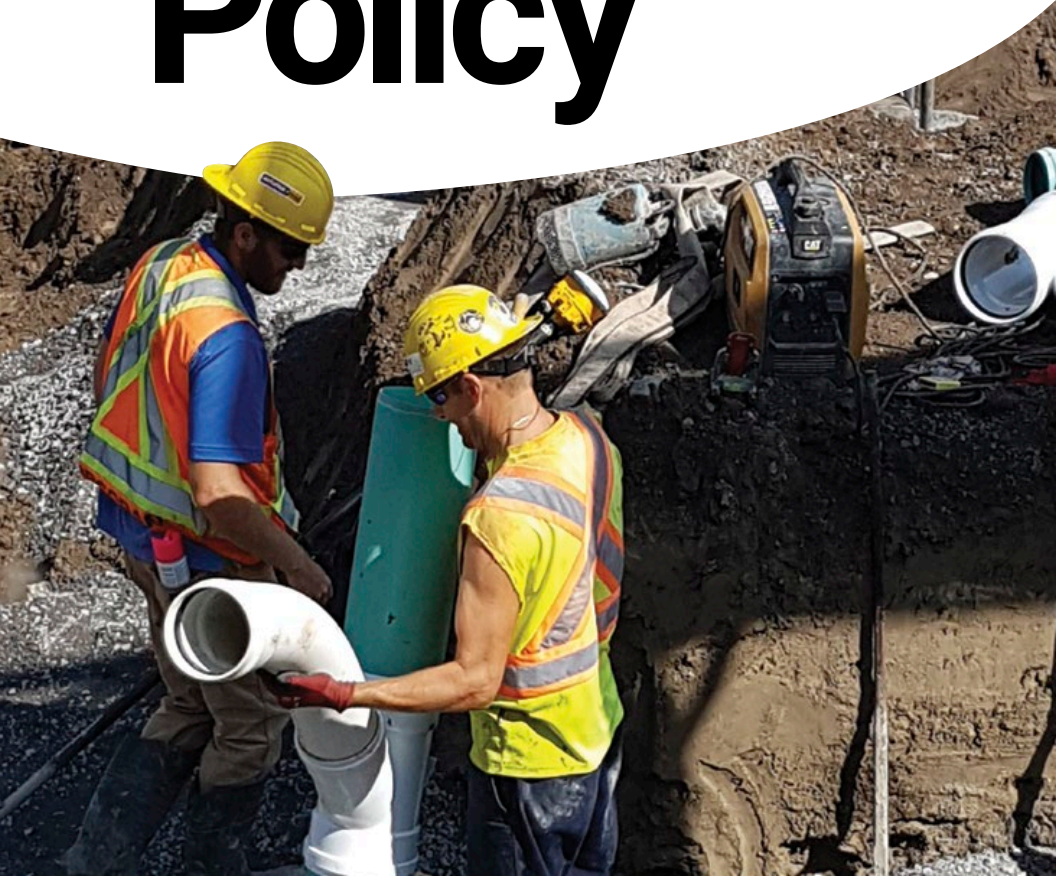




Len Corcoran Excavating Ltd.

Health & Safety Policy







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This policy manual is for internal use by all LCE staff.
Printed in 2022 with policy updates at: LENCOREX.COM.
All photos are of LCE projects and personnel, and were
taken by Paul Wash and staff.





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Health & Safety Policy Statement

Len Corcoran Excavating Ltd. (LCE) is committed to and responsible for promoting a safe and healthy work environment for employees, subcontractors, site visitors and the public. This will be accomplished through the implementation of a comprehensive Health & Safety (H&S) program that both meets and exceeds regulatory requirements. Our commitment is to give incident prevention the highest priority in every aspect on all projects, and we rely on all project personnel to make the same commitment.

LCE ensures that employees are informed of their responsibilities and are held accountable for their actions. We ensure that all subcontractors and visitors comply with H&S rules and regulatory requirements, and we provide effective controls to prevent public harm.

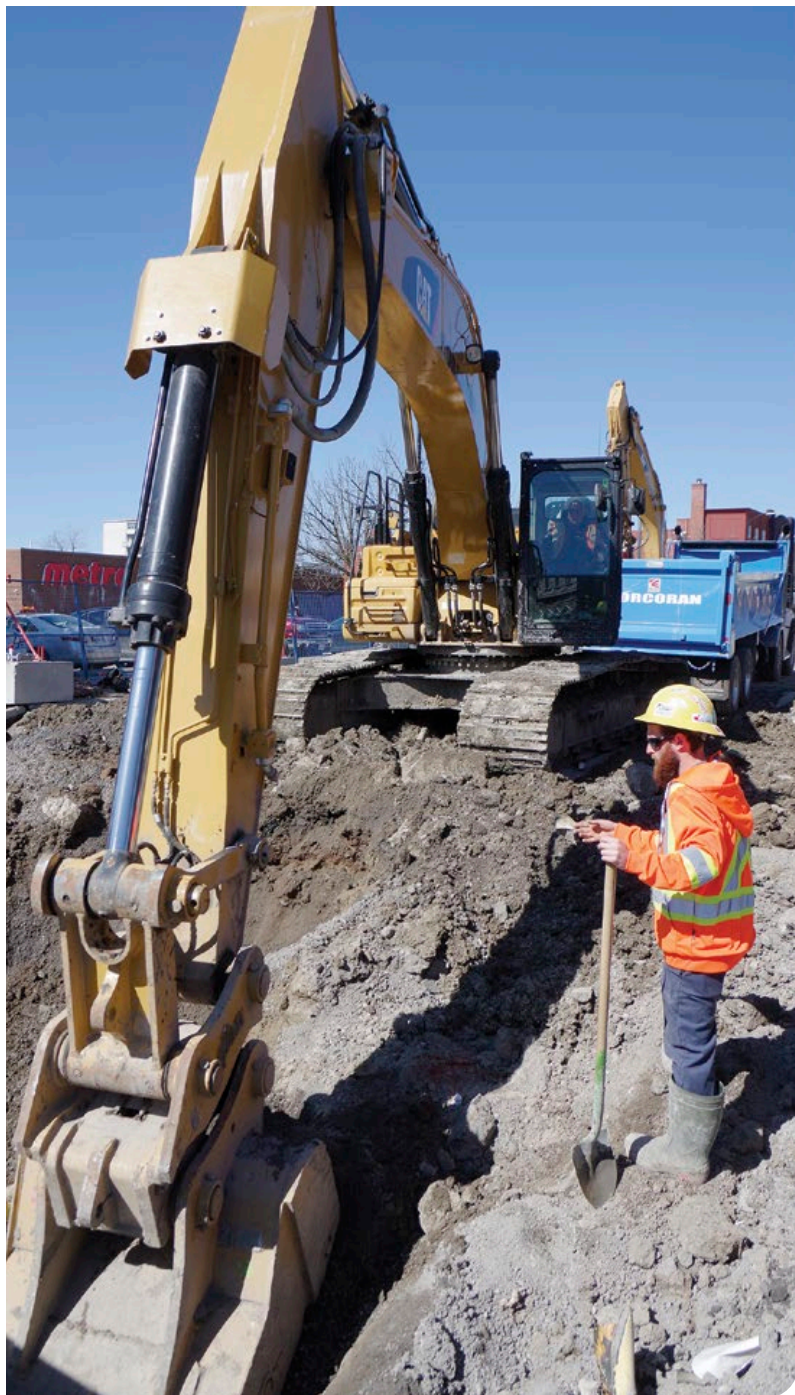
LCE's managers and supervisors set a high standard of actively promoting the LCE Health & Safety program. They are responsible and accountable for ensuring adequate instruction and training are provided prior to assigning personnel their duties. Managers and supervisors ensure that all personnel comply with applicable rules, regulatory requirements, and safe work practices. They ensure that regular safety inspections are performed and take prompt corrective action when unsafe conditions and/or practices are identified.

