BEST PRACTICES RESOURCE

Occupational Health & Safety

Management System

ABOUT the BEST PRACTICES RESOURCE MATERIAL

CESARONI has incorporated the CSA Z1000-06 Standards for Occupational Health and Safety Management Systems into their workplace safety applications. This has resulted in the enhancement of our systems and program to reflect the requirements of this national standard in Canada. We gave specific attention to provincial laws, regulations and the CSA Z1000-06 standard during the development process.

Employers are required to establish a standard of care appropriate for their employees work circumstances. Once established, it is also the employer's responsibility to ensure that a program exists to implement and monitor the standards contained in the safety program.

The **BEST PRACTICES** presented herein are a sample guide to the subject matters. They serve as an information source only and can provide assistance in understanding a variety of potential work conditions and precautions to consider when developing a safe work procedure or when reviewing information submitted by others.

For example – if a worker was going to erect a scaffold they could go to the page on scaffolding in this resource manual and review best practices for scaffold erection. Another example is a building manager who has a contractor doing some excavating on their property. The building manager wants to know if they are doing this safely and can turn to the information about excavations to learn more. Finally a worker new to the job and does not understand how to set up a ladder properly. They can turn to the section on ladders to gain more insight into the proper use of ladders.

This resource is not to be considered as a legal authority. It does not remove, replace, or alter our obligations under any health and safety legislation. These outlines are available to assist our employees in understanding and developing safe work procedures necessary for their work as required. You are encouraged to seek assistance as required.

Please use the **SITE SPECIFIC OHSMS SAFE WORK PROCEDURE FORM,** to develop specific safety procedures for any work where the gravity of potential harm is elevated. A Safe Work Procedure (SWP) typically provides a systematic process to follow to ensure that all safety considerations and precautions are in place prior to performing the work. It may include sign off sheets, checklists, or other information designed to ensure that every reasonable precaution for the protection of the workers is in place.

If a SWP is not available, and is required, it is important **that work does not proceed** until the actual and potential hazards are identified. Each supervisor will develop a safe work procedure and communicate this to the workers as required. If you have any questions regarding an existing SWP or the absence of a SWP, please advise your supervisor or our office **prior** to starting the work.

In determining the level of reasonable care (due diligence) required you should;

- **Determine the gravity of potential harm**
- **Determine the likelihood of harm occurring**
- **Review the alternatives available**
- **Determine the knowledge, experience and training required for the job**
- **Establish the safety precautions and procedures for implementation**
- **Communicate the safety precautions and procedures to the workers**
- **Establish a monitoring process to ensure these methods are effective**
- **Record any problems or deviations from the procedures established**

As stated, all employers are required to establish a standard of care appropriate for the work circumstances. Once established, it is also the employer's responsibility to ensure that a program exists to implement the standards contained in the safety program. Generic safe work procedures typically overlook the specific circumstances involved therefore, we do not recommend a generic procedure for any hazardous work.

TICKNER
& ASSOCIATES INC.
HEALTH AND SAFETY COMPLIANCE SPECIALISTS

SITE-SPECIFIC OHSMS SAFE WORK PROCEDURE FORM

DATE: _____ **PROJECT:** _____

SUPERVISOR: _____

PROCEDURE FOR: _____

Work Description: Provide a description of the work to be done along with the actual or potential hazards that may be encountered. The safety precautions below will be listed and discussed with our workers prior to the work proceeding. The workers will sign off on this procedure once they understand the necessary requirements.

_____
_____
_____
_____
_____

Hazards Involved: (List potential and actual hazards)

_____
_____
_____
_____
_____
_____

Safety Precautions: (List all requirements and PPE)

_____
_____
_____
_____
_____
_____
_____

Other Issues / Concerns:

_____
_____
_____
_____
_____
_____
_____

Worker Signatures: (Workers sign to acknowledge training)

Supervisor is to initial here _____ to verify that the above information has been discussed with all workers involved with this procedure. Please have all workers sign a copy of this page to verify their knowledge and understanding of the work and associated hazards and precautions required.

Ladder Use

Ladders must be used in accordance with the manufacturer's recommendations for safe use.

Ladders must be free from defective parts, loose rungs and side rails,

Ladders must be placed on a firm and solid base or footing and be set at an angle so that the base of the ladder is one foot away from the wall for every 3 to 4 feet in height. (Example – a 30 foot ladder should be a maximum 10 feet away from the wall and a minimum 7.5 feet away from the wall measured from the base.)

Ladders used as a regular means of access must extend 36 inches above the landing or floor, have a 6 inch minimum clearance behind every rung,

Ladders must be situated so that the landing areas at the top and bottom of the ladder are completely clear of all obstructions

Ladders must be secured (tied off) at the top and bottom to prevent any movement in the ladder.

Stepladder use requires that the legs be fully extended and the spreader bar locked into place. Never stand on the top 2 steps of the stepladder.

Make sure your area is clear of debris, equipment and other obstructions, both at the top and bottom of the ladder. Set up and secure the ladder prior to beginning your work. If you are using an extension ladder or any ladder higher than 10 feet, have someone hold the ladder in place until you have secured or tied off the ladder. If you are working on a ladder at 10 feet or above, you will need to use a fall arrest system secured to a lifeline, secured to an anchor point for the duration of your work at this height. You should inspect your ladder each day prior to use to ensure that it is in good condition. Check for cracks in the rungs or side rails or any other visible defects. Repair or replace any defective ladders. NEVER work on defective ladders. Do not paint ladders, as this tends to hide any possible defects. When transporting ladders, make sure they are secured properly, either in or on your vehicle.

Personal Hygiene

During the course of your work exposure to a variety of substances that may include chemicals, oils, dirt, germs or other substances is possible. It is essential that prior to eating food or smoking you wash your hands completely using soap and water. Trace amounts of any foreign substance can lead to serious health problems if you do not clean and sanitize your hands frequently throughout the day and prior to eating / smoking.

- ✓ A fresh supply of clean (potable) drinking water must be available at a workplace, as well as sanitary means of drinking the water. A common drinking cup is not permitted at any time.

- ✓ Toilet and washroom facilities are required to be clean and sanitary. A record of the cleaning and maintenance of these facilities should also be kept and be readily available.

- ✓ Separate toilet and wash-up facilities for male and female workers is mandatory.

- ✓ If at any time a foreign object or substance comes into contact with your eyes, seek first aid treatment immediately. For a splash in one or both of your eyes, flush the eye(s) with water for at least ten minutes prior to seeking further assistance. A portable eyewash station should be available if there are no permanent facilities on site. Refer to the appropriate regulations for more information on hygiene requirements.

- ✓ Workers who handle or use corrosive, poisonous or other substances likely to endanger their health shall be provided with washing facilities with clean water, soap and individual towels.

TABLE 2 – PROJECT REQUIREMENTS

Minimum number of toilets	Number of workers regularly employed at the project
1	1-10
2	11-20
3	21-30
4	31-40
4, plus 1 additional toilet for each additional group of 15 or fewer workers	41 or more

Fire Safety and Extinguisher Use

Fires present serious dangers to both workers and the workplace. Fires can quickly become out of control and spread rapidly. Fire extinguishing equipment must be readily available at all workplaces, and every worker who may need to use this extinguishing equipment needs training in its proper use and in the limitations of the equipment.

There are five (5) classes of fires and each fire extinguisher is labeled as to what type of fire can be extinguished with that unit. Every employee should be aware of the following classes of fires:

Class "**A**" fires involve paper, wood, and other ordinary combustibles.

Class "**B**" fires involve flammable liquids like gasoline, oil, paints and solvents.

Class "**C**" fires involve energized electrical equipment, wiring, fuses, motors, etc.

Class "**D**" fires involve combustible metals like magnesium, sodium, etc.

Class "**K**" fires involve greases found in commercial cooking equipment.

If you encounter a fire that you feel you can suppress without endangering yourself, make sure you have the correct extinguisher suited for the given type of fire. If the fire is increasing in intensity, vacate the area immediately and wait for emergency response.

Remember to use the **"PASS"** system when fighting a fire.

1. **P-**ULL the pin on the extinguisher to unlock the operating lever

2. **A-**IM the nozzle at the base of the fire

3. **S-**QEEZE the lever above the handle to discharge the extinguishing agent

4. **S-**WEEP the nozzle from side to side at the base of the fire

If the fire is being suppressed you may carefully approach the fire and continue to extinguish. Continue to watch the area after the fire is out for at least 30 minutes. If the fire becomes unmanageable at any time, vacate the area and call the fire department immediately.

Hot Work

Hot work is defined as any task that can produce flame, spark or a significant amount of radiant heat. Tasks considered hot work can be welding, torching, cutting, brazing, soldering or operation of devices that can produce open flame or spark.

The purpose of this procedure is to provide information that will reduce the potential of accidental fires.

Supervisors will ensure that any workers, contractors, sub-contractors or service agents performing work are qualified and can provide proof of training upon request.

Fire extinguishers must be present and kept no less than 12 feet from the hot work being performed. Workers performing hot work must be trained to use a fire extinguisher.

All manners of PPE must be worn as required, this includes (but not limited to), welding screens, welding goggles or shields, hot work aprons, welding gloves and skin protection.

Refer to the Workplace Hazard Analysis for specific task procedures involving hot work.

General Procedures

1. Always ensure that adequate ventilation is supplied since hazardous fumes can be created during welding, cutting, or burning.
2. All cylinders, regulators, gauges, hoses, and fittings shall be tested using an approved testing substance prior using the equipment.
3. Where other workers may also be exposed to the hazards created by welding, cutting, and burning, they shall be alerted to these hazards and protected from them by the use of protective screens and PPE.
4. A worker shall not begin welding / cutting / burning work without proper authorization from the building manager.
5. Appropriate fire fighting and prevention equipment shall be provided and within easy access to the welding / cutting / burning work area.
6. The work area shall be inspected for combustible, flammable, or explosive material or vapours prior to commencing welding / cutting / burning work.
7. A competent person shall maintain a fire watch during and after the process for a minimum of 30 minutes.
8. Welding cables and hoses shall be inspected for cracks, cuts, or burns prior to use. Cables and hoses shall be monitored and protected from slag and spark damage during use.
9. Ensure that any hot-work permits have been obtained prior working.

10. Never enter, weld, or cut in a confined space. The worker shall refer to, or create, a procedure for confined space entry prior to commencing any hot or cold work in a confined space.
11. When working overhead, fire resistant materials (blankets, tarps) to control or contain slag and sparks from the area below shall be used.
12. Cutting and welding shall not be performed where sparks and cutting slag will fall on cylinders (move all cylinders away to one side) or other combustible materials.
13. Open all cylinder valves slowly. The wrench used for opening the cylinder valves shall always be kept on the valve spindle when the cylinder is in use.
14. Never leave the valve wrench on the cylinder when it is not in use.
15. All lines, drums, and tanks shall be properly flushed and cleaned of flammable products prior to welding.
16. Welding, cutting, and burning shall be performed only by persons experienced and duly certified and trained and wearing all required PPE
17. A torch shall be lit using proper igniters.
18. Check valves (flashback arresters) shall be used on all regulators and torches to prevent flashback in the hose and / or regulators.
19. Never attempt to stop the flow of any compressed gas (or air) by placing any body part against the gas flow. This could result in a bubble of the gas entering the blood stream at the point of contact. Gas bubbles in the blood stream can be fatal.
20. Electric welding machines shall be properly grounded prior to use.
21. Rules and instructions supplied by the manufacturer of cutting or welding equipment shall be followed at all times.
22. When electrode holders are to be left unattended, the electrode shall be removed and the holder placed or protected to prevent electrical contact with workers, the public, or conducting objects.
23. When a welder stops work for any length of time, or when the welding machine must be moved, the power switch must be rendered in a non-operational position.
24. New or used electrodes shall not be left lying on floors or walkways causing a potential tripping or slipping hazard. Deposit used electrodes in the designated metal bucket.

Emergency Procedures

In the event of a fire or other emergencies, workers performing hot work will immediately sound the alarm and notify the building manager. Workers will only attempt to extinguish a fire if qualified and it is safe to do so. The building manager will be responsible to initiate the emergency procedure as per company policy.

Personal Protective Equipment

Personal Protective Equipment (PPE) is an essential part of every worker's defence against accidental injury. Although some workers do not like wearing PPE, it provides the required protection for a variety of working situations. The following PPE is required for work on construction projects;

1. **Hard Hats** – A CSA class "E" Type 2 hard-hat, worn at all times while on a construction project, is mandatory. The shell must be free from cracks, holes, or other defects. The suspension system must fit securely inside of the shell and must be free from defects and be used and worn in accordance with the manufacturer's recommendations.

2. **Safety Shoes or Boots** – Must have construction Grade 1 toe protection with sole protection in accordance with CSA standard Z195-M1984. The fully laced shoe or boot must be in good condition and worn in accordance with the manufacturer's recommendations. If tears in the outer shell of the boot or shoe appear, replace them as required.

3. **Fall Protection** – see fall protection systems section for full description.

4. **Eye / Face Protection** – May consist of glasses, goggles, or a full-face shield depending on the circumstances. Whenever there is a risk of injury to the eyes or face, eye protection is required. The glasses, goggles, or face shield should fit properly, be in good condition and be used in accordance with the manufacturer's recommendations.

5. **Skin Protection** – May include protective clothing such as aprons or coveralls, masks, gloves or lotions to protect against the hazards present such as chemicals or airborne contaminants in the form of gas, vapours, liquids, dusts, or hot molten substrates. Lotions such as sunscreens to protect against radiant heat may also be required. (Excessive exposure to sunlight is an example)

6. **Lifejackets** – Any worker who may drown at a project or workplace must wear a lifejacket. A lifejacket is a personal flotation device that provides sufficient buoyancy to keep the worker's head above water, with their face upwards and above the waterline without effort by the worker.

7. **Hearing Protection** – Must be worn during operations where noise levels exceed permissible exposure limits. (At any time when you have to raise your voice to talk).

8. **Respiratory Protection** – Must be worn as required by MSDS's when handling or using WHMIS controlled products. All manner of respiratory protection must be NIOSH approved. (Note: Fit testing will be required for workers expected to use respirators as required)

Access & Egress in the Workplace

Access and/or egress points refer to hallways, aisles, stairs, runways, ramps, ladders or any other way a worker gets to and from their workplace. Keep these areas free and clear of obstructions at all times, so that in the event of an emergency, evacuations or rescue operations are not hindered or delayed.

The following considerations are required:

- ✓ Remove snow, ice or other slippery material in the work area.
- ✓ Mop up any standing water on floors.
- ✓ Remove or find alternate storage for boxes, garbage and/or debris.
- ✓ Tools and equipment should be stored close to the work locations and not in halls or access / egress routes.
- ✓ Flammable or any other WHMIS-related products should never be stored in an access / egress route.
- ✓ Construct runways or ramps that will support all potential loads without displacement or the "diving board spring effect".
- ✓ Extension cords should run at the edge of a hallway or be suspended at the ceiling area to reduce trip and fall hazards and damage to the cords.
- ✓ Remove any trip hazards on a daily basis
- ✓ Ensure access ladders or scaffold stairs are free of defects and are properly secured / engineered.

