comply with recognized industry safe work practices.
4. Engaging in dangerous horseplay.
5. Crossing a no entry sign or barrier without permission.
6. Passing under a suspended load.
7. Possession or being under the influence of any illegal substance at work.
8. Possessing firearms or other weapons.
9. Failure to use personal protective equipment when required.
10. Fighting.
11. Theft.
12. Willful damage to property or equipment.
13. Insubordination.

5.6 General rules

1. Incidents, (injuries or near misses), regardless of their nature, shall be promptly reported to the immediate supervisor.

2. All personnel shall wear CSA approved Personal Protective Equipment as required.

3. Clothing shall be appropriate to duties being performed. Long pants, a minimum 6-inch sleeve shirt and C.S.A. (green tab) approved sturdy foot wear are the minimum requirements. No tank tops or running shoes.
4. Running is not permitted anywhere, except in the case of extreme emergency.

5. Safety glasses, goggles, or face shields shall be worn when material breaking, metal chipping, welding, grinding and for any other operations where eye and face protection is required. All must be CSA approved.

6. Hand tools shall not be used for any purpose other than that intended.

7. Only authorized personnel shall operate power tools, with guards furnished by the manufacturer “in place”.

8. All power tools shall have trigger locks removed.

9. Possession or use, on the job, of intoxicating beverages or unauthorized drugs is strictly forbidden and constitutes grounds for dismissal.

10. Riding on equipment is prohibited. No person shall ride any hook, hoist or other material handling equipment, which is used strictly for handling material and not specifically designed to carry riders.

11. All ladders must be tied off.

12. All fall arrest equipment must be worn and hooked up when required.

13. Do not jump off anything.

14. Horseplay, fighting, gambling, and possession of firearms are strictly forbidden on the job and constitute grounds for dismissal.

15. Any employees using and/or operating company vehicles without proper licensing/certification will be dismissed immediately.

5.7 Employee good work ethics

1. To be ready for work at the scheduled start time, mentally and physically.

2. To work to the best of your ability, towards product quality, customer satisfaction and the company’s objectives.

3. To work together with your fellow employees to create an efficient, safe, quality oriented work environment.

4. To give proper notice to your supervisor for time required off.

5. An immediate phone call to your supervisor is the minimum required notice for sickness or emergencies.

6. To treat all company property with respect, and safeguard all company property from misuse or abuse.

These rules will be prominently posted in areas where they are noticeable. (Shop, work trailer, lunchroom.)

5.8 Safety discipline form

SAFETY DISCIPLINE NOTICE

Date: _____ Workplace _____

Supervisor Name: _____

Employee Name: _____

Consider this as the written notice concerning the following

Safety infraction: _____

_____

DISCIPLINE NOTICE: As described during Employee Orientation

The following is a guideline of disciplinary action for safety infractions.

- **On first offense, worker will be given a verbal warning.**
- **On second offense, worker will be given a written warning.**
- **On third offense, worker's employment may be terminated.**
- **If safety violation is of serious nature, individual may be sent home without pay or terminated without prior warning.**

The above infraction has been explained to me and I am accountable for my actions.

Employees Signature: _____

Issuer's Signature: _____

Instructions for completing safety discipline notice:

Ensure all required information is readable.

Check appropriate reason and briefly describe violation.

Explain to employee why this warning is being issued and ask the employee to sign where indicated.

Person issuing notice and person receiving notification must both sign.

Your manager should be consulted prior to issuing this notice, if you have questions regarding this company policy or procedure.

One copy in booklet one copy employee one copy office

5.9 Element 5 revision table

Date	Revisions/Additions/Deletions	Page #	Initials

Harrison Industrial Contracting
Occupational Health and Safety Program

Element 6: Personal Protective Equipment

Table of Contents

6.0 Personal Protective Equipment (PPE) Policy

It is the policy of Harrison Industrial Contracting (Harrison) that all workers will use only CSA approved Personal Protective Equipment (PPE) when and where required.

All employees will be made aware of the proper way to use their PPE and they are expected to keep them in good condition and maintained according to the manufacturer's instructions.

Employees having PPE in substandard condition must turn in for replacement.

The purchasing of PPE will require input from the workers to ensure that the correct item for the job is acquired

As a minimum requirement all employees will wear CSA approved hard hats, side shielded safety glasses, class A steel-toed boots, long pants, a six-inch sleeved shirt, high vis vest, and FR coveralls where required.

Specific or special P.P.E. will be supplied by the company as required.

*All employees should be aware and familiarize themselves with the WorkSafeBC Safety Regulations for their industry. The safety information in this policy shall not take precedence over (WSBC). Regulations.

Signature: _____ **Date: March 25, 2016**

Name: _____

Position: General Manager

6.1 Objective

To ensure that all employees, subcontractors, suppliers, and visitors of Harrison are aware of our policy towards wearing of Personal Protective Equipment and to minimize the outcome of an incident should one occur.

6.2 Introduction

Personal Protective Equipment, or PPE as it is commonly called, does not prevent incidents. However, if an incident should occur, your PPE may be the only thing that will prevent an injury or save your life. For this reason, protective equipment must be in good repair and used properly at all times. Before any work begins, supervisors must ensure that the proper protective equipment is available and being worn by the workers.

All employees, subcontractors, suppliers and visitors of Harrison will be made aware of the type of PPE required for their task where PPE is to be worn and the consequences of non-conformance during their orientation.

The minimum standard on job sites is CSA approved hard hat, safety glasses with side shields, above the ankle footwear, long pants and minimum six-inch sleeved shirt.

Some work site may require high vis vests and FR high vis coveralls.

6.3 Determination of PPE used

1. Past experiences and knowledge of the workforce.
2. Project/client request.
3. Job-hazard assessments.
4. Material Safety Data Sheets.
5. Regulatory requirements.

6.4 Specialized PPE

All specialized PPE will be selected according to task requirements and will be selected with the advice of knowledgeable persons and manufacturer's recommendations.

Training, care and maintenance will be provided by the supplier or qualified outside resources, if required, for:

1. Fall Protection Equipment
2. Respiratory Equipment
3. Monitoring Equipment

Specialized PPE must be**:**

1. Inspected by trained personnel.
2. Cared for according to manufacturer's instructions.

3. Fitted to the individual's needs.

6.5 Eye and face protection

This PPE is designed to protect the worker from such hazards as:

1. Flying objects and particles
2. Molten metals
3. Splashing liquids
4. Ultraviolet, infrared and visible radiation (welding)

When using a wheeled power tool (grinders, zip disc etc.) a face shield with safety glasses **must be used.**

When an abrasive wheel is used (benched mounted grinding wheels or brushes) manufacturer guards are to be in place. Also, the rest for using the tool will be kept at the distance recommended by the manufacturer from the rotating wheel. Viewing shields shall be in place and safety glasses will be worn.

Basic eye protection should be worn with face shields. Face shields alone are often not enough to fully protect the eyes from work hazards. When eye and face protection are required, advice from the Workplace Health and Safety, Material Safety Data Sheet (MSDS), or your supplier will help you in your selection.

DO:

1. Ensure your eye protection fits properly. (Close to the face.)
2. Clean safety glasses daily, more often if needed.
3. Store safety glasses in a safe, clean, dry place when not in use.
4. Replace pitted, scratched, bent and poorly fitted PPE. (Damaged face/eye protection interferes with vision and will not provide the protection it was designed to deliver.)

DON'T:

1. Modify eye/face protection.
2. Use eye/face protection which does not have a CSA certification. (CSA stamp for safety glasses is usually on the frame inside the temple near the hinge of the glasses.)

Mono goggles must be worn when:

1. Working around chemicals.
2. Exposed to excessive dust.
3. Chipping or using a bush hammer.

Face shields must be worn when:

1. Working around corrosive chemicals.
2. Using a power wheeled tool.
3. Using a cut-off saw.
4. Any other time there is a hazard to the face.

6.6 Hearing protection

Hearing protection is designed to reduce the level of sound energy reaching the inner ear.

The “rule of thumb” for hearing protection is, use hearing protection when you cannot carry on a conversation at normal volume of voice when you are three feet apart.

Remember, this is only a rule of thumb. Any sound over 80 dB requires hearing protection. Hearing loss can be very gradual, usually happening over a number of years.

The most common type of hearing protection in the construction industry is earplugs and earmuffs. If you choose to use the other types of hearing protection, ask your safety supplier.

6.7 Hand PPE (gloves and mitts)

PPE for the hands include finger guards, thimbles and cots, hand pads, mitts, gloves and barrier creams. Choose hand PPE that will protect against the job hazard. Gloves should fit well and be comfortable. This type of PPE has to protect against chemicals, scrapes, abrasions, heat and cold, punctures and electrical shocks.

DO:

1. Inspect hand PPE for defects before use.
2. Wash all chemicals and fluids off gloves before removing them.
3. Ensure that gloves fit properly.
4. Use the proper PPE for the job.
5. Follow manufacturer’s instructions on the care and use of the hand PPE you are using.
6. Ensure exposed skin is covered. (No gap between the sleeve and hand PPE.)

DON’T:

1. Wear loose fitting gloves when working with moving machinery. (Gloves can get tangled or caught.)
2. Wear PPE with metal parts near electrical equipment.
3. Use gloves or hand protection that is worn out or defective.

PROTECTIVE EQUIPMENT DOES NOT PREVENT INCIDENTS – IT CAN ONLY REDUCE THE POSSIBILITY OF INJURY IF AND WHEN IT IS WORN PROPERLY.

6.8 Head protection

Safety headgear is designed to protect the head from impact from falling objects, bumps, splashes from chemicals or harmful substances, and contact with energized objects and equipment.

In construction, the recommended type of protective headgear is the Class B hard hat which has the required "dielectric strength." There are many designs but they all must meet the CSA requirements for Class B industrial head protection.

Most head protection is made up of two parts:

1. The shell - Light and rigid to deflect blows.
2. The suspension - To absorb and distribute the energy of the blow.

Both parts of the headgear must be compatible and maintained according to the manufacturer's instructions. If attachments are used with headgear, they must be designed specifically for use with the specific head-wear used. Bump caps are not considered a construction hard hat. They can only be used when the only hazard is where a worker might strike his/her head against a stationary object. (Work where there is no potential of falling objects from above.)

Inspection and Maintenance:
Proper care is required for headgear to perform efficiently. The service life is affected by many factors including temperature, chemicals, sunlight and ultraviolet radiation (welding). The usual maintenance for head-wear is simply washing with a mild detergent and rinsing thoroughly. This equipment must be inspected prior to use.

DO:

1. Replace headgear that is pitted, holed, cracked or brittle.
2. Replace headgear that has been subjected to a blow even though damage cannot be seen.
3. Remove from service any headgear if its serviceability is in doubt.
4. Replace headgear and components according to manufacturer's instructions.

DON'T:

1. Drill, remove peaks, alter the shell or suspension in any way.
2. Use solvents or paints on the shells. (Makes shells "break down.")
3. Put chin straps over the brims of Class B headgear.
4. Use any liner that contains metal or conductive material.
5. Carry anything in the hard hat while wearing the hardhat.

6.9 Foot Protection

Safety footwear is designed to protect against foot hazards in the workplace. Safety footwear protects against compression, puncture injuries and impact.

Safety footwear is divided into three grades which are indicated by colored tags and symbols.

The tag color tells the amount of resistance the toe will supply to different weights dropped from different heights.

The symbol indicates the strength of the sole. For example, a triangle means puncture-resistant sole able to withstand 135 kg (300 lbs) of pressure without being punctured by a 5 cm (2 inch) nail.

In construction, it is recommended that only the green triangle grade of footwear, which also gives ankle support, be used.

Your choice of protective footwear should always over protect, not under protect.

DO:

1. Choose footwear according to job hazard and CSA Standards. (When handling pipe or other heavy material metatarsal protection is required.)
2. Lace up boots and tie laces securely. Boots don't protect if they are a tripping hazard or fall off.
3. Use a protective boot dressing to help the boot last longer and provide greater resistance to water. (Wet boots conduct current.)
4. Choose a high cut boot to provide ankle support. (Fewer injuries.)

DON'T:

1. Wear defective safety footwear. (ex. exposed steel toe caps.)
2. Under protect your feet or modify safety footwear.

6.10 Legislation

Employers must:

1. Identify which PPE is required and when the specific PPE is to be worn, based on a Job Hazard Assessment.
2. Make all appropriate PPE available when required.
3. Ensure that PPE is maintained and in good conation for its use.
4. Ensure that the PPE meets all OH&S and regulatory requirements.
5. Ensure that employees are trained in the correct use and maintenance of all PPE.
6. Ensure that all PPE is used by workers when required.

Employees must:

1. Use all PPE required for the job they are doing.
2. Inspect all PPE prior to use for any defects.
3. Report to defects to supervisor and replace item.

The OH&S Code will be referenced when determining the requirements of specific PPE in order to meet the minimum standards of legislation.

All workers will receive specific training for specialized PPE when required.

6.11 Fall protection awareness introduction

The purpose of this standard is to ensure that employees are afforded protection in the event of a fall regardless of where, or on what job, they are working. Where there is potential of an employee falling, a job hazard assessment, including a rescue plan, will be completed.

1. Definitions

Qualified person
A person who has completed fall protection training and testing and is capable of identifying hazards or dangerous conditions in the personal fall system or any component thereof, as well as in their application and use with related equipment.

Anchorage point
A secure point of attachment for lifelines, lanyards or deceleration devices that is independent of the means of supporting or suspending the person.

100% tie-off
A person must be properly tied-off at all times while exposed to a fall hazard. The use of two lanyards is required if a person must move or relocate a tie-off point while exposed to a fall hazard to ensure a positive tie-off connection at all times during the move.

2. Requirements

All employees who are required to use fall protection shall receive approved training regarding the care and use of the fall protection devices.

Personnel who are required to work at 2.5 meters or more above a working level, and are not working on a standard railed platform, must ensure that they are equipped with, and properly use, adequate fall protection.

Wherever practical, a safe working area must be provided by means of approved handrails, work platforms or scaffolds. In all other cases, fall protection (100% tie-off)

must be used. This includes situations in which work is being carried out from an elevated work platform or man lift.
Where overhead work is being conducted, there must be toolboxes and tie-offs in place to prevent tools and equipment from falling and barricades must be erected in the work area to protect others below from falling objects.

Full body safety harnesses are required for use together with lanyards that provide shock-absorbing protection in the event of a fall. All fall protection equipment must meet or exceed CSA and ANSI Z359.1 requirements.

Before each use, the harness and lanyard must be inspected by the user for cuts, breaks, loose rivets, torn threads, excessive wear, etc. Fall protection equipment that has shown evidence of excessive wear or mechanical malfunction or has been exposed to a fall must be removed from service. At no time shall a harness or lanyard that appears unsafe be used. All harnesses and lanyards will be individually assigned to an employee and identified using a numerical system. An Inspection Logbook will be developed and implemented for each harness and lanyard.

A properly sized and approved full body harness must be worn tight enough to prevent the wearer from slipping out. The lanyard should be adjusted so as to restrict any fall to no more than 1.22 meters vertical drop and must ensure that in the event of a fall the worker will not contact any lower level.

Lanyards must be attached to a secure anchorage point. There must be a system for ensuring that anchorage points are tested and approved by a qualified person to ensure that they are secure and can take the required load. Anchorage points should, where practical, be above the head of the worker, and in any event not below waist level. Handrails that are not designed to anchorage point specifications may not be used as an attachment point.

All scaffolds must be installed by a qualified person. All personnel engaged in the erection of scaffolds shall wear approved fall protection equipment (safety harness and lanyards) when working 1.5 meters or more above a working level. Fall protection will be used until work platforms with proper handrails are installed. Safe access (i.e. ladders) to upper levels will be installed as part of the assembly process.

A person may climb or descend a ladder without fall protection provided that they are able to use both hands and legs, they face the ladder, and use one step at a time. Straight ladders must be located so as to prevent slipping and must be lashed or secured (see Ladders standard). Employees on ladders working 1.5 meters or more above ground level must wear appropriate fall protection equipment and must be tied-off prior to starting their task. When ascending or descending a ladder, tools must not be carried by hand.

Suspended work platforms and man baskets shall be used only when all other means of access are determined to be less effective. The use of man baskets is permitted only in unique work situations where their use results in the least hazard.
Personnel working from a suspended platform or man basket must wear approved fall protection equipment and must be tied off to a lifeline attached separately from the work platform, hoisting cables or attachment.

Personnel working from platforms or buckets on any vehicle-mounted man lift, boom, JLG, or scissor lift must wear an approved safety harness with the lanyard attached to the platform or platform/boom anchorage point.

3. Training

A qualified person must conduct training for all persons exposed to a fall hazard. The training must include hazard recognition, inspection and use of the personal fall arrest system and other protection to be used.

Retraining is required whenever there is a change in the fall protection system or equipment.

Each employee is responsible for using adequate fall protection equipment as described in this standard.

4. Harnesses and shock absorbent lanyards

Full body harnesses with a shock absorbing lanyard are used in construction to provide workers working at heights above ground level with freedom of movement and protection from falls. These devices will arrest a fall and absorb some of the shock of the fall. The systems are usually worn around the body and attached to a fall arresting device or rope grab.

If the fall to be arrested is short (less than 10 feet or 3.0 meters the length of the lanyard deployed must be considered.

A lifeline should never be used as a service line. The only time a lifeline becomes a load bearing line is in the event of a fall. At all times it should be just slack enough to permit free movement on the service lines.

Full body harness systems used with a shock absorber are the minimum standard

It is very important to get quality advice in the selection, purchase and maintenance of your fall arresting equipment.

DO:

a) Obtain expert advice before purchasing a fall arresting device.
b) Properly train and practice with the system you decide to use.

c) Use webbing type harnesses instead of leather harnesses.
d) Inspect carefully before each use. (Inspection to be performed by a trained worker.)
e) Have the harness fitted snugly to the worker using the system.
f) Ensure that the anchor points are secure and able to support the load in the event of a fall.
g) Follow the manufacturer's instructions on care and use.
h) Use only the proper safety related fastenings with the system.
i) Use a full body harness with shock absorber whenever possible.
j) Inspect all fall protection equipment prior to each use.

DON'T:

a) Modify, change or put additional holes in the harness or hardware.
b) Use the system for any other than its intended use.
c) Use the lifeline for a service line.

5. Fall Restraint and Fall Arrest are similar but not the same

Fall Restraint is using the knowledge and training to protect yourself and prevent the ability of a fall from happening.

Fall Arrest means you are working in such a way that you may fall and need that fall to be arrested. (Stop from hitting the ground in a manner that will have the least impact on your body.)

6. What are the hazards?

An important part of this program is the identification of all potential fall hazards. As a general guideline, there is a hazard any time that work is to be performed:

a) At a height of 2.5 m (8 ft.) or more.

b) Within 3 m (10 ft.) of an open hole or edge.

c) Where there is risk of falling more than1.2 m (4 ft) and the work area below is used as a travel way by people or equipment.

d) Where there is risk of falling into operating machinery, or into/onto a hazardous substance or object.

7. Inspections

Records of periodic inspections must be maintained and readily available. Inspect for:

a) On your harness, make sure that straps, buckles, and other hardware are intact and undamaged.

b) The lanyard should be securely fastened to the D-ring.
c) Inspect the lanyard for fraying, kinking, and loose or damaged hardware.
d) Inspect shock-absorbing lanyards regularly. Look for torn stitching on tear-away types. Check other types for damage such as cracks and loose parts.
e) Inspect fibre rope lifelines for fraying, burns, kinking, cuts and signs of wear and tear.
f) Check self-retracting devices for smooth operation. Pull out the line and jerk it suddenly. Braking action should be immediate and tight.

8. Care of Equipment

a) Follow manufacturer instructions for care, maintenance and replacement of all fall protection components.
b) The worker must inspect all components of a fall restraint /fall arrest systems before use.
c) Equipment must be stored in a manner and location which prevents damage from environmental factors such as heat, light, moisture, oil, chemicals and their vapours or other degrading elements.
d) Keep all components clean, as dust, grease, etc., may shorten the service life. Follow manufacturer recommendations for cleaning.

6.12 Element 6 revision table

Date	Revisions/Additions/Deletions	Page #	Initials

Element 7: Preventative Maintenance

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7.0 Preventative Maintenance

Objective:
To ensure standards for the proper care of equipment and facilities through appropriate maintenance and preventative maintenance programs.

7.1 Policy Statement

In order to provide a safe environment for employees, subcontractors, suppliers, and visitors, a preventative maintenance program will be implemented to promote the maintenance of equipment in a state of good repair and condition.

Routine inspections promote safety throughout our workplaces and aid in keeping equipment in good working order and operating in accordance with manufacturer's guidelines.

Harrison Industrial Contracting (Harrison) ensures all tools and equipment are properly maintained to reduce risk of injury and/or property damage.

We require all workers, supervisors, and managers to follow our maintenance program schedules, which outline key dates and processes for maintaining and upgrading tools and equipment. Any safety concerns regarding equipment are reported as soon as possible. As per OHS regulation 4.3(3).

Supervisors ensure all preventative maintenance is carried out and recorded by qualified personnel based on maintenance schedules.

All employees are responsible on a daily basis for checking their tools, equipment and vehicles they use. Any substandard conditions that have the potential for causing an incident are to be immediately tagged out and removed from service.

All equipment will meet or exceed Provincial standards, OH&S regulations and/or CSA or Industry Standards.

Reference to section 12 of the BC OHS regulations

Signature: _____ **Date: March 25, 2016**

Name: _____

Position: General Manager

7.2 Introduction

As we are under new management this preventative maintenance program is in its infancy and will address the regulatory requirements to the best of our ability. This program will be revised as required.

7.3 Objective

To have the equipment, vehicles, and tools maintained and inspected to ensure they meet design descriptions and specifications, and all health and safety regulations.

To ensure repair services provided by a third party are completed by qualified persons to ensure the safe operation, and adherence to health, safety, environment and quality performance objectives.

7.4 Definitions

Preventative maintenance (PM)
The care and servicing by personnel for the purpose of maintaining equipment and facilities in a satisfactory operating condition by providing for systematic inspection, detection, and correction of potential failures either before they occur or before they develop into major defects.

Maintenance
Includes tests, measurements, adjustments, and parts replacement that is performed specifically to prevent faults from occurring. All work will be completed by a competent person.

Equipment
For the purpose of this entry, equipment shall refer to hand/power tools, vehicles (cars/trucks up to and including 1 ton), shop and heavy equipment.

7.5 Scheduling, pre-checks, and maintenance

Defective hand/power tools are repaired in house, returned to supplier for warranty, or disposed of.

Shop equipment will have regular PM checks daily when used. Oil changes, greasing, belts, wheels, and adjustments will be completed by shop personnel as per manufacturer's recommendations. Any repairs will be in house or third party if required.

Light duty rental equipment will be inspected daily and logged. All repairs will be completed by the supplier.

Light duty vehicles will be checked daily for any visible substandard condition and logged by the operator. Any repairs will be completed in house or third party if required.

Heavy equipment is inspected prior to leaving for the worksite. Daily checks and required greasing/cleaning are completed by operator and logged.

Manufacturer scheduled maintenance is completed on site if required or in house if equipment is available. All maintenance is recorded.

1. An annual inventory of all equipment is conducted.
2. Based on the inventory, a calendar is developed that guides the PM person in completing timely servicing and maintenance of all equipment.
3. The calendar lists the PM due on a daily, weekly, monthly, and annual basis
4. Assessed equipment includes items owned by the facility, supplied by a vendor, leased, or rented.
5. The PM is completed in accordance with the defined procedure.
6. When manufacturer's guidelines are available, PM is completed in accordance with the manufacturer's guidelines.

7.6 Record keeping

A separate file or tabbed section of a notebook is designated for each piece of equipment requiring PM. Cover material should include the maintenance procedure for each piece of equipment, as well as any instructional manuals. The required parts and material list should also be noted.

The file or tabbed section includes an equipment-specific log to document maintenance completion.

The record should note whether routine PM was provided and whether any problems in servicing were identified. If problems are identified, the corrective action taken is recorded.

In the event that maintenance cannot be completed, the reason should be noted along with the action plan for completion.

Records are retained for five years, unless a different requirement has been set forth by provincial/federal regulations.

7.7 Inspections

A schedule is developed to outline all inspections that are to be completed on a regular basis. Inspections verify that all equipment and furnishings are in working order and free from safety hazards.

At a minimum, inspection checklists are developed for:

1. Office and shops. Monthly
2. Work site trailers. Before each project
3. Laydown areas. Monthly

4. Company vehicles. Daily
5. Heavy equipment. Daily
6. Alarms. Quarterly

Alarms are calendared on the routine inspection checklists. Alarms are inspected to verify that they are in working order and are diarized for inspection in accordance with manufacturer's specifications.

Where alarm batteries are utilized, a routine schedule for verifying that batteries are operational is maintained, along with a regular schedule for changing batteries.

Replacement and/or repair of all office furnishings and equipment is completed as soon as possible.

7.8 Work orders and service requests

As each employee completes their daily checklist for their equipment to be used, the substandard condition or item noted to be repaired will be brought to the attention of their foreman. The foreman will arrange for maintenance.

The system should include documentation of:

1. The problem
2. Date the problem was identified
3. Who was notified
4. Corrective action (servicing, repair, or replacement)
5. Completion date
6. By whom

7.9 Element 7 revision table

Date	Revisions/Additions/Deletions	Page #	Initials

Element 8: Education, Training, Competency and Awareness

Table of Contents

8.0 Education, Training, Competency and Awareness

Objective
To ensure that there are processes established to provide the necessary training, competency and awareness to effectively manage Health and Safety risks and prevent injury or loss.

8.1 Policy Statement

This company will provide, and encourage all employees to participate in all safety and related training that is necessary to minimize incidents to people, property and processes of this company.
When related safety courses are made available to employees, those employees will be expected to complete said courses to the best of their ability.
This will include, but is not limited to:

1. Safety orientation for new hires
2. Job specific training
3. Safety training for supervisors and management
4. Task and trade-specific training and certification
5. Specialized safety and related training
6. Training for equipment certification
7. Safety meeting

Note: reference to OHS regulations 3.22 and 3.23

Signature: _____ **Date: March 25, 2016**

Name: _____

Position: General Manager

8.2 Introduction

There must be a process for the delivery and maintenance of awareness and/or competence based training associated with the Health and Safety management program and must:

1. Identify Health and Safety training requirements for all workers.
2. Ensure the delivery of Health and Safety training is current.
3. Evaluate the effectiveness of Health and Safety training delivered. (Worker understanding through testing or verbal communications.)
4. Retain all records of Health and Safety training.

All new employees, subcontractors, suppliers, and visitors must undertake relevant orientation training. As a minimum, orientation training must include reference to the significant Health and Safety risks identified for their area of work. Specific competency profiles and selection criteria (fitness for work) must be developed for all personnel performing tasks and work activities which contain significant Health and Safety risks.

Note: as per OHS Regulations 3.22 and 3.23

All roles requiring technical certification, registration or licensing are documented. The requisite qualifications and competencies must be maintained for all employees and subcontractors performing such roles and their associated work activities.

Any equipment owned/leased by Harrison will have a competent operator having the ability to operate that equipment in a safe and responsible manner.

As a minimum, the following competency-based training must be provided:

1. Risk assessment (including evaluation methodologies as appropriate to the role).
2. Operational controls including procedures and/or work instruction.
3. Work place and environmental monitoring.
4. Incident management including investigation methods as appropriate to the role.
5. Health and Safety interactions from management, supervisors, and safety personal.

As a minimum, the following awareness training must be provided:

1. General orientation of Harrison's approach to managing Health and Safety.
2. Awareness of the Harrison Health and Safety standards.
3. Understanding of Health and Safety management system processes.
4. Significant Health and Safety risks and activities.
5. Accountabilities of specific Health and Safety roles and their responsibilities.
6. Consequences of substandard acts and conditions from standards set by Harrison.
7. Emergency response procedures.

Records of all orientations, awareness and competence based training must be retained for:

1. Training
2. Education
3. Skills
4. Experience

8.3 Orientation program

All employees including management will be introduced to Harrison's company orientation process as follows:

1. Safety representative will facilitate the orientation.
2. Receive from employee all relevant tickets, certificates, licences.
3. Ensure all documents are understood and signed off.
4. File orientation package for due diligence.

8.4 Scheduled health and safety meetings

1. Daily tool box
2. Weekly safety meetings
3. Monthly management safety meetings

Safety meeting forms will be completed with names and signatures of those in attendance.

8.5 Element 8 revision table

Date	Revisions/Additions/Deletions	Page #	Initials

Element 9: Inspections

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9.0 Inspections

9.1 Policy Statement

The intention of this policy is be proactive in identifying potential substandard acts or conditions that may be present at our worksites, thus reducing incidents.

There will be two types of work place inspections, formal and informal. Managers, foremen and employees will participate in these inspections.

Worksite inspections will be completed at start of job then on a weekly basis. General foremen, supervisors and workforce employees will participate in these inspections. These will be reviewed by the safety designate and the general manager.

Formal worksite inspections of shop, common laydown areas and offices will be conducted monthly by the general manager, supervisor and safety designate.

Inspections will include offices, workplaces, shops and laydown areas, equipment and tools. Safe work practices and methods will be a part of these inspections.

Informal inspections of our work sites will be done prior to commencing work and ongoing throughout the job by the crew and supervisor. Any substandard condition will be documented and corrected.

All inspections will be documented.

Signature: _____ **Date: March 25, 2016**

Name: _____

Position: General Manager

9.2 Objective

To ensure that all areas of work, storage and equipment are in a condition that will not present a substandard condition that may lead to an incident.

9.3 Introduction

Inspections, when completed properly, are a very important tool in assessing potential risk and losses before they happen.

Risk and potential losses are in the daily activities of any workplace. Every day use of tools and equipment increases their failure rate. Inspections are needed to detect these potential failures in a timely manner.

Workplace inspections help prevent injuries and illnesses. Through critical examination of the workplace, inspections identify and record hazards for corrective action. Joint occupational health and safety committees can help plan, conduct, report and monitor inspections. Regular workplace inspections are an important part of the overall occupational health and safety program.

9.4 Purpose of inspections

As an essential part of a health and safety program, workplaces should be inspected. Inspections are important as they allow you to:

1. Listen to the concerns of workers and supervisors.
2. Gain further understanding of jobs and tasks.
3. Identify existing and potential hazards.
4. Determine underlying causes of hazards.
5. Monitor hazard controls. (Personal protective equipment, engineering controls, policies, procedures.)
6. Recommend corrective action.
7. Gain feedback to assess if the equipment is right for the job, the maintenance program is working, and it the training is adequate.

9.5 What will be inspected?

1. Hand/power tools
2. Electrical cords
3. Equipment light/heavy
4. Vehicles
5. Areas of work
6. Ladders
7. Fall protection equipment
8. Meters and gauges
9. Worksites

Any item found to be defective or not working properly shall be tagged out for service or discarded. Any substandard acts or conditions will be corrected immediately or tagged and corrected ASAP.

9.6 Due diligence

Inspections are a way of contributing towards due diligence in the event of serious injury. Inspections will provide information in the following ways:

1. Identify potential problems if left unchecked.
2. Identify substandard condition of equipment or tools.
3. Identify positive or negative care of equipment or tools by employees.
4. Identify effects from change in production or work practices.
5. Demonstrate leadership commitment.

9.7 Who should do inspections?

Supervisors and foremen. They are knowledgeable and familiar with the type of work and process that is being applied to that particular phase of work. It is advantageous to have a worker along as they may see items that make them understand the need for inspections and provide good positive input towards corrective actions.

9.8 Basic planned inspection

1. Identify those involved in the inspection.
2. Ensure that forms are specific for the area of inspection.
3. Review reports of previous inspections.
4. During inspections look under, over, behind, inside etc.
5. Take time to observe the activities and processes applied to each task.
6. Always take immediate positive corrective action when there is imminent danger.
7. Review reports at meetings commenting on positive as well as negative findings.
8. All reports should be signed by management.

9.9 Inspection report form

An inspection report form should include:

1. Report completed by, date of inspection
2. Area of inspection
3. Identification of substandard act or condition
4. Priority of act or condition
5. Recommended action to be taken
6. When and by whom?
7. Positive, good items noted
8. Management sign off

9.10 Element 9 Revision Table

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Element 10: Incident Reporting, Investigating, and Corrective Action

Table of Contents

10.0 Incident Reporting, Investigation, and Corrective Action

10.1 Policy Statement

PURPOSE

To investigate all incidents and near misses in order to determine causes.

To evaluate these causes in order to determine positive corrective actions that will either eliminate or significantly reduce reoccurrence.

POLICY

We will investigate fully, (cause analysis) the following types of incidents:

1. Incidents that result in injuries that require medical aid.
2. Incidents that cause property damage or interrupt operations with potential loss.
3. Incidents that have the potential to result in (1) or (2). (Near misses.)
4. Occupational illness.

RESPONSIBILITES

Employees shall report all incidents, regardless of nature or how insignificant they may seem, as soon as possible to their supervisor and assist in the investigation when requested.

Supervisors shall conduct an initial investigation with persons involved and using the risk evaluation chart to determine if further investigating is required. Submit report to manager.