All project personnel conduct themselves in a manner that neither endangers the well-being of others or themselves, nor causes property damage. Personnel immediately report all work-related accidents, environmental incidents, near misses, injuries, and occupational illnesses to their supervisor. Personnel are encouraged to submit recommendations for improving H&S measures through their supervisor, at safety meetings, or through the Joint Health & Safety Committee.

To keep our work areas safe, everyone must be committed to always reducing the risk of injury. Commitment to health and safety will always form an integral part of this company from the President through to field workers. Keep safety top of mind.



Dan Corcoran,
President, LCE



Hazard Control and Inspections

Policy Statement

As the focal point of LCE's H&S Program, hazards that put employees, subcontractors, site visitors or the public at risk will be identified and controlled. It is everyone's responsibility and must be an ongoing process of continual improvement.

All LCE personnel must take an active role in the identification and control of hazards. Being alert to the possibility of hazards is necessary to eliminate them. In doing so, we attain maximum workplace safety, and prevent incidents. This is accomplished by:

1. Assessing hazards and risks during work planning.
2. Identifying appropriate hazard control methods.
3. Developing and communicating safe work procedures.
4. Inspecting to verify hazards are controlled and risks are minimized.

Assessing Hazards and Risks

Construction sites are dynamic and have inherent hazards associated with the construction process. Establishing a process for identifying, assessing, and controlling hazards is critical to reduce the risk and protect project personnel.

Hazard Assessments and Risk Assessments are two closely related activities. In some cases, the regulatory requirements call specifically for either a "risk assessment" or a "hazard assessment".

Consequence/Probability Matrix

A consequence/probability matrix is used to combine qualitative or quantitative data to prioritize or rank risks. It is commonly used as a screening tool when many risks have been identified to define which risks need more detailed analysis, which risks need treatment first, or which need to be referred to a higher level of management.

The process includes the use of a customized tool. Definitions for probability need to be as clear as possible and span the range relevant to the risks.

Probability		
A	Possible but Unlikely	Exposure to hazard very unlikely
B	Possible	Some chance of experiencing hazard
C	Probably	Hazard likely to occur
D	Very Likely	Hazard will be experienced

The consequence or type of injury likely to occur covers the range of consequence to be considered and should extend from the maximum credible consequence to the lowest consequence of concern.

Type of Injury Likely to Occur		
1	Minor Injury (small cut)	First Aid or no significant risk
2	Significant Injury	Potential for moderate injury
3	More Significant Injury	Potential for severe injury
4	Serious Injury or Possible Fatality	Likely to result in serious injury or death

To rank risks, find the consequence description that best fits the situation. Next, define the probability in which those consequences will occur. The level of risk is then located from the matrix. The level of risk defined by the matrix may be associated with a decision rule such as whether to treat or not treat the risk.

Low Risk	Manage for continuous improvement. "GO"
Medium Risk	Incorporate risk reducing controls. "CAUTION"
High Risk	Fails to meet criteria. "STOP"

LCE Probability Matrix Tool

This tool must be used by all LCE staff to assess hazards and implement controls to protect those on sites.

		Type of Injury Likely to Occur			
		Minor Injury (small cut)	Significant Injury	More Significant Injury	Serious Injury or Possible Fatality
Probability		1	2	3	4
Possible but Unlikely	A	Low Risk	Low Risk	Medium Risk	High Risk
Possible	B	Low Risk	Medium Risk	Medium Risk	High Risk
Probably	C	Medium Risk	Medium Risk	High Risk	High Risk
Very Likely	D	Medium Risk	Medium Risk	High Risk	High Risk

Specific Assessment Requirements

- Air Quality** - The indoor air quality is to be investigated and the hazards assessed when complaints are reported, occupancy in the space changes

substantially, or renovations involving significant changes to the ventilation system occur.