Housekeeping at Work - General

- ✓ Work locations, vehicles, buildings, and workstations shall be kept clean and orderly at all times.
- ✓ Keep floors and platforms free of dangerous projections or obstructions, free from oil, grease, or water.
- ✓ Prevent the falling or tipping of materials by blocking.
- ✓ Keep emergency exits, stairways, aisles, permanent roadways, walkways, and material storage areas clear at all times.
- ✓ Materials and supplies shall not be stored in walkways, access doors and fire exits or block access to fire equipment.
- ✓ Matches / lighters should not be left in clothes placed in lockers.
- ✓ Rubbish and unused clothing should not accumulate in lockers or in common areas.
- ✓ Remove waste material and debris from work and access areas on a regular basis or at least once a day.
- ✓ Do not throw waste material and debris from one level to another. Carry or lower it in containers or deposit in a disposal chute.

Flammable & Hazardous Materials

- ✓ Keep combustible materials such as oil-soaked rags and waste in approved metal containers.
- ✓ Do not use flammable liquids such as gasoline, benzene, naphtha, paint thinner, etc., for cleaning purposes.
- ✓ Keep all solvents in UGLY / CSA approved and labeled containers. Only handle and dispense gasoline, benzene, naphtha, paint thinners and other solvents of this class using approved, labeled containers.
- ✓ In any building (except one specified for their storage), flammable liquids such as gasoline, benzene, naphtha, lacquer thinner, etc. shall be limited to less than five gallons in UL / CSA approved properly labeled containers.
- ✓ Observe all grounding requirements when pouring, pumping gasoline, or other flammable liquids from one container to another.
- ✓ Post and adhere to all "**No Smoking**" and "**Shut off Your Motor**" signs at fuel dispensing locations.

First Aid Response Reminders & Logbooks

Prompt treatment of injuries can reduce pain and suffering and save lives as well. The following are some basic reminders for first aid: You are encouraged to participate in a first aid and CPR training program.

Bleeding:

- If the injured person is bleeding from an external wound, control the bleeding immediately. Apply direct pressure to the wound with a clean sterile dressing. Never attempt to remove an impaled object from a wound. Keep the injured person in a comfortable position. Elevate the injured body part if possible.

Burns:

- For minor burns, flush area with cool water. Cover the burn area lightly with a clean, sterile loose dressing and call for medical help. For serious burns, cover the injured area with clean, damp dressings, and get medical help. Do not apply creams, lotions, or ointments. Do not prick or puncture blisters. Do not pull any clothing that is stuck to the burned areas.

Breathing:

- If the injured person is not breathing but has a pulse, start artificial respiration immediately. There are various methods available but the most effective is the mouth-to-mouth technique.

Cardiopulmonary Resuscitation (CPR):

- If the victim's breathing has stopped and you cannot find a pulse (VISA) start CPR and AR immediately. For adults and children use 30 CPR compressions and two ventilation breaths. You are required to have formal training in the use of these procedures prior to performing CPR.

Shock (Non-Electric):

Persons suffering from serious injuries may lapse into shock. Signs of shock include drowsiness, paleness, disorientation, clammy skin, and weak pulse. Immediate medical attention is required.

- Reassure the injured person that help is coming. Place the injured person in the recovery position if possible. Otherwise, place injured person in a comfortable position that allows for easiest breathing and loosen clothing around neck, waist, and chest. Keep the injured person warm. Watch for signs of breathing trouble.

Extreme Temperature (Cold):

Hypothermia results when the body continues to lose heat and the core body temperature drops as involuntary shivers begin. This is the body's way of attempting to produce more heat and it is usually the first warning sign of hypothermia. Many cases of exposure have occurred in temperatures well above freezing. How the body gets cold depends on many factors, not just air temperature.

The human body senses and compensates for temperature changes. Tools such as protective clothing, altered work procedures, artificial heat or wind barriers, etc. will assist in maintaining constant body temperatures.

Heat loss from convection (wind-chill) is probably the greatest and most deceptive factor in loss of body heat. Many layers of relatively light clothing with an outer shell of wind-proof material maintain body temperatures much better than a single heavy outer garment worn over ordinary indoor clothing. Make sure clothing allows some venting of perspiration. Wet skin will freeze more rapidly than dry skin.

If travel is in areas where storms are frequent, emergency supplies should be available to meet any weather conditions (i.e. food, blankets, shovel, candles and cell phone or other communication device when possible). If a worker is traveling into remote areas, someone at the office should be aware of the travel plans. If stranded during a storm in a vehicle, it is better to stay with the vehicle. Be careful of carbon monoxide if the motor is running.

Extreme Temperature (Heat)

A normal body temperature is 37°C (98.6°F). Prolonged exposure to excessive heat can cause heat cramps, heat exhaustion, or heatstroke. A healthy person adapts more readily to hot climates, but everyone needs to moderate physical activities, maintain body fluids, and guard against over-exposure.

Initial Treatment for Over-Exposure to Heat:

- Place the injured worker at rest in a cool place. Give the conscious person small sips of water as tolerated. Transport to medical aid.

Heat Exhaustion

Occurs when excessive sweating causes a depletion of body fluids and when conditions prevent the evaporation of sweat to cool the body. This critical occurrence may cause the internal organs or the brain to shut down to protect them. All workers should be aware of the symptoms of heat exhaustion. The symptoms of heat exhaustion may include dizziness, fatigue, and slurred speech.

Initial Treatment:

- Place the injured person in a cool place with feet and legs elevated. Loosen tight clothing. Remove excessive clothing. Give conscious injured person small sips of water as tolerated. Place unconscious injured person in recovery position. Monitor breathing. Call 911 for transport to medical aid.

Heatstroke

Typically occurs when there is prolonged exposure to a very hot environment with poor ventilation or overexposure to the hot sun. Sweating ceases, temperature rises rapidly and can be fatal unless the body temperature can be lowered to near normal. High body temperatures, fatigue, slurred speech, dizziness and hot dry skin indicate heatstroke. In some cases, an injured person of heat stroke may begin to shiver. The high internal body temperatures may cause the internal organs and the brain to shut down to protect them against the heat.

Treatment:

- Place person in a cool place. Remove excess clothing. Place person in cool bath or sponge / douse with cool water. Monitor body temperature closely. Monitor breathing. Call 911 for transport to medical aid.

First Aid Kits:

- Every workplace and company vehicle shall have a first aid kit. The size and contents will vary (refer to specific regulations) to meet the needs and number of employees at the workplace.
- Every worker must know where the closest First Aid kit is located and be able to identify individuals trained in First Aid & CPR.

First Aid Logbooks

- These are required to record all information related to first aid treatment rendered in the workplace. A first aid logbook record must show;
  - ✓ Name the person(s) treated,
  - ✓ Date of treatment and time of treatment,
  - ✓ The treatment rendered,
  - ✓ Treatment location,
  - ✓ The name of the person who provided the treatment, and
  - ✓ The names of any witnesses to the injury.

Every time treatment is rendered, record the above information in the first aid logbook. This facilitates follow-up on the person's condition and verifies that an incident did occur should they require further medical treatment.

The contents of the First Aid Kit shall be **inspected** a minimum of once every three months (ideally, once every month) to ensure the contents comply with the provincial First Aid Regulations. Record the inspections on a card that includes the date of inspection and signature of the inspector. Keep the card next to, or inside of, the first aid kit.

Post valid **First Aid Certificates** of all trained workers on a notice board in a conspicuous place, preferably near the first aid room or in the workplace main office.

Accident Investigations

The investigation of any accident, illness, fire, explosion, or spill is for the sole purpose of establishing the causes and then implementing corrective action to eliminate or reduce the risk of another similar occurrence.

We will investigate every personal injury accident that requires medical attention, any reported occupational illness, major equipment or machine damage, and any incident with the potential for serious injury or property destruction (including near misses). Reports required by the WSIB or MOL reporting the circumstances surrounding the occurrence shall be completed within the specified timeframes.

It is impossible to complete the WSIB and MOL forms without a proper accident investigation into the facts of the case. Our investigations will establish **who** was involved, **what** happened, **when** it happened, **where** it happened and **why** it happened. In most cases, your immediate supervisor is responsible for conducting the investigation and completing the required investigation paperwork. If an injured worker does not report their accident, we will be unable to file the necessary reports on their behalf.

Critical or fatal injury investigations are conducted in conjunction with one or more members of our senior management team, as well as a certified member of the Joint Health and Safety Committee. We may also request assistance from Tickner & Associates in this area to ensure that we are in full compliance with OH&S reporting requirements. We ask that you respect the serious nature of these types of situations and refrain from interfering with the investigation process. If you are a witness to an occurrence of this nature, please identify yourself as such to the person in charge of the investigation.

Accident Investigation Steps

Written statements and pictures of any accident scene will be required along with the investigator's findings. A corrective action plan, developed from the conclusions of the investigation is a priority.

The steps involved in investigating any accident are as follows:

1. If it involves a personal injury accident, provide immediate first aid or medical attention as required.

2. Once the person has been treated or taken to a health care facility, begin the investigation by noting the person(s) involved, time of day, weather conditions, accident location, witnesses to the accident, machines or equipment involved, and what the worker(s) was doing at the time of the accident.

3. Establish contact information for the injured worker(s) including address, telephone number, occupation, and number of months or years employed by our company for the report.

4. Describe, in writing, the accident scene (or photograph) in detail.

5. Assemble all those in the vicinity at the time, including eye witnesses, and those involved in the incident.

6. Record eyewitness accounts in writing and have the witnesses sign their statement once it is complete.

7. Question witnesses using the following sequence: **what** happened, **what else** was going on at the time of the accident, **who** was involved, **when** did the accident happen, **where** did the accident happen, what where the possible **causes** of the accident?

8. Remember that the purpose of the investigation is to establish facts and you should avoid drawing any conclusions during the investigation process. We are not investigating to establish the guilt.

9. Have witness statements signed by the person providing the statement. If the witness would like a copy of their statement, provide one.

10. In all cases of serious, critical or fatal injuries, rope off the accident scene and surrounding location and keep all workers out of the area until the investigation is completed. **DO NOT DISTURB THE ACCIDENT SCENE.**

11. The MOL and other emergency personnel may be on scene and the MOL will release the scene once they have finished their investigation.

12. Once your investigation is complete, send it to our main office immediately and keep a copy for your records. The JH&SC will have access to copies of investigation reports.

Emergency Response Procedures

These Emergency Procedures will provide order during an otherwise stressful emergency. These can include; (but not limited to) fire, power failure, gas leak, chemical spill, crime prevention and workplace violence.

- ✓ Post emergency contact numbers and directions to the nearest hospital.
- ✓ Post the certificates of those trained in first aid alongside the emergency numbers and hospital routes.
- ✓ The supervisor must train and familiarize his/her workers in the site emergency procedures.
- ✓ The supervisor should also review the locations of the project's evacuation routes, gathering points and emergency alarms.
- ✓ Once the workers are familiar with the routes of access/egress for the site, the supervisor will designate a "Gathering Point".
- ✓ During an evacuation alarm, this is the point where ALL employees and/or visitors will gather for a headcount by the supervisor and receive any information or instructions regarding the emergency.
- ✓ A competent worker will perform the shutdown process of specific equipment, hydro, gas, etc. in the event of an emergency.
- ✓ The supervisor shall have all employees and/or visitors sign a training roster to acknowledge their understanding of these emergency procedures.
- ✓ Review and be aware of the nearest emergency evacuation routes prior to starting work.
- ✓ In the event of a serious accident or emergency, senior management will make any official statements to anyone requesting a formal statement.
- ✓ Re-entry into an evacuated area is not permitted until the site supervisor, under the guidance of the appropriate authority (Fire Department, Police, MOE, etc.), has deemed the workplace suitable for re-entry.

Emergency Fall Arrest Rescue Plan

The supervisor shall have all workers, sub-contractors and/or visitors sign a training roster to acknowledge the emergency fall rescue plan. If a Fall Arrest System arrests a worker's fall and you are first on the scene, the following crisis management steps apply:

Conscious Worker

1. Send someone to notify the supervisor/constructor immediately.
2. Communicate with the worker; calm the person.
3. If accessible and safe to do so, place a ladder or use an Elevating Work Platform under the person to allow him/her to climb down safely.
4. If qualified to do so, render first aid until help arrives.
5. CALL 911 if it is unsafe for you to rescue an arrested worker**.**
6. Never risk your safety to rescue a worker, wait for the Fire Department.
7. Send someone to guide the Emergency Services to the scene.
8. Send someone to call our main office to activate our crisis response.
9. Stay with the injured person until Emergency Services arrives.
10. Turn the scene over to the supervisor once they have arrived.
11. Restrict access to the accident scene, (Emergency personnel / MOL).
12. Rope off the accident area for the accident investigation team.
13. Notify the Safety Representative or JH&SC and union (if any).
14. Never impede the rescue of any worker.

Unconscious Worker

1. **Call 911 immediately.**
2. Send someone to notify the supervisor/constructor immediately.
3. If they regain consciousness, keep the worker calm and follow the procedures for a conscious worker.
4. If accessible and safe to do so, place an Elevating Work Platform under the person to support and remove from their Arrest System.
5. If qualified to do so, render first aid until help arrives.
6. If it is unsafe for you to rescue an arrested worker wait for the Emergency services to arrive.
7. Never risk your safety to rescue a worker - wait for the Fire Department.
8. Send someone to guide the Emergency Services to the scene.
9. Send someone to call our main office to activate our crisis response.
10. Stay with the injured person until Emergency Services arrives.
11. Turn control over to the supervisor once they have arrived.
12. Restrict access to the accident scene, (Emergency personnel / MOL).
13. Rope off the accident area for the accident investigation team.
14. Notify the Safety Representative or JH&SC and union (if any).

Fall Protection Systems

Training is mandatory prior to any use of a fall protection system. Valid proof of training in the form of a training card is the only acceptable evidence of this training. Your supervisor will discuss fall hazards on site as required. Your supervisor will arrange for update training as required. Upgrade training through safety talks and other meetings will be ongoing.

Types: Guardrail System **-** Protective Cover System **-** Travel Restraint System **-** Fall Restrictive System **-** Fall Arrest System

Requirements:

If exposed to any of the following hazards a worker must use fall protection:

1. Falling more than 3 meters. (10 feet)
2. Falling more than 1.2 meters (4 feet), if the work area is used as path for a wheelbarrow or similar equipment.
3. Falling into operating machinery.
4. Falling into water or another liquid.
5. Falling into or onto a hazardous substance or object.
6. Falling through an opening on a work surface.

If a worker has access to the perimeter of an open side of any of the following work surfaces and exposed to a fall of 2.4 meters (8 feet) or more, a guardrail system must be used.

1. A floor, including the floor of a mezzanine or balcony.
2. The surface of a bridge.
3. A roof while formwork is in place.
4. A scaffold platform or other work platform, runway or ramp.