Manager will review report and, if necessary, have a post investigation review.

The direct and indirect causes shall be determined by a joint effort of the employee, supervisor and manager.

The positive corrective actions shall be determined, reviewed with the workforce, and ensured that they are implemented.

Signature: _____ **Date: March 25, 2016**

Name: _____

Position: General Manager

Reference OHSregulation3.3(f) and worker's compensation act part 3, division 10, section172 and 173

10.2 Objective

To ensure all incidents and lessons learned are recorded with corrective actions identified, implemented, and communicated to all employees.

The procedure for the management of all incidents will include reference to the appropriate methodologies for:

1. Recording.
2. Investigating.
3. Analysis of the impact(s) and the potential risk of future incident.
4. Corrective action and follow up.
5. Communicating to relevant people.
6. Managing positive corrective actions to prevent recurrence.

The procedure must follow the processes detailed by regulatory and company incident reporting requirements and be communicated through awareness training to all personnel.

10.3 When should incidents be reported?

It is extremely important to report incidents right away, no matter how minor it may be. Even if the injury is minor or if there is no initial injury and you feel it is not worth reporting, the incident must be documented. The reason for this is that minor injuries can worsen over time and become more of an issue, or an ergonomic injury can become apparent several days or months after the initial cause. If this happens and there was no report of the incident, it may be difficult to argue that it happened at work. Furthermore, reporting an incident right away will allow for corrective action to be taken sooner, possibly preventing others from becoming injured, and ensure the details are accurate as the event will still be fresh in your mind.

10.4 What is an incident?

There are two types of events that fall under the definition of an incident for the purposes of reporting guidelines:

1. Injury. All workforce injuries must be reported. Minor injuries are equally as important to report as major injuries are. Both of the following cases and many others like them, are required to be reported.

   Examples:
   a) An employee who works at a computer station on a daily basis may suffer from an ergonomic repetitive strain injury.
   b) An electrician may suffer from a small laceration to the finger.

2. Near Miss. A near miss is an unplanned event that did not result in injury, illness or damage, but had the potential to do so. Only a fortunate break in the chain of events prevented an injury, damage or fatality. The following is an example of near miss incidents that would require reporting.

   Examples:
   a) An employee drops their work tool from an elevated workstation, but no contact was made with other workers.
   b) An employee was nearly hit by equipment being moved by a crane.

10.5 Impact from incidents

All incidents will have the actual and potential outcome evaluated for each impact type.

An incident can have multiple impacts. Each impact must be evaluated independently, with the most significant classification forming the main rating of the incident. Near miss events must be reported as an incident.

The potential consequence must be categorized as either:

1. Minor
2. Medium
3. Major
4. Catastrophic

10.6 Who will investigate incidents?

Incident investigations will be completed by personnel who have been trained and have the appropriate knowledge of the work associated with the incident.

10.7 We will investigate the following types of incidents

1. Incidents that result in injuries that require medical aid.
2. Incidents that cause property damage or interrupt operations with potential loss.
3. Incidents that have the potential to result in (1) or (2). (Near misses.)
4. Occupational illness.

10.8 Using the 5x5 qualitative risk matrix

This matrix will be used to determine the appropriate category for each impact. The potential outcome is based on a risk evaluation of the maximum reasonable consequence of the impact and the likelihood of the event occurring again given a reasonable failure of existing controls. Again, to ensure consistency of terminology and analysis, the Health and Safety 5x5 qualitative risk matrix must be used for the evaluation.

All incidents, including near misses, will be investigated to a level of detail appropriate to the maximum reasonable outcome (MRO) of the incident. The results from the investigation will be documented and communicated to all employees.

All significant incidents, (those with any impact categorized with an actual consequence of medium, serious, major or catastrophic, or a potential reasonable outcome of high and catastrophic) will be investigated using a Root Cause analysis format.

All incidents with an impact causing personal injury or occupational illness will be reported in the monthly performance statistics.

10.9 5X5 matrix for determining actual and potential incident classifications

STEP 1 DETERMINE LIKELIHOOD

Likelihood (L)			
A	Almost Certain	Happens Often	More than 1 event per month
B	Likely	Could easily happen	More than 1 event per year
C	Possible	Could happen and has occurred here or elsewhere	1 event per 1 to 10 years
D	Unlikely	Hasn't happened yet, but could	1 event per 10 to 100 years (within a single mine life)
E	Rare	Conceivable but only in extreme circumstances	Less than 1 event per 100 years (within life of New Gold Inc)

STEP 2 DETERMINE CONSEQUENCES

Consequence / Severity (C)						
Rank	Consequence	People	Damage / Loss	Environment	Business	Reputation
1	Catastrophic	Fatality(s).	Extreme financial loss (> US$500,000)	Irreparable Damage, very serious long term impairment of eco-systems	> 48 hours production delay	Major damage to reputation receiving national or international negative media OR production to cease as a result of statutory body concerns.
2	Major	Permanent and total disability	Major financial loss (US$100 - 500k)	Major Impact, serious medium term environmental impact affecting whole ecosystem	24 hr to 48 hr production delay	Major damage to reputation receiving state wide negative media OR Non-compliance with statutory requirements resulting in major fine.
3	Moderate	Lost Time Injury	Moderate financial loss (US$50 - 100k)	Minor Impact Moderate short term effects affecting part but not affecting whole of eco-system	12 to 24 hr production delay	Moderate damage to reputation localised to the regional media OR Non-compliance with statutory requirements resulting in minor fine.
4	Minor	Disabling Injury	Minor financial loss (US$5 - 50k)	Minor impact on biological or physical environment	6 to 12 hr production delay.	Minor impact to reputation localised to community near mine OR technical divergence that may attract attention from statutory authorities.
5	Low	First Aid / Medical Treatment injury with no time lost or change of duties	Low financial loss (<$5k)	Limited damage to minimal area of low significance or previously disturbed areas.	< 6 hour production delay	No impact on stakeholders or reputation

STEP 3 CALCULATE RISK

Likelihood (L)		Consequence / Severity (C)				
		1 Catastrophic	2 Major	3 Moderate	4 Minor	5 Low
A	Almost Certain	1 (Ex)	2 (Ex)	4 (Ex)	7 (H)	11 (H)
B	Likely	3 (Ex)	5 (Ex)	8 (H)	12 (H)	16 (M)
C	Possible	6 (H)	9 (H)	13 (H)	17 (M)	20 (M)
D	Unlikely	10 (H)	14 (M)	18 (M)	21 (L)	23 (L)
E	Rare	15 (M)	19 (M)	22 (L)	24 (L)	25 (L)

10.10 Element 10 Revision Table

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Harrison Industrial Contracting
Occupational health and Safety manual

Element 11: Emergency Preparedness

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11.0 Emergency Preparedness

11.1 Policy Statement

Purpose

To ensure that all employees are aware of Harrison Industrial Contracting's (Harrison) role in and response to emergencies and disasters occurring within their home office, work shop and the worksites they work at.

Policy statement

Harrison's Emergency Response Plan and Procedures (ERPP) will be reviewed annually by the management with all employees.
Management will ensure that all employees have access to a copy of the current (ERPP). This will be kept in an easily identifiable, accessible location.
Training for the position and responsibility of employees involved with this (ERPP) will be ongoing.

Scope: This policy applies to all employees.

Procedure

In case of emergency, employees will follow the protocols as outlined in the (ERPP). Emergency response practices will be completed annually with all employees at the company office and work area. Project work site emergency response practice will be dictated by the client.

11.2 Emergency Preparedness Plans and Procedures (ERPP)

ERPP are in place, posted and appropriate personnel are, at minimum, trained in:

1. Identification of possible emergencies.
2. Procedures for dealing with identified emergencies.
3. Location and operational procedures for emergency equipment.
4. Emergency response training requirements.
5. Fire protection requirements.
6. Procedures for rescue and evacuation.
7. Employee responsibilities in an emergency.

11.3 Small fire ERPP (For the office, shop and work area.)

In the event of a small fire with little smoke and minimal potential to spread:

1. Person who notices fire takes nearest ABC fire extinguisher using the PASS process and puts out fire.

a. **Pull** Pull the pin from the handle of the fire extinguisher.
b. **Aim** Aim the fire extinguisher at the base of the fire.
c. **Squeeze** Squeeze the handle of the fire extinguisher.
d. **Sweep** Sweep the extinguisher back and forth, covering the full base of the fire.

2. After the fire is out, clean up, and open windows to air out.
3. Have fire extinguisher tagged for refill and replace extinguisher.
4. Investigate cause and implement corrective actions.
5. Review incident with all employees. If at job site, report to client. Follow site procedures.

11.4 Large fire ERPP (For the office, shop and work area.)

In the event of a fire that cannot be contained:

1. Call the fire department.
2. Call over the intercom there is a fire at (state area) all employees are to proceed to muster area (front parking lot).
3. All vehicles in parking lot to be moved across the street to accommodate fire emergency vehicles.
4. Complete a head count of employees.
5. DO NOT re-enter the building until the "all clear" is given.
6. IF on a project, the project site ERPP will be followed.

A list of emergency contact numbers will be posted in obvious locations in offices and shops.

The orientation of employees to these procedures is a must.

On worksite projects, Harrison’s workforce will be orientated to the site specific emergency response plan and procedures. Each employee will know this plan and follow it.

11.5 In case of fire or other emergency

1. Stay calm, avoid panic and confusion.
2. Know where exits are located. Be aware of the safest route out at all times.
3. Know how to report an emergency. Sound the alarm without delay.
4. Follow the exit instructions for your location. When signaled or instructed to leave, complete all emergency duties assigned to you and prepare to evacuate according to the plan.
5. Maintain order and take all evacuation signals seriously.

11.6 Fire protection guidelines

All personnel will aid in the prevention of fires by practicing good housekeeping and limiting the quantity of combustible materials.

At least one 20 lb ABC fire extinguisher will be assigned to each crew and will be stored in an easily accessible location. All trucks will have a 20lb ABC extinguisher. All machinery and welding equipment will have a 20 lb ABC fire extinguisher mounted on them.

All employees must be familiar with and read the instructions on the fire extinguisher they intend to use.

1. Check the tag for the last inspection date and ensure it is current.
2. Inspect it for dents.
3. Check for the pin in the handle.
4. Is the pressure in the green area on the gauge?

If any defect is found, the extinguisher is replaced and the safety officer informed so they can have it fixed.

Employees are only advised to fight a fire if they are comfortable doing so and if it is a small fire.

An Emergency Response Team includes, at a minimum, the project superintendent, safety department, and a site safety representative.

11.7 Duties

1. General Foreman

a) Call 911 emergency response number.
b) Restrict access/secure area where incident occurred.
c) Evaluate potential for secondary incident.
d) Account for all workers.
e) Identify injured person.
f) Call the safety officer.
g) Delegate tasks to be done on scene until safety officer arrives.
h) Limit access in and out of the scene from outsiders.
i) Brief safety officer upon arrival.
j) Assist authorities. (WCB, police, fire, etc.)

2. Designated Safety Person

a) Contact WCB.
b) Attend scene of incident ASAP.

c) Take control of emergency response on arrival to site.
d) Assess incident/accident.
e) Gather witness statements/complete witness interviews.
f) Assist authorities (WCB, police, fire, etc.).
g) Secure area.
h) Assess and arrange for additional site security as required.
i) Complete safety reports for all agencies.

3. Site Safety Representative (First Aid Attendant)

a) Promptly call for medical aid and assistance.
b) Ensure energy sources are turned off or removed from the incident area.
c) Assess scene and potential hazards, rectify before attending to injured worker.
d) Assess the risk of others being hurt or if the rescue may injure you.
e) Take appropriate precautions to prevent infection.
f) Do not move injured worker unless there is imminent danger.
g) If you are waiting for medical aid and there is bleeding, use thick pads of clean cloth and press directly over the wound. Do not remove blood soaked dressing, just add more layers of padding if needed.
h) Stay with the injured worker until medical aid arrives and take directions from them once they are with the patient.
i) Stay calm.

11.8 Emergency scene management

1. Scene Survey

a) Take control of the scene and find out what happened before helping any injured workers.
b) Ensure the scene is safe.
c) How many workers are injured?
d) Any remaining hazards?
e) Introduce yourself to the injured worker. Explain what is happening and ask them to reply.
f) If head or spinal injury is suspected take C-spine control, do not let go.
g) Call for assistance.

2. **Primary Survey**

Assess each casualty for life threatening injuries and give lifesaving first aid.

Check for:
A-Airway – Is the airway is clear?
B-Breathing - Is there effective breathing?
C-Circulation - Is there effective circulation?
Severe Bleeding - Is the bleeding life threatening?

Are there any medical tags, bracelets or tattoos indicating an existing illness or allergies?

Life threatening injuries are:

1. Not Breathing
2. Unconsciousness
3. Severe Bleeding

3. **Secondary Survey**

During this step the first aider performs a more thorough check for injuries and symptoms that were not revealed in the primary survey, but would benefit from first aid.

Ongoing Casualty Care
Stay with the casualty until medical help arrives and takes over.

Do not give the injured worker water, medicine or anything they can ingest.
Moisten the lips if the worker is complaining of thirst.

11.11 Responsibilities

1. Project General Foreman (GF)

a) The GF ensures that an emergency plan is understood by all employees under his supervision including subcontractors, suppliers and visitors.
b) The GF ensures that all project personnel have received instruction in the requirements of the Emergency Response Plan.
c) Regular drills in applicable types of emergencies are coordinated by the GF in cooperation with the client representative.

2. Project Emergency Personnel

a) Emergency personnel are to ensure the orderly evacuation of job sites and work with the supervisor to ensure that all site personnel have received appropriate training.

b) Emergency personnel must be trained in the use of emergency equipment and should have at least a First Aid Certificate.
c) Emergency personnel shall review the site emergency plan for comprehensiveness.

11.12 First aid

Harrison is committed to ensuring that the best possible treatment is provided as quickly as possible for any injured employee. Harrison will ensure first aid attendants are trained adequately for their position. Facilities and equipment are adequately located, properly maintained, and readily accessible.

1. The general foreman is responsible for ensuring that first aid services, equipment and supplies are provided which meet or exceed the requirements set out in sections 3.14 to 3.21 of the Occupational Health and Safety Regulations.
2. First aid kits shall be maintained in all locations where they are required, including worksite trailers, crew vehicles, and job sites.
3. All injury incidents will be reported regardless how insignificant they may seem. On projects, all injury incidents shall be reported as per site rules.
4. Transportation to a hospital or qualified practitioner for initial treatment will be provided for an injured worker.
5. The first aid attendant's decision relating to treatment or transportation will be followed.
6. Injuries or cases of occupational disease that arise as a result of employment, will be reported to WorkSafeBC as per regulations.

First aid records and statistics shall be kept for at least three (3) years and shall be reviewed by management or the Joint Occupational Safety and Health Committee (if applicable) to determine trends and recommend positive corrective actions.

11.13 Transporting an injured or sick employee

In the event that an employee is injured at a work site and requires outside medical attention, they will be transported by the site emergency transportation vehicle, or Harrison will provide a mode of transportation suitable to the needs of the patient.

Call for an ambulance or use Harrison's own emergency transportation unit.

11.14 Working at heights rescues

When a worker falls and is suspended in a harness, it's important to rescue him or her as quickly as possible because of the following:

1. The worker may have suffered injuries during the fall and may need medical attention.

2. When workers are suspended in their safety harnesses for long periods, they may suffer from blood pooling in the lower body. This can lead to suspension trauma.
3. Suspended workers may panic if they are not rescued quickly.

The event that led to the fall may create additional risks that need to be addressed.

If a worker falls and is suspended by a safety harness, implement the emergency response plan by following the steps below.

On project where Harrison works, the project Emergency Rescue Team will provide all suspended worker rescues with any assistance asked of Harrison.

11.15 Elevating work platform rescue

If an elevating work platform (EWP) is available on site and the suspended worker can be reached by the platform, follow the procedure below.

1. Bring the EWP to the site and use it to reach the suspended worker.
2. Ensure that rescue workers are wearing full-body harnesses attached to appropriate anchors on the EWP.
3. Ensure that the EWP has the load capacity for both the rescuer(s) and the fallen worker. If the fallen worker is not conscious, two rescuers will likely be needed to safely handle the weight of the fallen worker.
4. Position the EWP platform below the worker and disconnect the worker's lanyard when it is safe to do so. When the worker is safely on the EWP, reattach the lanyard to an appropriate anchor point on the EWP if possible.
5. Lower the worker to a safe location and administer first aid. Treat the worker for suspension trauma and any other injury.
6. Arrange transportation to hospital if required.

11.16 Ladder rescue

If an elevating work platform is not available, use ladders to rescue the fallen worker with the procedure outlined below:

1. If the fallen worker is suspended from a lifeline, move the worker (if possible) to an area that rescuers can access safely with a ladder.
2. Set up the appropriate ladder(s) to reach the fallen worker.
3. Rig separate lifelines for rescuers to use while carrying out the rescue from the ladder(s).
4. If the fallen worker is not conscious or cannot reliably help with the rescue, at least two rescuers may be needed.

5. If the fallen worker is suspended directly from a lanyard or a lifeline, securely attach a separate lowering line to the harness.
6. Other rescuers on the ground (or closest work surface) should lower the fallen worker while the rescuer on the ladder guides the fallen worker to the ground (or work surface).
7. Once the fallen worker has been brought to a safe location, administer first aid and treat the person for suspension trauma and any other injury.
8. Arrange transportation to hospital if required.

11.17 Rescue from work area or floor below

If the fallen worker is suspended near a work area and can be safely reached from the floor below or the area from which they fell, use the following procedure:

1. Ensure that rescuers are protected against falling.
2. If possible, securely attach a second line to the fallen worker's harness to help rescuers pull the fallen worker to a safe area. You will need at least two strong workers to pull someone up to the level from which they fell.
3. Take up any slack in the retrieving line to avoid slippage.
4. Once the worker has been brought to a safe location, administer first aid and treat the person for suspension trauma and any other injury.
5. Arrange transportation to hospital if required.

11.18 Basket rescue

If a worker has fallen and is suspended in an inaccessible area, you may need to perform a basket rescue.

For basket rescues, the basket must be designed by a professional engineer in accordance with good manufacturing processes to withstand all loads to which it may be subjected. It must be kept on site at all times in an accessible location where it is clear of material or other equipment. Fit the rescue basket with appropriate rigging for quick hookup by the crane operator.

1. Always keep the following items in the rescue basket:

a) First-aid kit.
b) Three lanyards equipped with shock absorbers.
c) One full-body harness.
d) Tag line attached to the basket at all times.
e) Controlled descent rescue device in good working condition.
f) Secondary safety line to tie the basket above the headache ball of the crane.

2. Performing a basket rescue

a) Make sure other methods are not possible.

b) Notify the crane operator right away to position the crane to attach the basket.

c) While the basket is being attached, the crew leader checks that all safety rigging is done and all the required safety equipment is available.

d) With two rescuers in the basket, hoist it to a position that is above and as close as possible to the fallen worker. A designated worker on the ground guides the basket with a tag line. The designated worker must make sure that when the rescue basket reaches the right elevation, the door of the basket is facing the structural steel to provide an easy exit for rescuer #1.

e) Rescuer #1 exits the rescue basket and gets into a position to reach the fallen worker. When doing this, rescuer #1 must be tied-off at all times to either the structure or the rescue basket.

f) Rescuer #2, who is still in the rescue basket, lowers the line that will be used to retrieve the worker. Rescuer #2 attaches an extra lanyard to the line if required.

g) Rescuer #1 assesses the fallen worker for injuries and then decides how to proceed. (i.e. Treat injuries first, guide the fallen worker into the rescue basket, or lower the basket to the ground with the fallen worker attached to it.)

h) Once the fallen worker has been brought to a safe location, administer first aid. Treat the person for suspension trauma and any other injury.

i) Arrange transportation to hospital. A designated worker must accompany the injured worker to hospital.

3. If the basket rescue is the method used, keep the following points in mind:

a) Perform a basket rescue only when it is not possible to use conventional equipment to rescue the fallen worker in a safe manner.

b) Never exceed the maximum number of workers in the basket as indicated on the nameplate.

c) Ensure that a competent worker inspects the crane and equipment being used prior to lifting rescuers.

d) Always equip the crane with a fail-safe mechanism to prevent the boom from descending in the event of a power source or system failure.

e) Maintain an adequate means of communication between the rescuers in the basket and the crane operator at all times.

f) Ensure that workers in the rescue basket wear full-body safety harnesses attached to a lanyard and anchored to appropriate points in the basket at all times.

g) Make sure that all rigging used to attach the rescue basket to the hook of a load line has a safety factor of 10 against failure. There should be a safety line attached to the load line directly from the basket.

h) Do not allow cranes to travel while rescuers are in the basket.

Do not use suspended rescue baskets during high winds, electrical storms, snow, ice, sleet, or other adverse conditions that could affect the safety of personnel on the platform or in the basket.

11.19 Cable Vault or Manhole Rescue

1. Prior to entry of any cable vault or manhole, a confined space permit will be completed.
2. Once the area is cleared for entry, the work crew will complete a Job Hazard Assessment (JHA) which will determine the rescue procedure in the event of an incident.
3. A rescue tripod will be at the ready to hoist up a worker.
4. All workers will wear a lifting harness while working in these work spaces.

11.20 Post-Rescue Procedure

All non-affected workers should remain in the designated safe gathering zone until the site supervisor notifies them to do otherwise. The site supervisor and health and safety representative should:

1. Begin the accident investigation.
2. Quarantine all fall-arrest equipment that may have been subjected to fall fatigue effects and/or shock loading for further investigation.
3. Secure the area. (The OHSA requires that an accident scene not be disturbed where a fatal or critical injury has occurred.)
4. Determine whether or not the jobsite specific rescue and evacuation plans were followed as designed.
5. Record modifications or additions to the plans that the rescue team deems necessary.
6. Record all documented communications with fire, police, and others.
7. Record all documented statements from employees, witnesses, and others.
8. Save all photographs of the incident.
9. Record all key information such as dates, time, weather, general site conditions, and specific accident locales including sketches of the immediate incident area, complete with measurements if applicable.

11.21 Earthquake procedure

1. During the earthquake

a) Stay calm. You must be able to help yourself and others.
b) Ride out the shaking. You may hear a roaring or rumbling sound that gradually grows louder, and you may feel a rolling sensation that starts out gently and quickly grows violent, OR you may be jarred first by a violent jolt. Later you will

feel the shaking and find it difficult to stand. The whole tremor will last only a short while. Injuries are not caused by the earthquake itself, but usually by falling objects, so remember to look up.

c) If you are indoors, stay there. Quickly get under a desk or table, stay clear of windows or any object that could fall. Shield your head and face from falling glass and debris. Watch for falling objects. If the desk or table moves, move with it. Furniture can provide air space if the building collapses. If you cannot get under furniture, crouch in an inner corner or a doorway. Do not run for another room.
d) If you are working with equipment or machinery, turn them off quickly and take cover.
e) If you are outside, stay there. If possible get into the open, away from buildings, trees, walls, and power lines.
f) If you are in an automobile, pull to the side of the road and stop. Stay away from overpasses and power lines. Stay in your car until the shaking stops. Do not attempt to cross bridges or overpasses that may have been damaged in the quake. Do not approach downed power lines.

2. After the earthquake

a) If you are inside, exit the building as soon as the shaking stops. Do not use elevators. Stay in groups as much as possible. Move to the nearest safe area, such as a parking lot or open lawn
b) Check for injuries. Cover all injured people with blankets and do not attempt to move seriously injured people unless they are in immediate danger.
c) Do not use the telephone. Keep the lines clear for emergency traffic.
d) Because of debris and broken glass, wear hard soled shoes.
e) Listen to the radio for damage reports and other information.
f) Do not go sightseeing. Keep the roads open for emergency vehicles.
g) Watch for fires and falling objects.
h) Be prepared for aftershocks.

If you are injured or disabled, do anything to get attention. Be aware your regular exit may be blocked.

11.22 Emergency information

As part of emergency information processes, the following information must be posted and displayed in a common area visible to all employees:

1. Emergency exits
2. First aid location
3. Muster area
4. List of emergency phone numbers

5. Map to from job site to the nearest hospital
6. Eye wash station
7. Rescue equipment
8. Location of MSDS
9. Fire extinguishers
10. Communication devices and signals for contacting others in an emergency

A pre-job review will identify the locations of these items.

11.23 Workplace emergency contact list

This form is completed when Client or Owner does not have the information covered under their site specific indoctrinations. Form is completed and posted in a conspicuous location, ensuring all employees are aware of its location.

Emergency Contacts	**Name and Number**	
PROJECT LOCATION/ADDRESS		
SITE MUSTER POINT LOCATION		
EMERGENCY CONTACTS		
GENERAL FOREMAN		
SITE SAFETY REPRESENTATIVE		
NEAREST HOSPITAL/ADDRESS:	**ROYAL INLAND HOSPITAL** 311 COLUMBIA ST. KAMLOOPS, BC V2C 2T1	250-374-5111
AMBULANCE	250-374-4411	
POLICE	250-828-3000	
FIRE DEPARTEMENT	250-372-5131	
POISON CONTROL	1-800-567-8911	
WORKSAFE BC	1-888-621-7233	
GAS UTILITIES	1-800-663-9911	
DANGEROUS GOODS SPILL	1-800-663-3456	
BC HYDRO	1-888-769-3766	**On cell: *49376**
CALL BEFORE YOU DIG	1-800-474-6886	**On cell: *6886**
FIRST AID LOCATION:		
MSDS LOCATION		
FIRE EXTINGUISHER LOCATIONS		

11.24 Element 11 Revision Table

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Element 12: Records and Statistics

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12.0 Records and Statistics

12.1 Introduction

A health and safety management system is a dynamic and constantly evolving process. Records of health and safety activities must be maintained. These records provide information necessary to assess and record the health and safety system activities and results in order to make the required modifications and to plan for future activities. Some records are also required by regulations.

12.2 Purpose

The purpose of this document is to provide guidelines to the general manager and safety manager on the development and implementation of the "**Records and Statistics**" element of their Health and Safety Management Systems.

12.3 Items to be documented

Safety-related reports should be stored so that they are readily available. Records that should be kept on file in chronological order, include, but are not limited to, the following:

1. **Joint Health and Safety Committee:**
    a. Agenda
    b. Minutes
    c. JHSC Recommendations to Senior Management
    d. Health and Safety Representative Recommendations to Employer
    e. Health and Safety Representative Hazard Documentation and Control Report
    f. Hazard Controls Monthly Summary Review
2. **Hazard Identification, Risk Assessment and Control forms:**
    a. Formal Workplace Inspection
    b. Employee Discussion - Job Specific
    c. Management Document Review
    d. Job Hazard Assessments
    e. Hazard Identification/Risk Assessment/Control Implementation Plan
3. **Personal Protective Equipment Maintenance Records:**
    a. Maintenance Record Template
4. **Preventative Maintenance Records:**
    a. Inventory
    b. Maintenance Schedule
5. **Safety Orientation and Safety Training Records:**
    a. Safety Orientation Checklist
    b. Safety Orientation Checklist Supporting Documentation

   c. Safety Training Plan
6. **Incident and Near Miss Reporting and Investigating Records**:
   a. Minor Incident and Near Miss Investigating and Reporting
   b. Serious Incident and Near Miss Investigating and Reporting
7. **Emergency Preparedness Records:**
   a. Emergency Contact Information Summary Sheet
   b. Evacuation Observers
   c. Evacuation Training
8. **Communication Forms:**
   a. Health and Safety Meeting (crew)
   b. Tailgate (crew)
   c. Health and Safety Meeting (management)

In order to help facilitate the annual review, documentation should be kept current and easily available for review.

12.4 When to review

Summaries of safety related reports provide management with an overview of a department's health and safety activities and results. Summaries may be compiled on a periodic basis. (i.e. Monthly, quarterly, annually.) An annual consolidation should be prepared and reviewed for each of the areas as it helps in determining trends and setting priorities for future safety program measures.

12.5 Element 12 Revision Table

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Harrison Industrial Contracting
Occupational Health and Safety Program

Element 13: Legislation

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13.0 Legislation

13.1 Legislation Introduction

Legislation is an important part of this safety program, the legislated regulations that are a direct relationship to our industry assist both employer and employee in all aspects of safety.

Each employee is made aware of the Workers Compensation Act (WCA) of BC, Occupational Health and Safety Regulation (OHS), and the Health, Safety and Reclamation Code for Mines in BC. They are encouraged to review these documents and use them as guidelines in all their work activities.

Supervisors are encouraged to review relevant regulations in their weekly safety meetings and refer to relevant legislation during job planning.

Harrison supports and fully endorses the governing legislative bodies that assist the electrical discipline sector in health and safety matters.

Harrison will strive to not only meet, but exceed the guidelines, codes, and safe work practices of this industry

During new hire orientations workers are made aware of their right to:

1. Know and be informed of the hazards involved in the work place.
2. Participate in all safety meetings.
3. Refuse any unsafe work.
4. Report all incidents regardless of how insignificant they may seem.

Other legislation that deals with specific aspects of health and safety may include but is not limited to:

1. WorkSafeBC regulations
2. Employment standards
3. Safety codes for building standards. (Fire and electrical protection.)
4. Motor Vehicle Act
5. Transportation of Dangerous Goods Act and Clear Language Regulations
6. Atomic Energy Control Act
7. Environmental Protection Act and Regulation
8. National Safety Code
9. National Energy Board and Utility Board Legislation
10. Health and Safety Reclamation Code for Mines in BC
11. Hazardous Products Act

13.2 General duties of workers (WCA part 3 Div. 3 Sec. 116,117)

Every worker must:

1. Take reasonable care to protect the worker's health and safety and the health and safety of other persons who may be affected by the worker's acts or omissions at work.
2. Comply with this Part, the regulations and any applicable orders.
3. Carry out his or her work in accordance with established safe work procedures as required by this Part and the regulations.
4. Use or wear protective equipment, devices and clothing as required by the regulations.
5. Not engage in horseplay or similar conduct that may endanger the worker or any other person.
6. Ensure that the worker's ability to work without risk to his or her health or safety, or to the health or safety of any other person, is not impaired by alcohol, drugs or other causes.
7. Report to the supervisor or employer, a) any contravention of this Part, the regulations or an applicable order of which the worker is aware, and b) the absence of or defect in any protective equipment, device or clothing, or the existence of any other hazard, that the worker considers is likely to endanger the worker or any other person.
8. Cooperate with the joint committee or worker health and safety representative for the workplace.
9. Cooperate with the Board, officers of the Board and any other person carrying out a duty under this Part or the regulations.

13.3 General duties of supervisors

Every supervisor must:

1. Ensure the health and safety of all workers under the direct supervision of the supervisor.
2. Be knowledgeable about this Part and those regulations applicable to the work being supervised.
3. Comply with this Part, the regulations and any applicable orders.
4. Ensure that the workers under his or her direct supervision are made aware of all known or reasonably foreseeable health or safety hazards in the area where they work.
5. Comply with this Part, the regulations and any applicable orders.
6. Consult and cooperate with the joint committee or worker health and safety representative for the workplace.
7. Cooperate with the Board, officers of the Board and any other person carrying out a duty under this Part or the regulations.

13.4 Immediate notice of certain incidents (WCA Part 3 Div. 3 Sec. 172 & 173)

1. An employer must immediately notify the Board of the occurrence of any accident that:

    a. Resulted in serious injury to or the death of a worker.
    b. Involved a major structural failure or collapse of a building, bridge, tower, crane, hoist, temporary construction support system or excavation.
    c. Involved the major release of a hazardous substance.
    d. Is required by regulation to be reported.

2. Except as otherwise directed by an officer of the Board or a peace officer, a person must not disturb the scene of an accident that is reportable under subsection (1) except so far as is necessary to:

    a. Attend to persons injured or killed.
    b. Prevent further injuries or death.
    c. Protect property that is endangered as a result of the accident.

13.5 Incidents that must be investigated

1. An employer must immediately undertake an investigation into the cause of any accident or other incident that
    (a) Is required to be reported by section 172.
    (b) Resulted in injury to a worker requiring medical treatment.
    (c) Did not involve injury to a worker, or involved only minor injury not requiring medical treatment, but had a potential for causing serious injury to a worker.
    (d) Was an incident required by regulation to be investigated.

2. Subsection (1) does not apply in the case of a vehicle accident occurring on a public street or highway.

Harrison also services the mining industry in BC and acknowledges that the Health, Safety and Reclamation Code for Mines in BC is part of our workforce education.

13.7 Element 13 Revision Table

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Element 14: Joint Health and Safety Committee or Worker Representative

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14.0 Joint Health and Safety Committee or Worker Representative

As Harrison's workforce fluctuates throughout the year, a joint occupational health and safety committee is established and maintained when required by WCB Act regulations. The format for this committee is outlined in this section.

General

Harrison believes that the Health and Safety Committee plays a crucial role in setting the foundation required to achieve zero injury performance. It is therefore imperative that each subcontractor employed by Harrison maintain an active Health and Safety Committee that meets the minimum criteria set by WorkSafeBC.