2. **Asbestos** - The employer must ensure that a risk assessment is conducted by a qualified person on asbestos containing material if such material is present on the project worksite.
3. **Cold Stress** - If a worker is or may be exposed to conditions which could cause hypothermia or another cold-related injury, the employer must conduct a cold stress assessment to determine areas and tasks where workers may be at risk.
4. **Confined Spaces** - Before a worker is permitted to enter a confined space, the supervisor assesses any hazards and develops safe work procedures. The hazard assessment must be completed by trained personnel.
5. **Hazardous Materials Emergencies** - The employer must ensure that an assessment is conducted of the risks posed by hazardous substances used on site that may result from accidental release, fire or other such emergency.
6. **Emergency Washing Facilities** - The employer must ensure that the selection of emergency washing facilities is based upon an assessment of the risks present in the workplace.
7. **Ergonomics** - When there are factors that may expose workers to a risk of Musculoskeletal injury (MSD) the risk to workers must be assessed.
8. **Exposure to Chemical and Biological Substances** - If a worker is or may be exposed to a harmful substance, a survey is to be conducted to assess the potential for overexposure considering all routes of exposure, including inhalation, ingestion, and skin contact.
9. **Heat Stress** - If a worker is or may be exposed to conditions which could cause heat-related disorders, the employer must conduct a heat stress assessment to determine the potential for overexposure of workers.
10. **Rescue and Evacuation** - A risk assessment is required in any workplace in which a need to rescue or evacuate workers may arise.
11. **Toxic Process Gases** - The employer must ensure that a risk assessment is conducted if toxic process gases are produced on site.
12. **Vibration** - Worker exposure to hand arm and whole body vibration must be assessed in accordance with acceptable standards of evaluation.

Hazard Assessments

1. The assessment of hazards, development of safe work methods, and communication of this information to the persons undertaking the work is required for a safe project. This will be managed by working through the following assessments:

Project Hazard Assessment

This is completed at project start-up for projects as defined under *OHSA Regulation for Construction Part 1, Reg. 4-6*. It is used as a guiding document to identify potential hazards and allocate resources. It is conducted by the LCE H&S Coordinator, and considers the following:

1. Engineered plans, utility locates, and drawings for project.

2. Construction processes and equipment/materials to be used.
3. Regional weather conditions, both normal and extreme, such as temperature extremes, high winds, tornadoes, hurricanes, flooding.
4. Access to project and mode of travel.
5. Existing overhead or underground utilities, gas, electrical, storm sewer, etc.
6. Expertise of available subcontractor services.
7. Health and hygiene issues.
8. Environmental risk such as proximity to waterways, waste disposal, etc.
9. Nearest hospital location, emergency response, ambulance, fire, and police.

Segment Hazard Assessment

This is completed at project start-up for each identifiable segment of a project and updated at regular intervals. This assessment will be made available to subcontractors to assist in the development of their project specific safety plan.

Job Hazard Assessment

A specific job hazard assessment (JHA) is required when the work is:

1. Hazardous, with a high degree of risk, and potential for serious injury.
2. Seldom performed and/or new to the crew.
3. Identified as necessary through the work process.

The job hazard assessment is completed by the site supervisor to identify hazards specific to the work to be performed. Once a review of the work activities, tools, equipment, and the work environment is done, the hazards associated with the work are identified. The steps to completing a JHA are:

1. Review the scope of work to be performed.
2. Break the task or job into individual steps.
3. Identify both actual and potential hazards for each step.
4. Develop appropriate controls and preventative action for each hazard.
5. Review the JHA with experienced workers and adjust accordingly.

Upon completion, safe work methods and appropriate hazard controls are developed and discussed with the crew at a pre-job meeting.

Pre-Task Safety Inspection (PSI)

A Pre-Task Safety Inspection (PSI) is required to be completed by a worker or group of workers prior to beginning a task or when circumstances during the completion of a task changes. This allows for the identification of the task(s) and individual hazard(s) to allow workers to implement adequate controls to protect them while completing a task. Supervisor's audit, review or inspect the PSI process on site to ensure, enforce and promote the use of the form.

Safe Work Procedures

A JHA will fulfill the need to develop written safe work procedures in most situations. However, it may be necessary to create more detailed written instructions for safe work. One example is confined spaces. A confined space hazard assessment must be completed with a written safe rescue procedure that must:

- Accurately represent the work to be performed
- Have sufficient information for the work to be performed safely
- Be available where the work is to be performed
- Be part of the safety training
- Be reviewed with the affected personnel prior to work starting

Daily Hazard Awareness Talk

These must be completed:

- At the beginning of each new work assignment/day
- When new workers are assigned to a task
- When information about the work changes (e.g., plans, unexpected characteristics are identified)
- Whenever conditions on the job site change (e.g., weather, availability of tools)

NOTE: A Daily Hazard Awareness document is used by LCE crews. Subcontractors may use other acceptable formats provided the following are covered:

- All the activities to be undertaken are identified
- All hazards that apply to the activities are identified
- The methods for eliminating or controlling hazards are discussed and understood
- The crew signs off after the briefing to acknowledge their understanding
- The crew supervisor follows-up during the day to ensure the work is being conducted in a safe manner and in accordance with the established safe procedures
- A new briefing is conducted when the work changes

Hazard Reduction and Control Strategies

The types of hazards present on construction projects include:

Physical Hazards

- Crushing forces (e.g., getting caught in machinery or equipment)
- Cuts (e.g., by saws, abrasive surfaces, etc.)
- Falls from heights (e.g., from formwork, falsework, ladders, etc.)
- Excessive noise (e.g., working near equipment and machinery)
- Impact forces (e.g., falling heavy objects)
- Heat stress (e.g., working in hot humid weather)
- Cold stress (e.g., hypothermia in near zero, wet and/or windy conditions)

- Manual materials handling (e.g., excessive bending or unassisted lifting of objects)
- Airborne particulate matter (e.g., dusts, particles, etc. that can cause eye injury)

Chemical Hazards

- Corrosives (e.g., acids and bases that can burn the skin)
- Oxidizers (e.g., compressed oxygen added to a fire)
- Skin irritants (e.g., solvents, paints, etc. that dry out the skin)
- Lung irritants (e.g., irritant dusts, welding fumes, mists, etc.)
- Toxic materials (e.g., poisons that cause illness or death, silica and asbestos)
- Reactive materials (e.g., chemicals that explode if shaken or dropped, or give off dangerous products when mixed with other materials)

Biological Hazards

- Needles and condoms (e.g., may carry an infectious disease; require special handling procedures)
- Body fluids (e.g., when treating injured workers who may have an infectious disease; requires universal precautions)

Hazard Controls

Personal protective equipment (PPE) and clothing is used as the main method for protecting workers from hazards. PPE reduces injuries; however, eliminating or controlling the hazard is the preferred action. The priority of approach that will be used for hazard control is: 1) Engineering and Purchasing Controls, 2) Administrative Controls, and 3) Personal Protective Equipment.