A guardrail system shall consist of a top rail, intermediate rail and toe board. If the guardrail system is located at the perimeter of a work surface, the distance between the edge of the surface and the guardrail system shall not be greater than 300 millimeters (1 ft). A guardrail system may be temporarily removed to perform work in or around the opening if a worker is adequately protected and signs are posted.

A **Guardrail System** shall be capable of resisting anywhere along the length of the system the following point loads when applied separately, without exceeding the allowable unit stress for each material used:

1. 675 Newton's applied in a lateral direction to the top rail.
2. 450 Newton's applied in a vertical downward direction to the top rail.
3. 450 Newton's applied in a lateral or vertical downward direction to the intermediate rail, or midway between the top rail & the toe board.
4. 225 Newton's applied in a lateral direction to the toe board.

5. If the distance between any two adjacent posts of the guardrail system is greater than 2.4 meters (8 feet), the system shall be capable of resisting the required loads specified.
6. The wood shall be free of sharp objects such as splinters and protruding nails.

A **Protective Cover** shall be used to prevent a worker from falling through an opening on a work surface. Completely cover the opening and securely fasten and identify the cover. The cover must be capable of supporting all loads.

Removing a protective covering temporarily to perform work in or around the opening is permitted provided the worker is adequately protected and signs are posted. If it is not possible to install a guardrail system as previously defined, a worker shall be adequately protected by a travel restraint system, a fall restricting system, fall arrest system, or a safety net

The **Travel Restraint System** This system does not allow for a fall of any nature and, second to a guardrail system, should be considered as the next most ideal method of protection. The system consists of a full body harness with adequate attachment points or a safety belt. The full body harness or safety belt is attached by a lifeline and/or lanyard to a fixed anchor point. A competent worker shall inspect the system before each use. Defective components are to be removed and tagged as "out of service".

The **Fall Restricting System** shall consist of an assembly of components that is designed and arranged in accordance with the manufacturer's instructions so that a worker's free fall distance does not exceed 0.6 meters (2 feet) and is attached to an independent fixed support. A competent worker before each use shall inspect the system. All defective components shall be removed and tagged as "out of service".

The **Fall Arrest System** shall consist of a full body harness with adequate attachment points and a lanyard equipped with a shock absorber or similar device. The system shall be attached by a lifeline or by the lanyard to an independent fixed support / anchor point.

The system shall be arranged so that a worker cannot hit the ground or an object on a level below the work. A shock absorber shall not be used if it allows the worker to hit the ground or an object or a level below the work. The system shall not expose a worker who falls to a peak fall arrest force greater than 8 kilonewtons (1,800 lb force). Before each use, a competent worker shall inspect the system. All defective components shall be removed and tagged as "out of service".

All the above systems shall be designed by a professional engineer in accordance with good manufacturing practices and shall meet the National Standards of Canada. All workers shall be trained in fall prevention systems before engaging in any work that require use.

A **Fixed Support** is a permanent anchor system that is installed according to the Building Code.

A **Temporary Fixed Support** used in a fall arrest system is capable of supporting a static force of at least 8 kilonewtons (1,800 lb force) without exceeding the allowable unit stress for each material used.

If a shock absorber is also used in the fall arrest system, the temporary fixed support shall be capable of supporting a static force of at least 6 kilonewtons (1,350 lb force) without exceeding the allowable unit stress for each material used.

A temporary fixed support used in a fall restricting system must be capable of supporting a static force of at least 6 kilonewtons (1,350 lb force) without exceeding the allowable unit stress for each material used.

A temporary fixed support used in a travel restraint system that is capable of supporting a static force of at least 2 kilonewtons (450 lb force) without exceeding the allowable unit stress for each material used.

A Professional Engineer shall design all Horizontal Lifelines. A Professional Engineer or a competent worker designated by the supervisor shall inspect the lifeline before each use. The drawings for the lifeline shall be kept on the site as long as the system is in use.

The **Vertical Lifeline** must be made of synthetic rope and have a diameter of a least 16mm (5/8”). All lifelines must be CSA approved. A knot shall not be used to secure a lifeline to an anchor. A knot may be used to ensure a rope grab does not slide off the vertical lifeline. If during your inspection you find cuts, loose fibres, water damage or damage at the thimbles, the lifeline shall be removed and tagged as “out of service”.

All workers who may use a fall protection system shall be adequately trained in its use and given adequate oral & written instructions by a competent person. A written copy of the training & instruction record for fall protection shall be kept on site and a copy forwarded to senior management. Before any use of a fall arrest system or a safety net by a worker at a project, the worker’s supervisor shall develop written procedures for rescuing the worker after his or her fall has been arrested.

Get the edge on falls (CSAO Insert)

Despite variations in fatality causes and frequency, falls remain the number one killer in Ontario construction.

- Construction workers have fallen off edges of every description. The most common are floors, roofs, and openings in floors and roofs. When an unprotected edge makes you worry about falling, take action. Set up guardrails, install opening covers, or use a fall-arrest system securely tied off.
- A number of fatal falls have occurred among small crews doing jobs of low cost and short duration. Contractors evidently thought the jobs were small and quick enough not to warrant fall protection. That was their fatal mistake.
- Construction workers have been killed when they removed the plywood cover from a roof or floor opening to use the material elsewhere and inadvertently stepped into the opening. Covers should be clearly identified in bright paint: OPENING COVER! DO NOT REMOVE!
- Your chances of falling from a ladder are significantly reduced if you maintain three-point contact when climbing up and down the ladder or working from it. Three-point contact means one hand and two feet or two hands and one foot on the ladder at all times.
- Construction workers have been killed when they fell from ladders that slid or slipped because the ladders were not secured at top and bottom. In addition, use a mudsill to support ladder feet on soft, non-compacted, or rough soil.
- On scaffolds and other work platforms where personnel can fall 2.4 metres (8 feet) or more, guardrails *must* be installed or a fall-arrest system *must* be worn.
- Construction workers have been killed by falls as low as two feet. Where practical, install guardrails even on low work platforms. When working from any raised surface, remember where you are. Do not step backward. Do not shift footing without looking down first.

In Ontario construction, falls have accounted for at least 30 deaths since 1995.

	1995	1996	1997	1998
Fall Fatalities	6	8	8	4
Total Fatalities	13	23	15	24

In 1999, seven of the 12 construction fatalities so far have been from falls.

Ministry of Labour (MOL) inspectors have stepped up enforcement of fall protection requirements. The most important initiative is the move towards province-wide mandatory fall protection training, expected to be included in revised regulations.

Prevention starts with guardrails

Guardrails are the first line of defence in fall prevention. They should be installed along the open sides of any area where a worker may fall 2.4 metres (8 feet) or more or into water, operating machinery, or hazardous substances. Areas to be protected include

- floors and floor openings
- balconies
- slab formwork
- stairways and landings
- roof tops
- scaffolds and other work platforms
- runways and ramps
- bridge surfaces.

Guardrails should have a top rail, mid-rail, and toeboard secured to vertical posts or supports.

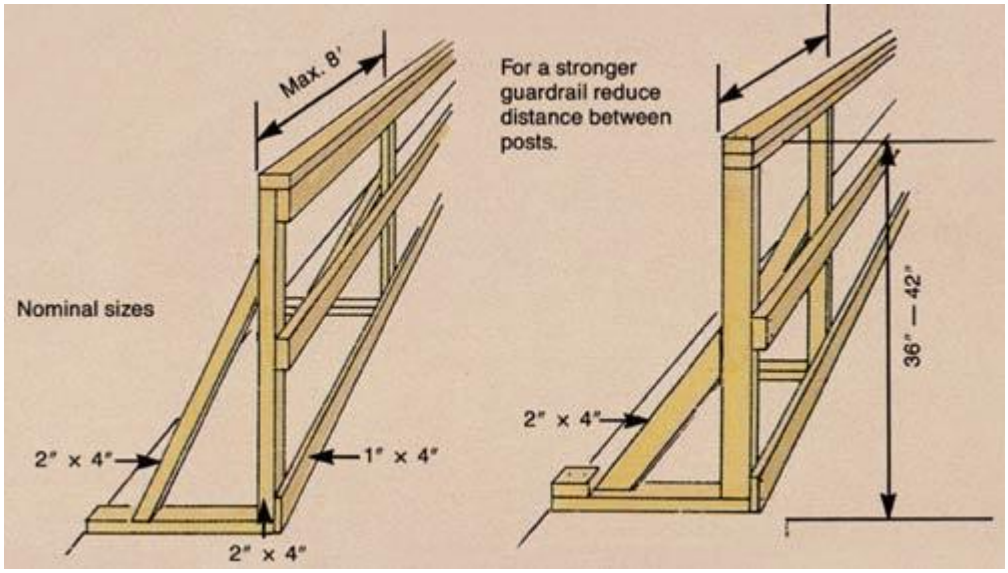
Available in wood, wood-slat, wire rope, and manufactured wire mesh systems, guardrails must meet the following minimum dimensions:

- top rail between 91 cm (3 feet) and 1.07 metres (3 feet, 6 inches) high
- toeboard at least 10.2 cm (4 inches) high and installed flush with the surface
- posts no more than 2.4 metres (8 feet) apart.

These components should be secured to the inside of the posts or jacks. Toeboard's should be installed on all open sides of a scaffold or work platform.

Guardrails should be installed as close to the edge as possible and must be capable of resisting any load likely to be applied. This may require extra reinforcement in special situations, such as where forklifts or buggies are used.

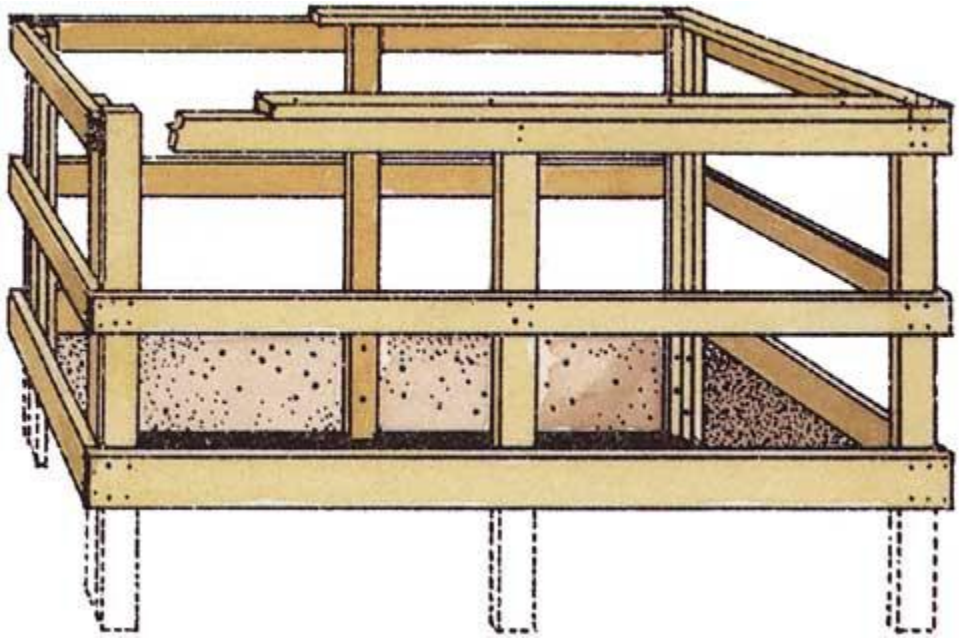
For maximum resistance to sideways force, the 2x4 top rail of wooden guardrails should be laid flat, with the larger dimension horizontal. To further strengthen guardrails, double the top rail and reduce the spacing of posts to between 1 and 2 metres (3 feet 4 inches and 6 feet 8 inches.)



Wood guardrails must be supported by posts extending to the top rail, braced, and solidly fastened to the floor. Shoring jacks used as posts should be fitted with plywood softener plates at top and bottom. Snug up and check the posts regularly for tightness.

For slabs and the end of flying slab forms, manufactured posts can be attached to the concrete with either clamps or insert anchors.

If guardrails must be removed, the opening edge should be roped off and marked with warning signs. In addition, workers should use a fall-arrest system properly anchored and tied off.



Fall Protection: two basic types

In construction, eliminating the risk of falls may not be possible. It then becomes essential to select proper fall protection.

Two basic types of fall protection are

- **fall arrest**
- **travel restraint.**

Where guardrails or other protection is not in place, you must use a fall-arrest or travel-restraint system if you are in danger of falling

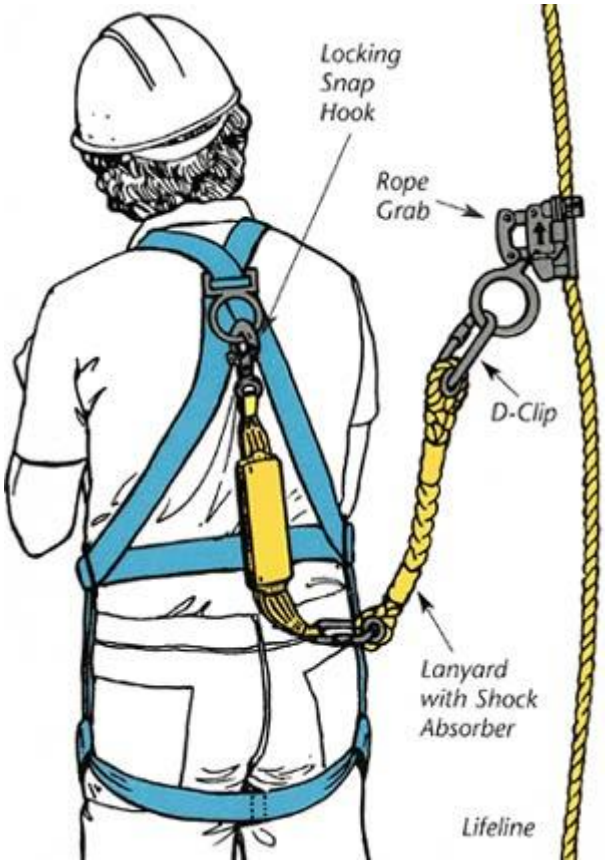
- **more than 3 metres**
- **into operating machinery**
- **into water or another liquid**
- **into or onto a hazardous substance or object**.

Fall Arrest

Fall arrest is the most common system. It stops a fall within a few feet of the worker's original position. A full body harness is required with a fall-arrest system. A typical system consists of the following parts connected together:

- full body harness (CSA-certified)
- lanyard (with locking snap hooks or D-clips)
- rope grab
- lifeline
- lifeline anchor.

A fall-arrest system must be worn when you are on a rolling scaffold that is being moved or when you are getting on, working from, or getting off suspended access equipment such as a swingstage or bosun's chair.



Travel Restraint

Travel-restraint systems prevent falls by restraining a worker from getting too close to an unprotected edge.

A travel restraint system must be arranged to keep the worker back from the fall hazard area. The system usually consists of

- safety belt of full body harness (CSA-certified)
- lanyard
- rope grab
- lifeline
- lifeline anchor.