14.1 Health and safety committee and terms of reference

Primarily, the Health and Safety Committee is responsible for communicating and demonstrating the value of an effective safety program by identifying several techniques used to achieve zero incidents.
Specific goals of the Health and Safety Committee are as follows, but not limited to:

1. Assisting in the establishment, promotion, and maintenance of healthy and safe work conditions and attitudes.
2. Promoting and maintaining programs for employee health and safety education.
3. Assisting in inspections, near miss investigations and return to work of injured workers.
4. Evaluating and responding to worker complaints and providing solutions on health and safety matters.
5. Ensuring that adequate records relating to accidents, injuries, illnesses and health hazards are maintained and monitored.
6. Reviewing all applicable WorkSafeBC and employer reports concerning the safety and health of workers.

14.2 Guidelines for committee

1. The Health and Safety Committee's responsibility is to recommend safe work practices to the employer and to provide workers with guidance in protecting their health and safety.
2. The Health and Safety Committee must hold regular meetings at least once each month.
3. Even though the Committee consists of employer and worker representatives who may be directly involved in project operations, it is only advisory and cannot direct management carrying out its recommendations.
4. The committee is the principal medium for employees and employer to communicate and exchange information on health and safety matters.

5. The committee shall decide how many members must be present to constitute a valid committee quorum. A quorum must consist of a minimum of four members. Management representatives must not outnumber worker representatives.
6. The committee must elect a chairperson and a secretary from its members. Where the chairperson is an employer representative, the secretary must be a worker representative and vice versa. The committee would decide on the term length for the positions prior to election.
7. The chairperson of the committee is responsible for planning meeting topics and giving the plan to the secretary for preparation of an agenda.
8. The chairperson should control the direction of the meeting but not the discussion.
9. The chairperson should ensure that every item on the agenda receives attention and a conclusion is reached on every item. This may involve referring a matter for further study.
10. The chairperson may cut off a discussion and move on to the next item, deferring the discussion to the next meeting.
11. The chairperson is responsible for achieving a diplomatic style within the committee. If two parties are in complete disagreement, the chairperson may call a break and make an attempt to mediate.
12. The secretary will retain the final say in the minutes and if the committee secretary is unfamiliar with secretarial duties, the committee may approve the use of a non-committee member with secretarial skills.
13. Special meetings will be held at the chairperson's request.
14. Committee members should be involved in, either on an active or an observer basis, the following activities outside the regular meeting:
    a) Inspections
    b) Accident and incident investigations
    c) Complaint investigations
    d) Corrective-action and follow-up.

14.3 Agenda

The Health and Safety Committee meeting forum will be standardized in an order such as the following:

1. Roll call.
2. Revision (if necessary) and adoption of previous meeting minutes.
3. Discussion of old business.
4. Discussion of worker complaints and suggestions.
5. Review of recent accidents, investigations and corrective actions.
6. Reports on special assignments.
7. Reports on inspections, with recommendations.
8. Training and education of committee members.
9. Inform management of committee goals and have management report to committee on its trends and suggestions for safety.
10. Discussion of new business.

11. Adjournment.

    Under the direction of the chairperson, the secretary will prepare the agenda. The agenda will be distributed to members one week prior to the meeting.

14.4 Minutes

1. Minutes will be prepared immediately after the meeting and will be distributed to all members.
2. Any additions or corrections to the report must be received in writing within 5 working days after the date of issue or they shall stand as written.
3. Adopted minutes from previous meetings will be posted where workers may read them.
4. Copies of minutes and reports will be kept on file for a period not less than two years, and will be made available to WorkSafeBC upon request.

14.5 Conducting the meeting

1. At the first meeting, members should elect a chairman and a secretary and develop the Committee's Terms of Reference. Members may choose to adopt the terms of reference provided.
2. Members should prepare for a meeting by being aware of, and prepared for, what is on the agenda.
3. Committee meetings should work by consensus to develop solutions rather than deciding matters by majority vote.
4. Committee meetings are not required to follow the more formal Robert's Rules with motions, amendments and votes on each motion.

The procedure followed in a meeting is generally as follows:

1. An agenda item is presented.
2. A discussion follows to ensure all members understand the issue.
3. Members discuss solutions in an effort to find the best one.
4. The chairman states the consensus of the Committee, and summarizes any major recommendations, and decisions.
5. Meetings should start on time without waiting for late arrivals.
6. Meetings should close on a positive note with a tentative date for the next meeting.

Constituency

1. Management representatives not to exceed the number of worker representatives.
2. Two substitute members, employed full-time, one to represent management and one to represent workers. Substitute members to be granted the same rights as committee members.

Committee officers

1. The Committee members will elect one chairperson and one secretary. When the chairperson is an employer member the secretary shall be a worker member and vice versa. Term length will be minimum six months.
2. The secretary will be responsible for keeping records of meetings and preparing and distributing agendas, minutes, and the annual report under the direction of the chairperson.

Amendments

The terms of reference may be amended by a majority vote of committee members.

Joint committees

1. An employer must establish and maintain a joint health and safety committee:
    a. In each workplace where 20 or more workers of the employer are regularly employed, and
    b. In any other workplace for which a joint committee is required by order.
2. A joint health and safety committee must be established in accordance with the following WCB guidelines:
    a. It must have at least 4 members, or if a greater number of members is required by regulation, that greater number;
    b. It must consist of worker representatives and employer representatives;
    c. At least half the members must be worker representatives;
    d. It must have 2 co-chairs, one selected by the worker representatives and the other selected by the employer representatives.

Note: Refer to the section of the applicable WCB Act for the requirement for a joint committee in certain circumstances and the membership requirements.

Note: Refer to the applicable WCB Act information relating to an annual educational leave of up to 8 hours, or longer, for members of joint committees as well as the requirement of the employer to provide the leave without loss of pay or other benefits

14.6 Element 14 Revision Table

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Element 15: Environmental and Waste Management

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15.0 Environmental and Waste Management

15.1 Environmental introduction

Harrison Industrial Contracting (Harrison) is committed to industry best practices where environmental issues and concerns are identified. Due to the nature of our work there are very limited situations that may result in concerns.

Equipment maintenance is completed by service companies who discard their waste or materials in containers, prescribed under federal legislation.

All excess material is taken to the appropriate disposal facility.

Fuels and lubricants are stored in required containers, properly labeled, and in small quantities. Any spills are cleaned up immediately.

Construction worksite

1. Be aware of undue dust. Rectify it!
2. DO NOT make additional tracks and access ways if it is not necessary.
3. Report wildlife observations, deaths and injury.
4. Clear only those areas marked to be cleared.
5. No fires without prior approval.

15.2 Spill response procedure for worksites

All Harrison employees will attend the project orientation and follow the site procedures for environment care.

Prior to start of work

1. Determine in advance what substances will be used and to what extent environmental response procedures will apply.
2. Ensure employees working in and around possible spill areas have been trained in spill response procedures.
3. Have supervisor contact numbers readily available where they can be reached at all times.
4. Identify, label and list in the field level hazard assessment, any substances used in the operations that pose a particular hazard or require special handling or emergency preparedness. (Substances requiring WHMIS and MSDS should also be identified). Provide spill kits prior to operations.
5. Ensure all equipment and machinery is properly maintained through a schedule of preventative maintenance to avoid leaks and spills.
6. Unsafe and defective equipment will be removed from service and repaired or replaced. Logbooks for maintenance and repair are maintained where and when required by Occupational Health and Safety Regulations.
7. All controlled products on the worksite are identified with proper supplier or workplace labels.

8. Ensure all MSDS for the products are available to workers.
9. All workers receive education and training to safely store, handle, use, and/or properly dispose of these products.
10. If a truck-mounted fueling system is used, the fuel tanks must not be removed and must remain mounted in the truck while on the construction site.
11. Fuel storage or refueling should not be located or conducted within 30m of a watercourse.
12. Have spill kits readily available.

15.3 What to do immediately after a spill occurs

1. Take all reasonable steps to stop the spill and contain the spread of the spill.
2. Communicate that a spill has occurred. You may need assistance for a major spill.
3. Consider risk to self, employees and the environment.
4. Cordon off the area to ensure all other personnel do not enter the area.
5. Contain the spill using a spill kit.
6. Clean-up absorbent material.
7. Ensure that all personnel leave the area, immediately, if you believe the spill poses a threat to health or safety.

As soon as possible after the spill, make notes recording the following information:

1. The place and time of the spill.
2. What circumstances caused the spill.
3. Who was involved and how were they involved.
4. What was spilled and how much.
5. If anyone was injured.
6. What actions were taken to deal with the spill.

15.4 Person responsible for managing spills on site

1. Identify the substance and determine the severity of the situation.
2. If the substance has been identified, but you are unsure what emergency response measures should be taken, attempt to contain the substance, and contact the manufacturer.
3. If it is safe to do so, commence operations to repair, remedy or confine the effects of the spill.

As soon as you have ensured all reasonable actions are being taken to prevent the spill from causing greater harm and no workers are in danger, you MUST report the spill to the project environmental person.

15.5 Government contact information

Environment Contacts
B.C. 1-800-663-3456 (Provincial Emergency Program)
ALBERTA 1-800-222-6514 (Pollution Control Line)
911 In case of emergency
City of Kamloops Environmental Services 250-828-3757
Thompson-Nicola Regional District Environmental Services 250-377-8673

Provide the following information to the authority contacted;

1. Your name and telephone number.
2. Name and telephone number of the company and/or the person who appears to have caused the spill.
3. Location and time of spill.
4. Description of the circumstances leading up to the spill.
5. What was spilled and how much.
6. What actions (if any) were taken on the site of the spill.
7. Description of the spill site and the area immediately surrounding it.
8. Names of agencies on the scene or individuals who were contacted about the spill.

15.6 Record keeping

1. Keep a record of the name of the person you spoke to, their title and the time and duration of the telephone call.
2. Keep a record of any requests or orders made by the authority contacted and implement any steps the authority requires.
3. Contact the local police, fire department or other authorities as circumstances dictate or as suggested by your first contact.

15.7 Special waste and contaminated soil

Spill may produce special waste and contaminated soil.

1. Use appropriate bins provided for waste.
2. Solid waste may be disposed of in the local landfill but specific restrictions on acceptable waste items may apply. The local landfill should be contacted and the contractor will comply with identified procedures.
3. Confirm contaminated soil disposal options and approval with the BC Ministry of Environment.
4. Recycle as much material as possible, use appropriate bins (on site).
5. Dispose of batteries, paint, tires and waste oil properly. If you do not know what can be recycled or where items belong contact:

15.8 Environmental contacts

Mission Flats Landfill & Recycling	**250-372-9611**
Recycling Council of B.C.	**1-800-667-4321**
Sumas Environmental	**250-374-4151**

15.9 Spill Response Plan

1. Identify product and ensure safety precautions are used.

a) Identify product spilled and flammability of the product.
b) Assess the site and ensure personal, public and environmental safety.
c) Determine safety and protective equipment for working in or around the spill.
d) Describe the spill. (Where, when and how.)

2. Report all Spills Immediately

a) All spills are reported immediately to the Site Environment Manager
b) Report spills, immediately, equal to or in excess of 10 L of antifreeze or 100 L of oil, diesel fuel, gasoline, grease, hydraulic oils, solvents or any flammable/combustible liquid or waste oil to the BC Provincial Emergency Program (PEP). **1-800-663-3456**
c) If an emergency situation occurs where response times are critical, dial 911.
d) Contact environmental representatives and provide a description of the spill, including location, quantity and type.

City of Kamloops Environmental Services	**250-828-3757**
Thompson-Nicola Regional District Environmental Services	**250-377-8673**
Ministry of Environment, Environmental Emergency Management Program	**250-490-8252**
Department of Fisheries and Oceans, Kamloops	**250-851-4950**
RCMP, Kamloops	**250-828-3000**

3. Contain the Spill

a) Mark the perimeter of the spill.
b) Dig recovery ditches around the perimeter to contain the spill.
c) Prevent the spilled material from entering ditches, culverts or drains.
d) Use various absorbents from the available spill kits appropriate for the product or other materials such as straw and sand to absorb the product.
e) Monitor the ditches and pits to ensure the collection system are effective.
f) Use absorbent pads to remove free product.
g) Excavate the contaminated soil.

4. Disposal and Site Restoration

a) Confirm disposal options and approval with BC Ministry of Environment (BCMOE).

b) Take photographs and notes to document the spill incident, response and clean up.
c) Ensure samples are taken and the results are properly documented and kept on file.
d) All waste disposals must comply with the *Act.* Accidental spills may produce special wastes and contaminated soil defined in Part 4 of the *Act.*
e) Solid wastes may be disposed of in the local landfill, but specific restrictions on acceptable waste items may apply. The local landfill should be contacted and the contractor should comply with identified procedures.
f) Confirm contaminated soil disposal options and approval with BCMOE.
g) Upon completion of the project, an inspection of the project site and work area should be performed by the contractor and a final clean up performed, if necessary.

5. Spill Reporting

a) A Spill Incident Report should identify the reporting organization, date, time, location, hazardous material or dangerous goods involved, source the persons or organizations notified.
b) In addition, the report should describe how the spill or release occurred, remedial action taken or planned, and actions necessary to prevent recurrence.

15.10 Element 15 Revision Table

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Element 16 Substance Abuse and Impairment Awareness

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16.0 Substance Abuse and Impairment Awareness

16.1 Introduction

Harrison Industrial Contracting (Harrison) does not have a full drug and alcohol program, we believe that any substance that may have the potential to impair a person from providing 100 percent of their normal mental or physical ability to their work is a potential risk to themselves and possibly others.

Ensuring the health, safety and well-being of our employees, our customers and the public continues to be the number one priority of Harrison. We recognize that the misuse of alcohol and drugs is a health, safety and security problem. The use of illicit drugs and misuse of medications, alcohol and other substances can have serious adverse effects on employee health, safety and job performance. The objective of Harrison's Drug and Alcohol Statement is to reduce the risk of incidents where substance use may be a contributing factor. We expect and require all employees and contractors to assist in maintaining a safe work environment that is free from the effects of misused drugs and alcohol.

Given the safety sensitive work of our industry, where electrocution of one's self or possibly others is a major concern, Harrison will provide all available controls to ensure our work place is impairment free.

16.2 What to test for

A standard Seven Panel test will be used (THC (Cannabinoids), Cocaine, Opiates, Oxycodone, Benzodiazepines, Barbiturates, Amphetamines)

Alcohol testing is best done using a **breath alcohol test** that determines the concentration of alcohol in a breath sample. Breath alcohol testing generates legally defensible results to ensure that both employer and employee rights are protected.

All persons wanting to be in the employment of Harrison shall be made aware of this Drug and Alcohol Statement and ask to sign off on it.

16.3 Substance abuse and impairment statement

Objective/Purpose: As we recognize the potential negative effects of alcohol and drugs on the organization, in particular the hazards that those individuals who abuse alcohol and/or drugs pose to themselves, their co-workers, and the general public, Harrison has delivered this statement for your acceptance as a preventative measure to avoid any kind of incident.

Scope: The Drug and Alcohol Statement applies to all Harrison employees, its contractors, and anyone else having business on Harrison property or worksites.

Description: For the purposes of this Statement, the following are prohibited:

1. Being impaired by alcohol or drugs (including prescription, over the counter, or illicit drugs) at work.
2. The possession or use of illicit drugs on company premises, on company worksites, or in company vehicles.
3. The presence in the body of illicit drugs (or their metabolites) while at work.
4. Refusal to submit to drug/alcohol testing, failure to report to a company-designated facility for a drug/alcohol test, or tampering, or attempting to tamper, with a test sample.

Pre-employment testing: Where drug or alcohol testing will be a valid requirement on the job, the employer will notify job applicants of the requirement at the time that an offer of employment is made. The circumstances under which such testing might be required should be made clear to the applicant.

Reasonable Suspicion Testing: Employees will submit to drug and alcohol testing whenever management has information about an employee's conduct that would cause a reasonable person to believe that the employee is demonstrating signs of impairment due to alcohol or drugs, appears unfit for duty, or is otherwise in violation of this policy.

Post-Incident Testing: Employees who are involved in a workplace incident in which it appears that employee error may have contributed to the incident, or which could have resulted in death, injury to any person requiring medical attention, and/or significant property damage will be required to submit to post incident drug and alcohol testing as part of the investigation of the incident.

Refusing a test: An employee who refuses to submit to drug and/or alcohol testing will be considered insubordinate and will be terminated.

Records Management: All results of drug and alcohol testing will be kept in individual employee a locked cabinet.

Disciplinary Action: Employees who violate the provisions of this policy are subject to disciplinary action up to and including termination of employment.

No person under the influence, or carrying, intoxicating liquor, a drug or narcotic substance, shall enter or knowingly be permitted to enter a mine or workplace

16.4 Element 16 Revision Table

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Element 17: Light Duty Modified Work Program

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17.0 Light Duty Modified Work Program

Light duty or modified work is any alternate work, task, function or combination thereof that a worker who suffers from lessening capacity may perform safely, which may or may not normally have been performed by that worker. The assignment of the work will be dependent on the employee's functional abilities.

17.1 Benefits

1. Employee:

Injured workers benefit because light or modified duties allow workers to return to the workforce as quickly as possible after an injury thereby:

a) Encouraging quicker healing time.
b) Helping them maintain contact with fellow workers.
c) Reducing the sense of separation.
d) Reducing the time needed to return to full work capacity.
e) Helping them maintain their character and self-esteem.
f) Maintaining job and employee benefits.

2. Employer:

Employers benefit because light or modified duties allow workers to return to the workforce as quickly as possible after an injury thereby:

a) Maintaining high productivity levels through the use of already trained workers.
b) Eliminating the non-recoverable costs of training new workers.
c) Reducing the costs of hiring and training replacement workers.
d) Reducing unnecessary lost time.
e) Maintaining goodwill and employee relations.
f) Assisting in meeting legal requirements.
g) Reducing worker compensation cost

17.2 Program goals

1. To provide a service and a benefit to workers who have suffered a work related injury.
2. To return disabled workers to their regular duties when possible or provide continuing employment.
3. To assist disabled workers to return to work as soon as possible
4. To assist disabled workers recovering from injury or personal illness return to their pre-accident/illness job.

17.3 Objectives

This is a strategy which gives structure and organization to the activity of returning injured employees to the workplace as soon as possible after the injury or illness. It is a program that recognizes the employer's responsibilities and participation in the affective rehabilitation of its employees.

This program is designed to assist injured workers to make a safe and speedy return to their regular duties.

The intent of the light duty, modified work program is to maintain a fair and consistent policy for all employees requiring rehabilitation.

To provide a plan for those who are suffering a work related injury/illness or non-work related injury/illness.

Each individual plan will be tailored to the worker's specific needs based on the functional abilities determined by the health care professional.

The program is to last no more than 12 weeks. Extensions to this will be reviewed on an individual basis with the parties involved.

17.4 Structure of the return to work program

Light Duty, Modified Work Program may be either:

1. Return to alternate work based on functional abilities.
2. Return to regular duties with a gradual increase of hours worked.
3. Gradual re-introduction to full activity using a "work hardening" program. (This program utilizes alternative work, modified hours and regular duties, thereby providing general physical conditioning for workers who have been off work due to their injury or illness or require conditioning to perform their normal duties.)

17.5 Who provides input for the return to work plan?

1. Program Coordinator
2. Supervisor
3. Union Representative
4. Employee
5. Health and Safety Coordinator
6. WorkSafeBC Representative
7. Healthcare Professional

17.6 Accommodating work restrictions

This program is a means of accommodating an employee's temporary work restrictions and may include:

1. Working fewer hours. (Gradual re-entry into the workplace.)
2. Taking more frequent breaks.
3. Obtaining assistance from co-workers with difficult tasks.
4. Modification of duties or hours of work.

If a worker is unable to return to their previous position in an agreed suitable time because of permanent restrictions, then a suitable job will be explored within the worker's workplace.

When all efforts to place a disabled worker in this manner have been exhausted, suitable alternative employment may be explored.

17.7 Compensation

Workers with WorkSafeBC claims or claims pending will be paid their pre-injury regular hourly rate while participating in the program.

At no time will the disabled worker lose their union status.

17.8 Roles and responsibilities of the program

Participants in this program have a responsibility to ensure its success.

1. **Supervisor:**

a) Ensure all incidents are documented immediately and are investigated.
b) Ensure first aid is immediately given to the injured or ill worker.
c) Advise the Health and Safety Coordinator and provide any documentation.
d) Assist in identifying any suitable alternative work for injured or ill workers.
e) Assist in the employee's transition from alternative work to regular duties.
f) Inform co-workers that the disabled worker is on a plan and has specific tasks and hours to be adhered to.
g) Inform other workers the purpose of the program and to promote this program in a positive manner.

2. **Employee:**

a) Ensure all incidents are reported immediately to their supervisor.
b) Assist in identifying any suitable alternative work.
c) Assist in developing the plan.
d) Maintain communication with supervisor and other participants of the plan, advising them of their progress.
e) Follow the plan mutually agreed to.
f) Attend any scheduled meetings concerning the program.
g) Co-operate in the program.
h) Supply any materials requested by the company, WorkSafeBC, or insurer.

3. Union Representative:

a) Participate and assist in implementation of the program.
b) Facilitate communications between the employee and the company.
c) Assist the member to understand the program.
d) Provide support, encouragement and direction to the disabled worker.
e) Inform other workers of the purpose to the Return to Work program and to promote this plan in a positive manner.
f) Ensure that the best interests of the disabled worker are a priority.
g) Ensure the plan is compatible with collective agreement obligations.

4. Health and Safety Designate:

a) Ensure all accidents/incidents are documented properly and are investigated.
b) Recommend any necessary corrective measures.
c) Assist in identifying any suitable alternative work.

5. Program Coordinator:

a) Ensure suitable alternative work is identified.
b) Assist in preparing the individual plan.
c) Communicate daily with the employee and complete the journal.
d) Follow-up and revise the plan if necessary.
e) Ensure communications with WorkSafeBC, health care professionals and all other participants of the program.

6. WorkSafeBC/Insurer:

a) Approve and monitor the individual's plan.
b) Assist when a dispute arises.

7. Health Care Professional:

a) Complete the functional abilities form in a timely manner.
b) Provide recommendations and/or restrictions upon which the plan is based.
c) Approve and provide comments on the individual plan.
d) Liaison with the Return to Work (RTW) committee and coordinator to discuss the progress and treatment plan of the disabled worker.

17.9 Program procedure

1. Employee:

a) Immediately report all incidents and illnesses and obtain necessary first aid and/or health care. Ensure the proper forms are taken when medical aid is required.
b) Complete any WorkSafeBC forms.
c) Return completed functional abilities form and any doctor's notes before start of next shift. Communicate the information to the RTW committee and company.
d) Sign off on all the Light/Modify Duty Work forms.

e) Assist the company to identify suitable work consistent with the functional abilities.
f) Assist in developing the plan.
g) Co-operate in the program and communicate daily with the coordinator.
h) Communicate any updates in functional abilities.

2. Coordinator:

a) Complete and submit forms to WorkSafeBC on time for an occupational incident or illness.
b) Review completed functional abilities forms and/or doctor's notes to identify suitable work.
c) Communicate regularly with the employee and other participants throughout recovery. Complete a daily journal.

17.10 Dispute resolution process

Whenever there is a dispute between the company and the employee the following steps will be taken:

1. Review the RTW Plan. Where an error has been made, reasonable steps will be taken by the company to correct the error.

2. If the dispute is regarding functional abilities / suitability of work:
    a) Obtain updated functional abilities form and review the suitability.
    b) If necessary, where the recovery is not progressing as anticipated, refer the employee to a health care professional paid for by the company to conduct a more comprehensive functional abilities evaluation.

3. Where the dispute cannot be resolved, refer the matter to WorkSafeBC for assistance.

17.11 Summary

This light/modified duty program will continue to evolve and must be monitored as to its success.

A number of alternate work duties (light or modified duties) will be developed as part of the program development along with physical demand analysis for these alternate jobs to assist in identifying suitable work for employees within the program.

The success of the program will be dependent on the working cooperation and communication between employer and employee.

17.12 Element 17 Revision Table

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Element 18: Hearing Conservation Awareness

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18.0 Hearing Conservation Awareness

18.1 Purpose and scope

The Hearing Conservation Program (HCP) is designed to protect the hearing of all employees and identify hearing problems of any type before they become serious. The program is intended to comply with the relevant legislations of the respective jurisdictions where the job is performed. It also serves as a tool by which compensation cost control may be monitored. Noise is one of the most common workplace hazards. Workers in many industries and occupations in different work places of various jurisdictions are exposed to noise levels that are so high that their hearing can be damaged. The purpose of this procedure is to specify the arrangements for the management of exposure to noise in the work place. This does not include the management of environmental noise, which should be addressed in each business' environmental management system. The employers are responsible for minimizing the noise hazards at their workplaces and must comply with the Occupational Health and Safety (OHS) Code of respective jurisdictions.

Inputs

1. Canadian Provincial Occupational Health & Safety Act & Regulations for Mining and Construction Projects USA and State OSHA and MSHA Occupational Health & Safety Act & Regulations for Mining and Construction Projects
2. Various Construction Associations' Health & Safety Manuals
3. Lessons Learned and Incident Investigations
4. Review of Procedures
5. Inspections
6. Job Observations
7. Crew Safety Meetings
8. Canadian Provincial Best Practice Guidelines on Noise in the Workplace

18.2 Responsibilities

Manager

1. Ensure that this procedure is implemented as part of the project activities.
2. Arranges to develop risk assessments suitable to this company scope of work.
3. Ensures that work equipment and work sites are inspected as per the requirements of this procedure.
4. Makes provision for instruction to be delivered to employees who will carry out work as outlined in the scope of this procedure.

General foreman

1. Implements method statements for activities covered in the scope of this procedure.
2. Ensures all hazards are identified and control measures implemented via the task analysis safety card (JHA) to reduce the risk to as low as reasonably practicable (ALARP)
3. Stop work if environmental conditions change.
4. Ensures that these procedures are communicated to affected employees and contractors, implemented, and reviewed by supervisors and contractors.

Contractors Management

1. Fully meet the requirements of this procedure.
2. Provide competent and fully trained personnel/supervision.
3. Provide suitable column and type of alternative mechanical aids and equipment.
4. Deliver instruction and training to operatives in the safe use of equipment.
5. Conduct inspections of testing equipment used in the scope of this procedure.

Employees/Contractor Workforce

1. Take part in appropriate training programs.
2. Follow this procedure.
3. Report unsafe/hazardous conditions and refuse work in unsafe/hazardous conditions.

18.3 Procedure

Occupational Exposure Limits

Legislation

The regulations respecting noise and hearing conservation vary with the jurisdiction in which Harrison and its subcontractors operate. The Canadian legislative requirements will be met as a minimum expectation.

18.4 Permissible Exposure Limit

Research has shown that a significant percentage of the working population may suffer hearing loss above 85 dba. Therefore, Harrison requires employees and contractors working on 8 hour shifts to wear hearing protection when the 8-hour time weighted average noise exposure levels exceeds 85 dba. Employees working a 12-hour shift shall wear hearing protection when the 12 hour time weighted average noise exposure level exceeds 83 dBA.

18.4 Noise exposure limits in Canadian jurisdictions

Jurisdiction (federal, provincial, territorial)	Continuous Noise		Impulse / Impact Noise	
	Maximum Permitted Exposure Level for 8 Hours: dB(A)	Exchange Rate dB(A)+	Maximum Peak Pressure Level dB(peak)	Maximum Number of Impacts
Canada (Federal)	87	3	-	-
British Columbia	85	3	140	-
Alberta	85	3	-	-
Saskatchewan	85	3	-	-
Manitoba	85	3	-	-
Ontario (includes ceiling level of 140 dBC)	85	3	-	-
Quebec	90	5	140	100
New Brunswick	85	5	140	100
Nova Scotia	85	3	140	100
Prince Edward Island (references ACGIH TLVs)	85	3	-	-
Newfoundland	85	3	-	-
Northwest Territories	85	5	140	100
Nunavut	85	5	140	100
Yukon Territories	85	3	140	90

Noise Exposure Limits when Criterion Level = 90 dB(A)

3 dB(A) Exchange Rate	Maximum Permitted Daily Duration (hours)	5 dB(A) Exchange Rate
Allowable Level dB(A)		Allowable Level dB(A)
90	8	90
93	4	95
96	2	100
99	1	105
102	0.5	110
105	0.25	115

Noise Exposure Limits when Criterion Level = 85 dB(A)		
3 dB(A) Exchange Rate	Maximum Permitted Daily Duration (hours)	5 dB(A) Exchange Rate
Allowable Level dB(A)		Allowable Level dB(A)
85	8	85
88	4	90
91	2	95
94	1	100
97	0.5	105
100	0.25	110

Permissible Noise Exposure Regulation of OSHA 1910.95

Duration per day, hours	Sound level dBA response
8……	90
6……	92
4……	95
3……	97
2……	100
1½……..	102
1……	105
½……	110
¼ or less……..	

Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

18.5 Survey of Noise Levels

Any area in which employees are likely to be exposed to hazardous (>85 dBA) noise shall be surveyed. Exposed employees shall be identified and spot dosimetry shall be used to verify area measurements. Include all employees with any chance of exposure to 83 dB or more within the hearing conservation program.

18.6 Controls

Engineering Control

The engineering plan for noise control shall consider all of the following. The detailed plan shall be kept on file in the office of the site manager. When feasible the noise level shall be reduced to <85 dBA.

1. Maintenance of equipment shall be adhered to in order to reduce noise levels.
2. Substitution of machines.
3. Substitution of process.
4. Vibration dampening.
5. Reduction of sound transmission through solids.
6. Reduction of sound produced by fluid flow.
7. Include noise level specifications when buying new equipment.
8. Isolate noise source.
9. Isolate operator.

Administrative Control

When feasible, manipulation of exposure time may be reduced through:

1. Arranging production schedule to distribute heavy noise over time.
2. Dividing work time at excessive noise levels among several people.
3. Shortening run time on noisy machines.
4. Performing noisy jobs when fewer people are in the area.

18.7 Hearing Protection Devices (HPDs)

1. Ear plugs with poor noise reduction are unacceptable.
2. Disposable and semi- disposable plugs such as foam (Ear. Pura foam) are acceptable.
3. Issuing of HPDs shall be the responsibility of the safety designate. The condition of reusable HPDs shall be checked at least monthly by the safety office. Plugs or muffs must be fit or dispensed with instructions by someone who has been appropriately trained and supervised.
4. The choice of HPD s is restricted to those providing sufficient noise reduction so as to reduce the noise level at the ear to below 85 dBA. As a guide, one half of the NRR (Noise Reduction Ratings) may be subtracted from the employee TWA exposure to establish effectiveness.
5. Employees exposed to more than 85 dBA shall be provided with HPDs and be required to wear them.
6. The use of HPDs shall be a condition of employment for exposed employees.

18.8 Noise Reduction Ratings (NRR)

NRR published for various hearing protective devices reflect laboratory test conditions and not actual field conditions. Hearing protection NRRs should be discounted to allow for less than perfect fitting in the field compared to the laboratory.

Our company discounts earplug NRRs by 50% and earmuff NRRs by 60%.

Assuming a laboratory NRR of 29dBA, the following table reflects a field NRR of 15 dba for earplugs and a field NRR of 12 for earmuffs.

Hearing Protection Requirements

Hearing Protection	8 hr TWA Noise Level	12 hr TWA Noise Level
Muffs or Plugs (Voluntary)	<85 dBA	<83 dBA
Muffs	<98	<95 dBA
Plugs	<101	<98 dBA
Muffs and Plugs	<111	<110 dBA

18.9 Audiometric Testing

General

Personnel undergoing audiometric tests shall have their results retained by the examining physician for a period of not less than 10 years.

New Employees

All new employees who may be exposed to noise levels in excess of 85 dBA and above for an 8-hour period or 83 dBA for a 12-hour period will be given an audiometric test at commencement of employment to determine the baseline audiogram.

This baseline audiometric assessment should take place as soon as possible, but not later than 1 month after commencement of employment and within 6 months after a worker is exposed to excess noise because of a change in the worker's duties or process conditions. Annual testing is required for permanent employees. Union workers will have their last hearing test cards available.

Routine Audiometric Testing

Employees exposed to noise levels in excess of 85 dBA for an 8-hour period or 83 dBA for a 12-hour period, should undergo audiometric testing every two years. Employees exposed to noise levels in excess of 90 dBA should undergo annual audiometric testing.

Medical Referral

The employees showing an audiogram with a standard threshold shift of an average of 10 dBA or more at 2000, 3000 and 4000 Hz should seek specialized medical services.

To determine whether the cause of the hearing loss is noise-related, all employees shall be advised in writing of the outcome of the hearing test and of the recommended course of action as deemed appropriate by the examining professional. If the hearing loss is found to be noise-related, review the individual's training, use of hearing protection, and occupational noise exposure level to ensure adequate protection is provided.

Training

Regular and on-going education for workers helps to increase their understanding of the importance of hearing conservation both at work and when exposed to high noise levels at home and at sports and entertainment events.