Engineering and Purchasing Controls

The goal is to eliminate the hazard(s) completely. Common engineering and purchasing control methods include:

- Eliminating the hazard by (re)design of the equipment or process
- Putting barriers around the hazard (e.g., guarding)
- Purchasing equipment or materials that are inherently safe
- Replacing equipment or materials with ones that have fewer hazards
- Adding safety features to existing equipment such as cut-out or limit switches
- Designing and installing general and local ventilation control
- Implementing maintenance programs for equipment and machinery
- Substituting with less hazardous materials
- Isolating workers from the hazard

Administrative Controls

When engineering and purchasing controls are not adequate or cannot be used, administrative control methods are implemented to reduce hazard exposure. Consider:

- Establishing safe methods of performance through written work procedures
- Posting signs and using other means to communicate hazards and increase awareness
- Changing work practices so that workers are located away from hazards
- Establishing rules to prevent the development of hazards
- Using correct job placement so employees are not at risk due to physical limitations
- Ensuring adequate supervision of hazardous work
- Using job rotation to reduce exposure
- Determining required skills and knowledge to deal with hazards, and training personnel so that they can effectively address the hazards

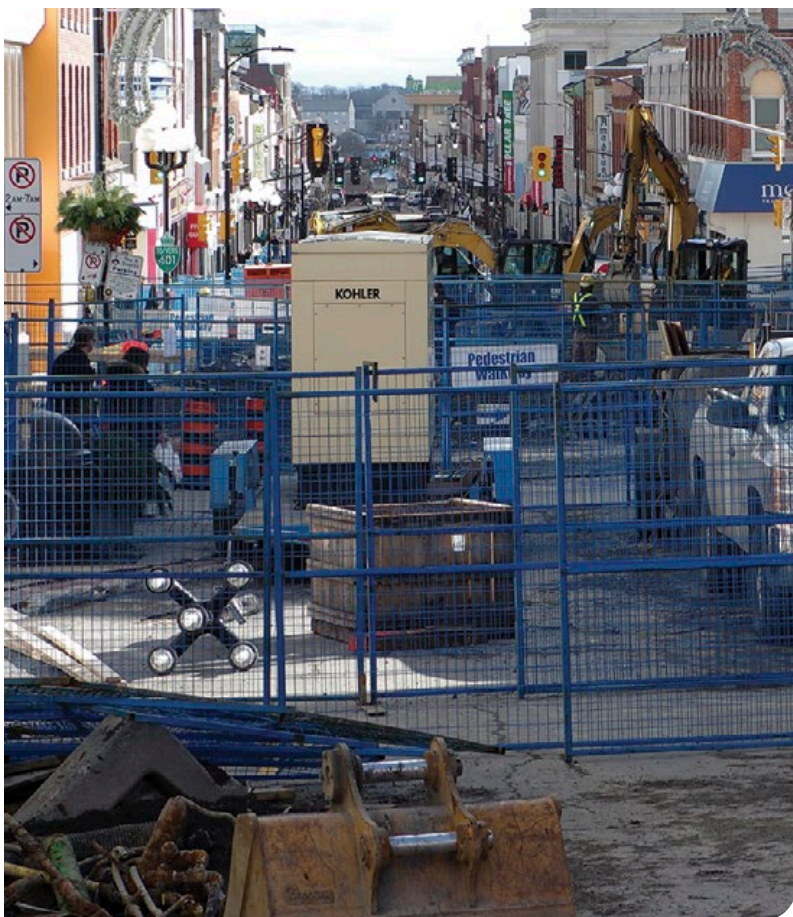
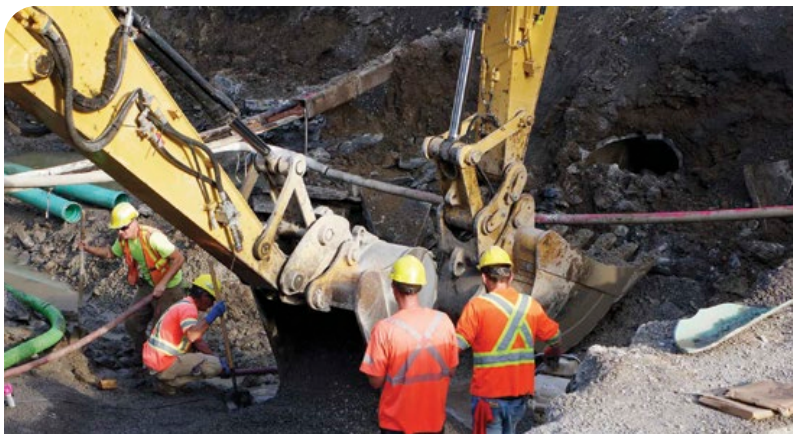
It may be necessary to develop other written procedures to ensure that work is performed in a safe and efficient manner. Written procedures:

- Identify and communicate hazard information
- Organize work processes and tasks in an orderly and efficient manner
- Communicate task procedures during training in a clear, efficient, and effective manner
- Establish the correct methods for conducting tasks and work processes, and comply with regulatory requirements

Personal Protective Equipment (PPE) and Clothing

All hazards that cannot be eliminated or the exposure controlled through engineering and purchasing, or administrative controls rely on the consistent use of the right type of protective equipment and clothing for:

- Cuts, abrasions and burns: use gloves, coveralls, power saw pants etc.
- Foot injuries: wear protective footwear, e.g., safety toed boots
- Falls: use fall-protection devices, e.g., harness and lifeline
- Hearing loss: wear earmuffs and/or plugs
- Respiratory ailments: use respirators
- Skin irritations and disease: use barrier creams, gloves, coveralls, etc.
- Leg/knee contact stress: wear protective knee pads
- Eye and face injuries: use protective eyewear, e.g., approved safety glasses, goggles, face shields, etc.



Safe Work Practices

Safe Work Practices (SWP) describe how to perform tasks safely and efficiently from start to finish without necessarily needing step-by-step instructions.

OHSA Responsibilities

Occupational Health and Safety Act and Regulations for Construction Projects (OHSA) is Ontario's cornerstone legislation for workplace health and safety. Enforced by the Ministry of Labour, OHSA's overarching role is to ensure protection for workers from workplace hazards.

Employers

It is the responsibility of the Employer to follow duties set out in *OHSA Regulations for Construction, Act Part III Sec. 23-26* to take reasonable and practical measures to have site equipment and materials made available and maintained in accordance with the applicable regulations and manufacturer's specifications.