The basic problem with travel-restraint systems is that the rope grab must be continually adjusted to allow free movement and travel but still keep the worker away from the edge. One technique is to use a self-retracting lifeline (see article below).

In practice, travel-restraint systems are not foolproof because the length of the lifeline is not always adjusted properly. If the self-retracting lifeline, for instance, is longer than the distance to the nearest edge, a worker moving in that direction will not be restrained before falling.

However, even if the system does not *prevent* a fall, it still *arrests* the fall.

Self-retracting lifelines

Self-retracting lifelines (SRLs) are widely used in construction to provide fall protection, especially where workers must move about to handle or install material. SRLs let the user move the full length of the line but stop and lock at any sudden pull. This action is designed for fall arrest -- not for travel restraint.

Users of SRLs most know the manufacturers' recommendations for proper operation as well as any safeguards required for specific applications.

SRLs have traditionally been anchored above the worker's head with the line running near vertical down to the worker's safety belt or harness. There is general agreement that this is the best application of SRLs.

In construction, however, different applications have appeared. In addition to the traditional position, two other basic options are

- anchor and unit at the ridge of a pitched roof above the worker's location
- anchor and unit situated on a flat work surface so that the lifeline is drawn out by the worker in a horizontal plane.

Each manufacturer's manual provides information and guidelines for SRLs anchored above a worker's head.

Not all of the manuals, however, cover the use of SRLs in horizontal applications. In these cases, the user must confirm that the particular model is approved for horizontal use. The manufacturer will then outline requirements for proper horizontal use.

Remember -- SRLs are NOT travel restraints. Travel restraints are designed to restrain the user's movement near open edges and prevent falling altogether.

The only time an SRL can act as a travel restraint is when the line is completely drawn out yet still short enough to keep the user from moving forward or laterally into a hazardous location.

Inspection Essential

Fall-arrest systems can only prevent fatal falls if they are used properly. Correct use includes inspection. Your life depends on it.

Harness

- Always check the tag for date of manufacture. Most web-type harnesses have a service life of five years. If the harness does not have a tag, do not use it.
- Look for cuts, fraying, broken stitching, and other damage to webbing. Check for chemical or heat damage.
- Inspect metal buckles for distortion, cracks, and sharp or rough edges. All buckles should slide easily for adjustment.
- Check for worn, cut, or frayed fibres where buckles attach to harness.
- Inspect D-ring for distortion, cracks, sharp or rough edges, and chemical or heat damage.

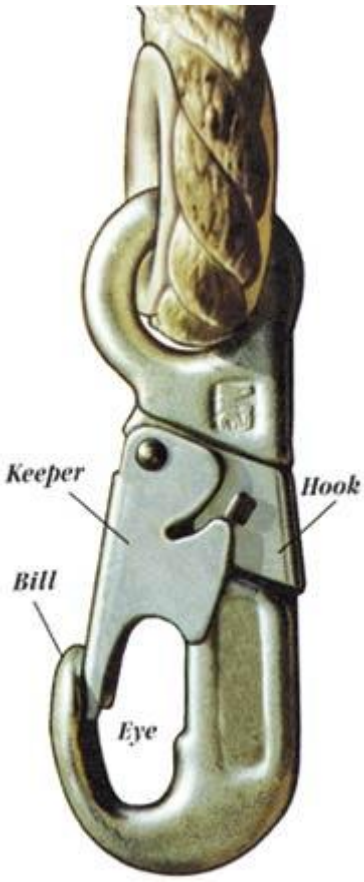
- Ensure that the plate holding the D-ring in position is free from cracks, heat damage, and other defects. The plate must keep the D-ring from sliding out of place.

Lanyard

Most lanyards have a service life of five years. Check tag for date of manufacture. Inspect lanyard for worn, broken, or cut fibres; signs of stretching; evidence of chemical or heat damage; and cracked or distorted connecting hardware.

Shock Absorber

A shock absorber should carry a tag indicating date of last inspection. If the tag is missing, return the absorber to your supervisor for advice on its suitability. If the absorber is made with tear-away stitching designed to absorb fall-arrest load, make sure stitching is intact.



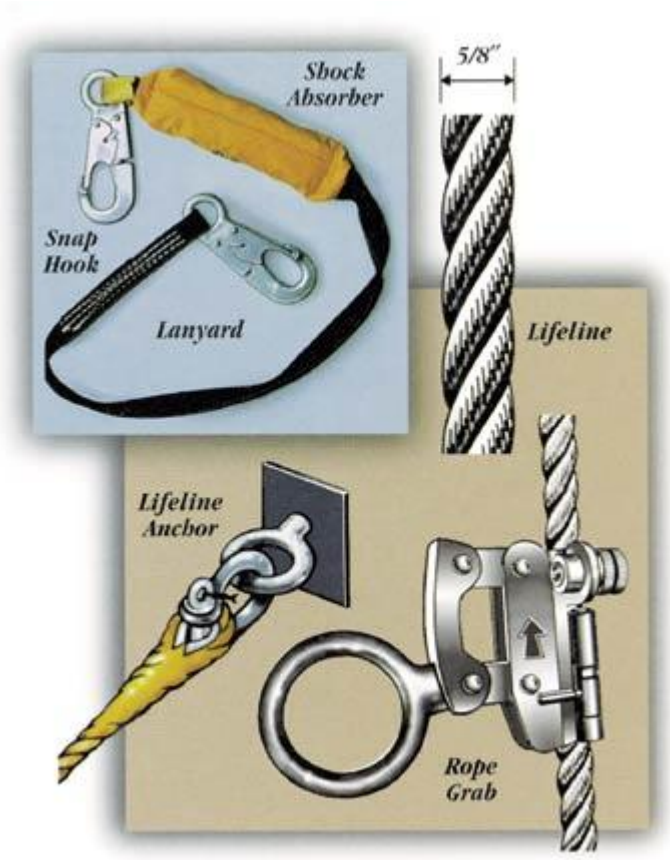
Snaphook

- Check for cracks and corroded or pitted surfaces.
- Ensure that bill and eye sections are not twisted or bent.
- Check that locking mechanism works properly. Push the keeper into the open position with the mechanism still engaged. If the keeper opens, discard the snaphook immediately.
- Ensure that spring has enough tension to close keeper securely.
- Open the keeper and release. The keeper should sit into the bill without binding.

Rope Grab

- Make sure that grabs are installed right side up. Most grabs feature a directional arrow to indicate proper orientation.
- Ensure that proper size lifeline is used. The required size is marked on the rope grab.

- Mount the grab on the lifeline. Pull the grab down sharply. The grab should lock within 30 cm (12 inches).



Lifeline

Lifelines must be at least 16mm diameter polypropylene or material of equal strength. Inspect lines from end to end before installation. Look for cuts, burns, fraying, and chemical or heat damage. Signs of decreased diameter may indicate that line has been involved in a fall arrest and should be discarded.

Lifeline Anchorage

- Ensure that lifelines are securely attached to solid anchor points.
- Whenever possible, attach only one lifeline to each anchor.
- Never anchor to bundles of material that may be moved or depleted through use. Do not anchor to exposed rebar unless embedment length is adequate.

CSAO is an excellent resource for educational materials / assistance and can be found at www.csao.org or at 416-674-2726 (Pg 25-33 are inserted from CSAO)

Safety Inspections

The supervisor, or a competent in-house staff member trained in the inspection process, may conduct the planned safety inspections. Alternately, we may choose to have Tickner & Associates Inc. conduct the inspections to verify our level of compliance. The supervisor or third-party professional shall perform planned inspections of all machinery, tools, and equipment, including the fire extinguishing system, personal protective equipment, magazines, electrical installations, communication systems, sanitation and medical facilities, buildings and other structures, temporary supports, and means of access and egress at the project to ensure that they do not endanger any individual or property.

These planned inspections shall be done on a timely basis with a record of the findings maintained. Unplanned inspections may occur on a daily or per-shift basis. As the supervisor carries out his or her daily functions, he/she shall remain alert and record any unsafe working conditions and practices. The supervisor shall use this information to review the safe work policies, procedures, and rules and to discuss their findings at the regular safety meetings.

Copies of the inspections and follow-up recommendations will be resolved as required. For both planned and unplanned inspections, a follow-up system must be in place to ensure that corrective action is taken for each hazard or problem. In most cases, corrective action is immediate. Senior management will review the information annually to ensure that all hazards have been acted upon and that a plan has been developed to reduce future potential hazards.

Each supervisor must conduct planned inspections and daily or per-shift unplanned inspections and record any relevant information. The supervisor shall include the location of the project, areas inspected, date, and the inspector's signature. These inspections are separate from the safety representative's or JH&SC's inspections. Pre-start-up inspections shall be performed prior to the start-up of a machine or piece of equipment, or prior to shift take-over/release.

Safety Talks

The Safety Talk is an important part of any organization's safety program. The safety meetings promote safety, identify and/or control hazards, review rules and discuss work methods/procedures. A site supervisor must arrange these meetings and attendance is mandatory for all site employees of the organization.

Each supervisor must,

- ✓ Conduct regular (weekly) safety meetings with their assigned crews
- ✓ Record the topics discussed during safety meetings.
- ✓ The supervisor shall have all employees sign a roster to acknowledge their attendance.
- ✓ The minutes are kept on site with a copy forwarded to the senior management member responsible for safety.
- ✓ The minutes should also indicate any plans for action or resolutions agreed to at the meeting.
- ✓ The topics should relate to the specifics of the work on site and any safety precautions that are required for the work. It is also a good idea to review safe work procedures and the current condition of equipment on site.
- ✓ Give top priority to outstanding safety issues or concerns.

Tool / Equipment Use & Inspection

To reduce the risk of employee injury or property damages, the use of all equipment & tools, in accordance with the manufacturer's instructions and Occupational Health & Safety Act/Regulations, is mandatory.

Guidelines & Considerations

1. An operator's manual and/or instruction book, for all equipment, must be at the workplace, near the equipment and/or process area. The operator must be familiar with its contents regarding safe operation.

2. An operator shall be trained and competent in the safe use of any (powered) equipment.

3. A maintenance log must be kept at the workplace showing repairs, dates and identifying the machine repaired.

4. Re-fuelling operations for equipment must be performed outdoors.

5. A load rating identification plate must be located on every machine and stamped on the appropriate component parts indicating load capacities.

6. No equipment, load, or tool shall pass over any individual.

7. All equipment and tools must be used in accordance with the manufacturer's instruction manual.

8. All permanent station machinery shall have a clearly marked and accessible emergency shut off button / switch.

9. Prior to any repairs or maintenance, lock out & tag out procedures must be established and followed.

10. Always remove and lock out the power source prior to making any adjustments.

11. Exposed moving parts shall be guarded as required by regulation.

12. All equipment & tools shall meet the standards established by CSA and the manufacturer and be maintained in good condition.

13. No worker shall remove any protective device or guard from a machine, tool, or equipment for any reason.

14. Grinding disks / wheels shall be compatible with the speed of the equipment or tool. The disks / wheels shall be inspected daily. If cracks, cuts or chips are visible, the disk / wheel shall be removed and replaced.

15. Ground Fault Circuit Interrupters (GFCI) shall be used where electrical shock is a hazard, for work outdoors or in damp / wet conditions.

16. Extension cords & cord-connected electrical equipment shall be inspected for cracks in the outer casings or outer insulation on a daily basis. Any cords or equipment with cracks or cuts in the casing shall be removed for repairs.

17. All cord-connected equipment shall be equipped with a ground pin and/or a GFCI system.

Note: Please refer to the Occupational Health & Safety Act, Regulations and the manufacturer's specifications for safe use information and specifics on the equipment or tool you are using.

Vehicles Used for Company Business

Any worker operating a vehicle during the course of their employment shall:

1. Provide a copy of their license and insurance to the office.
2. Operate the vehicle safely, abiding by all traffic rules and regulations set out by the Ministry of Transportation and the Highway Traffic Act.
3. Wear seat belts while the vehicle is moving.
4. When the vehicle is a company vehicle, the vehicle must be checked daily and have the appropriate maintenance logs onboard.
5. If the vehicle is a personal vehicle the proper maintenance and visual checks should be done to ensure the vehicle's safety and roadworthiness.
6. The vehicle's operating manual must be with the vehicle at all times.

Daily Vehicle Check - The vehicle circle check should include:

- ✓ Fluid level checks,
- ✓ Engine review,
- ✓ Check all belts for wear, tension and cracks,
- ✓ Tire pressure and inflation as per manufacturer's specification,
- ✓ Tire tread patterns are within safe and acceptable limits,
- ✓ Fuel levels are sufficient for the intended travel,
- ✓ All lights, signals, and horns are operating properly.

Guidelines & Considerations

- ✓ Access to any project site shall be in accordance with the local transportation regulations. Obey all traffic control signalers and devices as required.
- ✓ Do not use or operate any licensed vehicle and/or mobile equipment without the authorization of a supervisor.
- ✓ Parked vehicles shall not block roadways or service driveways, doorways, loading bays, dumpsters and/or fire hydrants or hoses or emergency access routes.
- ✓ Fuel tanks on vehicles shall not be filled while the engine is running. The driver shall remain with the vehicle and smoking is strictly prohibited during the refueling.
- ✓ Material that overhangs the sides or ends of a truck shall be secured & red-flagged.
- ✓ Trucks hauling waste materials shall be equipped with an adequate rear closure and/or covering to prevent material from dropping or blowing onto the roadway.
- ✓ Vehicles are prohibited from transporting more passengers than its design allows for.

- ✓ When a vehicle is in motion, all materials being transported shall be secured as per the manufacturer's instruction.

- ✓ Winch trucks shall not have a load suspended from the hook while traveling. The load shall be secured on the bed of the truck. The hook of a winch truck must be secured while traveling.

- ✓ Unless impossible, vehicles shall move in a forward direction at all times on a project.

Unlicensed Vehicles - Guidelines:

- ✓ All operating manuals and logbooks shall be available at the project. The safety design capacity of any mobile equipment shall not be exceeded, nor shall the equipment be modified in any manner that alters the original factor of safety and capacity. Mobile equipment shall be fitted with suitable alarm and motion sensing devices including backup alarms and/or a flashing light where and when required.

- ✓ Where there is a potential risk of contact by any mobile equipment with a structure or an individual, a competent signaler shall be assigned to control the movement.

- ✓ Under no circumstances shall any mobile crane or crane load come within 10ft. of any energized overhead power line or other critical structure. A competent signaler shall direct the operation if any part of the mobile equipment travels close to this 10ft restricted area of an overhead power line. When mobile equipment is traveling onto a public thoroughfare or roadway, a competent flag (signal) person shall ensure traffic has stopped prior to the mobile equipment moving onto the public way.

- ✓ Escort Vehicles shall escort mobile equipment traveling on a public thoroughfare or roadway with signs warning of slow-moving equipment. Other escorts may also be required.

- ✓ Natural and synthetic fibre rope made of material such as manila, nylon, polyester, or polypropylene shall not be used as slings on mobile equipment.