Personnel who are exposed to noise levels in excess of 83 dBA over a 12- hour time weighted average and are employed by or on projects for which Oil Sands &

Gas and Mining & Metals business units have responsibility will receive training in the following areas:

1. Physics of noise
2. Effect of noise on hearing
3. Hearing protection
4. Noise test methods
5. Permissible noise exposure level
6. Audiometric tests
7. Noise hazards

Employees exhibiting a standard threshold shift (STS) will be refitted and/or reinstructed in the use of hearing protection devices (HPDs).

General

1. Audiometers will be checked biologically prior to daily use. This includes a listening check of cords, switches and earphone wires.
2. Audiometers will be calibrated electro acoustically on an annual basis or as per manufacturer's recommendations and exhaustively calibrated every other year unless a problem is detected earlier.
3. Audiometric sound room will be recertified biannually or more often if a change is suspected.

18.10 Records

1. Site noise survey records are maintained in the safety office. These records are updated whenever new noise measurements are performed in any area.
2. Noise exposure records are regularly updated and maintained with the administrative listing of annual audiometric tests in the medical department.
3. Documentation of audiometer calibration (daily biological, annual electro acoustic, biannual exhaustive), sound room calibration, audiometric technician certification verification, sample letters of notification of outcome of hearing test and recommended course of action are all maintained in the medical care services department.
4. Corporate policy and enforcement program for hearing protective devices is detailed and maintained in the safety office.
5. Records shall be maintained to document employee participation in the annual educational program. These records are on file in the safety office.
6. A copy of the extract of the relevant regulations shall be maintained in both the medical & safety offices.
7. The examining physician shall keep results of audiometric tests for the duration of the employee's employment plus 5 years.

18.11 Walk around Survey

A walk around survey should be performed to screen for noise exposures and to determine if additional monitoring is necessary. When screening for noise exposures, sound level meter measurements and estimates of the duration of exposure are

sufficient. The resulting spot readings can be used to determine the need for a more complete evaluation.

Tour the facility and develop a detailed understanding of facility operations and potential noise sources. Take the tour with someone who is familiar with plant operations. Speak with knowledgeable personnel about operations and maintenance requirements. Make notes on a diagram of the floor plan if possible. Look for indications that noise may be a problem. Indications are as follows:

1. Noisy conditions can make normal conversation difficult.
2. When noise levels are above 80 decibels (dB), people have to speak very loudly.
3. When noise levels are between 85 and 90 dB, people have to shout.
4. When noise levels are greater than 95 dB, people have to move close together to hear each other at all.

High noise levels can cause adverse reactions or behaviors:

Use a sound level meter to take spot readings of operations that are in question. It may be useful to mark the sound levels on a diagram of the floor plan. Make notes regarding what equipment is on or off.

Estimate exposures by identifying workers and their locations and estimate the length of time they spend in different areas or how long they operate particular equipment or tools.

If the results of the walk around survey indicate time-weighted average (TWA) exposures of 80 dBA or more, then additional noise monitoring should be performed.

Walk Shift Sampling

When the results of the walk around survey indicate that noise levels may exceed legislative limits, additional monitoring is necessary. Establish a sampling protocol for the workplace.

General information collected during all government administered work place health and safety inspections, where it is pertinent to evaluate compliance with legislative standards on inspection data is also available.

Sample the noise exposures of representative employees from each job classification that may be potentially overexposed.

Use a dosimeter with a threshold of 80 dBA (A-weighted sound pressure level) and 90 dBA to measure noise exposures.

As a minimum, sampling should be conducted for a length of time necessary to establish whether exposures are above the limits permitted by the legislative standards (for general industry or construction workplaces, respectively). Instrument accuracy must be taken into account. Consider the following with respect to the monitoring results:

TWA exposures at or above the action level of 85 dBA require a hearing conservation program.

TWA exposures exceeding the PEL require feasible engineering or administrative controls to be implemented.

18.12 Noise Control

Consider the following approaches to reducing noise exposure based on practicality and effectiveness. A risk-based approach is to be used with the goal of hazard reduction or complete removal. The following methods will be used to reduce the risk of noise exposure:

1. Complete elimination and removal of noise level sources from work areas.
2. Substitution or replacement of equipment producing excessive noise levels with less noisy equipment.
3. Employment of engineered controls such as insulation, baffles, enclosures and mufflers to reduce noise to acceptable levels, where elimination or substitution of noisy equipment is not practical.
4. Implement administrative controls such as reduction of employee exposure time and scheduling work during non-operating times.
5. Utilize personal protective equipment (PPE) such as earplugs and hearing protection muffs as a last resort and when alternatives are impractical or ineffective.

Noise Level Measurement

Procedures for the measurement of occupational noise exposure and specifications for measuring instruments are performed according to local regulations and standards of the concerned jurisdictions.

A sound level meter (SLM)

Type 2 sound level meter is the basic instrument for investigating noise levels. Sound level meters can be used to:

1. Spot-check noise dosimeter performance.
2. Determine an employee's noise dose whenever use of a noise dosimeter is unavailable or inappropriate.
3. Identify and evaluate individual noise sources for abatement purposes.
4. Aid in determining the feasibility of engineering controls for individual noise sources.
5. Evaluate hearing protectors.
6. Measuring impulse/impact sounds.

Some meters have a "peak" and "impulse" response for measuring transient sounds (sounds that decay or pass with time).

The true peak value is the maximum value of the noise waveform. The impulse measurement is an integrated measurement. The true peak reading should only be used when determining compliance with peak sound pressure level in the respective jurisdiction

The user should not use "impulse" response when measuring true peak sound pressure levels.

18.13 Dosimeter

Dosimeter also measures sound levels. However, the dosimeter is actually worn by the employee in order to determine the personal noise dose during the work shift or sampling period. This meter is designed to measure the actual noise dose, eight-hour projected dose, and relevant time weighted average (TWA) values using the correct thresholds and criterion levels. All information is stored in the instrument and can be downloaded for proper interpretation.

Dosimeters can be used to:

1. Make compliance measurements according to OSHA's noise standard.
2. Measure the employee's exposure to noise and automatically compute the necessary noise dose calculations.

18.14 Octave band analyzers

Octave band analyzers are sound level meters that can be used to:

1. Measure noise at different frequencies and to pinpoint noise-source problems.
2. Help determine the adequacy of various types of frequency-dependent noise controls.
3. Select hearing protectors because they can measure the amount of attenuation (how much a sound is weakened) offered by the protectors in the octave bands responsible for most of the sound energy in a given situation.
4. Divide noise into its frequency components.
5. Some sound level meters may have an octave or one-third octave band filter attached or integrated into the instrument. Usually a Type 1 (precision) sound level meter is used for octave and one-third octave analysis.
6. The filters are used to analyze the frequency content of noise. They are also valuable for the calibration of audiometers and to determine the adequacy of various types of noise control.

Frequency components may include:

Most octave-band filter sets provide filters with the following center frequencies: 31.5, 63, 125, 250, 500, 1,000, 2,000, 4,000, 8,000, and 16,000 Hertz (Hz).

1. For a more detailed analysis, the spectrum is sometimes measured in one-third octave bands.
2. The special signature of any given noise can be obtained by taking sound level meter readings at each of the center frequency bands. The results may indicate octave-bands that contain the majority of the total sound power being radiated.

Record in a permanent record the noise level measurements and noise surveys conducted. The business units Oil Sands and Gas, Mining and Metals and Foundations shall keep the records for a period of 10 years.

Noise level surveys

Baseline noise level surveys are to be conducted in areas where it is necessary to raise the voice over normal talking levels to be heard. Use the survey methods detailed in the occupational hygiene programme. Also conduct surveys as soon as practical after any change to equipment or process that could produce a significant change in noise levels.

Noise dosimetry

Where noise exposures vary significantly over a shift and may exceed 85 dBA, it is necessary to establish an eight hour TWA (time weighted average) noise level for each occupation exposed. Determine the eight-hour TWA using noise dosimeters worn by affected personnel for a minimum of 6 hours or for a sufficient period to be representative of the normal noise levels in the specific area.

On-site consultative programs and mobile hearing testing services

Harrison may contract out and elect to have consultants provide on-site medical consultative services. These would usually consist of sound surveys and the identification of exposed workers to be included in the hearing conservation and testing programs. These would also include the professional review of audiograms, consultation about the hearing protection device (HPD) program, employee annual educational programs, and assistance in record keeping systems. Engineering consultation services may also be utilized in attempts to reduce the noise levels at the source or in the work environment. The on- site consultative programs should include monitoring site workers' job safety performance, ensuring compliance with company policies and government regulations, identifying unsafe conditions and providing onsite training.

Off-site consultative programs

Hearing testing that is accomplished by having the site employees go to the site of the professional. Employees could be periodically tested at the audiologist's private office. Off-site service should include a computerized review and record keeping system. If required training courses for occupational hearing conservationists should also be provided by professionals off-site.

18.15 Definitions

Criterion level: The criterion level, often abbreviated as Lc, is the steady noise level permitted for a full eight-hour work shift. This is 90 dB(A) in most jurisdictions, but in some jurisdictions it is 85 dB(A).

Exchange rate: As the sound level increases above the criterion level, Lc, the allowed exposure time must be decreased. The allowed maximum exposure time is calculated by using an exchange rate, also called a "dose-trading relation" or "trading ratio." The exchange rate is the amount by which the permitted sound level may increase if the exposure time is halved. There are two types of exchange rates currently in use: 3 dB(A) exchange rate or the "3 dB rule," and 5 dB(A) exchange rate or the "5 dB rule."

Time weighted average (TWA): The average exposure to a contaminant or condition (such as noise) to which workers may be exposed without adverse effect over a given period of time.

References

Canadian Provincial Occupational Health & Safety Act & Regulations for Mining and Construction Projects;

USA MSH 30 CFR

USA OSHA 1926

Various Construction Associations Health & Safety Manuals

18.16 Element 18 Revision Table

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Element 19: Bullying and Harassment Awareness

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19.0 Bullying and Harassment Awareness

19.1 Policy Statement

Harrison Industrial Contracting (Harrison) is committed to encouraging and maintaining good employee relations within a working environment which promotes team work and encourages employees to give their best.

Everyone in the company and those who have dealings with the company have a responsibility to maintain good working relationships and not use words or do deeds that may harm the wellbeing of others.

In addition to the obligations placed upon both employers and employees by human rights legislation, everyone has the right to be treated with consideration, fairness, dignity and respect. This contributes to a workplace environment in which individuals feel safe and can work effectively, competently and confidently.

Harrisons policy applies to all employees, subcontractors, consultants, suppliers and visitors. This policy, covers the behavior of all persons outside working hours which may impact upon work or working relationships.

Harrison has a “zero tolerance” policy and will investigate vigorously any allegations of bullying or harassment, regardless of whether the matter has been raised formally or informally.

19.2 Key Values

Harrison will provide and sustain a safe working environment in which everyone is treated fairly and with respect. Those working or dealing with the Harrison must not encounter harassment, intimidation or victimization on the basis of gender, race, colour, ethnic or national origin, sexual orientation, marital status, religion or belief, age, trade union membership, disability, offending background or any other personal characteristic.

Everyone carries a personal responsibility for their own behavior and for ensuring that their conduct is in accordance with the principles set out in this policy. In addition, each person has a responsibility to report any instance of bullying or harassment which they witness or which comes to their attention.

Employees have a responsibility to act as role models, pro-actively addressing instances of bullying and harassment. Managers should also make themselves aware of their responsibility.

Harassment may be defined as any conduct which is:

1. Unwanted by the recipient.
2. Is considered objectionable.

3. Causes humiliation, offence, distress or other detrimental effect.

Harassment may be an isolated occurrence or repetitive. It may occur against one or more individuals.

Harassment may be, but is not limited to:

1. Physical Contract – Any touching, serious assault, gestures, intimidation, and aggressive behavior.
2. Verbal – Unwelcome remarks, suggestions and propositions, malicious gossip, jokes and banter, and offensive language.
3. Non-verbal – Offensive literature or pictures, graffiti and computer imagery, isolation, non-co-operation, and exclusion from social activities.

Bullying is unlikely to be a single or isolated instance. It is usually, but not exclusively, repeated and persistent behavior which is offensive, abusive, intimidating, malicious or insulting.

Bullying includes but is not limited to:

1. Conduct which is intimidating, physically abusive or threatening.
2. Conduct that denigrates, ridicules or humiliates an individual, especially in front of colleagues.
3. Humiliating an individual in front of colleagues.
4. Picking on one person when there is a common problem.
5. Shouting at an individual to get things done.
6. Consistently undermining someone and their ability to do the job.
7. Setting unrealistic targets or excessive workloads.
8. Cyber-bullying (i.e. bullying via e-mail, social media) Care and sensitivity should be practiced with regard to the choice of context and language.
9. Setting an individual up to fail. (i.e. Giving inadequate instructions or unreasonable deadlines.)

Harassment and Bullying may be summarized as any behavior that is unwanted by the person to whom it is directed. It is the impact of the behavior rather than the intent of the perpetrator that is the determinant as to whether harassment or bullying has occurred.

Any employee who wishes to make a complaint of harassment or bullying is encouraged to first discuss matters informally with their supervisor or with Human Resources, provided that they feel able to do so. Should the issues not be resolved at this stage, or the employee feels unable to raise the issue informally, then a formal resolution should be sought.

When a complaint of Harassment or Bullying is brought to the attention of a manager at any level, whether informally or formally, prompt action must be taken to investigate the

matter. Corrective action must be taken where appropriate and this may require an investigation under the Company's Disciplinary Policy and Procedure.

If it is considered that one of the parties concerned in a harassment or bullying case should be moved from their current workplace, then as a matter of principle the company will normally remove the alleged perpetrator rather than the complainant. However, the final decision on who should be moved should reflect the particular circumstances of the case and advice from Human Resources to the relevant manager It should be noted and explained to those concerned that the moving of either party is not an implication of guilt or culpability and no detriment to either party will be construed as a consequence.

All matters relating to the investigation of complaints of harassment or bullying will be treated in strict confidence. Any breach of confidentiality in this regard may render those responsible liable to disciplinary actions. However, it will be necessary that any alleged perpetrator is made aware of the allegations against them and the name(s) of those making the allegations together with the name(s) of any witnesses.

No employee will be victimized or suffer detriment for making a complaint of harassment or bullying and no manager shall threaten, either explicitly or implicitly, that an employee's complaint will be used as the basis for decisions affecting that employee. Such conduct will be treated as a very serious disciplinary offence. Similarly, managers are required to act on any complaint of harassment or bullying. Failure to do so will be regarded as misconduct which if proven, will result in disciplinary action.

All complaints of harassment or bullying whether raised formally or informally must be notified by the recipient of the complaint to Human Resources for recording in accordance with the requirements of human rights legislation. This legislation requires such records to be maintained and the incidence of bullying and harassment to be monitored.

This policy and procedure will be reviewed periodically giving due consideration to legislative changes.

19.3 Informal Resolution

Very often people are not aware that their behavior is unwelcome or misunderstood and an informal discussion can lead to greater understanding and agreement that the behavior will cease.

Complainants are therefore encouraged to try, if they feel able to do so, to resolve the problem informally by making it clear to the alleged harasser that his/her actions are unwanted and should not be repeated. This may be done verbally or in writing in which case the complainant should keep a copy of the documentation and, where possible, the times and dates of incidents should be recorded.

If the complainant feels unable to approach the alleged harasser, a work colleague, or Trade Union representative could be asked to speak to the alleged harasser on the complainant's behalf. A note should be made of the action taken and the matter notified to Human Resources.

An individual who is made aware that their behaviour is unacceptable should:

a) Listen carefully to the complaints and the particular concerns raised.
b) Respect the other person's point of view. Everyone has a right to work in an environment free from harassment and intimidation.
c) Understand and acknowledge that it is the other person's reaction and perception to another's behaviour that is important.
d) Agree the aspects of behaviour that will change.
e) Review their general conduct and behaviour at work and with workplace colleagues.

19.4 Formal Resolution

If the alleged harassment continues, the complainant feels unable or unwilling to deal with the matter informally, or the allegation is so serious as to prevent use of the informal procedure, a complaint should then be raised formally with the employer.

Normally, the employer's representative will be the employee's general foreman. However, if the employee feels unable to do this they should submit the complaint in writing to a more senior manager. In exceptional circumstances, allegations may be raised directly with the relevant manager, who will, with other appropriate senior managers, arrange for the matter to be progressed in accordance with this policy and procedure.

When dealing with a complaint of harassment under the Formal Resolution Procedure, the relevant manager should:

a) Take full details of the incidents in writing from the complainant and their representative (if appropriate).

b) Take full details from any witnesses/other complainants who come forward and may have witnessed the alleged behaviour.

c) Inform the alleged harasser of the complaints against him/her, advise the alleged harasser to seek representation, and invite him/her to a meeting in order that they can comment on the allegations against them.

d) Keep all parties informed of expected timelines.

e) Inform all parties in writing of the outcome and any action that may be required.

If the allegations and the working situation warrant it, the alleged harasser may be suspended during the investigation (in accordance with the established disciplinary procedure) or transferred temporarily pending the outcome of the inquiry to another department.

Should there be a case to answer against the alleged harasser, the manager who has dealt with the complaint will communicate this to an impartial manager who will conduct a separate disciplinary investigation. The normal disciplinary procedure for misconduct/gross misconduct should then be followed. However, the following points should be taken into account:

a) The complainant will normally be required to attend the disciplinary hearing as a witness, unless there are exceptional circumstances which prevent them from doing so.

b) If the complainant is required to attend, they are entitled to be accompanied by either a Trade Union representative or work colleague and have any questions directed through that person.

19.5 Consequences

If the complaint is upheld at the disciplinary stage, there are a number of possible outcomes for the harasser, depending on the evidence presented and the circumstances. These could include, but are not limited to:

1. Dismissal.
2. A formal warning.
3. A recommendation of redeployment of the harasser, either on a temporary or a permanent basis. This will not be on any less favorable terms and conditions of employment.
4. Implementation of other sanctions as detailed in the company's Disciplinary Policy.
5. Making arrangements for both parties to work as separately as possible within the same workplace.

In addition to the above, the harasser may be required to attend any training courses as deemed necessary by the company.

It should also be noted that the complainant may wish to move to a different crew depending upon the nature of the complaint and the people involved. Appropriate consideration should be given to this request and the outcome with reasons provided to the complainant.

With any allegation, the need for a thorough and objective investigation is paramount. Consequently, if through the course of the investigation evidence demonstrates that the allegation has been made frivolously, maliciously, or for personal gain, then the individual making the complaint will be subject to Disciplinary proceedings as outlined in the company's Disciplinary Policy.

19.6 Appeals

Appeals against decisions taken under the Bullying and Harassment at Work Policy and Procedure shall be dealt with as follows:

1. Appeals against a disciplinary sanction will be dealt with in accordance with the appeals process in the Disciplinary Procedure.

2. Appeals by a complainant about the outcome of any inquiry will be dealt with in accordance with the appeal process in the Trade Union Grievance Policy.

19.6 Records

Where the complaint is informal and resolved at this stage, no record will be kept in personal files.

Following formal investigation, where the complaint is not substantiated, no records will be retained.

Where a complaint is substantiated or partially substantiated but does not proceed to disciplinary action, a letter confirming the outcome will be retained in the personal file and supporting documentation retained in a separate file.

Where the matter proceeds to a disciplinary hearing then the storage of records should be in accordance with the disciplinary procedure.

19.7 Element 19 Revision Table

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Element 20: Working at Heights Awareness

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20.0 Working at Heights Awareness

20.1 Purpose

The purpose of this procedure is to ensure that all safety precautions are taken to protect employees and contractors from the possible hazards involved in working in an elevated environment. It also specifies the minimum mandatory requirements and advisory guidance for controlling these hazards during various activities such as operations, maintenance, servicing, and construction. The procedure requires that fall protection must be provided and used whenever persons are exposed to fall hazard that could reasonably result in an injury to an employee working at height.

20.2 Scope

This procedure applies to all employees and contractors who may be exposed to fall hazards while performing work tasks. This procedure primarily addresses working at an elevated height or any height where a fall can result in an injury and where there is no physical protection such as handrails.

20.3 Responsibility

Management
Ensure this document is implemented.

Health and Safety Representative
Ensure the implementation of this procedure is monitored for completion and compliance. Periodically audit the procedure to determine effectiveness of the controls and make improvements when deemed necessary.
Ensure all persons required to work at heights are adequately trained in the procedure and that documentation of training is maintained by the safety department.

Supervisors
Ensure the implementation of this procedure is monitored for completion and compliance.
Ensure that employees are properly trained in this procedure and the use of fall protection devices.

Employees and Contractors
Understand and comply with this procedure.

20.4 Definitions and Requirements

Anchor
A secure point of attachment for a lifeline or lanyard.

1. In a temporary fall restraint system, an anchor for a personal fall protection system must have an ultimate load capacity in any direction in which a load

may be applied of at least 3.5 kN (800 lbs), or four times the weight of the worker to be connected to the system.

2. In a temporary fall arrest system, an anchor for a personal fall protection system must have an ultimate load capacity in any direction required to resist a fall of at least 22 kN (5,000 lbs), or two times the maximum arrest force.
3. A permanent anchor for a personal fall protection system must have an ultimate load capacity in any direction required to resist a fall of at least 22 kN (5,000 lbs).

Fall arrest system
A system that will stop an employee's fall before the employee hits the surface below.

Fall protection system
Includes:

a) Fall restraint system.
b) Fall arrest system.
c) Work procedures that are acceptable to the HRSC and WorkSafe BC and minimize the risk of injury to an employee from a fall.

Fall restraint system
A system to prevent an employee from falling from a work position, or from travelling to an unguarded edge from which the employee could fall.
NOTE: Personal restraint systems are designed to restrain movement so that a fall is not possible. It must have the capacity to withstand at least 3,000 lbs or twice the maximum expected force that is needed to restrain the person from exposure to the fall hazard.

Full body harness
A body support device consisting of connected straps designed to distribute the force resulting from a fall over at least the thigh, shoulders and pelvis, with provision for attaching a lanyard, lifeline or other components.

Lanyard
A flexible line of webbing, or synthetic or wire rope that is used to secure a safety belt or full body harness to a lifeline or anchor.

Lifeline
A synthetic or wire rope, rigged from one or more anchors, to which an employee's lanyard or other part of a personal fall protection system is attached.

Lifeline systems
Lifeline systems are points of attachment for fall protection lanyards and harnesses. Lifelines may be mounted either vertically or horizontally and provide fall protection for employees working in elevated areas. Lifelines shall be protected against being cut, or tampered with. Lifelines are to be inspected by trained, competent employees prior to each use to ensure there is no damage. The inspection of the lifeline must be documented.

a) **Horizontal Lifelines**
   i. Must be designed and engineered to maintain a safety factor of at least two people.
   ii. Lifelines shall be installed, removed and used under the supervision of a designated qualified person.

b) **Vertical Lifeline**
   i. Must have a minimum breaking strength of at least 5000 lbs.
   ii. Must be engineered before use.
   iii. Only qualified persons may install the lifeline.
   iv. Written documentation on personnel qualified to supervise the installation will be kept on file.

Personal fall protection system
An employee's fall restraint system or fall arrest system composed of a safety belt or full body harness, and a lanyard, lifeline and any other connecting equipment individual to the employee that is used to secure the employee to an individual point of anchorage or to a horizontal lifeline system.

Retractable lifeline system
Devices that when properly used, will stop a free fall of a person prior to the employee striking the lower surface.

Rope grab
A deceleration device that 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.

Safety belt
A body support device consisting of a strap with a means for securing it about the waist and attaching it to other components.

20.5 Training

All employees who will be working at heights shall receive training and instruction on the contents of this SOP and in the proper use, selection and inspection, care, limitations, and maintenance requirements of their personal fall protection equipment. Training shall also include hazard recognition concerning working at heights, as well as the use of guardrails and warning lines or tape.

Training on this procedure will be performed on the job by a competent person. The training will be documented and the documentation submitted to the safety department.

20.6 Procedures

1. Before performing any work at heights, a proper risk assessment shall be carried out and work planned to eliminate fall hazards.
2. Examples of work requiring a body harness and lanyard / fall arrest system include (but are not limited) to the following:
    a) Elevated working positions where the hazard of a fall exists and where there is no physical protection such as handrails.
    b) Working near unprotected roof edges or on sloping roofs.
    c) Working on open steel, form work, piping, or equipment.
    d) Working above 2.5m (8 ft) in height on ladders when both hands are needed for carrying out the work
    e) Working on incomplete scaffolds, suspended stage, or other type of suspended scaffolding.

20.7 Inspection and maintenance of fall protection equipment

1. All employees using fall protection will be trained in inspecting and maintaining their personal fall protection equipment. They are to inspect it before and after every use and keep it free from chemicals and any other substances that may deteriorate the equipment. Ensure the manufacturer's expiration date is still current.

2. Equipment used for a fall protection system shall meet and be used in accordance with CSA or ANSI standards, as well as the manufacturer's standards and requirements.

3. During regular inspection, be sure to pay particular attention to:
    a) Braids and webbing.
    b) Stitching.
    c) Condition of grommets, buckles, and hardware.
    d) Presence of manufacturer's date, tag, and serial number.
    e) Harnesses and lanyards exposed to chemicals should be closely examined for deterioration and flexibility.
    f) Cleanliness, broken strands, burns, excessive wear and dirt.

20.8 Ladders - Step, Straight, and Extension

1. All ladders shall be placed on a firm and level base and be positioned so that the horizontal distance from the base to vertical plan of support is approximately ¼ of the ladder length.
2. Ladders shall have sufficient length to project approximately 1m (3 ft) above the upper landing to which it provides access.

3. Do not work off the top two steps of step ladders or the top three rungs on straight and extension ladders.
4. Side-on working is not allowed.
5. Do not overreach – make sure your belt buckle stays within the stiles and keep both feet on the same rung or step throughout the task.
6. While using a ladder, persons shall face the ladders and have both hands free for climbing and descending.
7. Flag off the area immediately below ladders while work is being performed to keep people out of the danger area.
8. Extension ladders are required to be tied off and a second person shall tend the ladder until it is securely tied off at both the top and bottom.
9. All ladders shall be inspected prior to each use for safety defects. Defects affecting safety shall be immediately corrected if possible, or the ladder shall be taken out of service.
10. When a straight ladder or extension ladder is being used for access to a work area (as opposed to working from the ladder) where frequent trips up the ladder will be made, consideration shall be given to providing fall protection such as a retractable lifeline or rope grab for those climbing the ladder.
11. Straight ladders and extension ladders shall always be held by a coworker while the ladder is being tied off. The person on the ladder shall attach their lanyard to the anchor point before tying off the ladder itself where applicable.
12. Ladder shall be positioned with an angle of 4 to 1.

20.9 Fixed ladders

1. Permanently mounted ladders such as those on the side of buildings or vessels shall be anchored securely and installed to provide at least three (3) inches of toe clearance.

2. If working from a fixed ladder where there is a possibility of falling off, tie-off is required. The fixed ladder may be used as a tie-off point.

3. Fixed ladders shall project at least three (3) feet above landings, or substantial handholds shall be provided above the landings.

4. Fixed ladders shall not incline backwards.

5. If a cage is present around the fixed ladder then fall protection is not required for normal day-to-day climbing.

20.10 Scaffolds

1. The scaffold material used must be of sound construction and there must be a firm foundation for all scaffolds.
2. Platforms on scaffolds shall be a minimum width of 50 cm (20 in) or 30 cm (12 in) when used with ladder jacks, pump jack or similar systems.
3. Fall protection is required whenever working outside the plane of the handrails or if working against the handrails with awkward body position. Personnel shall not climb on, or work from, any scaffold handrail, mid-rail, or bracing member. Instead they must use ladders to get onto the scaffold.
4. A scaffold must be effectively guyed or secured to a building or structure if the height of the scaffold exceeds 3 times its minimum base dimension, or in any other circumstances if required for stability.
5. Fall protection shall be used while building scaffolds. Wherever practical, a retractable lifeline should be used to protect those building scaffolds but is not permitted to be attached to the scaffolding due to the side force thrust hazard. Double lanyards must be used in this case so that the person may maintain continuous tie-off.
6. Scaffolds and working platforms shall be of substantial construction and provided with handrails and maintained in good condition. Floor boards shall be laid properly and the scaffolds and working platforms shall not be overloaded. Working platforms shall be provided with toe boards when necessary.

20.11 Boom lift, man lift, and aerial platforms

1. Work platforms shall have sufficient strength to bear the load to be placed on it and be secured against separation from the supporting equipment, structure or surface to which it is attached.
2. When an employee is working from an elevated work platform personal fall protection is required.
3. Employees must ensure they have their harness on and are anchored to the manufacturer’s specified area.
4. When connected to the anchor, the lanyard is to be reasonably short enough to prevent the employee from being ejected from the work platform but long enough that it allows the employees to complete their tasks.

20.12 Control zones

1. A Control Zone is designed and is to be utilized when performing work on flat surfaces (i.e. a flat roof). Danger or caution tape, delineators or a warning line shall be used to maintain the control zone. These warning devices allow employees to notice when they are approaching the unprotected area of the roof.
2. A control zone shall be:
    a) Used only on a flat surface or a surface that has a slope no more than 4 degrees toward an unguarded edge.
    b) No less than 2 meters wide when measured from the unguarded edge.

REFERENCES

Health, Safety and Reclamation Code (HSRC):
- 4.4.1 Fall Arresting Devices
- 4.5.1 Elevating Work Platforms and Aerial Devices
- 4.14 Temporary Work Platforms – General

Work Safe BC
- Part 4.54-4.63 Work Area Guards and Handrails
- Part 11 Fall Protection
- Part 13 Ladders, Scaffolds & Temporary Work Platforms

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Element 21: Confined Space Awareness

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12.0 Confined Space Awareness

21.1 Definitions (specific to our scope of work)

Authorized entrant
A competent worker who is authorized by a Harrison supervisor to perform a specific task at this confined space location.

Clean respirable air
When used to describe the atmosphere inside a confined space, means an atmosphere which is equivalent to clean, outdoor air and which contains:

(a) About 20.9% oxygen by volume.
(b) No measurable flammable gas or vapor as determined using a combustible gas measuring instrument.
(c) No air contaminant in concentrations exceeding either 10% of its applicable exposure limit in Part 5 (Chemical Agents and Biological Agents) or an acceptable ambient air quality standard established by an authority having jurisdiction over environmental air standards, whichever is greater.

Competent worker
A worker, who is adequately qualified, suitably trained and with sufficient experienced to perform the work without supervision or with a minimal degree of supervision.

Confined space
Except as otherwise determined by WorkSafeBC, means an area, that is:

(a) Enclosed or partially enclosed.
(b) Not designed or intended for continuous human occupancy.
(c) Has limited or restricted means for entry or exit that may complicate the provision of first aid, evacuation, rescue or other emergency response service.
(d) Large enough and so configured that a worker could enter to perform assigned work.

A confined space does not include a mine shaft or the workings of a mine.

Entry
The action by which a person passes through an opening into a confined or restricted space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as the worker's breathing zone crosses the plane of the confined space access.

Entry permit
The printed document that is provided by the employer to allow and control entry into a confined space and that contains the information specified in this program.

Entry supervisor
The supervisor responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this program.

Hot work
Any work involving burning, welding or similar fire-producing operations. Also any work that produces a source of ignition, such as grinding, drilling, or heating.

Immediately dangerous to life or health (IDLH)
An atmosphere that poses an immediate threat of loss of life. It may result in irreversible and/or immediately severe health effects or other conditions that could impair escape from a confined space.

Harmful atmosphere
An atmosphere that may pose a health or safety hazard to workers due to one or more of the following:

a) Flammable gas, vapours, or mists in excess of 10% of its lower explosive limit (LEL).
b) Atmospheric oxygen concentration below 19.5% or above 23%.
c) Atmospheric concentration of any substance that exceeds the Occupational Exposure Limit (OEL).
d) Any other atmospheric condition that is immediately dangerous to life or health.

Harmful substance
A WHMIS controlled product, a substance, or a substance which may have a harmful effect on a worker in a confined space.

High hazard atmosphere (Level 1)
An atmosphere that may expose a worker to risk of death, incapacitation, injury, acute illness or otherwise impair the ability of the worker to escape unaided from a confined space, in the event of a failure of the ventilation system or respirator.

Inerting
Intentionally flooding the atmosphere inside a confined space with an inert gas such as nitrogen to eliminate the hazard of ignition of flammable vapours inside the confined space but thereby creating an oxygen deficient atmosphere.

Inert gas
A gas which does not undergo chemical reactions under a set of given conditions. Inert gases are used generally to avoid unwanted chemical reactions degrading a sample. These undesirable chemical reactions are often oxidation and hydrolysis reactions with the oxygen and moisture in air. Purified nitrogen and argon gases are most commonly used as inert gases due to their high natural abundance (78% N_2, 1% Ar in air) and low relative cost.

Lower explosive limit (LEL)
The minimum concentration of a combustible gas or vapour in air that will ignite if an ignition source is introduced.

Low hazard atmosphere (Level 2)
An atmosphere which is shown by pre-entry testing or otherwise known to contain clean repairable air immediately prior to entry to a confined space and which is not likely to change during the work activity, as determined by a qualified person after consideration of the design, construction and use of the confined space, the work activities to be performed, and all engineering controls required by this Regulation.