Supervisor

It is the responsibility of the Supervisor to follow duties set out in *OHSA Regulations for Construction, Act Part III Sec. 27* to take reasonable and practical measures to have site equipment serviced, maintained, and operated by qualified personnel. The Supervisor is responsible to ensure workers have received proper instruction and training in the safe use of related equipment and personal protective equipment prior to performing this type of activity.

Worker

It is the responsibility of the Worker(s) to follow duties set out in *OHSA Regulations for Construction, Act Part III Sec. 28* to adhere to the safety requirements regarding this specific task. The Worker will advise the Supervisor of any damage, deviation in operation, excessive wear, etc., prior to using equipment or related materials.

Operators Manual

Read and understand all manuals and documents created and provided by the manufacturer with information regarding operation and instruction of tools, equipment, devices. If you do not know how to operate a piece of equipment obtain advice from your Supervisor.

Access Ramp Installation

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.

Safe Work Practice

1. Where LCE is working to install access ramps to protect workers and or the public, an adequate reference to use is AODA Standards.
2. Install access ramps where wheelchairs, access vehicles, strollers and rolling loads are required to be moved over two different elevations.
3. Install access ramps or a temporary stair where the heights of two different floors cause a hazard to workers or the public having to cross or walk from one higher or lower floor to another.
4. Access ramps must be a minimum of 150cm (1.5m) wide and have a form of foot traction to prevent slips, trips, or falls.
5. Ramps must not exceed a 20% slope.
6. Where access ramps cross over an excavation greater than four feet in depth, the ramp must contain guardrails on both sides to prevent falls.
7. Access ramps must be constructed of materials capable of supporting the intended loads.

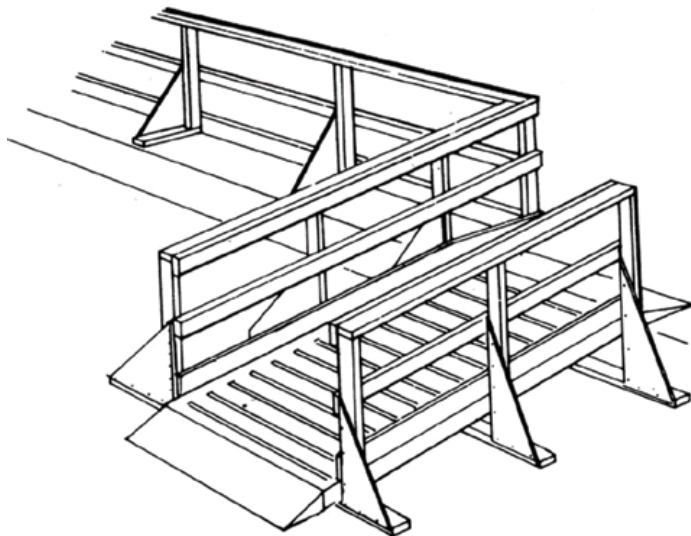


Illustration Credit: IHSA Construction Health and Safety manual.

Backfilling

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. Traffic control devices (paddle, cones, signage) where needed.
3. Suitable tools and equipment where required, (e.g. shovel and rake).

Safe Work Practice

1. All personnel directly associated with this activity are required to wear a high-visibility vest or apparel.
2. Before commencing with this type of operation, all personnel involved must be made aware of the dangers associated with backfilling and notify others on site to remain clear during the operations. A daily hazard discussion, or subcontractor equivalent, may be completed and signed by all involved in the operation.
3. Trained traffic control persons must direct all moving equipment on all sites where traffic control is required.
4. Designated spotters are required to guide any dump trucks to a specific backfill location.
5. Lower-level spotters/swampers must communicate to equipment operators and workers to remain clear of the dumping area while the dumping procedure is taking place. An “all clear” sign should be forwarded to the above spotter once it is safe to proceed.
6. Dump truck operators must only begin to dump after receiving an all clear from the above spotter.
7. No workers or equipment should approach the dumping area while the material is being dumped.

Compressed Gases – General Handling and Storage

Applies to fire extinguishers, propane, oxygen, acetylene, and self-contained breathing apparatus. Please refer to any product Safety Data Sheet (SDS) for further information/instruction.

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. Crescent wrench and / or other tools required.
3. Trolley cart and / or equipment required.

Safe Work Practice

1. The following points apply when storing compressed gases cylinders:
 - a) Cylinders shall not be placed where they might become part of an electric circuit or within 1.5m (5ft) of an electrical outlet.
 - b) Cylinders shall not be placed near a source of heat (gases expand and over pressure the cylinder).
 - c) Cylinders and any other container of substances under pressure must be protected from excessive heat, sparks, molten metal, electric current, flames, physical damage and should be stored in dry locations to prevent corrosion.
 - d) Cylinders shall not be placed in areas where the corrosive nature of the chemicals may deteriorate the cylinder walls.
 - e) All cylinders shall be clearly identified as to their contents.
 - f) All cylinders shall be stored in an upright position and secured in such a manner as to prevent accidental falling or upset.
 - g) Any gas cylinder not anticipated to be used within 24 hours is considered in storage and must be removed from a trolley or cart.
 - h) All cylinders that are not in use will have their protective caps in place and securely fastened.
 - i) Propane cylinders in use must not be located near an exit, stairway or an area intended for safe evacuation.
 - j) Gloves and a long-sleeved shirt must always be worn when connecting and disconnecting cylinders.
 - k) **No smoking** when connecting, disconnecting, or refilling cylinders.
 - l) The storage area is to be fenced or secured in some manner to protect the cylinders from being damaged.
 - m) Cylinders and other containers of pressurized substances may only be modified or repaired in accordance with the manufacturer's instructions.
 - n) Cylinders and other containers of pressurized substances, other than hand-held aerosol spray cans, must be equipped with appropriate pressure relief mechanisms.
 - o) Compressed gas containers that require pressure testing must bear a valid, current indication of testing.