- ✓ Only trained, qualified, and authorized personnel shall operate mobile equipment. Contractor personnel shall not operate equipment unless trained to do so.

- ✓ Controls of a machine are not to be left unattended while the machine is running.

- ✓ Operators should familiarize themselves with the operating criteria on a regular basis and prior to use if it has been more than 30 days since the operator's previous use.

- ✓ Vehicles must always be parked in a manner that does not endanger other traffic or workers.

- ✓ Vehicles should always be driven or moved in a forward motion only and at a posted speed or as recommended by the manufacturer.

- ✓ Equipment should always have the forks or buckets lowered to the ground when not operating.

Hazardous Materials and WHMIS

WHMIS - **W**orkplace **H**azardous **M**aterials **I**nformation **S**ystem.

There are three essential elements to WHMIS:

1. **Labels**
2. **Material Safety Data Sheets (MSDS)**
3. **Education and Training**

WHMIS is for your protection. It describes the dangers associated with controlled products and/or materials you may use on the job and instructs you how to protect yourself from the hazards. You have the right to know if material has hazardous ingredients.

Labels -All controlled products must have a label that identifies the product and includes:

- Name of the product
- WHMIS hazard symbol
- Classification
- Risk factor
- Precautions
- First Aid Instructions
- MSDS Referral
- Name of Supplier

Material Safety Data Sheets:

Gives the following detailed information of a product and its hazards:

Product information
- Hazardous ingredients
- Physical data
- First aid measures
- Specific Gravity
- Fire and explosion data
- Toxicological properties
- Reactivity data
- Preventive measures
- Preparation date and group

Training: All workers must be trained in the WHMIS system.

Workplace Electrical Safety - Z462-08

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5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6

1-800-463-6727 • 416-747-4044

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Z462-08

Workplace electrical safety

1.0 Scope

1.1 Subjects and workplaces included

This Standard specifies electrical safety requirements for workplaces that are necessary for the practical safeguarding of workers during activities such as the installation, operation, maintenance, and demolition of electric conductors, electric equipment, signaling and communications conductors and equipment, and raceways for the following:

(a) public and private premises, including buildings, structures, mobile homes, recreational vehicles, and floating buildings;

(b) yards, lots, parking lots, carnivals, and industrial substations

(c) installations of conductors and equipment that connect to the supply of electricity; and

(d) installations used by the electric utility, e.g., office buildings, warehouses, garages, machine shops, and recreational buildings, that are not an integral part of a generating plant, substation, or control centre.

1.2 Workplaces excluded

This Standard does not cover the following:

(a) installations in ships, watercraft other than floating buildings, railway rolling stock, aircraft, and automotive vehicles other than mobile homes and recreational vehicles;

(b) installations of railways for the generation, transformation, transmission, or distribution of power used exclusively for operation of rolling stock or installations used exclusively for signaling and communications;

(c) installations of communications equipment under the exclusive control of communications utilities located outdoors or in building spaces used exclusively for such installations; and

(d) installations under the exclusive control of an electric utility when such installations

(i) consist of service drops or service laterals, and associated metering;

(ii) are located in legally established easements or rights-of-way designated or recognized by public service commissions, utility commissions, or other regulatory agencies having jurisdiction for such installations; or

(iii) are on property owned or leased by the electric utility for communications or for metering, generation, control, transformation, transmission, or distribution of electric energy.

1.3 Purpose

The purpose of this Standard is to specify requirements for a practical safe working area for workers relative to the hazards arising from the use of electricity.

1.4 Use with related Standards and regulations

This Standard is intended for use with Parts I, II, and III of the *Canadian Electrical Code* and other related Canadian workplace electrical safety Standards (e.g., CAN/CSA-M421 and CAN/CSA-Z460), and should be used with such Standards. In addition, users of this Standard should always refer to provincial/territorial and federal safety regulations that have jurisdiction over their work facility, contract job site, or profession.

1.5 Organization of this Standard

The requirements of this Standard are divided into three main clauses, as shown in Figure 1.

Notes:

(1) *Clause 4 specifies general requirements for safety-related work practices.*

(2) *Clause 5 specifies safety-related maintenance requirements for electrical equipment and installations in workplaces.*

(3) *Clause 6 supplements Clause 4 with safety requirements for special equipment.*

(4) *Annexes A to R do not specify requirements and are included for information only.*

Organization of this Standard

(See Clause 1.5.)

1.6 Terminology

In CSA Standards, "shall" is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard,

- ✓ "should" is used to express a recommendation or that which is advised but not required;
- ✓ "may" is used to express an option or that which is permissible within the limits of the standard; and
- ✓ "can" is used to express possibility or capability.
- ✓ Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.
- ✓ Notes to tables and figures are considered part of the table or figure and may be written as requirements. Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

Electrical Safety Guidelines

Tagging and Lockout

Lockout and tag out procedures are an important requirement during any activity when a piece of equipment or system represents a potential energized hazard to life or property.

1. The minimum procedure is drawn from existing electrical codes, CSA standard Z462-08, local statutes, and/or manufacturer's specifications. The most stringent of the instructions, rules, regulations or standards are to be observed and apply with respect to tagging and lockout procedures.

2. Employees shall follow **written job procedures** for lockout and tagging as directed by their supervisor or as outlined by the site-specific tag and lockout procedure.

3. Only the person who placed a lock and tag on a system may remove it. No one else has the authority to remove safety locks.

4. When multiple tags and locks are required, a multiple lock clamp or gang-lock should be used to ensure that the system is not re-energized until all locks are removed.

5. All tags and locks must be placed at the primary source of the energy whenever possible. If this is not always possible, the locks should be placed as close to the primary energy source as possible. The primary energy source must be monitored to prevent the system from re-energizing prematurely.

General Electrical

1. When work is being done on or near live exposed parts of installations, equipment, or conductors, the qualified workers shall wear the proper personal protective equipment and have a written SWP in place.

2. No employee shall open or close any circuit unless he / she is thoroughly competent and has full knowledge concerning the circuits affected and given ample warning to other workers who may be endangered.

3. The worker shall stand on the opposite side of the hinge of a switch box when opening or closing a circuit.

4. The worker shall never use their bare fingers to determine a live wire.

5. Do not work on any conductors until you know the voltage.

6. Do not depend on the insulating cover of wires.

7. **Electrical equipment and lines shall always be considered as being "live". Always test, isolate, and ground prior to your work.**

8. Never wear jewellery or other metal objects while working on energized systems.

9. Always us the appropriate equipment and PPE to insert or extract fuses.

10. Whenever possible, disconnect and de-energize power before working on any electrical equipment.

11. When it is absolutely necessary to work on or near live "circuits", always place yourself in a position so that a shock or slip will not bring you in contact with live parts (2nd point of contact)
    .

12. Portable electrical tools shall be effectively grounded, protected, or be of "double-insulated" construction.

13. The casing and frame of portable electric generators shall be effectively grounded.

14. The CSA Z462-08 standards are to be considered as the minimum acceptable standards for our work.

Office Safety

You are required to work in a safe manner every day including in our office environment. The following issues are for your review:

1. Workers shall report all injuries, regardless of severity, to the supervisor in charge.
2. Workers shall walk cautiously up and down stairs; the handrail shall be used whenever possible.
3. Caution shall be exercised when walking around blind corners.
4. Running is not permitted at any time.
5. Walkways shall be kept clear of materials or furniture that may cause tripping, or that act as a barrier to an escape route.
6. Ensure that you are fully aware of exits & escape routes.

Lifting and Carrying

1. A worker shall obtain assistance when lifting heavy objects.
2. Bulky objects shall not be carried in such a way as to obstruct the view ahead or interfere with free use of handrails or stairways.
3. Large boxes or bundles of supplies shall be moved by a hand truck or unpacked and delivered in smaller parcels.

Doors

1. Doors shall be opened slowly to avoid striking anyone on the other side.
2. Doorways must never be blocked with equipment or materials.

Ladders and Step Stools

1. Workers shall use a set of steps or a ladder when required to place or obtain objects in elevated locations.
2. Material shall be stored and piled in a stable manner.
3. Ladders and platforms shall be examined before use; treads and safety feet on ladders shall be provided with non-slip material in good condition.
4. Boxes, chairs, etc. shall not be used in place of ladders.

Sharp Instruments

1. Knives, scissors, letter openers, pens and pencils, etc. shall be kept at the front of desk drawer where they can be seen when drawer is opened.
2. Care shall be exercised when using staplers, punches, or paper cutters.
3. Immediate first-aid treatment is essential for all cuts and puncture wounds regardless of severity.

Filing Cabinets

1. Drawers of desks and file cabinets shall be kept closed when not in use.
2. Only one drawer of a file cabinet shall be pulled out at a time in order to avoid instability or tipping of the cabinet.
3. Store heavy items and materials in the lower drawers of the filing cabinet.

Fire Protection

1. Smoking is permitted outside in **designated areas** only.
2. All workers shall exercise good housekeeping habits, not allowing waste, paper, rags, or other combustible material to accumulate.
3. No worker shall hinder access to fire extinguishers or exits.
4. Each worker shall note the location of fire extinguishers, exits, and fire alarms and shall be knowledgeable in the use of each.
5. It is the responsibility of each fire warden to ensure that all workers are knowledgeable in fire protection and evacuation procedures.
6. Workers discovering fires shall locate and pull the alarm
7. If the fire is of a small nature, trained worker(s) may attempt to extinguish it.
8. If there are any increased dangers from fighting the fire, all workers shall evacuate the building immediately.
9. Do not try to extinguish any fire that is out of control or that is too big to fight with extinguishers. When in doubt – GET OUT.

Office Equipment

1. Unsafe electrical cords, faulty electrical or other equipment, or any other hazardous conditions must be reported to your immediate supervisor.
2. Workers shall never attempt to clean, oil or adjust any machine that is running.
3. Machines must be equipped with an emergency off switch.
4. Chemicals used in office copiers or other equipment shall be stored in proper containers, in proper storage areas and handled with due care.
5. Appropriate personal protective equipment (goggles, aprons, gloves) shall be worn when handling chemicals necessary for office cleaning or maintenance functions.
6. Loose-fitting clothing, dangling bracelets, rings and ties may cause serious injury to workers operating or working around power driven machines (paper shredders, copiers, etc.). These items are not to be worn around operating machinery or equipment.

Scaffold Use

Scaffold use indicates that you will be working at an elevated height and requires that you take all necessary precautions to avoid accidents. No scaffold should ever be loaded in excess of its maximum load capacity. Every scaffold system shall be used in accordance with the manufacturer's specifications and have all required components secured in place.

This includes all horizontal and diagonal bracing, horizontal members secured with no splices between the points of support, footing or sills or supports capable of supporting 2 times the maximum load that the scaffold will be subjected to without settlement or deformation that will affect the scaffold's stability.

In addition, all fittings and gear including base plates or wheels as per the manufacturer's instructions, connecting devices between the frames that provide positive engagement in tension and compression, all safety catches, clips and/or pins as required shall be secured at vertical intervals not exceeding 3 times the least lateral dimension measured at the base.

Scaffolds mounted on castors or wheels shall have working brakes for each wheel and the brakes applied and locked when a worker is on the scaffold. A competent worker should inspect scaffold systems on a daily basis. A competent worker must supervise the erection, alteration and dismantling of any scaffold system. Records of inspections need to be maintained.

A scaffold or other work platform shall be at least 18 inches wide, be fully planked if it is a scaffold system and the working platform shall be 8 feet above ground level. A guardrail system must be in place, have a separate means of access and egress (a secured ladder), not have any unguarded openings and shall have each component of the platform secured against slipping from its supports.

Wooden planks used for platforms shall be Number 1 Grade Spruce, 2 inches thick by 10 inches wide, arranged so that their span is not greater than 7 feet, arranged so that the overhang is not less than 6 inches and not more than 12 inches and have cleats or other mechanism employed to secure the planks from slipping. Reference to the regulations for additional information is encouraged.

Prior to assembling and erecting the scaffold, review the work area to assess the ground conditions and determine what additional requirements may be needed. After the location has been determined, ensure that the ground conditions are as level and firm as possible prior to erecting the scaffold.

If set-up is on rough ground, use sills that extend the full length of each frame section rather than blocking under each foot. Nail the base plate to the sill to ensure that it does not move while in use. Set up each section of scaffold, including all hardware, clips, pins and bracing one section at a time. Fully plank the mainframe of the first level prior to erecting additional upper sections.

Make sure that the bottom level is square and level and that there are no bent frames in use. If you are erecting more than two sections (lifts) of scaffold, fall arrest must be worn once you are at the second platform level. The erection or dismantling of two or more lifts of scaffold should always require two workers. As indicated on page one of this section, a secured ladder must be used to gain access to all levels.

Continue to erect each section of scaffold making sure that you secure, level and square each section. Tie-in the scaffold to the project or building when the scaffold height is 3 times the least lateral dimension measured at the base of the scaffold; this will provide additional structural support for the scaffold system.

As the scaffold erection continues, install all required guardrail systems. Make sure that the platforms are secured with cleats or by using another process to secure the planks. If you are using pre-fabricated platform sections, check the hooks to ensure that they are not cracked, bent or deformed in any way prior to use. If they are, do not use them and return them to our shop for repair or replacement. The platforms should always be installed in accordance with the engineering design and/or manufacturer's instructions.

If you are using a wheel-mounted, rolling or "Baker" scaffold system on a firm or indoor ground/floor surface, you must ensure that the wheels have working brakes and that the brakes are applied and locked when you are on the scaffold. Do not "SURF" or move the scaffold while standing on it, as it is not designed for this procedure.

Elevating Work Platforms

Elevating Work Platforms (EWP) are motorized vehicles and must be used in accordance with all operating instructions provided by the manufacturer in their operating manual. No worker shall operate an EWP unless they have received training in the safe operation of the equipment, understand the limitations of the equipment, and have read the operating manual. An EWP must meet the applicable National Standards of Canada standards.

A fully trained and competent worker shall inspect the EWP each day before use. This worker must have received written and oral instructions on the machine's use, be familiar with the manufacturer's instructions, understand the load limits for the machine, understand the correct use of all controls and understand the surface limitations for operating the EWP.

EWP shall be equipped at all times with a full guardrail system. In addition, the EWP must have at the controls of the device, a rated working load, all limited working conditions including the proper use of outriggers, stabilizers and extendable axles, the specifics on firm level working surfaces required for all use, and any warnings from the manufacturer on use.

Also, the direction of movement for each operating control, the name and number of the National Standards of Canada standard to which it was designed and the name and address of the owner must be displayed. The EWP must be maintained by the owner to ensure that the safety factors are maintained to the original design. The owner must keep records of all inspections, tests, repairs, modifications and maintenance for as long as the machine is in use and this must include the signature of the person involved in any of the above-noted tests etc.