Moderate hazard atmosphere (Level 3) means an atmosphere that is not clean respirable air but is not likely to impair the ability of the worker to escape unaided from a confined space, in the event of a failure of the ventilation system or respirator.

Non-entry rescue
Rescue that doesn't involve entry into a confined space using lifelines or tripod hoists.

Oxygen-deficient atmosphere
An atmosphere that contains an oxygen concentration of less than 19.5% by volume.

Oxygen-enriched atmosphere
An atmosphere that contains an oxygen concentration greater than 23% by volume.

Personal protective equipment (PPE)
Any devices or clothing worn by the worker to protect against hazards in the environment. Examples are respirators, gloves, and chemical splash goggles.

Purging the removal of gases or vapours from a confined space by the process of displacement.

Restricted space
An enclosed, or partially enclosed space, not designed or intended for continuous human occupancy, that has restricted, limited or impeded means of entry or exit because of its construction. All other hazards are either non-existent or have been eliminated or controlled.

Watch/standby person
A competent worker who is in constant communication with workers in the confined or restricted space, has a suitable system for summoning assistance in case of emergency and is not permitted to leave the confined or restricted space work area until all workers have left the confined or restricted space or he/she has been relieved by another tending worker.

21.2 Harrison involvement with confined space work

Harrison's involvement with confined spaces is limited to:

1. Placement, of cable trays, cable(s) conduit in new vaults/manholes.
2. Placement, of cable trays, cable(s) conduit in existing vaults/manholes.
3. Mill work where connection of cable may be in a new tank.

Confined space entry for our scope of work is classified as low hazardous atmosphere. (Level 3 or restricted.)

All cleaning, purging, or inerting will be completed by others qualified to complete these tasks as per WorkSafeBC Regulations.

Regardless of whom ever is tasked to have the confined space made safe for entry, their process must meet or exceed our Confined Space Entry Program.

Purpose

Confined space work is a small part of this company's construction activities. This confined space awareness program has been developed to assist all workers who will be participating in confined space work for our company. This program is reflective of the British Columbia Occupational Health and Safety Act and Regulations and must apply to all confined space work. Harrison will ensure that those employees having to enter a confined space will be adequately trained for this task.

Statement

The strategy of this company is to commit to the health, safety, and environmental protection for the benefit of its employees, subcontractors and anyone who may be a part of or near a confined space work area.

In the ongoing control of illness and injuries that may occur from improperly entering into confined spaces, the primary objectives of this company are to:

1. Reduce the number of confined spaces (when feasible).
2. Limit the number of confined spaces entries.
3. Identify all possible hazards.
4. Have controls in place prior to entry of any confined space.

A sound and effective confined space awareness program is essential in ensuring that employees required to enter and work in confined spaces are properly trained and protected from associated risks and health hazards.

21.3 General requirements and safe work practices

1. A confined space is an enclosed or partially enclosed space that:

   a) Is not designed or intended primarily to be occupied or entered by a person.
   b) Is, or is designed or intended to be, at normal atmospheric pressure while any person is in the space.

c) Presents a risk to health and safety from:
   i. An atmosphere that does not have a safe oxygen level.
   ii. Contaminants, including airborne gases, vapors and dusts that may cause injury from fire or explosion.
   iii. Harmful concentrations of any airborne contaminants, engulfment, or entrapment.

2. A person has entered a confined space if:

a) The person's head or upper body is in the confined space or within the boundary of the confined space.
b) The person is in close proximity to an opening into the confined space in such circumstances that there is a serious risk that the person's head or upper body will inadvertently enter the confined space.

3. Prior to entering a confined space, all risks/hazards must be thoroughly assessed and mitigated.

   The work activities carried out in a confined space can indicate the hazards that may be present. For example, the use of hazardous chemicals can lead to oxygen deficiency, atmospheric contaminants or flammable atmospheres.

   Some of the hazards that may be associated with confined spaces include ignition hazards from welding and cutting, atmospheric hazards which cause the environment to be contaminated with harmful substances, oxygen deficient or oxygen enriched, engulfment hazards from sand and soil and noise hazards from the operation of equipment and plant.

   To minimize the risks associated with working in a confined space consider:

a) The nature of the confined space.
b) If a hazard is associated with the level of oxygen or the level of airborne contaminants in the confined space, any change that may occur in the level of oxygen or the contaminant.
c) The work to be carried out in the confined space, the range of methods by which the work can be carried out and the proposed method of working.
d) The means of entry to and exit from the confined space.
e) The type of emergency rescue procedures required.

   Other issues that need to be addressed include confined space entry permits, signage, communication, atmospheric monitoring and exposure standards, training and instruction, flammable gases and rescue procedures.

Confined Space Safe Work Practices

Initial Determination

Harrison will ensure that each confined space in the workplace is identified, and determine whether any such space will require entry by a worker, either in scheduled work activities or as a result of foreseeable system failures or other emergencies.

Prohibited Entry
If a confined space exists at a workplace but no worker entry is required, Harrison's supervisor will ensure that each point of access to the confined space is secured against entry or identified by signage which clearly indicates **THIS IS A CONFINED SPACED "DO NOT ENTER."**

Control of Hazards
Harrison will ensure that all confined space hazards are eliminated or minimized and that work is performed in a safe manner. A Job Hazard Assessment will be completed for each confined space entry.

Prior to Entry
Before an employee is required or permitted to enter a confined space, the responsible supervisor will prepare and implement a written confined space entry program which includes:

1. An assignment of responsibilities.

2. A list of each confined space or group of similar spaces and a hazard assessment of those spaces.

3. A written safe work procedure for entry into and work in the confined space, that address, where applicable:
   a) Identification and entry permits
   b) Lockout and isolation
   c) Verification and testing
   d) Cleaning, purging, venting or inerting
   e) Ventilation
   f) Standby persons
   g) Rescue
   h) Lifelines, harnesses and lifting equipment
   i) Personal protective equipment and other precautions
   j) Coordination of work activities

21.4 Responsibilities

Each person who is assigned duties or responsibilities related to entry into a confined space must be adequately instructed and trained in:

1. The hazards of the space, and
2. The precautions identified in written procedures to properly perform their duties.

Management
Ensure that all aspects of this confined space program meet or exceeds legislative requirements.

Supervision
1. The employer must assign responsibility for supervision to a person who is adequately trained to supervise the job before any worker enters a confined space.
2. The responsible supervisor must ensure that:
   (a) Pre-entry testing and inspection is conducted based on the written procedures.
   (b) The precautions identified in the written procedures and the precautions required by this Regulation or which are otherwise necessary for the health and safety of workers are followed.
   (c) Only authorized workers enter a confined space.

Employees
1. To be trained and educated in confined space entry.
2. Employees who may enter confined spaces shall comply with the confined space entry procedures contained herein and with those procedures stipulated by their supervisor. To comply, employees shall carry out the following tasks:
   a) Store, clean, maintain and guard against damage, equipment used for confined space entry.
   b) Report any deficiencies or malfunction of equipment to a supervisor.
   c) Understand emergency procedures in case of an accident in a confined space.
   d) Under no circumstance, enter a confined space that is suspect of having a non-respirable atmosphere, even to rescue a fellow employee.

21.5 Hazard assessment and work procedures

Hazard Assessment
A hazard assessment must be conducted for each confined space, or each group of confined spaces which share similar characteristics, work activity, or group of work activities which present similar hazards, to be performed inside a confined space.

The hazard assessment must consider:

1. The conditions which may exist prior to entry due to the confined space's design, location or use, or which may develop during work activity inside the space.

2. The potential for oxygen enrichment and deficiency, flammable gas, vapour or mist, combustible dust, other hazardous atmospheres, harmful substances requiring lockout and isolation, engulfment and entrapment, and other hazardous conditions.

Procedures
Written procedures specifying the means to eliminate or minimize all hazards likely to prevail must be developed, based on the hazard assessment document.

Qualifications
A hazard assessment and written confined space entry procedures will be prepared:

1. By a qualified person who has adequate training and experience in the recognition, evaluation and control of confined space hazards.

2. In consultation with the person assigned overall responsibility for administration of the confined space entry program and with the joint committee or the worker health and safety representative, as applicable.

21.6 Identification and entry permits

Identification of confined space
When a confined space requires entry by a worker, each point of access which is not secured against entry must be identified by a sign or other effective means which indicates the hazard(s) and prohibits entry by unauthorized workers.

When a permit is required
An entry permit must be completed and signed by the responsible supervisor before a worker enters a confined space:

1. With a high hazard atmosphere.
2. That requires lockout or isolation procedures to be followed.
3. In which there is a hazard of entrapment or engulfment.

An entry permit must be posted at each designated point of entry to a confined space. Does not apply if the entry permit is posted at a minimum of one designated point of entry and the identification at other designated points of entry includes up-to-date information on whether it is safe to enter, and all workers authorized to enter are informed of the location of posted entry permits.

Contents of permit
An entry permit will identify the:

1. Confined space and the work activities to which it applies.
2. Workers who are inside the space.
3. Required precautions for the space.
4. Time of expiration of the permit.

Updating the information
Once issued, the information on an entry permit may only be altered by:

1. The responsible supervisor who signed the permit to update it in accordance with subsection (2) or (3).

2. The standby worker to update the list of workers inside the confined space.
3. The tester to record test results.

An entry permit must be reviewed and updated as necessary to ensure the ongoing safety of the workers inside the space. The permit must be re-authorized and signed by the responsible supervisor under the following circumstances:

1. If there is a change in the work crew.
2. After each shift change, or after a change of the responsible supervisor.

Every worker affected must be informed of an alteration of an entry permit regarding a change in the required precautions or work activity.

Record of permit
A copy of the signed entry permit will be kept for at least one year.

21.7 Verification and testing (industrial scientific M 40)

Before a worker enters a confined space, pre-entry testing and inspection must be conducted to verify that the required precautions have been effective at controlling the identified hazards and that it is safe for a worker to enter.

Testing the atmosphere
Before a worker enters a confined space, the employer must ensure that the atmosphere in the confined space is tested in accordance with this section.

The pre-entry testing must be:

(a) Conducted as specified in the written work procedures.
(b) Completed not more than 20 minutes before a worker enters a confined space.

When all workers have vacated the confined space for more than 20 minutes, pre-entry testing, must be repeated.

While a worker is inside a confined space with a moderate or high hazard atmosphere, additional testing must be conducted as necessary to ensure the worker's continuing safety.

Whenever practicable, continuous monitoring of the atmosphere must be done.

If a worker enters a confined space with a moderate or high hazard atmosphere, the employer must continuously monitor the atmosphere if a flammable or explosive atmosphere in excess of 20% of the lower explosive limit could develop.

Pre-entry atmospheric testing is not required in a confined space with a low hazard atmosphere if:

(a) the location and control of the space ensures that a more hazardous atmosphere could not inadvertently develop,

(b) such testing is not required to verify the effectiveness of an isolation or other pre-entry control,
(c) prior representative sampling has demonstrated that the atmosphere within the space or group of similar spaces meets the low hazard atmosphere definition, and
(d) the written entry procedures do not require such testing.

Procedures and equipment

Each confined space test must be carried out by a qualified person who has training and experience to calibrate, operate and monitor testing equipment and interpret readings from the testing equipment.

The test record must show the date and time of the test, the initials of the tester and the levels or condition found.

Test results, other than continuous monitoring results, must be posted without delay at all points of entry to the confined space.

21.8 Cleaning, Purging, Venting, Inerting

Cleaning, purging and venting
When practicable, the employer must ensure that a confined space to be entered contains clean respirable air.

If a confined space is known, or shown by pre-entry testing to contain other than clean respirable air, the hazard must be controlled by cleaning, purging or venting the space and the atmosphere must be retested before a worker enters the space.

The dead-ends of a line that has been isolated must be cleaned, purged or vented to remove any harmful substance which could present a hazard to a worker entering the confined space.

Risk control
If clean respirable air cannot be assured in a confined space before worker entry, the employer must ensure that:

a) all workers entering the space wear appropriate personal protective equipment including respirators when necessary,
b) the concentrations of flammable gases and vapors are maintained below 20% of the lower explosive limit, and
c) if flammable or explosive gases, vapors or liquids are present, all sources of ignition are eliminated or adequately controlled.

Inerting

The employer must notify the Board in writing, and submit a copy of the proposed work procedures, at least 7 days before a worker enters a confined space which has been inerted.

The employer must follow any additional precautions that are prescribed by the Board after review of the notification.

If a confined space has been inerted:

a) all entry precautions for high hazard atmospheres must be followed, except the requirement for continuous ventilation,
b) every worker entering the confined space must be equipped with a supplied-air respirator meeting the requirements of Part 8 (Personal Protective Clothing and Equipment),
c) all ignition sources must be controlled, and
d) the atmosphere inside the confined space must remain inerted while workers are inside.

Subsection (1) does not apply to entry for the purpose of performing emergency rescue duties.

21.9 Ventilation

Continuous ventilation

Every confined space must be ventilated continuously while a worker is inside the space, except in:

a) an atmosphere intentionally inerted in accordance with section 9.29,
b) a low hazard atmosphere controlled in accordance with section 9.31(2), or
c) an emergency rescue, if ventilation is not practicable.

Low hazard atmospheres (level 3)

The employer must ensure that a minimum of 85 m^3/hr (50 cfm) of clean respirable air is supplied for each worker inside a confined space with a low hazard atmosphere, except as permitted in subsection (2).

Continuous ventilation is not required in a confined space which has a low hazard atmosphere, if:

a) the atmosphere is continuously monitored and shown to contain clean respirable air, and
b) the space has an internal volume greater than 1.8 m^3 (64 cu ft) per occupant, is occupied for less than 15 minutes, and the work inside the space generates no contaminants other than exhaled air.

Mechanical ventilation

1. A ventilation system for the control of airborne contaminants in a confined space must be designed, installed and maintained in accordance with

established engineering principles and must be specified in the written procedures.

2. Ventilation equipment must be located and arranged so as to adequately ventilate every occupied area inside the confined space.

3. If a contaminant is produced in a confined space, it must be controlled at the source by a local exhaust ventilation system if practicable, by general (dilution) ventilation, or by a combination of both.

4. If practicable, a mechanical ventilation system for a confined space must be sufficient to maintain concentrations of airborne contaminants below the applicable exposure limits.

Natural ventilation

1. If natural ventilation is relied upon for the control of airborne contaminants in a confined space, the rate of airflow through the space must be monitored and must be sufficient to maintain concentrations of airborne contaminants below the applicable exposure limits.

2. Natural ventilation must not be used,
   a) to ventilate a confined space that has a high hazard atmosphere, or
   b) if such ventilation could draw air other than clean respirable air into the confined space.

21.10 Standby/Watch Person

1. Low hazard atmosphere

a) If a worker enters a confined space which contains a low hazard atmosphere another worker must be assigned as a standby person.
b) There must be a continuous means of summoning the standby person.
c) The standby person must check on the well-being of workers inside the space at least every 20 minutes.
d) The standby person must have a means to immediately summon rescue personnel.

2. Moderate hazard atmosphere (Level 2)

If a worker enters a confined space which contains a moderate hazard atmosphere:

a) another worker or workers must be assigned as the standby person(s),
b) a standby person must be stationed at or near the entrance to the space,
c) the standby person must visually observe or otherwise check the well-being of the worker(s) inside the space, as often as may be required by the nature of the work to be performed, but at least every 20 minutes,
d) there must be a continuous means of summoning the standby person from inside the space, and
e) the standby person must have a means to immediately summon rescue personnel.

3. High hazard atmosphere (level 1), engulfment or entrapment

If a worker enters a confined space which contains a high hazard atmosphere, a risk of engulfment or entrapment or with any other recognized serious health or safety hazard:

a) another worker or workers must be assigned as the standby person(s),
b) the standby person(s) must be stationed at the entrance to the space and must continuously attend to the standby duties,
c) the standby person(s) must visually observe or otherwise continuously monitor the well-being of the worker(s) inside the space,
d) there must be a continuous means of summoning the standby person(s) from inside the space,
e) the standby person(s) must be equipped and capable of immediately effecting rescue using lifting equipment if required, or otherwise performing the duties of rescue persons, and
f) the standby person(s) must prevent the entanglement of lifelines and other equipment.

21.11 Rescue

1. Provision of rescue services

a) Harrison will provide for the services of rescue persons when a worker enters a confined space. Either our own employees will have the appropriate training or the project emergency rescue team will be notified.
b) If the rescue persons are employees of another firm, or an agency such as a fire department, there must be a written agreement detailing the services that are to be provided.

2. Equipment and training

a) Every person assigned rescue duties must be properly equipped and adequately trained to carry out such duties.
b) A practice drill must be conducted at least annually.
c) Records of training and practice drills must be maintained by the employer of the rescue persons.

3. Notification

a) Before a worker enters a confined space, the responsible supervisor or the standby person must notify rescue personnel of work in the space.
b) The responsible supervisor or the standby person must notify rescue personnel when all workers have completed their work and exited from the space.
c) If more than one confined space is to be entered at the same time, notification of rescue personnel to be on alert status at the commencement of work is adequate.
d) Notification requirements in this section do not apply if the written agreement indicates that rescue personnel are available 24 hours each day.

4. Summoning Rescue

The employer must ensure that rescue personnel monitor any signaling system that will be used to summon the rescue persons in the event of an emergency whenever they have been informed by the responsible supervisor or the standby person that a confined space entry is in progress.

5. Rescue procedures

a) Rescue or evacuation from a confined space must be directed by a supervisor who is adequately trained in such procedures or a qualified rescue person.
b) Effective voice communication must be maintained at all times between workers engaged in the rescue or evacuation and the person directing the rescue.
c) A rescue worker must not enter a confined space unless there is at least one additional worker located outside to render assistance.
d) A self-contained breathing apparatus, or air supplied respirator with escape bottle, must be used during rescue operations in an unknown or IDLH atmosphere.

Note: Rescue procedures must apply every possible effort to eliminate, control or reduce the risk to emergency personnel responding to emergency situations including the use of mechanical ventilation.

21.12 Lifelines, harnesses and lifting equipment

When required
When entering a confined space which contains a high hazard atmosphere, a risk of entrapment or engulfment or with any other recognized serious health or safety hazard, the worker must wear a harness of a type which will keep the worker in a position to permit rescue.

A lifeline must be attached to the harness and be tended at all times by a standby person stationed outside the entrance to the space.

The standby person must be equipped with suitable lifting equipment if necessary to permit rescue.

The use of a lifeline is not required if the risk assessment identifies obstructions or other conditions that make its use impractical or unsafe.

Standards
Harnesses, lifelines and lifting equipment must meet the requirements of standards acceptable under this Regulation.

Line entanglement
If one or more workers enter a confined space, provision must be made to prevent the entanglement of lifelines and other equipment.

Additional workers
If rescue cannot be effected by the standby person(s) using harnesses, lifelines and lifting equipment, then one or more additional workers must be stationed at the entrance to the confined space and these workers must be equipped and capable of entering the space and effecting rescue.

21.13 Personal protective equipment and other precautions

Emergency escape respirator
Workers entering a confined space which contains a high hazard atmosphere must carry on their person or have within arm's reach an emergency escape respirator sufficient to permit them to leave the confined space without assistance. Either an SCBA, or an airline respirator with an auxiliary self- contained air cylinder of sufficient capacity to permit the worker to escape unassisted from the contaminated area if the air supply fails.

Compressed gas cylinders
A cylinder of compressed gas is not permitted inside a confined space, except for a cylinder of compressed air supplied to a respirator, medical resuscitation equipment, handheld aerosol spray containers, fire extinguishers, or other equipment permitted by the Board.

Torches and hoses
When practicable, torches and hoses used for welding, brazing or cutting must be removed from a confined space when not in use and when the confined space is vacated.

Note: It may be impracticable to remove hoses for some short duration breaks of 60 minutes or less, particularly where the confined space is large or where the removal of hoses may create some risk to workers, for example, when hoses are removed from scaffolding. If removal is impracticable, alternate measures must be adopted under sections 9.4 and 9.5. The preferred method in most cases is to disconnect at source with safe venting procedures together with procedures to ensure no inadvertent reconnection while workers are on the break or, if this is not practicable, closing and putting a tag on connections located outside the confined space. Other applicable requirements in Part 9 must also be followed including those on ventilation, standby persons and retesting prior to re-entry. For further information, see the OHS Guideline on section 9.49

Electrical equipment
Electrical tools and equipment used in a confined space must be grounded or double-insulated and so marked, and if wet or damp conditions exist inside the space, must be protected by an approved ground fault circuit interrupter as required by Part 19 (Electrical Safety).

Electrical tools and equipment used in a confined space where flammable vapors of explosive gases, or liquids are present must be CSA approved for hazardous locations classified under CSA Standard C22.1-94, Canadian Electrical Code Part 1, as Class 1, Division 2, Groups A, B and C.

Non-sparking tools

Only non-sparking tools may be used in a confined space where flammable or explosive gases, vapors or liquids are present.

21.14 Element 21 Confined Spaces Awareness

Date	Revisions/Additions/Deletions	Page #	Initials

APPENDIX A

Safe Work Practices

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Safe Work Practices

Electrical Safety Work Practices

It is the responsibility of each exposed employee's immediate supervisor to ensure that the employee has received the training necessary to safely perform his or her duties. This training will be given via classroom and on-the-job instruction and is to be documented. Exposed employees shall be trained in and familiar with the safety related work practices required by MIOSHA General Industry Standards Part 40, and safety related work practices contained within the National Electric Code as they pertain to their respective job assignments. Additional training requirements for qualified persons are also mandated.

Employees will be trained in specific hazards associated with their potential exposure. This training will include isolation of energy, hazard identification, premises wiring, connection to supply, generation, transmission, distribution installations, clearance distances, use of personal protective equipment and insulated tools, and emergency procedures.

Qualified Person

Those persons who are permitted to work on or near exposed energized parts and are trained in the applicable electrical safe work practices.

Qualified persons shall, at a minimum, be trained in and familiar with:

1. the skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment,
2. the skills and techniques necessary to determine the nominal voltage of exposed live parts, and
3. the clearance distances specified in Table I and the corresponding voltage to which the qualified person will be exposed.

All electrical energy sources must be locked out when any employee is exposed to direct or indirect contact with parts of fixed electrical equipment or circuits.

Safety related work practices will be used to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts. Safety related work practices will be consistent with the nature and extent of the associated electrical hazards.

Specific types of work practices covered by this safety procedure include:

Working with de-energized parts
Working with energized parts
Vehicular and mechanical equipment near overhead lines and underground lines

Illumination
Conductive materials and equipment
Portable Ladders
Housekeeping

Portable Equipment

All portable electric equipment will be handled in such a manner that will not damage or reduce service life. Flexible cords connected to equipment may not be used for raising or lowering equipment and will not be used if damage to the outer insulation is present. Additionally, visual inspections are required and unauthorized alterations of the grounding protection are not allowed to ensure the safety of employees. Prior to each shift, a visual inspection will be performed for external defects and for possible internal damage. Attachment plugs and receptacles may not be connected or altered in a manner that would prevent proper continuity of the equipment grounding conductor. In addition, these devices may not be altered to allow the grounding pole of a plug to be inserted into slots intended for connection to the current-carrying conductors.

Portable electric equipment and flexible cords used in highly conductive work locations or in job locations where employees are likely to contact water or conductive liquids shall be approved by the manufacturer for those locations. The hazardous locations that employees should be aware of include, wet locations and locations where combustible or flammable atmospheres are present.

For wet locations, employees' hands will not be wet when plugging and unplugging energized equipment. Energized plug and receptacle connections will be handled only with protective equipment if the condition could provide a conductive path to the employee's hand (if, for example, a cord connector is wet from being immersed in water). In addition, ground-fault circuit interrupter (GFCI) protection is required for some equipment/locations and is also recommended for use in all wet or highly conductive locations.

For combustible/flammable atmospheres, all electric equipment and wiring systems in classified locations must meet The National Electric Code requirements for that particular classification.

Protective Equipment

Employees working in confined areas such as electrical vaults or any other area where there are potential electrical hazards will be provided with and use protective equipment that is appropriate for the work to be performed.

Examples of Personal Protective Equipment (PPE) that might be needed for protection against electric shock include but are not limited to:

Nonconductive hard-hats, gloves, and foot protection or insulating mats

Eye and face protection whenever there is danger from electric arcs or flashes
Insulated tools or handling equipment
Protective shields and barriers to protect against electrical shock and burns

Additionally, other ways of protecting employees from the hazards of electrical shock will be implemented, including insulation and guarding of live parts. The insulation must be appropriate for the voltage and the insulating material must be undamaged, clean, and dry. Guarding prevents the employee from coming too close to energized parts. It can be in the form of a physical barricade or it can be provided by installing the live parts out of reach from the working surface.

Conductive Materials and Equipment

Conductive materials and equipment (e.g., hand tools) will be handled to prevent contact with exposed energized conductors or circuit parts. Conductive articles of jewelry and clothing (such as watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear) will not be worn.

De-energized Parts

All electrical parts exceeding 50 volts will be de-energized before an employee works on or near equipment unless:

The de-energizing creates a more hazardous situation
The equipment, by design, cannot be shut down
The decision to work without de-energizing shall be made by management and documented before work begins
When any employee is exposed to direct or indirect contact with parts of fixed electrical equipment or circuits that have been de-energized, the electrical energy source will be locked out.

Energized Parts

If work must be performed while equipment is energized or if de-energizing is not feasible, additional safety measures will be taken to ensure the safety of the qualified employee and any other persons who may be exposed. Protection from energized parts will be suitable for the type of hazard involved. Exposed energized parts in areas accessible to the public shall be continuously protected by an authorized attendant. In areas not accessible to the public, employees shall be protected from exposed energized parts by the use of signs or tags. In addition to signs or tags, barricades shall be used where necessary to limit access to areas with exposed energized parts.

Only Qualified persons will be allowed to perform work directly on energized parts or equipment. Qualified persons will be capable of working safely on energized circuits and will be familiar with special precautionary techniques, personal protective equipment,

insulating and shielding materials and insulated tools. Qualified persons must also have received the training required in this safety procedure.

Illumination

Employees will be provided with adequate light to work on energized equipment or equipment will be relocated to ensure adequate light is available.

Portable Ladders

Portable ladders will have nonconductive surfaces if they are used where the employee or the ladder could be exposed to electrical shock hazards.

Reclosing Circuits

If circuits are tripped using a protective device such as ground fault circuit interrupter (GFCI), power will not be restored until the reason for the interruption is determined and corrected. Fuses or breakers will not be replaced or reset until it is determined that the circuit is safe to operate. Fuses will not be replaced with higher rated fuses or with makeshift devices to bypass circuit protection as designed. Problems will be identified and promptly repaired by a qualified person.

Vehicular and Mechanical Equipment near Overhead Power Lines

Overhead power lines will be de-energized and grounded before any work is performed by any vehicle or mechanical equipment near the energized overhead power lines. If the overhead lines cannot be de-energized, then the vehicle or mechanical equipment will be operated so that a clearance of 10 feet is maintained. If the voltage of the overhead line exceeds 50 kV, the distance will be increased 4 inches for every 10 kV increase in power. If lines are protected with properly rated insulating devices, the distance may be decreased. If the equipment is an aerial lift insulated for the voltage involved and if the work is performed by a qualified person, the clearance may be reduced. If protective measures such as guarding or isolation are provided, these measures must protect the employee from contacting such lines directly with any part of the body or indirectly through conductive materials, tools, or equipment.

Working	Clearance	Distances
Voltage ("V")	Fully Insulated Minimum Distance	Un-insulated (or covered) minimum distance
Less than 300 volts (phase to phase)	3 – feet	10 – feet
300V to 50 kV	10 – feet	10 – feet
More than 50 kV	10-feet plus 0.4 inches for each 1\kV>50 kV	10-feet plus 0.4 inches for each 1\kV>50 kV
Vehicle in transit	**Clearance**	**Distances**
Voltage ("V")	Minimum Distance	
Less than 50 kV	4-feet	
50 kV up to & including 345 kV	10-feet	
More than 345 kV	16-feet	

Electrical Equipment/Machinery

All electrical equipment and machinery must be grounded effectively so that there is no potential difference between the metal enclosures. Use the voltage detector to find discrepancies and other test equipment to determine the corrective action required. Disconnects should be easily identified with the specific machinery they shut off. Disconnects should also be accessible near the machinery for use in an emergency. The disconnects should be activated periodically to be sure they are operable. All electrical connections to the equipment must be secure so that no cord or cable tension will be transmitted to the electrical terminals within the equipment. The wiring installation should be such that it is protected from damage at all times.

GFCI Protection

Generally, GFCI protection is not required by the NEC on a retroactive basis. Where there is an employee exposure to potential line-to-ground shock hazards, GFCI protection should be provided. This is especially important in work areas where portable electrical equipment is being used in wet or damp areas in contact with earth or grounded conductive surfaces.

Temporary wiring that is being used on a permanent basis should be replaced with fixed wiring. Conduit and/or cable systems must be protected from damage by vehicles or other mobile equipment. All fittings and connections to junction boxes and other equipment must be secure. No exposed wiring can be allowed. Check for missing knockouts and cover plates. Jerry-rigged splices on flexible cords and cables should be

correctly repaired. Electrical equipment should be installed in a neat and professional manner. Check for damaged insulation on flexible cords and pendant drop cords.

Table I: Approach Distance For Qualified Employees

Alternating Current	
300V and less	Avoid Contact
Over 300V, but less than 750V	1 ft. 0 in. (30.5 cm)
Over 750V, but less than 2kV	1 ft. 6 in. (46 cm)
Over 2kV, but less than 15kV	2 ft. 0 in. (61 cm)
Over 15kV, but less than 37kV	3 ft. 0 in. (91 cm)
Over 37kV, but less than 87.5kV	3 ft. 6 in. (107 cm)
Over 87.5kV, but less than 121kV	4 ft. 0 in. (122 cm)
Over 121kV, but less than 140kV	4 ft. 6 in. (137 cm)

Safe Work Practices:

1. Know the equipment and potential hazards - Define the scope of work.
2. Submit the scope of work to your supervisor for approval.
3. Analyze the hazards use engineered methods to mitigate hazards.
4. Establish procedures as necessary.
5. Use barricades or other means to prevent unqualified persons crossing approach boundaries.
6. Personnel shall employ insulating barriers to prevent themselves and others from leaning into or falling into live parts and to prevent live parts that might become loose from contacting personnel.
7. Personnel shall wear safety glasses.
8. Personnel shall not wear metallic personal items (e.g., jewelry, glasses, watches) while working on or near live parts.
9. Personnel shall use non-conducting ladders when needed.
10. Always assume a conductor is energized until proven otherwise.
11. Personnel shall wear voltage rated gloves when using tools on or near live parts.
12. Personnel shall use only personal protective equipment that is designed [approved. certified] for the hazard.
13. Personnel shall use only insulated tools when working on or near live parts.
14. Personnel shall use only tools and instruments that are designed for the system voltage.
15. Personnel shall not bypass interlocks or safety devices that protect persons against electrical shock except when absolutely necessary and then only with written approval from your supervisor
16. Whenever possible, do not work alone.
17. Safety Watch is required when deemed so by your supervisor. This person shall be CPR trained and be familiar with removing all sources of power to the devise being worked upon and have ready access to a phone in order to call 911 in case of emergency.

18. When operating circuit breakers or fused switches. ALWAYS stand to the side NEVER directly in front of the device being operated.

Work Conditions:

1. Personnel should inspect electrical equipment for defective parts, faulty insulation, improper grounding, loose connections, ground faults, and unguarded live parts and should take appropriate remedial action before working on or near live parts.
2. Personnel should work only where there is adequate clearance.
3. Personnel should not work on or near live parts that are in a hazardous location (e.g., in wet or damp areas, where there are corrosive or flammable atmospheres).
4. Restrict non-participants from the work area.

_____
Supervisor

Electrical Safety

1. All temporary wiring must be installed and maintained in accordance with applicable codes.

2. Temporary electrical cords are to be kept clear of locations where they may be subjected to damage or present tripping hazards.

3. Ensure your extension cords and power tools have the appropriate continuity and polarity testing every 3 months and color coded tags applied as per WorkSafeBC's' Assured Grounding Program. If they do not, bring into the shop and have the testing done.

   •Red – January, February, March
   •White – April, May, June
   •Blue – July, August, September
   •Green – October, November, December

4. Splices in electrical cords must retain original mechanical, water penetration and electrical strength.

5. Energized wiring in junction boxes, circuit breaker panels, etc. must be protected from accidental contact whenever left unattended.

6. Temporary lighting lamps that are broken or burned out are to be replaced as soon as possible. Bulbs are not to be removed from other areas to provide lighting.

7. Avoid working on any circuits when standing on metal or in water.

8. Avoid having electrical cable or connections in water.

9. Under no circumstances* shall work be conducted, materials be stacked, scaffolds be erected, or tools and equipment be operated in proximity to power lines within the limits of approach. These limits of approach are specified in the following table:

VOLTAGE	MINIMUM DISTANCE
751 V to 75 kV	3 metres (10 feet)
Over 75 kV to 250 kV	4.6 metres (15 feet)
Over 250 kV to 550 kV	6.1 metres (20 feet)

Note: Sufficient distance shall be added to the specified distance to prevent unplanned or accidental movements bringing the worker, tools, equipment or material within the

specified distance. The specified distance used applies to all parts of the equipment, including booms, hoisting cables and any part of the load being raised. Distances shall be increased to provide for any change in boom angle, swing of the hoisting cable and the load while it is being raised, lowered or moved laterally, to ensure that safe distance is maintained at all times.