- p) Compressed gas cylinders must not be hoisted by slings or magnets, dropped, subjected to impact, handled by the regulator, or used as a roller or work support.
 - q) Compressed gas cylinders must be secured (strapped or chained) to prevent falling or rolling during storage, transportation or use and, where practical, kept in an upright position.
 - r) Cylinders must be prevented from bumping together during transport and must be transported with protective caps in place.
 - s) Empty cylinders and cylinders not in use must have the valve closed. When opening a cylinder valve avoid standing in front of the regulator.
 - t) Compressed gas cylinders must be marked to indicate their pressure rating and contents.
 - u) Empty cylinders must have the pressure regulator removed, the protecting cap put on (unless integral guards are provided) and be marked “empty” or “MT”.
 - v) Prior to filling, thoroughly inspect the cylinder for dents, damaged foot rings or protective collars, corroded areas, leaks, or any other conditions that indicate possible weakness. If any are found, remove from service.
 - w) Cylinders must not be filled beyond their marked capacity.
2. Buildings for permanent storage of cylinders shall be:
- a) Constructed of non-combustible material with a fire rating of at least 30 minutes.
 - b) Ventilated with openings at floor level and the highest point in building.
 - c) Openings have a minimum total area of one square foot per thousand cubic feet of room volume. (0.09m² per 93m³)
 - d) Located at least 6.1m from flammable and combustible liquids/materials, sources of ignition or heat sources exceeding 60°C.
 - e) Provided with clearly identified cylinder racks to secure cylinders.
 - f) Identified with signs “FLAMMABLE GAS, NO OPEN FLAMES” whenever any flammable gases are likely to be stored.
3. Oxygen cylinders in storage will 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.
4. When handling or transporting compressed gas cylinders:
- a) Do not roll or lift by the valve or valve-cap; a suitable cradle or other device must be used.
 - b) Whether full or empty they are transported in an upright position and secured so they cannot fall / be upset.
 - c) They shall not be dropped, jarred, or exposed to temperature extremes.
 - d) Cylinders not having fixed hand wheels will have keys, handles, or nonadjustable wrenches on the valve stems while the cylinders are in service.

- e) Cylinders are not to be hoisted with the use of a sling. Do not hook onto the protective collar around the top of the cylinder. Utilize a hoisting cradle.
5. When compressed gas cylinders are in use:
- a) Cylinders will be properly secured and always used in a vertical position.
 - b) Cylinders will be protected from sparks, flames, and contact with energized electrical equipment.
 - c) The recessed top of cylinders must not be used as a place for tools.
 - d) All pressure regulator connections shall be of the approved type and shall be tightly secured to threaded cylinder outlet. Connections shall be checked for leaks.
6. When using an oxygen cylinder:
- a) They must not come in contact with grease or oil, including that from hands, gloves, or clothing.
 - b) Oxygen must never be used as a substitute for compressed air.
 - c) When in use, the valve should be opened fully to prevent leakage around the valve stem.
7. When using an acetylene cylinder:
- a) Acetylene cylinders stored in a horizontal position must stand in a vertical position for at least one hour prior to use.
 - b) An acetylene cylinder valve will not be opened more than one and one half turns of the spindle and preferably no more than three fourths of a turn.
 - c) Workers will not use acetylene in a free state at pressures higher than 15 psi.
8. When using propane cylinders and bullets:
- a) All propane used must be of the stanchied variety, personnel will not use a non-stanchied product.
 - b) Are to be placed on a firm solid base to prevent tipping.
 - c) Jersey barricades, wooden barricades or barricade tape will be used where mobile equipment may encounter a cylinder or a bullet.
 - d) Cylinders and bullets will not be filled over 80%.
 - e) If you smell propane and suspect a leak you should shut off the fuel supply and ventilate the area.
 - f) Propane has a boiling point of -42°C and will flash immediately into vapour upon contact with the atmosphere unless the atmospheric air temperature is colder than -43°C.
9. If you have a propane leak with fire, then:
- a) Use water to cool exposed propane cylinders.
 - b) Do not extinguish fire if the source of the propane cannot be shut-off.
 - c) Evacuate the area if sufficient water is not available.
10. The expansion ratio of liquid propane to vapour is 1:270.
11. Cylinders must not be covered with a tarp as a build-up of propane may develop under the tarp.

12. No other combustible gas or flammable liquid is to be stored within 6m of the propane cylinders.
13. “No Smoking” signs must be prominently displayed.
14. When using cylinders in a manifold system, the system should be properly configured and operated:
 - a) The area where the system is located should be level, even, and free of obstructions and defects.
 - b) The system should be designed to diminish pinch points and to allow easy access.
 - c) The system should be ergonomically designed for all users.
 - d) There should be hooks or shelves for storing cylinder caps and wrenches.
 - e) There should be adequate space between cylinders to allow for the adjustment of the hose or tubing connections.
 - f) Prior to connecting a component to the system, it should be visually inspected for defects. This includes but is not limited to pigtails, flex hoses and fittings.
15. Leaking cylinders must not be used. It must be taken outdoors away from sources of ignition.
16. A flame must never be used to detect gas leaks; leak testing is to be done with an approved solution. This may include soap and water, snoop, etc.
17. Before the regulator is removed, the valve will be closed, and all pressure released from the regulator.
18. All pressure regulator connections shall be of the approved type and shall be tightly secured to threaded cylinder outlet. Connections shall be checked for leaks.
19. Workers will never force connections, which do not fit nor will they tamper with the safety relief devices of cylinder valves.

Compressed Air and Compressors

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. Cable tiebacks.

Safe Work Practice

1. Ensure equipment is safe for use.
 - a) All pipes, hoses, and fittings must have a rating of the maximum pressure of the compressor. Compressed air pipelines should be identified (kPa) as to maximum working pressure.
 - b) Air supply shutoff valves should be located (as near as possible) at the point-of-operation.
 - c) Air hoses should be kept free of grease and oil to reduce the possibility of deterioration.
 - d) Hoses should not be strung across floors or aisles where they are liable to cause personnel to trip and fall. When possible, air supply hoses should be suspended overhead, or otherwise located to afford efficient access and protection against damage.
 - e) Hoses are to be checked regularly for cuts or bulges.
 - f) Hose to fitting connections are to be made using proprietary crimped fittings and not screw type adjustable clamps.
 - g) Hose ends for any air hose greater than 12.7mm inside diameter (ID) must be secured with tiebacks to prevent whipping if an accidental cut or break occurs.
 - h) Pneumatic impact tools, such as riveting guns, should never be pointed at a person.
 - i) Before a pneumatic tool is disconnected (unless it has quick-disconnect plugs), the air supply must be turned off at the control valve and the tool bled.
 - j) Compressed air must not be used under any circumstances to clean dirt and dust from clothing or off a person's skin. Air under pressure can enter the blood stream through the skin and cause death. Shop air used for cleaning should be regulated to 15psi unless equipped with diffuser nozzles lessor pressure.
 - k) Goggles, face shields or other eye protection must be worn by personnel using compressed air for cleaning equipment. Ensure the other workers are away from the operation and fallout area.
 - l) Static electricity can be generated using pneumatic tools. This type of equipment must be grounded or bonded if it is used where fuel, flammable vapours or explosive atmospheres are present.
 - m) Compressor air is not used for in-line breathing apparatus unless the equipment provides for filtering/purifying.