An EWP shall never be loaded in excess of its rated working capacity and shall be used on a firm level surface in accordance with all of the manufacturer's written instructions. It should not be loaded or used in a manner that will affect its stability or endanger a worker and shall never be moved unless all workers on it are protected against falling by a safety harness attached to the platform. Reference to the regulations for additional information is encouraged.

Prior to using an Elevating Work Platform (EWP), make sure you are comfortable with all required operating requirements as set forth in the manufacturer's operating instructions. If it has been more than 30 days since you last used an EWP, it is suggested that you spend a few minutes reviewing the EWP manual prior to use. <u>If you are not qualified to operate the EWP do not use it</u>.

Review the work area and all intended paths of travel to ensure there are no obstructions or floor / ground conditions, which could affect the stability of the machine. Make sure that the guardrail system is intact and that all operating instructions and warning signs at the controls are legible. If equipped with outriggers, stabilizers, warning alarms and/or a flashing light make sure that these components are operational prior to use.

You will need to have a safety harness and lanyard if you intend on moving the machine from one location to another or when elevating the machine. Once you are on the EWP make sure the chain or restraining device at the open end is secured in place.

Always drive the EWP slowly and pay strict attention to the path of travel. If workers are in the area, move the machine only when they are clear. Once you have arrived at your next work location, elevate the platform to the work area. Never stand on the mid-rail or top-rail of the guardrail system as this presents a serious fall hazard. If you cannot reach the area to complete your work, you will require a written SAFE WORK procedure to identify the required steps prior to continuing. If you will be performing any open flame operations such as welding or soldering, you must have a fire extinguisher on the EWP and a fire watch below.

When your work is complete and you will be moving to another location, it is recommended that you lower the machine to its lowest point and then drive the machine to its new location. This will ensure that the centre of gravity is at its lowest point and will provide maximum protection against rollover. When lowering the EWP, make sure that there are no workers below the EWP. If the EWP hydraulics fail at any time or the elevating device becomes stuck in an elevated position, call for assistance, stay in the machine and do not attempt to climb down the machine. If this occurs, do not use the machine until it has repaired and re-certified for use.

Compressed Air Use

Air-powered tools used in construction range from stapling guns to jack hammers. These tools can be dangerous if you do not use them as outlined in the manufacturer's specifications. The following is a list of rules that you must adhere to when using compressed air:

1. Do not use compressed air to blow debris or to clear dirt from clothing.
2. Turn off air pressure and the line pressure before disconnecting the hose or changing tools.
3. Attach any hose that may to a rope or chain secured to the machine to prevent whipping.
4. Wear personal protective equipment including eye protection / face shields and ensure other workers in the area are aware of or have restricted access to the hazard area.
5. Check hoses on a regular basis for cuts, bulges, or other damage. Repair or replace defective hoses. Document all hose and equipment inspections and maintenance repairs.
6. Maintain a proper pressure regulator and relief device on the system.
7. Use the correct / designated air supply hoses for the tool / equipment used.
8. Properly maintain the equipment according to the manufacturer's requirements and maintenance schedules.
9. Follow the manufacturer's general instructions for use and maintenance and comply with legislated safety requirements.

Explosive / Powder Actuated Tools

The manufacturers of these devices provide detailed instructions regarding their use and maintenance. You must read, understand, and abide by all manufacturers' specifications for use and maintenance prior to operating an explosive / powder actuated tool. The following general recommendations apply to all explosive / powder actuated tools:

- ✓ Only properly trained and qualified operators are to use this type of tool. The user shall possess proof of this training issued by the manufacturer, authorized dealer / distributor, or other competent source.
- ✓ The tool shall be CSA Standard approved for "Explosive/Powder Actuated Fastening Tools".
- ✓ The tool shall be loaded just prior to use with the correct load for the job anticipated.
- ✓ Never load tools if being moved to an alternate work site.
- ✓ Never point the tool at anyone whether loaded or unloaded.
- ✓ Keep hands and fingers clear of the muzzle end at all times.
- ✓ Always store explosive powder actuated tools in their proper lockable boxes.

Explosive powder actuated tools shall never be used in an explosive atmosphere.
When used, hold the tool firmly and at right angles to the surface. Unload the tool after use and prior to transport or storage. The operator shall wear eye and hearing protection at all times. To prevent free-flying fasteners, ensure that the material driven into will not allow the fasteners to pass through it (i.e. glass block, hollow tile, etc.)

Review and follow Manufacturers' recommendations whenever uncertainty arises regarding the material driven into, maintenance procedures or load strength. Always be aware of other workers. Where a hazard to other workers exists, use signs and barricades identifying the hazard area as a restricted area.

Asbestos Awareness

Asbestos fireproofing and insulation is common in many older buildings. Disturbing this material during construction, renovation, maintenance, or restoration can cause friable material (hazardous dusts) to become airborne. The following precautions are required:

- ✓ When any material found on a job site appears to be or resembles asbestos, workers shall immediately stop work and notify their supervisor in order to facilitate testing to determine the nature of the material.

- ✓ Once the material has been tested and identified, the supervisor will make the decision on how to proceed using site-specific safe work procedures designed specifically for the work and based on the findings of the tests conducted.

- ✓ If asbestos is present, during your work or after the testing noted above, it will require abatement (removal), encapsulation, or specific safe work procedures prior to continuing the work. This SWP will address where the asbestos is located, the type of asbestos (silicates, actinolite, amosite, anthophyllite, chrysotile, crocidolite, or tremolite) and the precautions necessary for working in or around the type of asbestos found.

- ✓ Prior to working in or around asbestos, each worker must understand the conditions they will be working in, the appropriate measures and procedures for their work, the required PPE to be worn, how to clean the PPE after each use and the limitations of the PPE.

- ✓ A specific written safe work procedure is required for each circumstance.

Confined Space Program

1. Evaluate Work To Be Performed And By Whom.

2. Advise All Site Employers/Employees Of Confined Space
   No Unauthorized Entry Is Permitted

3. Perform A Hazards Evaluation (Including Copies Of MSDS Info)

4. Perform Air Quality Tests

5. Determine PPE And Work Process.

6. Complete Permit Report

7. Hold A Pre-Entry Meeting To Discuss All Relevant Info.

8. Monitor Work Process By Radio Check-Ins Every 30 Minutes And Record.

9. Conduct A Post Exit Meeting And Discuss Any Issues With Workers Inside Confined Space.

10. All Training Cards For All Employees To Be Attached (Attach Copies Of Training Cards Of Anyone Entering)

Confined Space Assessment

Date: _____

Assessed by: _____

Signature: _____

FLAMMABLES: _____

_____

COMBUSTIBLES: _____

_____

EXPLOSIVE: _____

_____

CORROSIVE: _____

_____

PHYSICAL ISSUES: _____

_____

COMMENTS:

_____
_____
_____
_____

Confined Space Coordination Plan

Date: _____ Supervisor: _____

EMPLOYERS INVOLVED: _____

_____

_____

_____

WORKERS INVOLVED: _____

_____

_____

_____

PRE-ENTRY MEETING:

Work to be performed by: _____

_____

_____

Location of each worker: _____

_____

_____

Duration of work: _____

Communication System _____

First Aid/Emergency Plan Rescue Person:

_____

Attendant: _____

(Outside Confined Space)_____

Air Quality Test Results:_____

Possible Hazards: _____

PPE Required: _____

Sign-off on Permit by each worker: _____

_____

_____

_____

Points of Access/Egress: _____

_____

Means of Ventilation/Purging:_____

_____

SIGNATURES: _____

_____

_____

_____

ENTRY PERMIT FOR CONFINED SPACES

A SEPARATE PERMIT IS REQUIRED FOR EVERY CONFINED SPACE

1. Today's date: _____ Permit #: _____

(yyyy/mo/day)

2. Location of confined space:

_____

(address/city/province)

3. Description of work:

_____

_____

_____

4. Time Period for Entry:

_____

(start time and finish time)

5. Workers Involved:

6. Each worker's location during work process:

7. List of Monitoring & Rescue Equipment Available:

8. Identified Hazard Conditions and/or Activities:

Check all items identified	**YES**	**NO**		**YES**	**NO**
a) Heat stress condition			h) Configuration hazard		
b) Electrical/mechanical energy			i) Fall from an elevation/ through an opening		
c) Smoldering/burning material			j) Airborne combustible dust/gases		
d) Falling overhead objects			k) Chemical/thermal hazards		
e) Engulfment			l) Abrasive blasting		
f) Welding/cutting or burning			m) Entanglement		
g) Fumes from equipment			n) None		

9. Health & Safety Precautions/Equipment:

_____

_____

_____

10. Atmospheric Test Results:

_____

_____

_____

(date and time taken/results/qualified person's signature for each sample)

11. Verification Sign-off:

(sign-off by all persons involved that plan and requirements are in place)

12. Competent Person Sign-Off:

(signature of one or more competent persons verifying that entry complies with the plan)

13. Identify Qualified First Air Responders:

---

21. Emergency Response and Rescue Plan:

(Ensure the emergency plan has been reviewed and signed by all those involved)

15. Hot Work Permits: (Where & when required)

(Signatures from all workers involved in the entry plan)

16. Ventilation/Purging:

---

17. **OTHER CONSIDERATIONS:**

Personal Conduct at Work

Riding on Equipment

No worker shall ride on any piece of equipment unless he/she is occupying a seat designated for such a purpose and is specifically trained in the operation of that piece of equipment.

Horseplay

No worker shall engage in any activity that may be a hazard to co-workers, the public, the work area, or the environment.

Fighting

Fighting with co-workers, supervisors, or the public is a violation of policy. Any worker caught fighting will be subject to immediate dismissal.

Theft

Any worker caught stealing tools, equipment, materials, or supplies from the company or suppliers will be subject to immediate dismissal. We will notify the proper authorities for possible investigation and prosecution.

Substance Abuse

If any worker is caught using any illegal or controlled substances, disciplinary action will ensue. See the Substance Abuse Policy.

Misuse or Destruction of Equipment and/or Property

Any misuse or abuse of tools, equipment, property, vehicles, or supplies will result in immediate disciplinary action. Use all of the above for the intended manner and as per manufacturer's specifications.

Insubordination

We will not tolerate insubordination of any kind. All workers are required to listen to and abide by the directions of their supervisors, managers and any other personnel that have authority over them; this extends to Ministry of Labour, Ministry of the Environment, Police, Fire, and EMS officials. Any worker failing to abide by this rule will face immediate disciplinary action.

Harassment

Harassment is a very serious workplace issue. Such behavior may include any unwanted physical contact, oral or written statements, gestures, or expressions that communicate a direct or indirect threat of physical harm or intimidation. Individuals who commit such acts will be subject to sanctions including, but not limited to, removal from the premises; exclusion from the premises; criminal prosecution; corrective and/or disciplinary action; suspension or termination.

At no time will any worker harass any other worker, client or member of the public be it physically, sexually, or emotionally. If an incident of harassment arises, we will investigate this thoroughly. If the allegation has merit, the worker will face immediate disciplinary action appropriate to the circumstances.

If the harassment includes unwanted contact, we will terminate the workers employment and forward the issue to the proper authorities for appropriate investigation.

If you are the victim of any type of harassment, report it immediately to your supervisor or the appropriate person in charge (providing they are not involved in the allegation). All allegations are serious and we will treat every situation with the respect, dignity, and confidence.

Painting Operations

Hand Painting Operations:

All employees painting with brushes are required to wear the proper personal protective equipment. This includes eye protection and respiratory protection in the case of alkaloid-(oil) based paints.

Painting Operations using Compressed Air:

Compressed air painting tools can be dangerous if not used as outlined by the manufacturer's specifications and instructions. When painting with the use of compressed air tools the following rules apply:

- ✓ Never use compressed air to blow debris or to clear dirt from any worker's clothes.
- ✓ Turn off the air pressure and the line pressure relieved before disconnecting the hose or changing tools.
- ✓ Attach a rope or chain to any hose that may whip.
- ✓ Wear personal protective equipment including eye protection, face shields, respiratory protection and ensure other workers in the area are aware of, or have restricted access to, the hazard area.
- ✓ Check hoses on a regular basis for cuts, bulges, or other damage. Repair and/or replace defective parts and document equipment inspections.
- ✓ A proper pressure regulator and relief device shall be on the system.
- ✓ Use the correct air supply hoses in relation to the tool / equipment.
- ✓ Maintain equipment according to the manufacturer's requirements.
- ✓ Follow the manufacturer's general instructions for use and maintenance and comply with legislated safety requirements.

Cleaning Brushes and Equipment with Solvents:

We must protect workers and the environment from hazards associated with cleaning solvents and other products. Wherever possible, solvents should be non-flammable and non-toxic. The supervisor shall be aware of all solvents / flammables used on the job. We will provide instructions to workers who use these materials. MSDS on all cleaning solvents shall be readily accessible by all workers in contact with the chemical(s).

The following safe work practices apply when solvents/ flammables are used:

- ➢ Use non-flammable solvents for general cleaning.
- ➢ Do not perform hot work when flammable liquids are used.
- ➢ Store flammables / solvents in approved well-marked containers.

- Check toxic hazards of all solvents before use (read the MSDS).
- Provide adequate ventilation.
- Use eye / face shields to protect the face and eyes from splashes or sprays.
- Use rubber gloves to protect your hands.
- Wear protective clothing to prevent contamination of worker's clothes and skin exposure.
- When breathing hazards exist, use the appropriate, fitted respiratory protection.
- Never leave solvents in open containers.
- Use proper containers for transportation, storage and field use of solvents / flammables and properly label.
- Train all employees using WHMIS products in the Workplace Hazardous Materials Information System.
- Dispose waste to satisfy all applicable legislation and environmental requirements.

Visitors and Public Protection

Public Protection & Access

Wherever possible CESARONI will protect the public from accessing our work area using caution tape or barrier rails. Proper precautions must be in place to protect the public. Post routes for pedestrians to follow.

Cordon off the area when performing overhead work so that no member of the public may walk under the overhead activity. Erect proper signs to inform the public that overhead activity are taking place.

Minimize slippery floors, debris, openings or uneven floor surfaces and maintain the best possible housekeeping to minimize the risk of slip, trip, or fall hazards. Erect barriers and signs to inform the public of the hazard.

If there is a high level of noise, reduced lighting or electrical hazards present, post proper signs outlining the risk. Never leave tools and/or equipment unattended where the public has access to them.

Visitors:

Any visitor entering a work area shall immediately report to the supervisor responsible for that area. All visitors are to comply with all safety requirements of the area and may not enter until they are aware of their responsibilities.

Responsibilities of the visitors are in the policies section of this manual. If they do not have the appropriate safety equipment, CESARONIwill provide them with proper equipment or they shall not enter the area.

If a visitor reports a safety concern, the supervisor, along with the health and safety representative, will investigate the concern and act upon it accordingly. All visitors are required to notify the supervisor when they are leaving the area or site to ensure their safety. They must also return any personal protective equipment provided to them by the company at that time. First-time visitors to the company will be required to read and sign the visitor's code of conduct, shown in the sample below.

Working Alone

When it is necessary for you to work alone, you should ensure that your immediate supervisor is aware of your location, activities, and projected time of completion.