*The only exception to the above rule is for qualified, properly instructed workers working in an emergency situation, and if workers are protected in accordance with regulatory requirements

10. The supervisor must be notified when power-lines are encountered within a work area. The supervisor will ascertain the voltage, and minimum distance required, and will ensure a WSBC Form 30M33 (Assurance in Writing) is completed and submitted when required.

11. The following must be followed prior to commencing work when job circumstance requires working closer than the limits of approach as stated above:

An Assurance in Writing form must be obtained from and signed by the person(s) controlling the electrical system. The assurance must state that during the work period, the electrical conductors will be de-energized, effectively guarded against contact, or displaced/re-routed from the work area. The assurance must be posted at the jobsite & available for inspection by a WSBC Officer.

12. Contact with live electrical equipment and electrical guarding is prohibited. Whenever guarding is used, a qualified safety watcher must be posted to control the approach and prevent contact with the guarding of equipment, tools and workers. The only exception to this rule is for qualified electricians with special training and experience as outlined in the WSBC OHSR Part 19.

Arc Flash Awareness

An arc flash is a sudden release of electrical energy through the air when a high-voltage gap exists and there is a breakdown between conductors.

An arc flash gives off thermal radiation (heat) and bright, intense light that can cause burns and other injuries. Temperatures have been recorded as high as 35,000 degrees Fahrenheit. Exposure to these extreme temperatures burns the skin directly and ignites the clothing that you are wearing.

High-voltage arcs can also produce considerable pressure waves by rapidly heating the air and creating a blast. This pressure burst, or arc blast, can hit a worker with grenade-like force and send metal droplets from melted copper and aluminum electrical components shooting out at speeds up to 700 miles per hour. Fast enough for the tiny shrapnel to penetrate your body.

An arc flash can be spontaneous, or can result from inadvertently bridging electrical contacts with a conducting object. Other causes may include dropped tools, the buildup of conductive dust, or corrosion.
While great advances are being made to improve equipment design and thereby reduce the number of arc flash incidences, there is still much to be done. Each year, 2,000 workers are admitted to burn centers for treatment of severe arc flash burns.

De-energize:
Be proactive about your safety. Power down whenever possible. Working on energized equipment greatly increases your risk of injury and death. The number one way to prevent electrical injuries and fatalities is to de-energize the equipment being worked on. It may take a little more time and planning, but your life and your health are worth it. Be proactive about de-energizing equipment and taking steps to ensure that your work environment remains safe.

Lockout/Tag out:
Lockout/Tag out helps prevent the unexpected. Each day, nearly 3 million professionals participate in work activities where lockout/tag out procedures should be used. Unfortunately, too many workers still put themselves unnecessarily at risk by working energized or neglecting to follow their company's lockout/tag out procedures. Failure to comply with the lockout/tag out standard is listed as one of the top OSHA violations year after year.
Lockout/tag out procedures safeguard workers from the unexpected energization, or startup, of machinery and equipment. They can also prevent the release of hazardous energy during service or maintenance activities.
Always de-energizing and following established lockout/tag out procedures saves lives. Compliance with OSHA's lockout/tag out procedure prevents an estimated 120 fatalities and 50,000 injuries each year.
Workers injured on the job from exposure to hazardous energy lose an average of 24 days of work to recuperation.

Personal Protective Equipment (PPE)

Personal Protective Equipment is your last line of defense. Workers often find themselves in environments where they are exposed to unseen electrical hazards. In the event of a momentary electric arc, flash fire or exposure to energized equipment, a worker can find himself completely unprotected against forces that cause severe or fatal injuries. Everyday work clothes can ignite and will continue to burn even after the source of ignition has been removed. Normal clothes will continue to burn until the fabric is totally consumed causing severe contact burns to the skin.
Personal Protective Equipment (PPE) is your last line of defense and will be the major factor in differentiating between an electrical event you walk away from and one that requires months of painful healing. PPE comes in many different forms, including: hard hats, gloves, goggles, safety shoes, flame-resistant shirts and pants, safety glasses, face shields, fall protection equipment, etc.
Be sure to choose the PPE that is right for you and your circumstances. PPE should be:

1. Appropriate for the hazard
2. Worn as the outermost layer
3. Worn CORRECTLY; zipped, buttoned, etc.
4. Maintained properly and removed from service when needed

Working Around Heavy Equipment

It is essential to identify the possible hazards and ensure that all personnel are well aware of the procedures when working around all heavy equipment.

Prerequisites:

Two way Radio
Safety Orientation Relative To Each Site
PPE

1. Gloves
2. Hearing Protection
3. Dust Mask
4. Hard Hat
5. Safety Glasses
6. CSA Approved Steel toe boots
7. High Visibility Apparel

All employees must be well aware of their surroundings and remain a safe working distance from any heavy machinery that is working in the area. All equipment operators must be very cautious of the employees working around them and make eye contact every available opportunity.

Site supervisors are to maintain a watchful eye that all employees are working in a responsible manner and are utilizing all work safe knowledge and practices.

With every change of job site a safety meeting will be held and all possible health and safety hazards will be identified.

Truck and Tractor Trailer Operation

Hazards:

Backing up
Speeding
Animal on roadway
Fatigue
Distraction

Any person that drives a Harrison Industrial Contracting Ltd. truck will have the proper class of drivers' license. Class 1 for operating any tractor-trailer combinations and a Class 3 for operating any truck with three axles. Even though it is not required by law, TAMS requires a Class 3 license for driving the signal axle 5 tons (Mack). An air brake certificate is also required.

All operators are to obey all rules of the roads, obtain all necessary permits, and drive defensively.

Pre-Trip Inspections

Each driver is directly responsible and accountable for the safe operation and to properly maintain his or her equipment. This is the law.
With this responsibility in mind the driver must inspect the unit before taking it on the road. The inspection itself is made up of 3 parts:

Under the Hood
In the Cab
The walk around (circle) check

Rest/Check stops are to be conducted at intervals throughout the day as required by the National Safety Code every 4 hours.

Post-trip Inspection/Report

After completing the run, the driver shall perform a post-trip inspection of the unit to ensure any flaws are identified so that repairs can be completed before these units are again required on the road.

Your report should also include any problems you may have discovered during the run. It can be frustrating, time-consuming and costly for all concerned if problems are left undetected until the next load is ready to be moved. If stopped you would be written up as out of service and not allowed to move until repairs are done.

Transporting Dangerous Goods

In the interest of public safety both the Federal and Provincial governments have passed legislation related to the handling, storage and transportation of various dangerous goods.

Regulation in this regard state that no person shall handle, offer for transport or transport dangerous goods unless they are trained or working under direct supervision of a person who has been trained.

All TAMS Drivers will have completed a Transportation of dangerous good courses before transporting any dangerous goods.

NOTE: refer to Transportation of Dangerous Goods Act and Regulations book for more information on transporting dangerous goods.

National Safety Code

The National Safety Code is an agreement between Federal and Provincial Jurisdictions to establish minimum performance standards for all commercial vehicles and their operators.

This code and the provision of this code became effective January 1, 1989.
The provisions of the National Safety Code are applicable to:

1. Vehicles having a gross vehicle mass (GVW) of 4500 kg or greater
2. Any bus having a seating capacity of 10 or more (excluding the driver)
3. The Drivers of these vehicles
4. Farmers, cord wood cutters and fisherman operating 2 or 3 axle trucks are exempt from most provisions of the code except as they apply to the “road-side inspection” requirement.

This inspection will be a random check conducted by law enforcement agencies or other authorized personnel who will use the standards outlined in “The Commercial Vehicle Safety Alliance Standard”

What the Code Means to the Driver:

All drivers must obey the “hours of work” regulation. Each driver must keep an accurate “log” of his “on-duty”, “off duty” and “driving” hours for at least 4 days prior of being on shift.

1. Driver must report all moving violations and collisions to their employer regardless of where those incidents occur.

2. Employers must obtain an abstract of the driver’s driving record, before hiring and at least on a yearly basis thereafter.

Open Holes

Open holes are dangerous and could cause injury to a worker.
Examples of open holes would include: hydro-vacuumed holes, rat or mouse holes (drilling operations), scaffold decking missing, portions of floor temporarily removed from walkways, stairs, and/or buildings, roof holes, bell holes, etc.

Hazards:

- Falling into or through
- Tripping at level or into
- Inadequate lighting
- Congested work area
- Driving or backing into
- Public or visitors to site

Open holes shall require a guardrail and toe boards. If the decision is made to use a cover, it must be securely installed. All whole covers must be secured and marked "OPEN HOLE". Erect appropriate caution/danger signs and/or snow fence and use flashing lights or traffic signage as needed. If a person removes a cover, guardrail or toe board, or part of them, protecting an opening or hole for any reason, you must ensure a temporary cover or other means of protection replaces it immediately. Open holes should be identified in any permits.

Manual Lifting

Most lifting accidents are due to improper lifting methods rather than lifting heavy loads. All manual lifting should be planned and safe-lifting practices followed. The following list of recommendations will help to avoid back injuries due to manual lifting.

Look up as you lift!
Employees should know their physical limitations and the approximate weight of materials they are trying to lift.
Obtain assistance in lifting heavy objects whenever the task may be more than can be safely handled.
Before any manual lifting is done, the use of power equipment or mechanical lifting devices such as dollies, trucks or similar devices should be considered and employed where practical.
Bulky loads should be carried in such a way as to permit an unobstructed view ahead.
Ensure a good firm grip before lifting.
Lift gradually, slowly, smoothly and without jerking.
The back should be kept close to vertical or straight and the lifting should be done with the legs.
Avoid unnecessary bending.
Avoid unnecessary twisting.

Towing Portable Equipment with Light Vehicles

To establish a safe and efficient method of towing portable equipment (compressors, heaters, etc.) using light vehicles, supervisors and employees must adhere to the following:

This work practice only applies to portable equipment that is on wheels.

1. Towing device is secured to the truck frame.
2. The wheels on the portable equipment are to be blocked when it is not attached to a light vehicle or mobile equipment.
3. The Light Vehicle Fleet (L.V.F.) department will check and repair all hitches as part of the regular scheduled planned maintenance, but it is the operator's responsibility to check the truck hitch prior to use and report any defects.

Tiger Torch

Tiger torches, although valuable to a jobsite, are sometimes misused in a manner that can make them a dangerous tool. When a torch is used, an adequate fire extinguisher should be present. Eye protection must be worn when heating edges where loose aggregate is present, because the rocks can explode due to the extreme heat that is applied to them. Inspect the hoses and valves to ensure there are no leaks. If you suspect that there is a leak, do not use a match to test. Instead, use soap and water and look for bubbles. Ensure that the propane bottles are properly shut off. Ensure that the propane bottle is in the upright position during use of the torch. Do not leave the tiger torch on, unattended. Do not use a tiger torch to heat a propane tank. Ensure that you turn the propane off at the tank and not just the tiger torch head. This will ensure that no propane will leak out of the tank if there is a leak in the propane line linking the tiger torch to the regulator. Do not use torch to heat up manhole lids, as a possible explosion could take place if explosive gases have built up beneath manhole lid.

Cut-Off Saws

Only qualified personnel of Harrison Industrial Contracting Ltd. are allowed to operate a cut-off saw. When using this piece of equipment, it is important to remember the following practices:

Do:

1. Use safety footwear, snug fitting clothing, safety glasses, hearing protection and a hardhat while operating the cut-off saw. A respirator with HEPA filters must be worn while cutting concrete or asphalt.
2. Dust concentrations must be maintained below the established exposure limits. Keep water continuously running on the cutting wheel while cutting,
    a. Concrete,
    b. Asphalt, if dust concentrations may exceed exposure limits.
3. Operate the cut-off saw in well-ventilated areas.
4. Inspect the cut-off saw before start-up, CLEAN THE AIR FILTER.
5 .Inspect the cutting wheel for warping and damage before using the cut-off saw.
6. Run the saw at full throttle while cutting.

7. Use the bottom of the wheel for cutting.
8. Test newly mounted wheels to run at normal operating speed for approx. 30 seconds with guard in place before beginning to use.
9. Hold the cut-off saw with 2 hands while it is running

Hand and Portable Power Tools (General)

Hand operated tools often pose risk of lacerations, contusions, and muscle strain. Obviously, power tools pose higher risk of severe injury because points of contact can transfer a large amount of mechanical energy from the tool to small areas on the body. The risk of laceration becomes risk of amputation with power tools; risk of contusion becomes risk of crushing. In addition, users of hand and power tools may also be exposed to hazardous airborne contaminants, flying debris, and electrocution, among others risks.

Do:
•Use the right tool for the job. For example, do not use a screwdriver as a chisel. Do not attempt to modify or adapt a tool to extend its capabilities.
•Inspect every tool before use and remove damaged or defective tools from service. Do not use tools with defective, broken, or compromised handles, guards, or ancillary parts (e.g., warped, dull, or cracked blades, marred or chipped drill bits, checked hoses, frayed cords, sprung gripping surfaces, mushroomed heads, etc.). Most power tools must be equipped with guards and positive pressure switches (or other safety controls).
•Operate and maintain tools in accordance with manufacturer recommendations. Store tools in a clean and dry location.
•Use the proper apparel and Personal Protective Equipment. Avoid loose clothing and jewelry. Minimum PPE will generally consist of protective eyewear, sturdy shoes, and gloves. Depending on the task or tool, additional or specialized PPE may be needed (e.g., hearing protectors, face shields, special helmets or
(Created 8/01; Revised 5/06, 7/09, 3/10)
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goggles, respirators, cotton clothing, leather chaps, steel toed boots or shoes, etc.).
•Take action to minimize ancillary hazards posed by the work place. For example, remove accumulated debris or tools to prevent trips; dry or clean up slippery surfaces; use portable lighting in poorly lit areas, etc. Non-sparking or intrinsically safe tools may be required in the presence of flammable vapors.

Portable Power Tools
•Use only with properly placed, adjusted, and functioning guards. In general, the exposed moving parts of power tools need to be safeguarded.
•Do not carry a tool by the hose or cord.
•Do not yank on a cord to disconnect the tool from the receptacle. Firmly grasp the plug.
•Avoid accidental starting. Do not hold fingers on the switch button while carrying a plugged-in tool.
•Keep hoses and cords away from heat, oil, and sharp edges.

•Disconnect tools from their power source before servicing, cleaning, when changing accessories, and when not in use/attended.
•When a temporary power source is used for construction a ground-fault circuit interrupter should be used.
•To protect the user from shock and burns, electric tools must have a three-wire cord with a ground and be plugged into a grounded receptacle, be double insulated, or be powered by a low-voltage isolation transformer.
•Do not use electric tools in damp or wet locations unless they are approved for that purpose.
•Keep all people not involved with the work at a safe distance from the work area.
•Secure work with clamps or a vise, freeing both hands to operate the tool.
•When using pneumatic tools, a safety clip or retainer must be installed to prevent attachments from being ejected during tool operation.
•Compressed air guns should never be pointed toward anyone. Workers should never "dead-end" them against themselves or anyone else. A chip guard must be used when compressed air is used for cleaning.
•Compressed air used for cleaning. Compressed air shall not be used for cleaning purposes except where reduced to less than 30 p.s.i. and then only with effective chip guarding and personal protective equipment.
•Handle, transport, and store gas or fuel only in approved flammable liquid containers, according to proper procedures for flammable liquids. Allow a hot engine to cool before refueling a tool. Use fuel-powered tools only when there is sufficient ventilation for removal of fumes.
•If using nail guns, read and adhere to the content of OSHA's publication titled "Nail Gun Safety: A Guide for Construction Contractors."
Exposure to dusts created by the use of tools can present respiratory hazards. Reduce dust hazards to the extent feasible by:
(Created 8/01; Revised 5/06, 7/09, 3/10)
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•Utilizing local engineering controls to minimize exposures, including enclosures, tools equipped with dust collection devices, and local ventilation/dust collection systems, and maintain these systems so that they function effectively.
•Avoid dry sweeping of dusts. Use a vacuum system or wet method.
•Do not use compressed air to clean dusty surfaces.
•Avoid inadvertent transport of dusts on equipment or work pieces. Clean them before they are removed from the work area. Keep the general work area clean of dust accumulations.
•Contact EHS if you conduct dust-generating activities without the benefit of engineering controls so that an exposure evaluation can be completed to assess the need for respiratory protection.
•Do not eat or drink in work areas.
•Use protective outer garments to avoid contaminating clothing and transporting dusts out of the work area. Eye protection is also required when conducting work that could result in creation of flying debris or dust.

•Wash hands and exposed skin thoroughly after conducting dust producing operations.

Hand and power tools are used extensively in construction work and can be the cause of personal bodily injury, if not used as designed and in a safe manner. Tools must be appropriate for the task, properly maintained, and equipped with all necessary guards and safety devices.

Portable Stepladders

Do:

1. Ensure that stepladders conform to CSA and/or ANSI standards.
2. Inspect the stepladder prior to each use.
3. Place the stepladder on a stable, level base.
4. Open stepladder spreaders fully and lock in place.
5. Face the stepladder when climbing up or down.
6. Keep three points of contact when climbing the stepladder.

Do Not:

1. Use a worn or damaged stepladder.
2. Locate a stepladder too close to electrical power lines.
3. Over-reach or lean-out on a stepladder.
4. Stand on the top two steps of the stepladder, unless designed with a railed platform.
5. Allow more than 1 person on the stepladder at a time.

Falls from ladders are a significant cause of injuries in construction. Stepladders should only be used for short-term work where a safer means of access, such as scaffolds, elevating work platforms, stairs, manlifts, or other devices is not available.

Circular Power Saws

Do:

1. Wear all PPE, including gloves, safety eyewear and footwear, hearing protection.
2. Check the guard regularly to ensure it works freely and provides full coverage.
3. Allow the saw to attain full power before cutting.
4. Secure work being cut to avoid undue movement.
5. Ensure that the blade that you have selected is sharp enough to do the job. Sharp blades work better and are safer.
6. Check the saw for proper blade rotation.

Do Not:

1. Force the retracting lower guard in the open position.

2. Place hand under guard of the saw.
3. Force the saw during cutting.
4. Cut materials without first checking for obstructions or other objects such as nails, etc.
5. Carry the saw with a finger on the trigger switch.
6. Overreach-keep proper footing and balance.
7. Twist the saw to change, cut or check alignment.
8. Use a saw that vibrates or appears unsafe.

Circular power saws are widely used in construction and users should not become complacent in operating these tools. They can result in serious injuries if not used correctly and maintained in good working condition.

Hazards: -cuts and amputations, high noise levels resulting in hearing loss, contusions, flying objects/particles, repetitive strain injuries, electrocution

Aerial Work Platforms

General Operational Safety Precautions
• All newly-acquired aerial lifts should meet the design and construction requirements of the relevant American National Standards Institute and OSHA standards. Every effort should be made to replace equipment that does not meet current standards.
• Modifications to lifts are not allowed without express written approval from the manufacturer (maintain file documentation).
• Most lifts are designed for operation on relatively flat surfaces with minimal slope (< 5%). Do not operate on surfaces that exceed the manufacturer's maximum rated slope.
• Lifts are to be used strictly for the purposes for which they were designed and in accordance with manufacturer's specifications and instructions.
• Service and repair are to be conducted only by qualified mechanics and replacement parts must meet the original equipment manufacturer's specifications.
• Prior to each day's operation, each operator must conduct a worksite and machine inspection, including applicable function tests of controls and safety devices. The purpose of these checks is to detect and abate hazard. Example checklists are provided in the Appendix to this SOP. Additional guidance is provided in the EHS aerial lift training module and the manufacturer's operator's manual.

Hazards
• Electrocution
Nationally, one of the most common and deadly hazards associated with aerial lifts is electrocution from contact with electrical wires and conductors. ANSI and OSHA standards specify minimum safe distances that are to be maintained while working in an aerial lift, as indicated in the table below. If these distances cannot be achieved, do NOT use the equipment.

Other precautions to avoid an electrocution hazard include:

o If welding while on an aerial lift, do NOT use the platform or any part of the machine for grounding. Adhere to hot work permit requirements. See EHS SOP, Hot Work Operations.
o If using electrified tools while on an aerial lift, use only tools that are double insulated or have a grounding plug.
o If using an electromechanical model lift, ensure that the proper gauge of extension cord wire is used and that it is in good condition and equipped with a grounding plug.
o Do not operate the machine outdoors if there is threat of lightening. In fact, do not operate during any type of inclement weather, including windy conditions, since fall and tip-over hazards are exaggerated in these conditions.
o Personnel on the ground are prohibited from operating the ground controls when an aerial lift is in contact with a live electrical source until such time as the electrical source is de-energized.

• Tip-over and Collapse
Tip-over and collapse are also serious hazards associated with aerial lifts, being the second leading cause of injury associated with aerial lifts. Reduce this hazard by observing the following precautions:
o Never exceed the manufacturer's specified maximum load (which includes the weight of the person and all tools/supplies/equipment, etc. that will be on the platform).
o Do not operate on surfaces that exceed the manufacturer's maximum slope (typically 5% or less). Always use wheel chocks and brakes when operating on any slope.
o Set up on a firm surface, well away from drop-offs.
o When navigating a lift that is designed to move with the platform extended, avoid debris, bumps, depressions, or potholes. Do not drive over floor grates or covers. Never exceed the manufacturer's maximum speed recommendations.
o Know the type and proper usage of stabilizing mechanisms used on the lifts that you operate. Do not attempt to move or adjust stabilizing mechanisms while the platform is raised.
o Never position or tie off the lift or platform against a wall, structure, or other surface.
o Maintain the intended center of gravity by evenly dispersing loads on the platform. Never attempt to increase the surface area of the platform with planks, boards, or other devices. Do not let materials extend over the edge of the platform. Do not hang tools or equipment off the sides or rails of the platform.
o Exercise care when raising and lowering the platform to avoid entangling ropes, cords, etc. in the machine.
o Most aerial lifts are intended for a single person. Do not allow more than one person on a lift unless it is specifically designed for that purpose.
o Avoid horizontal forces from work tasks that could cause the platform to sway and become unstable. This includes pushing off or pulling toward any surface, structure, or object outside of the platform.
o Do not operate an aerial lift outdoors during windy conditions or other inclement weather.
o Never climb on the mast or use ladders or scaffolds on any part of the machine.
o Enter and exit the platform only through the intended access point/gate.

• Falls
Falling from a lift is another hazard that must be recognized and steps taken to mitigate the risk.
o Guardrails typically provide adequate protection for scissor like and vertical mast lifts that are stationary, not capable of motive power while the platform is extended, and the platform raises straight up from its base, so long as work activities and practices do not defeat the protection afforded by the guardrail. A full-body harness personal fall arrest systems must be used when operating all boom type lifts. See EHS SOP, Fall Arrest Systems for specific requirements.
o Restrict materials and equipment on the platform to that which can be safely handled by one person.
o Keep both feet firmly on the floor of the platform. Do not attempt to gain additional reach by standing on boxes, planks, or other objects.
o Do not lean on or over the rails. Do not sit, stand, or climb on the guardrails.
o Keep your shoes clean and ensure that they have a good, anti-slip tread.
o Keep the platform clean and free of debris. Position equipment so that the weight is evenly distributed and in a manner that does not create a trip hazard.
o Enter and exit the platform only when it is fully lowered.
o If a platform or elevating assembly becomes caught, snagged, or otherwise prevented from normal motion by adjacent structures or other obstacles such that control reversal does not free the platform, all personnel must be removed from the platform before attempts are made to free the platform using ground controls.

• Collision
Collision hazards can exist both overhead and on the ground. To avoid collision hazards:
o Lockout overhead cranes that are located within the working distance of the lift.
o Look below before lowering a platform to verify that persons or objects are not present. Give warning of your intent to descend (audible alarm, voice commands, etc.). If working as a team, verbally verify clearance of your teammate(s) on the ground before lowering.
o Avoid setting-up in high traffic areas. If absolutely necessary, attempt to conduct work at low-traffic times or work with appropriate personnel to temporarily interrupt traffic during the time that the lift is in use. Regardless of the traffic level, place warning barricades at a safe perimeter around the lift to detour both pedestrian and vehicular traffic.
o Be aware of the swing range. Set-up in a manner that avoids objects within the range of motion of the machine.
o When moving a lift, use extreme caution and slow and deliberate motions, particularly when space is limited, traffic is high, surface conditions are potentially hazardous (slippery, pot-holes, etc.), or the route contains corners, blind spots, and other visual obstructions.
o For drivable boom lifts, use the boom controls (not the drive controls) for final positioning of the platform close to objects.

• Entanglement

Obviously, any lift has many moving parts, which create pinch and/or shear points. To avoid injury from pinch/shear points:
o Keep hands, arms, and other body parts within the confines of the platform and guard rail while working on the platform. Keep hands and fingers away from moving parts while on the ground.
o Avoid loose clothing that could become caught in chains, pulleys, lifts, etc. Keep long hair confined.
o Always ensure that the machine is de-energized before conducting maintenance and repairs.

• Improper Use
It is relatively simple to mitigate the risk of injury resulting from improper use.
o Remove the key or otherwise secure a lift while it is being stored so that it is not available to unauthorized persons.
o Do not allow anyone to operate a lift until they have completed instructional and hands-on training and they have demonstrated competency in the operation of the specific lift they are expected to use.
o Refrain from horseplay.
o Use an aerial lift only for the purposes and in the manner specified by the manufacturer. Never use an aerial lift as a crane.
• Hazardous Atmosphere
There are a couple of things that must be considered with respect to potentially hazardous atmospheres. The first is the workplace atmosphere irrespective of the aerial lift. Aerial lifts are not intrinsically safe, meaning that they can create sparks that could ignite flammable vapors, fibers, or dusts that may be in the atmosphere. Under no circumstances should a lift be operated in a hazardous location (contains, or has the potential to contain, an explosive or flammable atmosphere). While UNL does not have work sites that ordinarily would contain flammable vapors/dusts/fibers, it is important to recognize that an anomalous condition could present such a hazard (e.g., leak/ruptured drum or tank for gasoline or other solvent, etc.) and this would negate the use of an aerial lift.
The other atmospheric hazard to be aware of may arise from operation of certain lifts in unsuitable locations. For example, gasoline, propane, and diesel engines generate exhaust fumes (carbon monoxide and other pollutants) that can be hazardous to the operator and others. This is especially problematic when operating a combustion engine lift in areas that have insufficient ventilation. To avoid creating a hazardous atmosphere:
o Use electric powered units in confined areas.
o Install carbon monoxide detectors in use areas.
o Adhere to maintenance schedules to ensure efficient fuel combustion
o Remove a lift from service that does not appear to be operating normally (e.g., excessive smoke)
o Clean up spills and leaks of fluids
o Know the symptoms of exposure to carbon monoxide. Carbon monoxide is colorless and odorless- you can’t easily detect overexposure through your ordinary senses. Rather, you are likely to suffer symptoms such as shortness of breath, nausea, headache, or light-headedness at low to moderate concentrations. Prolonged or high

exposures can lead to death. If you suspect an overexposure, seek fresh air. As needed, seek medical attention.

• Defective Machine
Before an aerial lift can be used safely it must be in safe condition. That is the purpose of a pre-use inspection: to detect defects or damage that could impair the functioning of the machine or the operator's familiarity with the controls. If a defect is detected during the pre-use inspection, the machine must be clearly tagged out of service until it is repaired. Report all such circumstances to your supervisor in a timely manner. More information on conducting a proper pre-use machine inspection is provided in the EHS training module and the operator's manual for the particular model to be used.

Batteries /Charging and Servicing

Batteries contain sulphuric acid and should be handled by trained personnel and be charged in approved battery charging areas. Supervisors and employees must follow and/or have:

Safe work procedures
MSDS
PPE as per company policy
Safety shower and eyewash station
ERP (Emergency Response Plan)

It is the supervisor's responsibility to facilitate and/or provide proper instruction to their workers on protection requirements and training. Ensure the charger is off before attaching or removing clamp connections. Attach clamps to the battery in proper polarity (i.e., negative to negative). Ensure proper ventilation is in place where batteries are charged. Inspect for defective cables, loose connections, corrosion, cracked cases or covers, loose hold-downs and deformed or loose terminal posts. Replace worn or unserviceable parts. Tighten cable clamp nuts with the proper size wrench. Utilize a cable puller to remove a cable clamp from the battery terminal. Remove corrosion on the terminal posts, hold-down tray and hold-down parts. Utilize a battery carrier to lift a battery. Ensure battery cells are not filled above the level in indicator.

Crushing Operation

Crushing operations involve heavy equipment, loaders, conveyers and other vehicles. Supervisors and employees must follow and/or have:

Safe job procedures
Manufacturer's specifications

PPE
Lockout procedures
ERP (Emergency Response Plan)

It is the supervisor's responsibility to facilitate and/or provide proper instruction to their workers on protection requirements and training. A worker must be conversant with work site operations that are part of a crushing operation. Operators must be familiar with the lock out system. Under NO circumstances proceed to attempt to rectify any electrical and/or hydraulic problems without first "locking out" the equipment. Do not cross, jump or touch any moving conveyer. Always use ladders and the provided access and exit points from all crushing equipment. Loader operators must maintain good housekeeping practices. Personnel operating heavy equipment (loaders) on the work site must refrain from using hand-held devices (cell-phones, two-way communication devices, etc.) while the heavy equipment is in motion.

Driving (Winter)

Operation of motor vehicles must be performed according to all vehicle codes, traffic laws, company procedures, and manufacturer's recommended operating guidelines. Supervisors and employees must follow and/or have:

Safe work procedure
Highway Safety Act
Company Rules
Manufacturers Recommendations
Company Rules

It is the supervisor's responsibility to facilitate and/or provide proper instruction to their workers on protection requirements and training in compliance and enforcement. Ensure you have a valid operator's license. Be conversant with traffic laws and applicable regulations. Drive defensively. Ensure the vehicle has an emergency road kit. Avoid using cruise control on icy roads. Ensure winter clothing does not restrict movement, vision or hearing. Ensure you are familiar with the installation of snow chains, if applicable. Monitor weather reports, road conditions. Do not operate a cell phone while driving.

Equipment Activities near Overhead Power Lines

Do not operate heavy equipment near or under a power line until a permit and/or crossing agreement has been issued. Supervisors and employees must follow and/or have:

Safe job procedure
Permit system
PPE
Crossing agreement

Barricades warning signs
ERP (Emergency Response Plan)

It is the supervisor's responsibility to facilitate and/or provide proper instruction to their workers on protection requirements and training.

Working	Clearance	Distances
Voltage ("V")	Fully Insulated Minimum Distance	Un-insulated (or covered) minimum distance
Less than 300 volts (phase to phase)	3 – feet	10 – feet
300V to 50 kV	10 – feet	10 – feet
More than 50 kV	10-feet plus 0.4 inches for each 1\kV>50 kV	10-feet plus 0.4 inches for each 1\kV>50 kV
Vehicle in transit	**Clearance**	**Distances**
Voltage ("V")	Minimum Distance	
Less than 50 kV	4-feet	
50 kV up to & including 345 kV	10-feet	
More than 345 kV	16-feet	

Confined Space Entry

A confined space's primary function is something other than human occupancy: and – has restricted entry and exit; and may contain potential or known hazards. Supervisors and employees must follow and/or have:

Safe job procedure
Permit system
PPE
Site specific entry program
ERP (Emergency Response Plan)

It is the supervisor's responsibility to facilitate and/or provide proper instruction to their workers on protection requirements including Confined Space Entry and Emergency Egress procedures. A worker must be competent in confined space entry to identify the work procedures required to enter the confined space. Establish a method of communication to allow immediate contact with necessary personnel if rescue or assistance is required, confirm alarm system. Workers must be trained in H2S Alive or equivalent (if required). Before entry, the vessel or confined space must be tested by a

competent worker wearing breathing apparatus, for oxygen content, combustible gas (L.E.L.) and hydrogen sulfide.

Working on Live Electrical Apparatus

Electrical apparatus, equipment and circuits shall be designed and operated in accordance with the Canadian Electrical Code. Supervisors and employees must follow and/or have:

Safe job procedure
Permit system
P.P.E
E.R.P. [Emergency Response Plan]

It is the supervisor's responsibility to facilitate and/or provide proper instruction to their workers on protection requirements and training. Electrical installations should be carried out by a properly trained and qualified journeyman or registered apprentices. Two or more journeyman should work together on any energized circuit with a potential to 480 volts or more between conductors. Ensure ladders are made of non-conductive materials. Be conversant with E.R.P. (Emergency Response Plan).

Excavating and Trenching

No worker shall enter any trench or excavation until the walls have been adequately cut back or temporary protective structures have been installed unless said trench or excavation is shallower than the legal minimums and the soil is stable. Supervisors and employees must follow and/or have:

Safe job procedures
Manufacturer's specifications
PPE
ERP (Emergency Response Plan)

It is the supervisor's responsibility to facilitate and/or provide proper instruction to their workers on protection requirements and to pre-plan trench/excavation soil condition. Prior to commencement of any excavation ensure that all underground and/or overhead lines have been identified, exposed and are well marked/flagged. Control traffic near roads or busy access ways. Provide ladders in immediate area for access/egress of trenches, excavations. Where the cut back method is not possible, provide timber shoring, trench jacks, sheet piling, cage or other approved method.