Air receivers

- a) The maximum allowable working pressures of air receivers should never be exceeded except when being tested. Only hydrostatically tested and approved tanks shall be used as air receivers.
- b) Air tanks and receivers should be equipped with inspection openings, and tanks over 36in in diameter should have a manhole. Pipeline openings should be provided on tanks with volumes of less than five cubic feet.
- c) The intake and exhaust pipes of small tanks, like those used in garages, should be made removable for interior inspections.
- d) No tank or receiver should be altered or modified by unauthorized persons.
- e) Air receivers should be fitted with a drain cock that is located at the bottom of the receiver.
- f) Receivers should be drained frequently to prevent accumulation of liquid inside the unit. Receivers having automatic drain systems are exempt from this requirement.
- g) Air tanks should be located so that the entire outside surfaces can be easily inspected. Air tanks should not be buried or placed where they cannot be seen for frequent inspection.
- h) Each air receiver shall be equipped with at least one pressure gauge and a safety valve of the proper design.
- i) A safety (spring loaded) release valve shall be installed to prevent the receiver from exceeding the maximum allowable working pressure.
- j) Only qualified personnel should be permitted to repair air tanks, and all work must be done according to established safety standards.

Air Distribution Lines

- a) Air lines should be made of high-quality materials, fitted with secure connections.
- b) Only standard fittings should be used on air lines.
- c) Operators should avoid bending or kinking air hoses.
- d) Air hoses should not be placed where they will create tripping hazards.
- e) Hoses should be checked to make sure they are properly connected to pipe outlets before use.
- f) Air lines should be inspected frequently for defects, and any defective equipment repaired or replaced immediately.
- g) Compressed air lines should be identified as to maximum working pressures (kPa), by tagging outlets.

Pressure Regulation Devices

- a) Only qualified personnel should be allowed to repair or adjust pressure regulating equipment.
- b) Valves, gauges, and other regulating devices should be installed on compressor equipment in such a way that cannot be made inoperative.
- c) Air tank safety valves should be set no less than 15kPa or 10% (whichever is greater) above the operating pressure of the compressor but never higher than the maximum allowable working pressure of the air receiver.

- d) Air lines between the compressor and receiver should usually not be equipped with stop valves. Where stop valves are necessary and authorized, safety valves should be installed between the stop valves and the compressor.
- e) The safety valves should be set to blow at pressures slightly above those necessary to pop the receiver safety valves.
- f) Blow-off valves should be located on the equipment and shielded so sudden blow-offs will not cause personnel injuries or equipment damage.
- g) Cast iron seat or disk safety valves should be ASME approved and stamped for intended service application.
- h) If the design of a safety or a relief valve is such that liquid can collect on the discharge side of the disk, the valve should be equipped with a drain at the lowest point where liquid can collect.
- i) Safety valves exposed to freezing temperatures should be located so water cannot collect in the valves. Frozen valves must be thawed and drained before operating the compressor.

Air Compressor Operation

- a) Air compressor equipment should be operated only by authorized and trained personnel.
- b) The air intake should be from an outside, fresh air source. Screens or filters can be used to clean the air.
- c) Air compressors should never be operated at speeds faster than the manufacturer's recommendation.
- d) Equipment should not become overheated.
- e) Moving parts, such as compressor flywheels, pulleys, and belts that could be hazardous should be effectively guarded.
- f) Compressors should be equipped with pressure relief valves and pressure gauges.

Compressed Air Equipment Maintenance

- a) Only authorized and trained personnel should service and maintain air compressor equipment.
- b) Exposed, non-current carrying, metal parts of compressor should be effectively grounded.
- c) Low flash point lubricants should not be used on compressors because of its high operating temperatures that could cause a fire or explosion.
- d) Equipment should not be over lubricated.
- e) Gasoline or diesel fuel powered compressors shall not be used indoors.
- f) Equipment placed outside but near buildings should have the exhausts directed away from doors, windows, and fresh air intakes.
- g) Soapy water or lye solutions can be used to clean compressor parts of carbon deposits, but kerosene or other flammable substances should not be used. Frequent cleaning is necessary to keep compressors in good working condition.
- h) The air systems should be completely purged after each cleaning.

- i) During maintenance work, the switches of electrically operated compressors should be locked open and tagged to prevent accidental starting.
- j) Portable electric compressors should be disconnected from the power supply before performing maintenance.

Compressed Gases – Propane

Properties of Propane

1. Propane, especially liquid propane, is cold to the touch. It can cause severe frostbite if it comes in contact with the skin. Use the appropriate personal protective equipment and Safe Work Practice when handling.
2. Propane will saturate clothing and remain trapped for extended periods of time. If clothing becomes saturated, immediately remove the contaminated clothing and take the clothing outside to air out. DO NOT enter a building with propane saturated clothing. Ignition sources such as furnaces, smoking, stoves, heaters may exist.
3. Propane is heavier than air and will collect in low lying areas, such as basements, sewers, septic tanks, etc. Always test for propane prior to entering these areas.
4. Propane requires oxygen to complete the combustion process. Ensure there is an adequate amount of combustion and excess air when using any propane fired equipment or appliance.
5. The combustion process will deplete oxygen in the atmosphere; ensure that steps are taken to bring in fresh replacement air.
6. Propane cylinders should not be in stairwells or hallways. Leaking cylinders or a resulting fire can block exits and prevent escape.
7. Propane cylinders should be stored 25ft from the property line.
8. Empty cylinders and full cylinders should not be stored together.
9. When storing cylinders ensure that the cylinders are secured in an upright position and identify if they are full or empty.
10. Only cylinders being used should be inside of a building and monitored.
11. Keep propane cylinders away from heat sources. Propane will expand as heat is applied causing either the plug to let go or the cylinder to rupture. This may result in an uncontrolled gas release producing a fire or explosion.