When working alone keep in contact with the supervisor or dispatch/answering service and inform the dispatch of start, stop, and completion timelines for the work. When possible, you should try to communicate with a supervisor or dispatch on a pre-determined schedule throughout the day. Communication when working alone is very important. You should always have the ability to communicate with someone whenever required.

Preplanning every job is an important practice but is especially imperative if you will be working alone. Be aware of the emergency exits and access ways to and from the work location. Also, make yourself aware of the locations of fire extinguishing equipment and the alarm locations.

Establish a plan and the estimated time it will take to complete your work. Communicate the plan to your office or supervisor to ensure they have an approximate timeframe for your work completion. Check in with your supervisor immediately after the work and advise them of your status. This should be done in addition to the pre-arranged call-in times.

It is also essential to advise other parties that you are in the area and the approximate location and duration of your work. If a telephone number for the location is available, ensure that your supervisor or office has the number.

Cell phones or pagers do not work in some geographical areas. Other alternatives may be required.

Transportation of Dangerous Goods (Guideline)

Classes of Dangerous Goods:

Class 1 - Explosives

Class 2 - Gases

Class 3 - Flammable liquids

Class 4 - Flammable solids

Class 5 - Oxidizing substances and organic peroxides

Class 6 - Poisonous and infectious substances

Class 7 - Radioactive materials

Class 8 - Corrosive substances

Class 9 - Miscellaneous dangerous goods

General requirements are for the transport of goods that are greater than 500kg (total mass). Less than 500 kg is Low Threat Consignment and does not require the following applications.

General Requirements

1. Only workers who are trained or under the direct supervision of a trained person may handle or transport any dangerous goods relative to their assigned duties.
2. All trained workers will receive a certificate of training.
3. Certificate of training are renewed every three years and a record kept for five years by the trainer.
4. The shipper shall ensure that the shipping document contains all the required information.
5. The carrier shall ensure that the document accompanies the consignment.
6. The driver shall insure that one copy of the dangerous goods document is kept in a pocket mounted on the driver's door.
7. Dangerous goods transported in a van or pick-up will have the proper documents required under the Transportation of Dangerous Goods Act.
8. No person shall transport dangerous goods that are contained in a cylinder unless the cylinder is securely stored in or on that means of transport.

9. An approved carrier shall perform all transportation of large quantities of hazardous goods (i.e., have the supplier deliver to site).

Gasoline and Other Highly Flammable Liquids

1. Cannot be carried in the passenger compartment of a vehicle.
2. Be carried and stored in approved containers, with properly fitted caps, and shall be prevented from over turning.
3. Be used when adequate ventilation is in place.
4. Be provided with a fire extinguisher in transporting vehicle.
5. Not be used as a cleaner.
6. Shut off gasoline engines before refueling.

Compressed Gases:

1. Exercise care in handling all compressed gas cylinders. Do not drop, jar, or expose to temperature extremes.
2. Cylinders shall have the valve cap or valve protection device in place at all times except when in actual use.
3. Do not roll cylinders or lift by the valve or valve cap; use a suitable cradle.
4. Store or transport compressed gas cylinders, whether full or empty, in an upright position and chained or otherwise secured so they cannot fall.
5. Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease) a minimum distance of 6M or by a 1.5M high non-combustible barrier.
6. Do not store cylinders in a manner that they become part of an electrical circuit.
7. Hydrogen and fuel-gas cylinders shall not be stored inside any operating building. Use separate storage buildings or sheltered storage areas.
8. Employees shall never force connections that do not fit nor shall they tamper with the safety relief devices of cylinder valves.
9. Protect cylinders from sparks, flames, and contact with energized electrical equipment.

Oxygen and Acetylene

1. Leather gauntlet gloves and workers using an oxyacetylene cutting torch shall wear goggles with the proper shade of lenses.
2. Oxygen and acetylene shall be stored and transported in a secured upright position.
3. Cylinders shall be stored in a well-ventilated area with an overhead cover to protect from the weather.
4. Protecting caps shall be in place when moving cylinders or when not in use.
5. Rack cylinders when being hoisted.
6. Shut off leaking gas cylinders; place outdoors and report to the supervisor.
7. Keep away from heat over 54 C or 130 F.
8. Empty cylinders and full cylinders shall be stored separately.
9. Check joints with soapy water or commercial leak detector when connecting regulators to cylinders.
10. Oil, grease, or similar materials shall contact any valve, fitting, regulator, or gauge on oxygen cylinders.

Propane

1. Propane is heavier than air. (Specific Gravity Greater than 1.00) It will settle in low areas such as trenches, manholes, and sumps. Check the bottles for leaks. Check low-lying areas for gas build-up.
2. Cylinders shall be stored upright in a well-ventilated area away from heat.
3. Use approved hoses and fittings only.
4. Use soapy water or commercial leak detector when checking for leaks in propane systems.

Hydrogen

1. Special precautions shall be taken when using hydrogen to avoid the possibility of fire and explosion.
2. "DANGER - NO SMOKING" and / or "OPEN FLAMES" signs shall be posted where hydrogen is used or stored.

Chlorine

1. Chlorine containers shall be stored and properly secured in a cool place and protected against moisture.
2. Protective equipment shall be readily available for use in an emergency.
3. Don't store chlorine cylinders near flammable materials.
4. Should a chlorine leak develop, place the cylinder so that only "gas" escapes. (Use an ammonia swab to detect leaks.)
5. Don't spray or pour water on chlorine leaks.

Nitrogen

While nitrogen is not toxic or flammable, it could be hazardous if large quantities were present in confined spaces (this is true of most gases). Some large transformers coming from the manufacturer are nitrogen charged.

Personnel entering a confined space with a nitrogen leak will have an atmosphere lacking in oxygen unless fully ventilated as per the section on "CONFINED SPACES" within this handbook.

Temporary Lighting

Illumination / Lighting - Fixed Temporary

1. Use artificial lighting where natural illumination is not sufficient.

2. Protect temporary lighting (except battery powered) with approved guards.

3. All areas where workers must work or pass through or be present including areas of access and egress must be adequately illuminated.

4. Replace missing or burned-out light bulbs.

5. Replace missing or broken covers or shields for the light bulbs.

6. Use portable lighting or flashlights in darker areas.

7. Where the work site is the responsibility of the general contractor, lighting must be provided and adequate for all trades and the public.

Lighting - Fixed Temporary

This refers to the electrical system installed for the purpose of illumination during construction. Branch lighting circuits should be kept entirely separate from power circuits except for a common supply. Minimum temporary lighting requirements do not include provisions for portable hand-held lamps used by various trades to illuminate their immediate work area.

- ✓ Install lamps in suitable locations to illuminate the entire area.
- ✓ Where this is impractical, install additional light over and above the minimum requirements.
- ✓ Inspect all temporary lighting regularly and replace burned-out or missing lamps promptly. Relocate lights obstructed by new work such as ceiling, ducts, piping, equipment and/or partitions.
- ✓ Protect each individual lighting branch circuit protected by a circuit breaker or fuse with a rating of 15 amperes. The total load per circuit should not exceed 12 amperes.
- ✓ Lighting stringers should not be plugged into a receptacle but instead hard-wired directly into a distribution panel.
- ✓ All work areas where a worker is present (including the means of access and aggress from the work area(s)) must be adequately lit.
- ✓ Lights bulbs used in temporary lighting systems must have a protective cage or other mechanical protection device.

Temporary Heating

All temporary heating sources are required to provide proper heat for the workers, and in some cases, the materials used during the project.

1. Place heaters at least 3m (10 feet) away from any materials or foundations.

2. Keep all combustible and flammable materials clear of the heater at all times.

3. A person trained and certified in propane handling must install and maintain the heater.

4. Do not use heaters for any other purpose other than the outlined manufacturer's specifications.

5. All propane tanks, compressed gases, and pressurized cylinders must be stored away from the heater. The heater should never be directly applying heat to flammable supplies and/or materials such as wood and other flammable compounds.

6. If there is an unpleasant odour near the heaters (either of rotten eggs or boiled cabbage), immediately turn off the heater and contact the rental provider. If the smell is present before starting the heater, DO NOT, start the heater under any circumstance. Contact the provider immediately and ventilate the area.

7. Prior to starting a temporary heater, establish and implement an Emergency Evacuation Procedure.

8. A fire extinguisher must be in the area and readily accessible in the event of a fire; workers shall be trained in firefighting methods.

Traffic Control

Every employer with workers exposed to hazards of vehicle traffic shall develop and implement a written traffic control program. Advise workers of the types of vehicles on site and the traffic routes. Obey speed limits and traffic direction flows at all times.

Vehicle traffic on site is to move in a forward direction at all times unless it is not possible. The Constructor will have a traffic control and protection plan for the site. Review the plan with all workers on site.

A traffic control person must be a "competent worker" and must not be involved in any other work while directing traffic. They shall not direct traffic for more than one lane in the same direction or direct traffic if the posted speed limit is greater than 90 kilometres per hour.

Position the traffic control person in a manner that minimizes the risks involved. Provide written and oral instructions regarding the traffic protection plan including a description of the signals and signs used. Document this instruction and administer in a language the traffic control person understands.

A tear-away vest or garment that covers the upper body shall be worn by the traffic control person and include fluorescent blaze, two yellow stripes on the front and back 5 cm. wide with a total area of 500 square centimetres on the front and 570 centimetres on the back.

The stripes shall be retro-reflective and fluorescent, vertically centered on the front, and form an "X" pattern on the back. Arm and leg reflective fluorescent bands can be included in the abovementioned garment and worn in addition to the vest or garment for the upper body. If a vest is used, it should have an adjustable fit mechanism. For a list of required signs, lane control devices, barricades etc., please refer to the Construction Regulations or Ministry of Transportation regulatory requirements.

New Worker Orientation & Training
The following topics will allow you to understand our operating procedures and assist you in your success as a member of our company. Your supervisor will discuss each item in the following checklist with you.

NOTE: New workers should ask questions if they do not understand the work. Do not engage in any task that you are unsure of or you feel endangers your safety

If unsure - STOP work immediately and ask for assistance

NEW WORKER ORIENTATION CHECKLIST

	Comment	Initial	Date
Name			
Date of Hire			
Hours			
Wage			
Supervisor			
JH&SC Members			
Training			
Responsibilities			
Discipline			
Review			
Safety/PPE			
Probation			
Job Training			

Material Handling

Lifting and Carrying

Most lifting accidents are due to improper lifting methods, as well as trying to lift more than the acceptable weight for one worker.

Planning Your Lift

1. Know your physical limitations and weight of materials you are to lift.
2. Obtain assistance in lifting heavy objects whenever that task may be more than can be safely handled.
3. Before any manual lifting, consider the use of power equipment or mechanical lifting devices such as dollies, trucks or similar devices.
4. Carry bulky loads to ensure an unobstructed view of the intended path.
5. Get a good grip before lifting.
6. Lift gradually. Lift slowly, smoothly, and without jerking.
7. The back should be kept nearly vertical or straight and the lifting done with the leg muscles, which are large and strong.
8. Avoid bending over at 90° from the waist.
9. Avoid twisting. Turn your feet, not your hips or shoulders.
10. Avoid reaching out. Handle heavy objects close to the body.
11. Do not be tempted at the last moment to swing the load onto the deck or shelf by bending or twisting your back.
12. Do not carry pipes, conduits, reinforcing rods, and other conductive materials on the shoulders near exposed live electrical equipment or conductors.
13. Have a prearranged signal for releasing the load if two people are carrying the load.
14. Face the direction in which the object is being carried or travelling.
15. Avoid lifting more than 22.5 kg (50lbs) alone whenever possible.

Sample Mechanical Safety Tag & Lockout Procedure

APPLICATION:

This procedure applies to all managers, supervisors, employees, and subcontractors in our employ or under contract with Company.

PURPOSE:

The purpose of this procedure is to review the basic principles of Tag and Lockout for working with mechanical – HVAC, Fire Stand Pipes, Domestic Potable Water, and Sanitary Systems in the workplace.

PROCEDURE:

General Mechanical

1. Do not attach or otherwise install the connection piece from the discharge side of the incoming valve for the Fire Stand Pipe System and Domestic Potable Water System and cap the open end, thereby blanking the system.
   (NOTE: The systems will not be able to be pressurized without the missing connection piece of pipe; however, the Fire Stand Pipe System will remain open for the Siamese street connection to be energized by the external emergency services, in the event of an emergency).

2. The connection piece to the domestic potable water and the fire standpipe will be reconnected during the testing phase upon completion of the system being worked on. (NOTE: The connecting piece from the discharge side of the incoming valve for the Fire Stand Pipe System and Domestic Potable Water System, once attached and installed, will create the potential for an energized system. The Lock out tag out procedures will also be followed for work with the specific systems).

3. Prior to opening or closing an energized mechanical system the designated employee **MUST:**

   - **Have written authorization from their foreman**
   - **Have full knowledge and be competent regarding the affected systems**
   - **Notify the constructor/owner of the system verbally and in writing of the work to be performed.**
   -

a) HVAC: During the construction installation, phase the system is not under pressure. The system is under minimal pressure during the testing phase.

The kitchen exhaust duct is tested with a smoke bomb to assess adequate seals and welds. The make-up air units are smoke bomb-tested to determine if they will trip the fire alarm system. The pressurization airflow for stairwells is smoke bomb-tested to determine adequate positive and negative air pressure.

The smoke bomb test is performed under normal atmospheric conditions and a fan is used to circulate the smoke throughout the tested systems. Tests are performed in accordance with the Ontario Building Code (1997).

b) Sanitary System: During the construction installation, phase the system is not under pressure. Gravity and slope of the system will move the material through the sanitary system upon completion. The system is under pressure during the testing phase. (NOTE: The tests are performed in accordance with the Ontario Plumbing Building Code 7.3.6.0 – 7.3.6.7) Two test options are available: an air test or a water test. The testing of the sanitary system is performed in conjunction with a Municipal Plumbing Inspector and a mechanical contractor's employee to inspect the drains and vents for leaks or deficiencies. The testing procedure is as follows: a test piece of pipe with an attached nipple and pressure gauge will be installed at the bottom and top of the system's test area. A hose will be connected to the nipple at the bottom to fill the system with water or air from a compressor until the pressure gauge at the top and bottom reads 5 PSI. The Municipal Plumbing Inspector will inspect the system while it maintains a pressure of 5 PSI for 15 minutes. The inspector will pass the system if there are no leaks and the system holds under pressure for the allotted 15 minutes.

c) Domestic Potable Water (Hot and Cold lines): The system is not under pressure during the construction installation. The connection piece from the discharge side of the incoming valve for the Domestic Potable Water will be re-installed for the testing phase. The system is under pressure during the testing phase. (NOTE: The tests are performed in accordance with the Ontario Plumbing Building Code 7.3.7.0 – 7.3.7.3. The testing is performed by injecting water and or air into the system. The testing of the domestic potable water system is performed in conjunction with a Municipal Plumbing Inspector and contractor's mechanical employee to inspect the system for leaks or deficiencies. A test connection piece will be connected to the incoming cold water main (same diameter) with an attached nipple piece at the lowest point of the system.