Backfilling

Protecting workers from injuries associated in backfilling operations is important.

As per job requirement, supervisors and employees must follow and/or have:

Safe job procedure
Permit system
PPE as per company policy
ERP (Emergency Response Plan)

It is the supervisor's responsibility to facilitate and/or provide proper instruction to their workers on protection requirements. No backfilling shall commence until all workers are clear of working areas. The operators of any equipment being used in backfilling operations shall keep their swampers in sight at all times. All workers shall don all appropriate PPE (including high visibility vests).

Cell Phone Usage

Using a cell phone improperly while operating a motor vehicle may be hazardous to the worker and general public. Supervisors and employees must follow and/or have:

Safe work procedure
Highway Traffic Act
Local Regulations
Manufacturers Recommendations

It is the supervisor's responsibility to facilitate and/or provide proper instruction to their workers on protection requirements and training in:

Enforcement
Compliance

1. When vehicle is in motion calls may not be answered by the driver and must be directed to voicemail or a passenger.
2. If an employee driving a vehicle must make a phone call, the vehicle must be parked and in a safe location.
3. If making an emergency call (911) the vehicle must be safely parked before making the call.

Driving

Operation of motor vehicles must be performed according to all vehicle codes, traffic laws, company procedures, and manufacturer's recommended operating guidelines. Supervisors and employees must follow and/or have:

Safe work procedure
Highway Safety Act
Company Rules

Manufacturers Recommendations

It is the supervisor's responsibility to facilitate and/or provide proper instruction to their workers on protection requirements and training in compliance and enforcement. Be conversant with traffic laws and applicable regulations and drive defensively. Ensure you are not under the influence of alcohol or drugs, and avoid driving when fatigued. Ensure seatbelts are worn at all times when the vehicle is being operated. Offering rides to strangers or hitchhikers is prohibited.

Electrical System Lockout

Where there is or may be a danger to a worker from the inadvertent operation of electrical equipment then that equipment must be locked out and tagged prior to commencing work. Supervisors and employees must follow and/or have:

Safe work procedure
Permit system
Lockout procedure
PPE
Lockout devices {padlocks, multiple lock hasps, tags}
ERP (Emergency Response Plan)

General Responsibilities

1. The employer shall provide information, instruction and supervision to workers on proper lockout procedures for each piece of equipment they will be operating.
2. An initial review should be made to determine which switches, valves, or other energy isolating devices apply to the equipment being locked out. More than one energy source (electrical, mechanical, hydraulic, pneumatic, chemical, thermal, gravitational) may be involved.
3. The employer should ensure that workers know which energy sources may need to be controlled. Workers should check with a supervisor or other knowledgeable person if in doubt about which energy sources may need to be controlled.
4. When equipment is to be locked out, employers, supervisors and workers should follow accepted lockout principles, including:
•Pre-planning for the lockout by identifying all energy sources, switches, etc.
•Where lockout is complex, a written sequence in checklist form should be prepared for equipment access, lockout/tagout, clearance, release and start-up.
•All workers affected by the lockout should be notified.
•Equipment should be shut down by normal means by turning of switches and closing valves etc.
•Equipment should be isolated from energy sources by disconnecting or blocking the sources of energy.
•Lockout and tag the energy isolating devices by padlock or some other locking device that the worker has control over as well as a tag indicating that the equipment has been shut down.

•Verify that all energy sources have been isolated by attempting to cycle the equipment prior to working on it.
•When work is completed, release equipment from lockout.
•Test equipment.

Excavating To Expose Existing Lines or Underground Line Crossings

When it is necessary to disturb soil within existing cable pipeline conduit, then that pipeline, cable or conduit must be exposed before work is allowed to proceed. Supervisors and employees must follow and/or have:

Crossing agreement
Notification of owner
Permit system
Survey report
P.P.E.
Safe work procedure
Barricades and warning signs
ERP [Emergency Response Plan]

It is the supervisor's responsibility to facilitate and/or provide proper instruction to their workers on protection requirements and training. Existing pipeline(s) and/or cables must be exposed "BEFORE" commencing any mechanical excavation. If for any reason hand excavations are temporarily filled in, they shall be re-exposed before excavation takes place. A Signal Person must be present at all times to direct the mechanical excavation during line crossings. Workers and operators must be conversant in proper hand signals.

Opening and Guarding Manholes

Whenever the cover is to be removed from a manhole or when obstruction to traffic exists, precautions must be undertaken. Supervisors and employees must follow and/or have:

Safe work procedure
Traffic control mechanisms
Breathing air apparatus
Air movers and monitors
PPE
Barricades and warning signs
Confined Space Code of Practice/Permit system
ERP (Emergency Response Plan)

Supervisors are responsible to facilitate and/or provide proper instruction to their workers on protection requirements and training in hazard analysis and work site

inspection. Ensure covers are removed and replaced by means of approved hooks or hoists. Ensue forced ventilation is used for oxygen deficiency. Ensure you are trained in the use of breathing air apparatus. Before any work is done on a cable, it shall be identified by an approved method.

Fall Protection

Fall Arrest Protection shall be utilized where there is or may be a danger to workers falling. NO person shall use fall protection devices until they have received adequate training in:

Permit system
ERP (Emergency response plan)
Fall protection plan
PPE
Manufacturer's specifications
Safe work procedure
Barricades and warning signs

It is the supervisor's responsibility to facilitate and/or provide proper instruction to their workers on protection requirements and training in:

Hazard analysis
Work site inspection
Determine type of equipment required

Hazard Control Signage

Work sites should have appropriate and adequate signage to identify site hazards in place prior to the commencement of any work process. Supervisors and employees must follow and/or have:

Safe work procedures
Government Legislation
Local jurisdictions
Worksite traffic guidelines
PPE

It is the supervisor's responsibility to facilitate and/or provide proper instruction to their workers on protection requirements and training in signage selection and hazard analysis. Ensure signage is in good condition, clean, legible and suited to the purpose. Ensure traffic control signage is of accepted standards. Ensure you are fully trained to erect road traffic signage.

Hydrovac Operations

Hydrovac units are used for daylighting of underground structures and pipelines and doing the primary excavation in restricted areas. Supervisors and employees must follow and/or have:

Safe work procedures
Environmental legislation
Barricades and warning signs
Locate Procedure
PPE
Permit system
ERP (Emergency Response Plan)

It is the supervisor's responsibility to facilitate and/or provide proper instruction to their workers on protection requirements and training in hazard assessment and work site inspection. Ensure barricades and warning signs are in place. Determine if the soil the hydrovac is working in is contaminated by hazardous substances or not. Keep all unnecessary personnel and equipment out of the area the hydrovac is working in.

Operation of air tools

Air tools are powered by compressed air supplied by rubber hoses. Supervisors and employees must follow and/or have:

Safe job procedure
PPE
ERP (Emergency Response Plan)
Provincial OH&S Legislation

Supervisors are responsible to facilitate and/or provide proper instruction to their workers on protection requirements. Regularly inspect tools and hoses before using. Use proper shoring or slope equipment when air back tools are used in a ditch. Do not use an air tool for any purpose other than what it is intended for. Follow Air Tool Safe Work Practice step by step.

Monitoring For Escaping Hydrocarbon Gases

Continuous monitoring for escaping hydrocarbon fluids (liquid or gas) is required when working near vessels or lines that are in service. Supervisors and employees must follow and/or have:

Safe work procedure
Permit system
Monitoring devices
Respiratory protection equipment

PPE
ERP (emergency response plan)
Manufactures specifications
Barricades and warning signs
Manufactures specifications

Supervisors are responsible to facilitate and/or provide proper instruction to their workers on protection requirements and training in:

Hazard analysis
Worksite inspection
Type of monitoring system

Office Safety

To ensure employees are aware of the potential and existing hazards in the office environment, all supervisors and employees must follow:

Safe work procedures
ERP (Emergency Response Plan)
Manufacturer's recommendations
Local Legislation
MSDS
Working Alone Policy
ERP
MSDS

Supervisors are responsible to facilitate and/or provide proper instruction to their workers on protection requirements and training.

Operation of Manlifts and Scissor Lifts

No person shall operate a Manlift or Scissorlift until they have received adequate training, in accordance with manufacturer's specifications. Supervisors and employees must follow and/or have:

Manufacturer's specifications
ERP [Emergency Response Plan]
Safe work procedures
P.P.E.
Barricades and warning signs
Part 18 OH&S Code
Manufacturer's specifications

Supervisors are responsible to facilitate and/or provide proper instruction to their workers on protection requirements and training. Determine the type of equipment

required. Erect warning devices, and ensure a Flagperson is on site. Fall arrest protection must be in place. Follow manlift / scissor lift specific make / model safe work procedures step by step. Do not use hand-held devices (cell phone, two-way radio etc.) while operating the piece of equipment.

Refueling Equipment

Refueling of equipment is a daily task in construction industry which may be hazardous if not carried out properly. Supervisors and employees must follow and/or have:

Safe work procedure
Applicable Legislation
PPE
ERP (Emergency Response Plan)

Supervisors are responsible to facilitate and/or provide proper instruction to their workers on protection requirements and training in.

Ensure you are conversant with regulations
Refueling area is ventilated
Ensure equipment is shutoff prior to refueling
Ensure there is no smoking or open flames in vicinity
Avoid spillage on equipment or ground
Ensure cellular phones and/or hand-held devices are turned off

Restricted Work Areas

A Work Area will be designated as a “Restricted Area”, where there is a danger of contact with energized electrical equipment or hazardous substance. Supervisors and employees must follow and/or have:

Safe work procedures
ERP (Emergency Response Plan)
PPE
Permit system
Hydrocarbon monitors
Fire extinguishers
Barricades and warning signs
Lockout procedures

Supervisors are responsible to facilitate and/or provide proper instruction to their workers on protection requirements and training. Designate the limits of the restricted area. Practice hazard analysis and always perform a worksite inspection. Establish and maintain clear exits. Continually monitor area for changing conditions.

Pipe Bending

A bending machine is used to shape the pipe to conform to the contours of the terrain or to change the direction of the line route. Supervisors and employees must follow and/or have:

Safe work procedure
Permit system
Equipment Maintenance procedure
Barricades and warning signs
ERP (Emergency Response Plan)
Manufacturer specifications
Provincial OH&S Legislation

Supervisors are responsible to facilitate and/or provide proper instruction to their workers on protection requirements and training in hazard assessment, worksite inspection and equipment selection. Keep a proper distance when tagging pipe. Keep the pipe from swinging. Check the pipe slings for wear and defects. Ensure the pipe is properly chalked. Follow pipe bending safe work procedure step by step. Use proper PPE as per manufacturer's specification.

Rigging

Rigging of equipment, piping and valves is an integral part of construction operations. Supervisors and employees must follow and/or have:

Safe work procedure
Rigging OH&S Code Part 21
PPE
Permit system
ERP (Emergency Response Plan)
As per safe work procedure
Provincial OH&S Legislation

Supervisors are responsible to facilitate and/or provide proper instruction to their workers on protection requirements and training in hazard analysis and worksite inspection. Ensure you are competent in rigging procedures. Be acquainted with hand signals. Ensure load is centered. Do not walk under suspended loads. Ensure wire chockers, slings and other equipment is in good condition. Be aware of the direction of the swing of the load. Follow rigging safe work procedure step by step.

Portable Arc Welders

Portable arc welders should be treated as a vehicle and not operated indoors due to exhaust fumes. Employees and supervisors must follow and/or have:

Safe job procedure
Working Alone Policy
PPE
Manufacturer's specifications
ERP (Emergency Response Plan)
Provincial OH&S Legislation

Supervisors are responsible to facilitate and/or provide proper instruction to their workers on protection requirements. Workers must be trained in the use of a welder. When fueling, DO NOT "top off" the gas tank. Gasoline expands as the outside temperature rises, this may result in seepage and an ensuing fire. Ensure the side covers are kept closed to protect equipment from any damage from external objects, as well as to protect he operator and others from the moving parts of the machine. Any repairs shall be done by qualified mechanics.

Use of Tiger Torches

The primary function of the tiger torch is to preheat piping systems prior to welding. Employees and supervisors must follow and/or have:

Safe work procedure
Permit system
Manufacturer's specifications
PPE
Fire protection
ERP (Emergency Response Plan)
Safe work procedure
Manufacturer's specifications
Provincial OH&S Legislation

Supervisors are responsible to facilitate and/or provide proper instruction to their workers on protection requirements and training. Ensure you are acquainted with the operation of equipment. Torches are not to be used for heating or thawing of lines where known hydrocarbons are present. Follow tiger torch safe work procedure step by step. Use proper PPE as per manufacturer's specifications.

Working with Snow Fence

The erecting or dismantling of snow fencing requires heavy manual labor with many inherent hazards. Employees and supervisors must follow and/or have:

Safe work procedure
Permit system
PPE
Manufacturers recommendations

ERP (Emergency Response Plan)
Manufacturers recommendations

Supervisors are responsible to facilitate and/or provide proper instruction to their workers on protection requirements and training. Always perform a worksite inspection.

Thawing of Frozen Ground Using Artificial Heating Methods

Thawing frozen ground using artificial heating methods must be closely monitored to prevent any incidents of fire, explosion or excessive heating. Employees and supervisors must follow and/or have:

Safe work procedure
Environmental legislation
Barricades and warning signs
PPE
Permit system (from local Fire Dept. or Client if necessary)
ERP (Emergency Response Plan)

As per safe work procedure and provincial OH&S legislation, supervisors are responsible to facilitate and/or provide proper instruction to their workers on protection requirements and training in:

Hazard Assessment
Work site inspection
Type of heating device

Use proper PPE when thawing frozen ground. Follow thawing safe work procedures step by step.

Use and Care of Respiratory Equipment

The goal is protecting workers from injuries associated with the improper use and care of respiratory equipment.

When hazardous airborne contaminants or an oxygen deficient atmosphere exists, proper respiratory equipment must be utilized.

Each employee should be aware of and/or have:

Safe work procedure
Permit system
Manufacturer specifications
Air quality monitors
PPE
ERP (Emergency Response Plan)

WHMIS

As per safe work procedure, supervisors are responsible to facilitate and/or provide proper instruction to their workers on protection requirements and training in the following:

Selection of equipment
Hazard analysis
Work site inspection

Use of Portable Fire Extinguishers

To protect workers from injuries associated with IMPROPER use of fire extinguishers, always follow protocol.

Portable fire extinguishers must be installed, inspected and maintained on a regular basis to ensure proper operation in an emergency. Be sure to follow manufacturer's recommendations and have proper PPE.

Supervisors are responsible to facilitate and/or provide proper instruction to their workers on protection requirements and training, including:

Proper selection of equipment
Conversant with proper regulations

Working In Hills and On Slopes

Protecting workers from injuries associated with working in hills and on slopes is essential. Working in hills and on slopes is an integral part of pipeline/construction activity, requiring proper planning prior to work. This includes:

Safe work procedures
Permit system
Manufacturer's specifications
Barricades and warning devices
ERP (Emergency Response Plan)
PPE

Supervisors are responsible to facilitate and/or provide proper instruction to their workers on protection requirements and training. Always perform a work site inspection. Ensure you are acquainted with an ERP. Ensure warning signs/devices are in place. Be familiar with anchoring of pipe/equipment. Ensure wheel chocks are utilized. Be aware of rolling boulders or loose rocks. Follow working on hill and on slopes safe work procedure step by step.

Safety Principles – Electrical Equipment

Staff often work with a variety of electrical equipment which may expose them to electrical shocks. Tasks can be performed safely when safety principles are applied throughout the day. Some tasks may carry greater risks for injury if specific procedures or instructions are not followed. Safe work procedures separate from these principles have been developed for these tasks.

General electrical safety principles for Harrison Industrial Contracting would include:

Keep your fingers or other materials off the prongs of a plug while inserting it in an outlet.
Power tool / appliance plugs must match the outlet. Never modify a plug in any way.
Before using any tool, electric, gas or non-motorized, check to ensure it is in proper working order. Ensure there are no cracks, splits, damaged guards, damaged cords or any other damage/excessive wear and tear that could lead to an injury if it was used.
Never use the cord for carrying, pulling or unplugging a power tool, appliance or other equipment. Pulling on the cord could damage the cord and increased the risk of shocks
Do not use damaged cords or receptacles or cords that feel warm.
Do not plug, use or unplug electrical equipment with wet hands or while touching a wet or damp surface or standing on a wet surface.
Do not expose power tools to rain or other wet conditions. Water entering a power tool can increase the risks for shocks.
Never perform maintenance or repairs, remove a stuck item, or insert anything other than what is specified for the appliance when it is plugged in.
Avoid touching the outside of a metal outlet box with one hand while plugging in an appliance with the other hand. If there is a short, this could make an electrical “circuit” allowing current through you, exposing you to possible shock or electrocution.
When moving, raising or lowering beds, ensure that they do not come into contact with the receptacle or cords plugged into it as they may become damaged.
Learn how to shut off the current (such as flip breakers or lever switches) in case of emergency.
Never touch an electrocuted victim until the power has been turned off
Report any additional safety concerns to your Supervisor

Working in Extreme Hot or Cold Weather

Is there a temperature at which work becomes dangerous and should be stopped?

The short answer is yes. Both very cold and very hot temperatures could be dangerous to your health. Excessive exposure to heat is referred to as heat stress and excessive exposure to cold is referred to as cold stress.

In a very hot environment, the most serious concern is heat stroke. In absence of immediate medical attention, heat stroke could be fatal. Heat stroke fatalities do occur every summer. Heat exhaustion, and fainting (syncope) are less serious types of illnesses which are not fatal but interfere with a person's ability to work.

At very cold temperatures, the most serious concern is the risk of hypothermia or dangerous overcooling of the body. Another serious effect of cold exposure is frostbite or freezing of the exposed extremities such as fingers, toes, nose and ear lobes. Hypothermia could be fatal in absence of immediate medical attention.

What are the warning signs of heat stroke and hypothermia?

The victims of heat stroke and hypothermia are unable to notice the symptoms, and therefore, their survival depends on co-workers' ability to identify symptoms and to seek medical help.

While symptoms can vary from person to person, the warning signs of heat stroke can include complaints of sudden and severe fatigue, nausea, dizziness, lightheadedness, and may or may not include sweating. If a co-worker appears to be disorientated or confused (including euphoria), or has unaccountable irritability, malaise or flu-like symptoms, the worker should be moved to a cool location and seek medical advice.

Warning signs of hypothermia can include complaints of nausea, fatigue, dizziness, irritability or euphoria. Workers can also experience pain in their extremities (hands, feet, ears, etc), and severe shivering. Workers should be moved to a heated shelter and seek medical advice when appropriate.

What are the exposure limits for working in hot environments?

Two types of exposure limits are often used: occupational exposure limits and thermal comfort limits. Occupational exposure limits are to protect industrial workers from heat-related illness. Thermal comfort limits are for office work to ensure productivity and quality of work. Please see the OSH Answers Thermal Comfort for Office Work for more information on indoor temperatures.

The American Conference of Governmental Industrial Hygienists (ACGIH) recommends Threshold Limit Values (TLVs) for working in hot environments. These limits are given in units of WBGT (wet bulb globe temperature) degrees Celsius (°C). The WBGT unit takes into account environmental factors namely, air temperature, humidity and air movement, which contribute to perception of hotness by people. In some workplace situations, solar load (heat from radiant sources) is also considered in determining the WBGT. Some Canadian jurisdictions have adopted these TLVs as occupational exposure limits and others use them as guidelines to control heat stress in the workplace.

The ACGIH publication "2013 TLVs® and BEIs®" (or the most current booklet) provides recommended screening criteria for heat stress exposure for workers (Table 1). The publications "2013 TLVs® and BEIs®" (or most current) and "Documentation of TLVs® and BEIs®" should be consulted for more detailed information on these screening criteria, categories of work demands, guidelines for limiting heat strain and heat strain management.

Table 1

ACGIH Screening Criteria for Heat Stress Exposure (WBGT values in °C)
for 8 hour work day five days per week with conventional breaks

Allocation of Work	TVR				Action Limit			
Work/Rest Cycle	Light	Moderate	Heavy	Very Heavy	Light	Moderate	Heavy	Very Heavy
75-100%	31.0	28.0	--	--	28.0	25.0	--	--
50-75%	31.0	29.0	27.5	--	28.5	26.0	24.0	--
25-50%	32.0	30.0	29.0	28.0	29.5	27.0	25.5	24.5
0-25%	32.5	31.5	30.5	30.0	30.0	29.0	28.0	27.0

Notes:
Table is intended as a screening tool to evaluate if a heat stress situation may exist.
Assumes 8-hour workdays in a 5-day workweek with conventional breaks.
TLVs assume that workers exposed to these conditions are adequately hydrated, are not taking medication, are wearing lightweight clothing, and are in generally good health.
Examples of work loads:
Rest - sitting (quietly or with moderate arm movements)
Light work - sitting or standing to control machines; performing light hand or arm work (e.g. using a table saw); occasional walking; driving

Moderate work - walking about with moderate lifting and pushing or pulling; walking at moderate pace; e.g. scrubbing in a standing position
Heavy work - pick and shovel work, digging, carrying, pushing/pulling heavy loads; walking at fast pace; e.g. carpenter sawing by hand
Very Heavy - very intense activity at fast to maximum pace; e.g. shoveling wet sand
Adapted from: 2013 TLVs® and BEIs® - Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. Cincinnati: American Conference of Governmental Industrial Hygienists (ACGIH), 2013, p.210.
Many Canadian occupational health and safety regulations specify upper and lower temperature limits for work performed inside buildings which are normally heated (see Table 3).
The weather broadcast service of Environment Canada uses the humidex scale to inform the public about hot weather conditions. The humidex scale quantifies human discomfort due to perceived heat taking into account the effect of air temperature and relative humidity. For a given temperature, the humidex increases as the relative humidity (moisture content) of the air becomes higher. The following table gives ranges of humidex for various degrees of thermal effect on people.

Table 2
Humidex and Thermal Comfort

Humidex Range (°C)	Degrees of Comfort
20 - 29	Comfortable
30 – 39	Varying degrees of discomfort
40 – 45	Uncomfortable
46 and Over	Many types of labour must be restricted

Table 3
Canadian health and safety regulations with respect to thermal conditions in the workplace

Jurisdiction	Regulation	Temperature
Canada, Federal	Personal service food preparation area	18°C min./29°C
	Materials handling: operators' compartment	27°C
	First aid room	21°C - 24°C
National Joint Council (Public Service)	OH&S Directive	20-26°C Humidex 40°C
British Columbia	Heat Stress Regulations	Limits in WBGT
	Indoor Air Quality Regulation, ASHRAE 55-1992 Standard	units similar to ACGIH TLV
	Summer Indoor	23.3-27.2°C/74- 81°F
	Winter Indoor	20.5-24.4°C/69-76°F
Alberta	(Guidelines only)	Similar to ACGIH
Saskatchewan	Thermal environment	Reasonable and Appropriate to work
Manitoba	Thermal environment	ACGIH TLVs
Ontario	Construction projects:	
	Change room for underground workers	27°C min
	Work chamber	38°C max.
	Medical locks.	18°Cmin./27°C max
.	Enclosed workplace, Industrial Establishment Regulations	18°C min.
Quebec	Safety in mines:	
	Dryhouse temperature	22°C min.
	Occupational exposure limits	WBGT similar to ACGIH TLVs
New Brunswick	Enclosed place of employment:	
	Light work while sitting, mental work	20°C min.
	Light work while sitting, work with small machine tools	18°C min
	Moderate physical work, standing	16°C
	Heavy physical work	12°C min.
	Work conditions	1997 ACGIH TLVs for heat/cold exposure
Nova Scotia	Workplace Health and Safety Regulation	ACGIH TLVs for heat/cold exposure
PEI	Enclosed workplace:	
	Light work while sitting, mental work	20°C min.
	Light work while sitting, work with small machine tools	19°C

Light work, standing		17°C
Moderate work standing		16°C
Heavy work		12°C min.
Occupational exposure limit	ACGIH TLVs for heat/cold exposure	
Newfoundland and Labrador	Occupational exposure limit	ACGIH TLVs for heat/cold exposure
NW Territories Camp Sanitation Regulation	Overnight minimum temperature only,	18°C min
Nunavut Camp Sanitation Regulation	Overnight minimum temperature only,	18°C min
Yukon Territory	Thermal environment	Similar to ACGIH TLVs for heat/cold

What are exposure limits for working in the cold?
Some Canadian occupational health and safety regulations specify a minimum temperature for indoor work environments in buildings that are normally heated (see Table 3). As indicated in Table 3, some jurisdictions have adopted the ACGIH TLVs for both heat and cold exposure for outdoor work.
The ACGIH has adopted the guidelines developed by the Saskatchewan Labour for working outdoors in cold weather conditions. These guidelines recommend protective clothing and limits on exposure time. The recommended exposure times are based on the wind chill factor, a scale based on air temperature and wind speed. The work-break schedule applies to any four-hour period with moderate or heavy activity. The warm-up break periods are of 10 minute duration in a warm location. The schedule assumes that "normal breaks" are taken once every two hours. At the end of a 4-hour period, an extended break (e.g. lunch break) in a warm location is recommended. For more information see the webpage from the Occupational Health and Safety Division of the Government of Saskatchewan on Working Outdoors in Saskatchewan.

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APPENDIX B

Safe Job Procedures

Table of Contents

Safe Job Procedures

Electrical Safety Work Procedures

This safety procedure provides guidelines for safely working around electrical hazards. It includes provisions for training, lockout requirements, and specific types of work practices and the required precautionary practices when using portable electric equipment.

Electrical System Lockout

Procedure:

1. Switch off all appropriate devices (MCC, Distribution Panel, Disconnect).

2. Lock and tag out Electrical Supply devices in the “OFF” position.

3. Test to be sure the equipment cannot be operated at the STOP-START switch.

4. Test to be sure electrical equipment is de-energized.

5. After completion of task, remove padlocks and destroy tags.

Lockout Procedures

Preparation

1.Notify all affected workers that a lockout is required and the reason for the lockout.

Machine or Equipment Shutdown and Isolation

1.If the equipment is operating, shut it down by the normal stopping procedure (depress stop button, open toggle switch, etc.). Only workers knowledgeable in the operation of the specific equipment should perform shutdown or re-start procedures.

2.Operate the energy-isolating device(s) so that all energy sources (electrical, mechanical, hydraulic, etc.) are disconnected or isolated from the equipment.

3.Electrical disconnect switches should never be pulled while under load, because of the possibility of arcing or even explosion.

4.Stored energy, such as that in capacitors, springs, elevated machine parts, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc., must also be released, disconnected, or restrained by methods such as grounding, repositioning, blocking or bleeding-down.

5.Pulling fuses is not a substitute for locking out. A pulled fuse is no guarantee the circuit is dead. Even if a circuit is dead, another person could inadvertently replace the fuse.

6.Equipment that operates intermittently, such as a pump, blower, fan or compressor may seem harmless when it is not running. Do not assume that because equipment is not operating at a particular point in time that it will remain off for the duration of any work to be performed on it.

Application of Lockout/Tagout

1.Lock out and tag the energy-isolating device with an assigned, individual lock. A worker will not be protected unless he/she uses his/her own padlock.

2.If more than one worker is working on the same piece of equipment at the same time, each one should lock out the equipment, by placing a personal lock and tag on the group lockout device when he/she begins work, and should remove those devices when he/she stops working on the machine or equipment.

3.Locks and tags should clearly show the name of the person who applied the device, the date, and the reason for the lockout. This identifies who is servicing the machinery or equipment. In a multiple lockout/tagout situation, it will also identify any worker(s) who may not have finished working.

4.Locks and tags must be durable enough to withstand the environment in which they are to be used. Information on the locks and tags should remain legible.

5.Locks must be substantial enough to prevent removal without the use of excessive force. Tags must be substantial enough to prevent accidental or inadvertent removal.

6.Both locks and tags are to be standardized by colour, shape, or size. Tags should be easily recognized and provide appropriate information about the lockout.

7.For some equipment it may be necessary to construct attachments to which locks can be applied. An example is a common hasp to cover an operating button. Tags must be attached to the energy isolating device(s) and to the normal operating control in such a manner as to prevent operation during the lockout.

Verification of Isolation

1.After ensuring that no workers can be injured, operate the push button or other normal controls to verify that all energy sources have been disconnected and the equipment will not operate.

2.If there is a possibility of re-accumulation of stored energy, such as an increase in pressure to a hazardous level, isolation of the equipment must be periodically verified

until the maintenance or repair is completed, or until the possibility of such accumulation no longer exists.

3.Return operating controls to neutral position after the test. A check of system activation (e.g. use of voltmeter for electrical circuits) should be performed to ensure isolation.

4.The equipment is now locked out.

Lockout/Tagout Interruption

1.If a machine is locked/tagged and there is a need for testing or positioning of the equipment/process, the following steps should be followed: •Clear the equipment/process of tools and materials.

•Ensure workers are a safe distance from any potential hazard.

•Remove locks/tags according to established procedure.

•Proceed with test.

•De-energize all systems and re-lock/re-tag the controls before resuming work.

Release From Lockout/Tagout

1.Before locks and tags are removed and energy is restored to the machine or equipment, inspect the work area to ensure that non-essential items have been removed and that machine or equipment components are operationally intact.

2.Ensure workers are a safe distance from any potential hazard.

3.Each lock and tag should be removed from each energy-isolating device by the worker who applied the lock and tag.

4.Notify affected workers that locks and tags have been removed.

General Lockout Recommendations for Servicing Farm Equipment

1.Disengage the power and stop the machine before servicing.

2.Do not clean, unplug, lubricate, adjust or repair any machine while it is running, unless it is specifically recommended in the service or owner's manual.

3.Lock out the ignition and put a warning sign over the ignition that tells everyone that you are working on the machine.

4.Engage safety locks if the hydraulic cylinders are so equipped.

Lockout for Hydraulic Systems

1.Workers should always follow instructions in the operator's manual for servicing hydraulic systems. Where appropriate, a properly qualified and certified mechanic should perform repairs and maintenance.

2.Shut off the engine that powers the hydraulic pump.

3.Lower implement to the ground or onto a solid support.

4.Move the hydraulic lever back and forth several times to relieve pressure.

5.When applicable, blanking devices should be used.

Working on Live Electrical Apparatus

Procedure:

1. When working on connections, shut off power if possible.

2. Ensure what amperage and voltage you are working on.

3. Electrical installations should be carried out by a properly trained and qualified journeyman or registered apprentices.

4. Two or more journeyman should work together on any energized circuit with a potential to 480 volts or more between conductors.

5. Remove panel covers with care, ensuring cover screws or panel space fillers are removed.

6. Ensure ladders are made of non-conductive materials.

7. Be conversant with E.R.P. (Emergency Response Plan).

Working Around Heavy Equipment

Procedure:

1. When entering an area where heavy equipment is operating always notify the operator of your arrival over the radio. Always make eye contact. It is usually indicated that the operator is aware of you and your location with a wave of the hand

2. Always remain a safe distance form any equipment in use. You never know when they will make a share turn or begin backing up. Notify the operator if you will ever be passing behind them as they are working at the task at hand and may not see you.

3. When approaching any equipment on foot ensure that it has come to a complete stop before you begin your approach. It is important to be aware of any possible falling debris. Often enough materials will spill out of loaded buckets or can be kicked up from under tires.

4. It is important when working in areas where dust is being created to wear the proper dust mask. Ensuring that you are wearing all of your proper PPE is the best way to prevent an accident and will provide the best visibility to all employees and equipment operators working around you.

Pre-trip Inspections

Procedure:

Under the hood:

1. Check radiator for leaks, coolant level and proper fitting cap

2. Check fan for bend blades, loose mounting, and all belts for tension

3. Check oil and other fluid levels

4. Check battery for electrolyte level, cracks, and excessive corrosion

5. Check air cleaner

6. Check quickly for obvious breaks or loose connection in electrical systems, coolant hoses and vacuum hoses

7. Check inspection sticker when last certified and current CVIP.

In the cab:

1. Check feel and operation of brake and clutch – free play

2. Check horn

3. Check adjustment of rear view mirrors

4. Check operation of all lights - by getting in and out of the cab, or by getting a helper

5. Check engine for ease of starting and smooth operation

With the engine started:

1. Check all brakes (include pressure build up time and maximum allowable pressure drop on full application) – check travel of slack adjusters

2. Check operation of all instrument panel gauges

3. Check operation of windshield wipers

4. Check for unusual noise in clutch and transmission when clutch pedal is depressed and released with engine running and transmission in neutral

5. Extra Equipment

6. Fire extinguisher and flares

7. First Aid Kit

8. Vehicle Registration and other required paperwork

9. Tools properly secured

Walk around:

1.A systematic circle check of the unit shall be made before starting on any trip. Details of the check can, of course, be varied by generally the principal of making a complete circle should be followed in all cases.

Note: Wheels must be choked and parking brake applied.

2. Check vehicle for damage to lights, clearance cluster, bumper, fenders and mud flaps

3. Check for tire damage, wear, proper inflation and missing valve caps. Check wheel lugs and nuts

4. Check springs for sag, U-bolts for tightness, pintle hitches for signs of cracks and under vehicle for signs of fluid leaks

5. Check rear view mirrors and mirror mountings, operation of doors, door handles and latches

6. Check fuel and fuel levee, air vent and proper fitting cap

7. Check tarps, lashing, tailgates, placards, safety chains, and rear doors

Fifth Wheel:

1. Check fifth wheel mounting

2. Check operation and position of fifth wheel locking handle and ensure fifth wheel is properly closed or open

3. Check air lines for proper connection and condition

4. Check light cables for connection and condition

Other Driver Performed Inspections:

1. Rest/Check Stop Inspections

2. These stops have two purposes. First, they allow the driver to rest and change routine, thereby reducing fatigue and maintaining alertness. Secondly, they give the driver a chance to check his unit after it has been on the road for a while to ensure that everything is operating as it should.

Rest Stop Checks should include:

1. Visual check of all light for cleanliness and operation

2. Audible check for air leaks

3. Tire, and wheel checks

4. Visual check of the unit for broken or unsecured items

5. Check placard placements

Uncoupling and Coupling Semi-Trailers

Procedure:

To Uncouple:

1. Park tractor and trailer in a straight line

2. Secure tractor with parking brake or maxi

3. Set trailer brakes and block wheels

4. Lower landing gear – drain air out of trailer prior to decking off have pads under landing gear to ensure lading won’t sink.

5. Unlock fifth wheel

6. Disconnect electrical connection and air lines securing them to tractor

7. Move tractor slowly ahead until fifth wheel clears the trailer – drop air out of tractor

To Couple:

1. Visually check fifth wheel to assure the jaws are in the unlocked position

2. Back up tractor in line for hook-up with the trailer and stop before contracting the fifth wheel

3. Connect air lines from tractor to trailer and block trailer wheels to the rear

4. Fill trailer air reservoir and set trailer brakes

5. Back tractor until trailer connection is made after first checking to match the height of the fifth wheel and that of the trailer

6. Visually check to assure fifth wheel jaws are properly locked around the trailer pin

7. Before moving the unit, set trailer brakes and pull with the tractor to make sure you have a good hook-up. If you see, during this test that there is a noticeable slack, correction should be made – notify supervisor

8. Raise landing gear and hook up electrical connections

9. Remove wheel chocks

Confined Space Entry

Procedure:

1. Must be competent in confined space entry to identify the work procedures required to enter the confined space.

2. Ensure there is reasonable means exit from all parts of the confined space.

3. Ensure that ventilation and purging is established and allows acceptable air levels to be achieved and maintained.

4. Establish method of communication to allow immediate contact with necessary personnel if rescue or assistance is required, confirm alarm system.

5. Must be trained in H2S Alive or equivalent (if required).

6. Before entry, the vessel or confined space must be tested by a competent worker wearing breathing apparatus, for oxygen content, combustible gas (L.E.L.) and hydrogen sulfide.

7. Continuous monitoring may be required of the vessel or confined space atmosphere.

8. Must be conversant with Rescue Procedures.

Open Holes

Procedure:

1. Use caution when working around manholes.

2. Do not smoke, light open flames, or produce sparks in the immediate vicinity of open manholes.

3. Before removing manhole or entrance covers, test the atmosphere inside the manhole by using remote sampling probe or aspirators. If the lower explosive limit is above 10% inside the manhole, do not remove the cover.

4. Use picks, hooks to open manhole covers.

5. Lift manhole covers and heavy hatches with the legs. Never lift with the back muscles.

6. Lay removed manhole and heavy hatch covers flat on the ground several feet away from the opening.

7. When manhole or entrance covers are removed, the opening must be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and protect each employee working in the space from foreign objects entering the space.

8. Use barricades and/or warning devices to direct traffic around open manholes.

9. Follow Public Services Department's Confined Space Entry Program and all safety procedures before entering and during entry into any manhole.

10. Have at least two persons present before entering a manhole: One person to enter the manhole and one person in the clear to observe in the event of an emergency. One of the persons must be a "qualified person" as defined by the Public Services Department's Confined Space Entry Program. This person bears the responsibility of completing the Confined Space Entry Permit. Never enter a manhole unattended.

11. Wear protective clothing and nonslip, non-sparking shoes in a manhole.

12. Test each individual manhole step carefully. Be sure to check ladder for overall structural soundness and ability to support weight before using.

13. Use ladders to access manholes whenever the structural soundness and support ability of the manhole steps/stairs are in question.

14. Take proper safety precautions when using ladders in a manhole.

15. Use a safety harness and life line when entering a vertical entry manhole, unless the life line creates an entanglement hazard.

16. Watch out for slippery footing in a manhole.

17. Do not hand-carry tools and/or equipment while climbing up or down steps or a ladder into a manhole.

18. Raise or lower tools and/or equipment into a manhole using a rope, sling, or bucket.

19. Use only explosion-proof portable lighting and non-sparking tools in a manhole.

20. Avoid using electrical tools in or near water. Never stand in water when using electrical tools.

21. Constant ventilation is required when performing “hot-work” within a manhole.

Manual Lifting

Procedure:

1. Rule of Thumb: Look up as you lift!

2. Employees should know their physical limitations and the approximate weight of materials they are trying to lift.

3. Obtain assistance in lifting heavy objects whenever the task may be more than can be safely handled.

4. Before any manual lifting is done, the use of power equipment or mechanical lifting devices such as dollies, trucks or similar devices should be considered and

employed where practical.

5. Bulky loads should be carried in such a way as to permit an unobstructed view

ahead.

6. Ensure a good firm grip before lifting.

7. Lift gradually, slowly, smoothly and without jerking.

8. The back should be kept close to vertical or straight and the lifting should be done with the legs.

9. Avoid unnecessary bending. Do not place objects on the floor if they must be

picked up again later.

10. Avoid unnecessary twisting. Turn your feet, not your hips or shoulders.

Towing Portable Equipment with Light Vehicles

Procedure:

1. Do a pre-use check of the portable equipment prior to hooking it up. Check:

    a) equipment hitch

    b) tires

    c) axles

    d) weight

    e) general condition of unit

2. Hook the portable equipment to the truck.

Note: If using a pintle hitch, the hitch is to be closed and locked in the closed position using a locking pin so that it cannot open up during use.

Note: If using a pin through a tubular bumper, the pin must be of sufficient size and strength to tow the equipment and it must be locked into the bumper by a hitch pin or similar device to prevent it from coming out during use.

Note: If using a ball type hitch, the ball and hitch must be the same size and safety chains must be crossed under the hitch and attached to the truck to prevent the trailer from becoming detached.

3. Lower any raised mast(s), stow the jack and/or any other stands safely prior to transporting the unit.

4. Tow the portable equipment to the new location, keeping in mind the equipment size/weight, speed limits and road conditions.

Tiger Torches

1. When a torch is used, an adequate fire extinguisher should be present.

2. Eye protection must be worn when heating edges where loose aggregate is present, because the rocks can explode due to the extreme heat that is applied to them.

3. Inspect the hoses and valves to ensure there are no leaks. If you suspect that there is a leak, do not use a match to test. Instead, use soap and water and look for bubbles.

4. Ensure that the propane bottles are properly shut off.

5. Ensure that the propane bottle is in the upright position during use of the torch.

6. Do not leave the tiger torch on, unattended.

7. Do not use a tiger torch to heat a propane tank.

8. Ensure that you turn the propane off at the tank and not just the tiger torch head. This will ensure that no propane will leak out of the tank if there is a leak in the propane line linking the tiger torch to the regulator.

9. Do not use torch to heat up manhole lids, as a possible explosion could take place if explosive gases have built up beneath manhole lid.

Cut-Off Saws

1. Use safety footwear, snug fitting clothing, safety glasses, hearing protection and a hardhat while operating the cut-off saw. A respirator with HEPA filters must be worn while cutting concrete or asphalt.

2. Dust concentrations must be maintained below the established exposure limits. Keep water continuously running on the cutting wheel while cutting,

a. Concrete,

b. Asphalt, if dust concentrations may exceed exposure limits.

3. Operate the cut-off saw in well-ventilated areas.

4. Inspect the cut-off saw before start-up, CLEAN THE AIR FILTER.

5 .Inspect the cutting wheel for warping and damage before using the cut-off saw.

6. Run the saw at full throttle while cutting.

7. Use the bottom of the wheel for cutting.

8. Test newly mounted wheels to run at normal operating speed for approx. 30 seconds with guard in place before beginning to use.

9. Hold the cut-off saw with 2 hands while it is running

Hand and Portable Power Tools (General)

Procedure:

1. Choose the most appropriate tool for the task.

2. Inspect the tool and ensure it is in good operating condition and is equipped with all guards. Replace or repair defective tools.

3. Ensure you are familiar with the safe operating procedures and any limitations on the use of the tool.

4. Ensure you are wearing all appropriate PPE for the task, such as safety eyewear, footwear, hearing protection, respirator, etc.

5. Ensure no one in the surrounding area will be put a risk when you are using the tool.

6. If a portable power tool, make sure it is connected to a safe source of energy (i.e. GFCI for electrical power)

7. Use tools designed to allow wrist to stay straight. Avoid using hand tools with your wrist bent.

8. Keep cutting tools sharp and cover sharp edges with suitable covering to protect the tool and to prevent injuries from unintended contact.

9. Replace cracked, splintered, or broken handles on files, hammers, screwdrivers, or sledges.

10. Replace worn jaws on wrenches, pipe tools and pliers.

11. Redress burred or mushroomed heads of striking tools.

12. Keep the work environment clean and tidy to avoid clutter which may cause accidents.

13. Use a heavy belt or apron and hang tools at your sides, not behind your back.

Portable Stepladders

Procedure:

1. Choose proper type and grade of stepladder for the job.

2. Use a stepladder that is about 1 m (3 ft) shorter than the highest point you have to reach.

3. Check the manufacturer’s ratings and ladder markings to ensure it is suitable for the task.

4. Inspect the stepladder to ensure no bent rungs or side rails and that all parts are in proper working order.

5. Make sure the spreader bars are undamaged and can be locked in place.

6. Place the stepladder in position, ensuring that the base is level, solid and on stable ground. Do not use stepladders on soft ground where one leg may sink farther into the ground than others.

7. Place a stepladder at right angles to the work, with either the front or back of the steps facing the work. Keep the stepladder close to the work.

8. Ensure that the stepladder spreader bars are fully extended and locked in position.

9. Face the stepladder and climb using the 3 point contact rule at all times.

Circular Power Saws

Procedure:

1. Inspect the circular saw and ensure it is in good operating condition and is equipped with all proper functioning guards in place.

2. Make sure you are familiar with the safe operating procedures and any limitations on the use of the saw.

3. Wear all appropriate PPE for the task, such as gloves, safety eyewear and footwear, hearing protection, and respirator (if necessary).

4. Use sharp blades designed for your work and recommended by the tool manufacturer.

5. Check the retracting lower blade guard frequently to make certain it works freely. It should enclose the teeth as completely as possible, and cover the unused portion of the blade when cutting.

6. Make sure the saw is connected to a suitable extension cord with a proper grounding connection. Conduct a daily pre-operating check and repair or replace damaged cords.

7. Allow the saw to reach full power before cutting.

8. Make sure the lower blade guard is fully returned before laying down the saw.

9. Disconnect the power supply before adjusting or changing the blade.

10. Keep all electrical cords clear of the cutting path. Use both hands to operate the saw.

11. Keep the saw blade guards and motor clean and free of sawdust.

12. Secure the work while cutting.

Aerial Work Platforms

Procedure:

1. Read and follow manufacturer operator’s instructions.

2. Perform job site inspection and walk around inspection of the equipment.

3. Ensure ground is firm and level.

4. Be aware of power line proximity.

5. Ensure correct aerial platform is utilized.

6. Do not overload the machine at any time.

7. No platform is to be made higher by the use of a scaffold, boxes, or ladders.

8. Wear the applicable safety harness attached to the machine when operating any aerial platform.

9. Get on and off the platform when it is in the lowered position.

10.While operating an aerial work platform, the operator shall not use any hand-held device(s) while the equipment is being operated.

Operator's Checklist

WORKSITE

 Minimum safe distance from overhead electrical lines and other conductors (< 50 KV – 10 feet; 50 – 199 KV- 15 feet; 200 – 349 KV- 20 feet; 350 – 499 KV- 25 feet; 500 – 749 KV – 35 feet; 750 – 1000 KV – 45 feet)

 Floor and ground conditions are appropriate

(free of slippery conditions, uneven surfaces, obstructions, and significant slopes; sufficient load ratings of floor/surface)

 Overhead obstructions are outside of the working range of the lift, if possible. If not, the operator is aware of the overhead obstructions. Hard hat is used.

(e.g., cross members, trusses, sprinkler heads, water/utility lines, conduit, cranes)

 Lift is protected from pedestrian and vehicular traffic

(barricades or other effective means are used to delineate the work zones and divert both vehicular and pedestrian traffic)

 Weather conditions

(If operating outdoors, weather conditions are safe- no threat of inclement weather, including windy conditions)

 Atmospheric conditions

(work space is free of flammable/explosive vapors, dusts, and fibers; lifts with combustion engines not operated in an enclosed space)

 Machine load ratings and intended use are compatible with the specific machine to be used.

Lift

 Batteries (DC Operated Models)

(proper electrolyte level; cable connections should be tight; there should be no visual evidence of corrosion or other deterioration/damage; and the batteries should be of the size and weight specified by the manufacturer)

 Power cord (AC Operated Models)

The power cord for AC models should be securely attached and have no visible signs of damage (e.g., cut or cracked insulation, missing prongs, etc.)

 Fluid levels

(i.e., oil, hydraulic fluid, coolant, etc.)

 Frame

(look over the entire frame checking for loose or missing hardware, cracked welds, bent pins/sockets, etc.)

 Hydraulic and pneumatic systems

(look for signs of deterioration or leakage including reservoirs, hoses, cylinders, etc.)

 Platform raising system

(look for worn, nicked, frayed or rusted cables or chains, insufficiently lubricated moving parts, loose tension on chains or cables, bind in pulleys or sheaves, etc.)

 Tires, wheels, casters

(check tires, wheels, casters to ensure that they are free rolling and securely attached; if tires are pneumatic, ensure proper inflation level).

 Guardrail

(securely attached to the platform, there are no signs of damage (e.g., cracked welds, etc.), and the gate works properly)

 Fall arrest anchoring point

(good condition)

 Platform

(clean, securely attached to mast)

 Outriggers

(cables leading to controls are in good condition and control labels are present and legible)

 Controls

(cables leading to controls are in good condition and control labels are present and legible)

 Instructional and warning labels/decals

(present and legible)

 Operator's manual

(stowed in the designated weather-resistant compartment on the lift)

 Function tests

(all function tests recommended by manufacturer conducted with acceptable results)

 Additional items for specific models (as recommended by manufacturer)

Batteries /Charging and Servicing

Procedure:

1. Ensure the charger is off before attaching or removing clamp connections.

2. Attach clamps to the battery in proper polarity (i.e., negative to negative).

3. Ensure proper ventilation is in place where batteries are charged.

4. Inspect for defective cables, loose connections, corrosion, cracked cases or covers, loose hold-downs and deformed or loose terminal posts.

5. Replace worn or unserviceable parts.

6. Tighten cable clamp nuts with the proper size wrench.

7. Utilize a cable puller to remove a cable clamp from the battery terminal.

8. Remove corrosion on the terminal posts, hold-down tray and hold-down parts.

9. Use a tapered brush to clean battery terminals and the cable clamps.

10. Clean dirt from the battery with baking soda solution.

11. Utilize a battery carrier to lift a battery.

12. Ensure battery cells are not filled above the level in indicator.

Crushing Operation

Procedure:

1. A worker must be conversant with work site operations that are part of a crushing operation.

2. Operators must be familiar with the lock out system.

3. Under NO circumstances proceed to attempt to rectify any electrical and/or hydraulic problems without first “locking out” the equipment.

4. Do not cross, jump or touch any moving conveyer.

5. Always use ladders and the provided access and exit points from all crushing equipment.

6. Loader operators must maintain good housekeeping practices.

7. Personnel operating heavy equipment (loaders) on the work site must refrain from using hand-held devices (cell-phones, two-way communication devices, etc.) while the heavy equipment is in motion.

Driving

Procedure:

1. Ensure you have a valid operator’s license.

2. Be conversant with traffic laws and applicable regulations.

3. Drive defensively.

4. Back in when practical.

5. Ensure the vehicle has an emergency road kit.

6. Ensure you are not under the influence of alcohol or drugs.

7. Avoid driving when fatigued.

8. Ensure seatbelts are worn at all times when the vehicle is being operated.

9. Be familiar with the vehicle and its’ capabilities.

10. Offering rides to strangers or hitchhikers is prohibited.

11. Perform a “walk around” inspection prior to travelling.

12. Use good judgement and understand of the basic recovery skills appropriate to the vehicle you are driving.

13. Do not operate a cell phone while driving.

Driving (Winter)

Procedure:

1. Ensure you have a valid operator's license.

2. Be conversant with traffic laws and applicable regulations.

3. Drive defensively.

4. Back in when practical.

5. Ensure the vehicle has an emergency road kit.

6. Clear snow from all windows, lights and mirrors, when required.

7. Avoid using cruise control on icy roads.

8. Accelerate and brake gently to reduce skids or spinouts.

9. Ensure winter clothing does not restrict movement, vision or hearing.

10. Ensure fuel tank is full when possible.

11. Ensure you are familiar with the installation of snow chains, if applicable.

12. Monitor weather reports, road conditions.

13. Do not operate a cell phone while driving.

14. Refer to Working Alone procedure when driving in isolated areas.

Equipment Activities near Overhead Power Lines

Procedure:

Perform worksite inspection

1. Maintain minimum safe clearances.

2. Install warning devices and signs.

3. Install telescopic non-conductive posts and flagging across R.O.W. at the minimum allowable clearance as allowed by regulations for the line voltage.

4. Position signs or other devices to identify the "Danger Zone".

5. Be conversant with allowable clearances.

6. Adhere to all site-specific requirements.

7. Beware of atmospheric conditions such as temperature, humidity and wind which may dictate more stringent safety procedures.

1. General Procedures

• Only a qualified electrical worker or a certified utility arborist is permitted to work within the “General Limits of Approach”. The General Limits of Approach are described in table 19-1 of paragraph 19.24 of the OH&S regulation. This table has been recreated on page 2 of this standard.

• No work (falling of trees) will commence when working within two tree lengths of the General Limits of Approach of any power line (see table 19-1) until a pre-work plan is reviewed and understood by all workers.

• A “Logging Near Energized High Voltage Conductors” pre-work form (Appendix 2) and onsite inspection must occur with the power authority (BC Hydro, BC Transmission Corporation – BCTC, or an Independent Power Producer - IPP) prior to any tree pruning or falling within two tree lengths of the General Limits of Approach of any power line. This pre-work form as well as a falling plan will be completed jointly between the company and a representative from the power company during the initial onsite.

• An “Assurance of Compliance” (Worksafe form 30M33) must be completed and signed by a representative of the power authority if at any time the minimum distances from an energized line cannot be maintained. Note: It is very unlikely that a company representative will ever have to fill one of these forms out as only a qualified electrical worker or a certified utility arborist is permitted to work within the General Limits of Approach. The power authority will generally arrange to remove trees, branches or limbs that are within the General Limits of Approach.

• The operator of any equipment traveling under or working near an energized power line must plan their work to avoid any part of their equipment or material the equipment may be handling from encroaching on the General Limits of Approach (table 19-1). A safety spotter may be necessary to ensure that the machine does not enter the General Limits of Approach.

• When a safe distance can not be maintained under a power line, workers must stop all work or movement of equipment and immediately inform their supervisor

• In the event of any power-line, power-pole or guy-line contact with a tree or any equipment, employees are instructed to cease work immediately, follow the power line safety guidelines (Appendix 1) and contact their Supervisor.

• The maximum allowable load heights (to meet the General Limits of Approach) are to be posted at both sides of all power line crossings. Power line clearances at road crossings can change significantly with temperatures and electrical load. Ensure that signage reflects current conditions.

OHS Regulation Table 19-1 General Limits of Approach Voltage – Phase to Phase
Minimum Distance

Over 750 V to 75k V	3 m	10 ft.
Over 75k V to 250k V	4.5 m	15 ft.
Over 250k V to 550k V	6 m	20 ft.

2. Lowbedding / Log Hauling / Equipment Moving Under Power Lines

• Before proceeding, the operator must determine the location, height and voltage of all power lines that will be encountered when transporting, low bedding, moving, or operating any equipment around power lines.

• Never attempt to throw the binder straps over a load near power lines as there is a potential to have an inadvertent contact with the energized line.

• Ensure that the equipment being transported or operated, including any materials or trees being handled by a piece of equipment remains outside the General Limits of Approach and clear of all support guylines from the towers or poles.

• Use a safety spotter in areas where there is a risk of encroaching on the General Limits of Approach.

• Telephone and cable lines do not have limits of approach; however the use of a safety spotter may be required in areas where the equipment or material being handled may come in contact with the lines.

• Where it is determined that the height of equipment on a lowbed will be within the General Limits of Approach, the equipment must be either:

a. off loaded to travel under the power lines and then re-loaded, or

b. disassembled sufficiently to travel under the power lines and then re-assembled

3. Proximity Zones for Tree Pruning and Falling Near Energized Conductors

Hard-line Zones

Any areas (settings or road r/w) containing trees that are not within, but could fall within the General Limits of Approach will be designated as “Hard-line” zones. The Hard Line zones will be at minimum of two tree lengths from the General Limits of Approach however a greater distance may be required if there is potential for the tree(s) to encroach the limits. The Engineering department will identify these areas by hanging orange ribbon embossed with “Power Line” in black print.

The Hard-line zones will be felled mechanically or using mechanical assists only. Machines must be able to maintain positive directional control for machine assisted falling. The type and size of machine and falling head being used must be suitable for the type and size of timber being felled. No conventional hand falling is to take place in

Hard-line zones. In circumstances where the terrain or conditions will not permit the use of a machine or machine assist, specialized fallers or certified utility arborists may be required. Specialized falling techniques with the use of tree jacks and or lines or other specialized falling practices may be utilized.

Excavating and Trenching

Procedure:

1. Prior to commencement of any excavation ensure that all underground and/or overhead lines have been identified, exposed and well marked/flagged.

2. Control traffic near roads or busy access ways.

3. Use traffic controllers/flaggers.

4. Set up barricades.

5. Provide ladders in immediate area for access/egress of trenches, excavations.

6. Where the cut back method is not possible, provide timber shoring, trench jacks, sheet piling, cage or other approved method.

Backfilling

Procedure:

1. No backfilling shall commence until all workers are clear of working areas.

2. The operators of any equipment being used in backfilling operations shall keep their swampers in sight at all times.

3. Operators/Swampers to be conversant in hand signals for their work site.

4. Shall don all appropriate PPE (including high visibility vests).

Excavating To Expose Existing Lines or Underground Line Crossings

Procedure:

1. Locate all Lines and determine the probable depth of the lines to be crossed.

2. Sweep R.O.W. using radio detection units for line alignment, where applicable.

3. Existing pipeline(s) and/or cables must be exposed “BEFORE” commencing any mechanical excavation.

4. Hydrovac to expose the line(s) within the critical area to allow for mechanical excavation as per Regulations.

5. If for any reason hand excavations are temporarily filled in, they shall be re-exposed before excavation takes place.

6. A Signal Person must be present at all times to direct the mechanical excavation during line crossings.

7. Workers and operators must be conversant in proper hand signals.

Opening and Guarding Manholes

Procedure:

1. Ensure obstructions to traffic shall be guarded by adequate signs, barricades, lights, flares or flags.

2. Ensure a blow torch or other open flame is not utilized to melt ice around a manhole or vault cover.

3. Ensure covers are removed and replaced by means of approved hooks or hoists.

4. Ensue forced ventilation is used for oxygen deficiency.

5. Ensure equipment is in good working conditions.

6. Ensure you are trained in the use of breathing air apparatus.

7. Before any work is done on a cable, it shall be identified by an approved method.

Fall Protection

Procedure:

1. Be fully conversant with Fall protection systems.

2. Ensure you know capabilities of Fall Protection Equipment.

3. Ensure barricades, ribbons and signs identify restricted areas.

4. Ensure you understand the procedures for rescue of workers who may be unable to rescue themselves from an elevated work area.

5. Ensure you know your anchor points.

6. Ensure you do not wrap the lanyards and/or rope around beams, girders, pipes, etc.

7. Utilize buddy system and continually check each other's harness and D ring to ensure that the harness is not too lose and or the D ring has not slipped down the back.

Hazard Control Signage

Procedure:

1. Ensure signage is in good condition, clean, legible and suited to the purpose.

2. Ensure traffic control signage is of accepted standards.

3. Ensure signage is secured.

4. Routinely inspect signage for placement, cleanliness and physical damage.

5. Ensure road traffic control signage is covered when no activity is present.

6.Ensure you are fully trained to erect road traffic signage.

Hydrovac Operations

Procedure:

1. Ensure barricades and warning signs are in place.

2. Ensure lines are identified.

3. Determine if the soil the hydrovac is working in is contaminated by hazardous substances or not.

4. Ensure you do not stand near edge of excavation.

5. Keep all unnecessary personnel and equipment out of the area the hydrovac is working in.

6. Additional care must be taken when locating and exposing fiberglass lines

Operation of air tools

Procedure:

1. Regularly inspect tools and hoses before using.

2. Obtain underground utility locates for the work area.

3. Wear suitable clothing and personal protective equipment.

4. Use proper shoring or slope equipment when air back tools are used in ditch.

5. Get assistance before lifting or moving heavy objects.

6. Practice good housekeeping.

7. Keep loose fitting clothing away from rotating equipment.

8. Bleed air before disconnecting hoses.

9. Shut-off equipment while re-fuelling.

10. Do not use an air tool for any purpose other than what it is intended for.

11. Follow Air Tool Safe Work Practice step by step.

Monitoring For Escaping Hydrocarbon Gases

Procedure:

1. Ensure barricades and warning signs in place.

2. Ensure all monitors are in proper working condition as per manufacturer's recommendations.

3. Check power supply, backup systems and batteries where applicable.

4. Consider wind, atmospheric conditions and sources of gas as well as other activities that could affect the work area when placing monitors.

5. Ensure Respiratory Protection Equipment is available and serviceable.

6. Ensure you are trained in proper use of respiratory equipment.

7. Check monitors on a regular basis.

Office Safety

Procedure:

1. Ensure you are conversant with emergency evacuation.

2. Ensure that all electrical cords are in good condition and are not overloaded.

3. Ensure that computer monitors are adjusted to correct height and kept clean.

4. Ensure fans/space heaters are used to manufacturer specifications.

5. Ensure floors and aisles are kept clear and not cluttered.

6. Ensure that only one drawer of filling is open at one time and that drawers are closed when not in use.

7. Ensure proper type of fire extinguisher is available.

8. When transporting materials of a heavy nature ensure that handcarts and trolleys are used properly.

9. Operate microwave according to manufacturer's specifications.

10. Ensure coffee makers are used according to manufacturer specifications.

11. Ensure photocopier is maintained according to manufacturer's specifications.

12. Ensure chairs are in good repair.

13. Ensure rugs are kept clean and in good repair – free of tripping hazard.

14. Ensure paper cutter blade is placed in closed lock position.

15. Ensure all loose clothing is tied back when using paper shredder.

Operation of Manlifts and Scissor Lifts

Procedure:

1. Erect warning devices.

2. Erect barricades and warning signs

3. Ensure Flagperson on site.

4. Swamper to be utilized and identified.

5. Ensure means of communication between operator and swamper.

6. Fall arrest protection in place.

7. Follow manlift / scissor lift specific make / model safe work procedures step by step.

8. Do not use hand-held devices (cell phone, two-way radio etc.) while operating the piece of equipment.

Refueling Equipment

Procedure:

1. Ensure you are conversant with regulations
2. Refueling area is ventilated

3. Ensure equipment is shutoff prior to refueling
4. Ensure there is no smoking or open flames in vicinity
5. Avoid spillage on equipment or ground
6. Ensure cellular phones and/or hand-held devices are turned off

Restricted Work Areas

Procedure:

1. Establish and maintain clear exits.
2. Have safety and emergency breathing air apparatus available.
3. Place continuous gas monitors at strategic points.
4. Place fire extinguishers at strategic points.
5. Isolate system to be worked on.
6. Purge system.
7. Check for hydrocarbon leaks.
8. Ensure no alternate power sources.
9. Continually monitor area for changing conditions.

Pipe Bending

Procedure:

1. Regularly inspect equipment.
2. Remain within the operator's line of vision.
3. Keep proper distance when tagging pipe.
4. Keep pipe from swinging.
5. Know the proper hand signals.
6. Check pipe slings for wear and defects.
7. Ensure pipe is properly chalked.
8. Do not ride on equipment unless appropriate seating is available.
9. Do not stand between pipe and equipment.
10. Do not stand between pipe and ditch.

11. Ensure you know pinch points.

Rigging

Procedure:

1. Ensure you are competent in rigging procedures.

2. Be acquainted with hand signals.

3. Be aware of pinch points.

4. Ensure you are in view of operator.

5. Utilize a tag line.

6. Ensure load is centered.

7. Do not walk under suspended loads.

8. Ensure wire chockers, slings and other equipment is in good condition.

9. Be aware of the direction of the swing of load.

10. Follow rigging safe work procedure step by step.

Portable Arc Welders

Procedure:

1. Worker must be trained in use of welder.

2. Perform a “walk around” inspection before starting equipment.

3. Ensure welder is firmly attached to the transporting unit.

4. Check all fluid levels to ensure they are at acceptable levels for operation.

5. Do not fuel the machine while it is running or hot.

6. When fueling, DO NOT “top off” the gas tank. Gasoline expands as the outside temperature rises, this may result in seepage and an ensuing fire.

7. Ensure the side covers are kept closed to protect equipment from any damage from external objects, as well as to protect he operator and others from the moving parts of the machine.

8. Ensure sure all cables are wound securely when transporting equipment.

9. Any repairs shall be done by qualified mechanics.

10. Ensure Working Alone policy is followed, where applicable.

Use of Tiger Torches

Procedure:

1. Ensure you are acquainted with the operation of equipment.

2. Ensure fuel lines are in good working conditions.

3. Ensure proper cylinders are secured and regulators in place.

4. When not used for pre-heating operation, shut torch off.

5. Torches are not to be used for heating or thawing of lines where known hydrocarbons are present.

6. Follow tiger torch safe work procedure step by step.

7. Use proper PPE as per manufacturer's specifications.

Working with Snow Fence

Procedure:

1. Ensure proper PPE is worn.

2. Ensure equipment is in good working condition.

3. Utilize appropriate tools.

4. Practice good housekeeping.

5. Ensure to block rolls from rolling.

6. Ensure to stand or post side in case of wire break.

7. Ensure post holes are refilled when posts are removed.

Thawing of Frozen Ground Using Artificial Heating Methods

Procedure:

1. Ensure barricades and warning signs are in place.

2. Ensure no presence of flammable items such as wood, plastic, insulation, cardboard, or hydrocarbon products.

3. Ensure no presence of any electrical lines either above or below ground.

4. Ensure no presence of any infrared fire detection devices.

5. Ensure visibility is not restricted for workers and/or vehicles due to smoke and steam.

6. Check steam hose for secure connections and hose punctures.

7. Periodically check the depth of the thawing.

8. Use proper PPE when thawing frozen ground.

9. Follow thawing safe work procedures step by step.

Use and Care of Respiratory Equipment

Procedure:

1. Ensure you are fully trained on respiratory equipment.

2. Ensure you are conversant with safe work procedures and/or site-specific procedures.

3. Inspect before each use.

4. Inspect after each use.

5. Ensure to utilize “Buddy” system.

6. Ensure work masks are cleaned and disinfected after each use.

7. Ensure equipment is stored properly.

Use of Portable Fire Extinguishers

Procedure:

1. Ensure you are fully trained with operation and maintenance of fire extinguishers.

2. Check cylinder.

3. Inspect cartridge puncture cap.

4. Weigh cartridge.

5. With cartridge removed, check action of puncture lever.

6. Check hose and nozzle for obstruction.

7. Check date of manufacture.

8. Check level and condition of powder.

9. Check fill-cap threads and gasket.

10 .Attach visual seal.

11. Check pressure gauge.

Working In Hills and On Slopes

Procedure:

1 .Ensure you are acquainted with ERP.

2. Ensure warning signs/devices are in place.

3. Ensure you are familiar with restraining devices and rigging.

4. Ensure you are familiar with the use of anchors, bridals and winches.

5. Be familiar with anchoring of pipe/equipment.

6. Ensure you are in view of operator at all times.

7. Ensure you wear appropriate PPE (including high visibility vests).

8. Ensure wheel chocks are utilized.

9. Be aware of rolling boulders or loose rocks.

10. Follow working on hill and on slopes safe work procedure step by step.