The hot and cold water will be connected to create a bypass in order to fill the complete system (hot and cold). Pressure gauges will be attached to the highest and lowest point. A hose will be connected to the lowest test piece, the valve will be opened and the system will be injected with water and or air until the top pressure gauge reads 215 PSI.

The worker reading the top gauge will contact the worker at the bottom gauge by radio to instruct the worker to disconnect the hose, close the valve and place a lock and tag on the valve. The system will remain under pressure for 2 hours, in accordance with

section 7.3.7.0 – 7.3.7.3 of the Ontario Plumbing Code (1997). Upon completion of the test and with written approval from the Municipal

Plumbing Inspector: the mechanical contractor's employee who placed the lock and tag will remove their lock and tag, open the valve and bleed the system. The Domestic Potable Water system may be isolated for maintenance work (individual suite, riser, main, etc.). The water entering a specific location can be shut off by closing the valve closest to the water source, thus de-energizing the system at that specific point.

The mechanical contractor's employee will close the valve, drain the system of water (pressure), and place their individual lock and tag on the valve.

The mechanical contractor's employee will remove their lock and tag upon completion of the task and reopen the valve. Any additional employees who are required to work on the Domestic Potable Water System shall attach their lock/tag to a multiple lock and tag out clamp. The multiple clamp lock system will be removed when the testing phase is complete after all employees complete their tasks.)

d) Fire Stand Pipe:
(NOTE: The system is not under pressure during the installation construction phase. The system is under pressure during the inspection phase)

The following steps shall be taken to complete a Fire Stand Pipe System:

- Remove the temporary fire line piece from the 15th floor.
- Install the final fire line piece complete with 1 ½ inch and 2 ½ inch nipples and gauges on top.
- Install the fire hose cabinet.
- Connect the 1 ½-inch fire hose and rack.
- Install the fire hose cabinet glass and fire extinguishers before the final inspection by the Municipal Fire Department.

These procedures shall be followed for the final inspection by the Fire Department:

- A competent mechanical contractor's employee appointed by the supervisor shall be positioned on the roof level with the fire hose connected to the standpipe with the Fire Department Inspector.
- A second appointed, competent employee will be positioned in the fire pump room with the Fire Department Inspector.
- The two employees and the supervisor shall be in communication by radio contact.
- The employee on the roof will open the 1 ½-inch fire hose valve and take a pitot tube reading with a handheld gauge.

- The employee in the fire pump room will verify the pressure that the fire pump activated.
- Employee on the roof shuts off the fire hose.
- The employee in the basement will drain the pressure in the standpipe system and refill by city pressure with water only.
- Reset the fire pump in the basement.
- Inspections will be performed by the mechanical contractor's supervisor and two additional, competent mechanical employees.
- The constructor will be notified of all dates and times of inspections in writing.
- The final pressure at the top of the fire hose cabinet will be between 60-90 P.S.I. as per the NFPA regulations.
- The Fire Stand Pipe System will be disconnected and de-energized by the removal of the connection piece to the fire pump until it is required to be reinstalled for the final inspection by the fire department.
- The constructor will be requested to lock the door to the sprinkler/fire pump room.
- To ensure the system is de-energized, the 1 ½ inch valve on the ground floor or P1 level will be opened to release any pressures if they exist and confirm that the system is de-energized.

(NOTE: The inspection is performed in accordance with the Ontario building code 7.2.11.1, and the National Fire Protection Agency (NFPA 24). The testing is performed by injecting water and or air into the system.)

- The system may be isolated for maintenance work anywhere along the system depending on the task (riser or main, fire pump, etc.) The water or potential energy in the standpipe can be shut off by closing the valve closest to the water (pressure) source and placing an individual lock and tag on the valve. The employee will remove their lock and tag upon completion of the task and reopen the valve.

- All additional employees who are required to work on the Fire Stand Pipe system shall attach their lock and tag to a multiple lock and tag out clamp. The multiple clamp lock system will be removed when all employees complete their task. All Fire Cabinets will have signs affixed to them stating "Danger Due To Testing – Do Not Touch" prior to and throughout the testing phases on all systems. Mechanical equipment and lines shall always be considered as being "energized". Always test and isolate systems prior to your work. When opening any valve the employee shall stand with their body away from the pipe. All maintenance work will be performed in conjunction with the constructor or building owner and Municipal Authorities safe work procedures and protocols.

Trenches & Excavations

Special attention to Sections 222 - 242 of O.Reg. 213/91 as amended, must always be reviewed and complied with prior to beginning an excavation.

Considerations

- Call all required services, (hydro, water, etc.) prior to digging for locates.
- No worker will be allowed to work in a trench or excavation without another worker being stationed outside of the trench and in close proximity to the work.
- The area shall be kept reasonably free of water accumulations.
- Loose rocks or other material that could give way must be removed.
- Excavations cut in rock must have wire mesh or rock anchors to eliminate spalling of loose rock.
- Materials, equipment and excavated material must not be stored within one metre of the upper excavation wall.
- Wall stability must be maintained at all times.
- Machine, vehicle or equipment use must not be located or used in a manner that will affect the walls stability.
- A 1.1-metre fence must be provided for an excavation that is 2.4 metres or more in depth and is not sloped in the proper manner.
- Correct sloping of walls should be completed once the soil condition and type of soil is known and at the time of the excavation work.
- If the excavation has the potential to affect adjacent structures, a professional engineer must specify the safety precautions to be implemented.
- Records of the soil types must be retained for review and referral as required.
- The appropriate support system must be used as the circumstances dictate
- Proper access and egress into the excavation must be maintained at all times
- All trenching and excavation work must be done under the direction of a competent person.
- A specific emergency rescue plan should be developed prior to entry by any worker.

Demolition

CONSIDERATIONS

- Only those workers who are directly involved in the demolition process are to be in the immediate area.
- Barriers should be used to restrict access to the area by other workers or pedestrian traffic.
- Signs warning of the dangers and restricted areas should be posted in areas where they are most likely to be noticed.
- Precautions must be taken to protect adjacent buildings and prevent injury to other persons nearby.
- All gas, electrical and other services must be de-energized and locked out prior to the demolition.
- All toxic, flammable or explosive materials must also be removed from the building prior to demolition.
- Buildings should be demolished from the highest point to the lowest point unless this process endangers a worker.
- No support for a tier or floor shall be disturbed until all work above is complete
- No exterior wall may be demolished until all glass from doors, windows etc. have been removed.
- Masonry units must be removed in a manner that does not endanger the worker or other persons.
- Structural members must only be removed after the load forces have been relieved and temporary supports are in place as required.
- Any basements or excavations left by the demolition must be back-filled to grade level or have a fencing installed along all open sides with the appropriate signage.
- Workers should be trained in the actual and potential hazards associated with each job and the circumstances present.

Z317.13-03

Infection Control (Construction or Renovation of Health Care Facilities)

The information below is an excerpt from the CSA Standard on infection Control and is not intended to replace your obligations. ***We encourage employers to arrange for this and other CSA training with the Canadian Standards Association and consider becoming members to help support health and safety across Canada.***
Tickner & Associates Inc. is proud to be a member of CSA.

Introduction

0.1

More than 30 reports published between 1975 and 1995 have documented incidents in health care facilities of construction-related infections caused by *Aspergillus, Legionella,* and other agents. See Health Canada's *Construction-related Nosocomial Infections in Patients in Health Care Facilities: Decreasing the Risk of* Aspergillus, Legionella *and Other Infections*. The mortality rate for aspergillosis (i.e., an *Aspergillus* infection) and legionnaires' disease (one of the diseases caused by *Legionella*) acquired in health care facilities is high (65 to 100% for the former, 24 to 80% for the latter), even when these infections are recognized and treated. Thus, precautionary measures are a priority.

The occupants of the health care facility, their proximity to the construction or renovation areas, and the type of construction activity in and around the facility are examples of issues that need to be addressed when a construction or renovation project is undertaken by a health care facility. Immunosuppressed patients are at greatest risk of acquiring a fungal or bacterial infection. This group includes patients who have undergone bone marrow or solid organ transplants, patients receiving dialysis, patients taking immunosuppressive medications (including steroids), and oncology patients receiving chemotherapy. Assessment of the risks to occupants of the health care facility is necessary before construction or renovation begins.

0.2

Aspergillosis acquired in health care facilities can cause severe illness in, or the death of, immunocompromised patients. Aspergillosis is acquired primarily by inhalation of fungal spores, which can lead to pneumonia following local lung tissue invasion. The fungus can also disseminate through the bloodstream to involve deep organs. Aspergillosis is difficult to diagnose and treat; consequently, there should be an emphasis on prevention and improved detection.

0.3

Legionnaires' disease is a preventable pneumonia for which both vigilant surveillance of possible health care facility sources of legionellosis (i.e., a *Legionella* infection) and confirmation by laboratory tests are required.

0.4

Assessing the risks to health care facility occupants and preventing and detecting fungal and bacterial infections require a multidisciplinary team approach to;

a) improve understanding of the issues;

b) identify responsibilities; and

c) implement suitable avenues of communication between responsible parties.

Infection control concepts and precautions should be practiced in all areas of construction and renovation where hazards due to water, air or earth containments are possible. Exposure to mould, tainted water and contaminated earth is not restricted to hospital and health care facilities, so pro-active infection and illness prevention measures are encouraged.

Floor Opening Cover / Guardrail Permit

This permit system shall be used when installing, removing and replacing floor opening covers or guardrail systems on construction projects.

INSTALLATION
The following protective measures shall be used for protecting floor openings. Place a check mark in the box next to the situation that applies.
1. **Core Opening/Bore Hole Opening** less than 6 inches x 6 inches or less than 6 inches in diameter • Shall be appropriately and securely covered to prevent any tools, materials or other items from falling onto the level below ☐
2. **Small Openings**, 6 inches x 6 inches up to 3 feet x 3 feet in diameter • Shall be covered with steel checker plate (capable of supporting any load that may be applied), secured to the concrete slab and the cover shall extend beyond the opening a minimum of 6" onto the slab, ☐ **Or** • Shall be covered by defect-free plywood that is no less than 5/8 inches thick, and the cover shall extend beyond the opening a minimum 6" onto the slab, and be secured to the slab.☐ In either case a large X shall be marked on the covering along with the words, "DANGER – FLOOR OPENING" in red or orange marking paint, to indicate it is being used as a protective covering. If at any time a Power Elevated Work Platform (PEWP) is required to operate in an area of a protected opening the covered, the protective opening cover will also be protected with 2"x 4" wood pieces secured to the slab around all four sides of the existing cover to prevent the PEWP from accessing the cover.
3. **Larger Openings** - 3 feet to 5 feet in diameter • Shall be covered by defect-free plywood that is no less than ¾ inches thick, and the cover shall extend a minimum 6" onto the slab, and be secured to the slab. If at any time a Powered Elevated Work Platform is required to operate in an area of a protected opening, the covered opening will also be protected with 2"x 4" wood pieces secured to the slab around all four sides of the existing cover, to prevent the PEWP from accessing the cover. ☐ **Or** • The floor opening shall be protected by a barrier/ guardrail system that meets the full requirements of Sec. 26 of the Construction Regulations. ☐
4. **Openings greater than 5 feet in diameter** • These floor openings shall be properly protected by a barrier/ guardrail system that meets the full requirements of Sec.26 of the Construction Regulations. ☐

Site:	Floor:	Location:	Cover #:
Dimensions of Opening:		Date of Cover/Guardrail Installation:	
Signature of Site Manager:		Signature of Safety Rep:	

REMOVAL

The removal of the above documented floor opening covering/guardrails shall only be permitted once a permit is issued and the plans approved by HSE. Protective floor covers and guardrail systems must NEVER be removed without this permit. The proper use of fall protection systems and precautions must be implemented during the time between removal of the covering/guardrail and completion of the work activity in order to prevent falls and accidental injury. Remember that fall protection is a ZERO TOLERANCE policy.

Protection Method(s) Used

At Opening Level

☐Travel Restraint/Fall Arrest ☐Barriers ☐Danger Tape ☐Other _____

Beneath Opening Level

☐Barriers ☐Danger Tape ☐Other _____

Site Manager: _____	Safety Rep.: _____	Date Removed:_____

Project Start-Up Checklist

1. Has the Notice of Project (NOP) been filed & posted?

2. Is the Act & Regulations for Construction Projects posted?

3. Is Safety Policy, map to the hospital, emergency contact numbers, fall rescue plan, accident reporting & emergency response plan and traffic control plan posted?

4. Is a fist aid kit available and are the certificates of those qualified in first aid posted?

5. Is the WSIB Form 82 (what to do in the event of an injury) posted?

6. Do we have the required Material Safety Data Sheets (MSDS) for all controlled products on site?

7. Do we have the required storage cages for gas cylinders designated in an area away from vehicle traffic? (if applicable)

8. Do we have a sufficient number of fire extinguishers?

9. Do workers have the required training cards for fall protection, WHMIS, propane, fork truck operation, fire extinguishers, etc.?

10. Have we inspected all incoming vehicle equipment (X-lifts, cranes, forklifts etc) to ensure that they have the required maintenance logs and operators' manuals available and up-to-date?

11. Have the subcontractors submitted their required safe work procedures outlining specific safe work procedures for any areas prescribed?

12. Do we have an emergency contact list and safety policy for each subcontractor?

13. Have we established a JH&SC / Safety Representative as required?

14. Have we notified Tickner & Associates Inc. of the project location and have they conducted a start-up review?

A Note On Sound

Decibel is a logarithmic measure of the intensity of sound. The correlation between the absolute intensity of a sound wave and its decibel level is shown in the following table, along with examples of sounds at each level.

Sound levels for nonlinear (decibel) and linear (intensity) scales

decibels	**intensity**	**type of sound**
130	10^{1} (10)	artillery fire at close proximity (threshold of pain)
120	10^{0} (1)	amplified rock music; near jet engine
110	10^{-1} (1/10)	loud orchestral music, in audience
100	10^{-2} (1/100)	electric saw
90	10^{-3}	bus or truck interior
80	10^{-4}	automobile interior

70	10^{-5}	average street noise; loud telephone bell
60	10^{-6}	normal conversation; business office
50	10^{-7}	restaurant; private office
40	10^{-8}	quiet room in home
30	10^{-9}	quiet lecture hall; bedroom
20	10^{-10}	radio, television, or recording studio
10	10–11	soundproof room
0	10–12	absolute silence (threshold of hearing)

Decibels: 10 log (I/I_0) where I is the absolute intensity of the sound in question and I_0 is a reference intensity corresponding to 0 dB and representing the threshold of human hearing of a sound wave at 1,000-Hertz frequency.

Intensity: watts per square metre.

Threshold of pain is shown as 10 watts per square metre (130 dB).

Sometimes the threshold of pain is considered 1 watt per square metre (120 dB).