Safe Handling of Cylinders

1. Propane cylinders will be transported, stored, and used in an upright position.
2. Liquid propane must never be allowed to meet the cylinder relief valve. This can cause large volumes of gas to be released. Should this occur with a construction heater, the result can be a serious over burn (causing flames to extend many feet beyond the burner tip).
3. When transporting a propane cylinder, fasten cylinders in an upright position using appropriate securing devices (e.g., rope, straps, etc.).
4. Transporting propane cylinders must be done so within compliance with the *Transportation of Dangerous Goods Act./D.O.T.* regulations.
5. Never transport a propane cylinder in the trunk of an automobile, cab of a vehicle or inside of a closed van.
6. Use a cart to move the propane cylinder. Never roll a cylinder.
7. Use a hoisting cradle to move cylinders from one level to another.
8. Never use a sling to move a cylinder.
9. Never hook to the protective collar of the propane cylinder.

Propane Construction Heaters

1. A competent worker must complete all connections.
2. All components (i.e., burner, controls, hoses, and regulators) must be inspected for damage/defects prior to use. If damaged or defective components are found, they must be replaced or repaired by licensed personnel.
3. Ensure that all connecting components are free of grease, oil, and other debris prior to completing connections.
4. Do not use adjustable wrenches to tighten connections, use the appropriate fitting wrenches.
5. Propane cylinders should be between 3m-7.6m from a heater.
6. Never place the propane cylinder near the flame end of the heater, nor any other heat source.
7. Have a properly sized fire extinguisher on hand, prior to lighting the heater.
8. Leak test all connections once cylinder valve has been opened (use soapy water, gas monitor, etc.). If a leak is detected, immediately close cylinder valve.
9. Open propane cylinder valves slowly to prevent slugging (liquid entering lines and components). If slugging occurs close the propane cylinder valve, wait for a few minutes for the check valve to open and then reopen the cylinder valve.
10. The propane cylinder and heater must always be in the same room so that the cylinder valve can be shut down quickly if trouble arises.
11. Keep heaters away from flammable or combustible materials, as the heat from a burner produces heat far beyond the tip of the flame.
12. If a pressure drop occurs or a reduced flame efficiency, check to see if the cylinder is low on fuel or if the gas is being drawn out too quickly. If it is a case of low fuel replace with a new cylinder. If it is a case of insufficient gas, consider using a manifold system. DO NOT apply heat to the cylinder to increase the flow of gas.
13. Where possible, use only single cylinders for heaters. However, should a manifold system be required never use more than three 100-pound cylinders.
14. If other heaters with manifold cylinders are to be used in the same area, the cylinders must be at least 50ft away or be separated by a firewall.

Propane Torch

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. Be sure you have a fire extinguisher (type ABC) on the job and ensure it's easily accessible to each worker.

Safe Work Practice

1. Do not use torches on or near combustible materials.
2. Inspect equipment daily.
3. Secure cylinders in a level, upright position. Do not invert or lay cylinders on their sides.
4. Use only vapour equipment on cylinders equipped with vapour withdrawal valves. Use only liquid equipment on cylinders designed for liquid withdrawal. Do not invert vapour cylinders to dispense liquid.
5. Do not apply flame to cylinders to increase pressure.
6. Do not operate torches or any equipment if the odour of LPG (butane/propane) is evident. Immediately shut off all valves and, using soapy water, check all equipment for leaks.
7. LPG (butane/propane) is heavier than air which causes it to accumulate in low areas. Check low areas for accumulation and ventilate. Be certain all work areas are well ventilated.
8. Keep torches, open flame, and sources of ignition away from cylinders, regulators, and hose.
9. Cylinder valves must be protected. Do not hoist cylinder by the valve.
10. Gloves should be worn at all times. Long sleeves, long pants, and boots are recommended.
11. Never leave a lighted torch unattended.
12. When extinguishing a torch, shut off cylinder valve and allow gas to burn out of lines.
13. Be certain to comply with all safety guidelines and local ordinances regarding the use of an open flame.
14. Please contact your local LP Gas dealer or fire officials if you have questions regarding proper operating Safe Work Practice and safety guidelines.

Electrical Safety – General Application

This Safe Work Practice applies to persons working with electricity or on “energized equipment” below 750 volts and not for more advanced electrical technology. No employee shall perform work on any electrical equipment, as defined in the Electrical Safety Act and/or Regulations unless certified under the provisions of that Act.

Equipment Required

Personal protective equipment suitable and necessary for the hazards of the work being performed.

1. Cotton or wool fabrics are recommended for clothing worn by personnel working with electricity.

Safe Work Practice

1. All electrical equipment acquired or used within our organization shall be approved in accordance with the provisions of Part 1 of the *Canadian Electrical Code (Standard C22.1-1982)*, and certified for use by the Canadian Standards Association (CSA), or other acceptable testing agency. UL (Underwriters Laboratories).
2. All temporary wiring must be installed and maintained in accordance with the applicable codes.
3. Flammable material shall not be stored or placed in proximity to electrical equipment.
4. All electrical distribution, switches, and controls shall be clearly marked to indicate the machinery or equipment which they serve.
5. Metal ladders, or wire-reinforced wooden ladders, shall not be used when working around electrical sources.
6. The requirements for lock-out of energized electrical equipment shall be followed whenever such equipment is to be worked on or around depending on voltage and hazard.
7. Only electricians or authorized employees shall perform electrical repair or maintenance on electrical tools, machinery, or equipment, or replace electrical fuses.
8. Electrical equipment shall be de-energized before work is done on such equipment. Switches shall be locked out and other measures taken which shall prevent the equipment from being energized without the knowledge of the individuals working on it. Such locks and preventative devices shall be removed only by the persons who installed them or by authorized personnel. The Lockout procedure is available from your supervisor.
9. All electrical tools and equipment must be grounded or double insulated.
10. Extension cords should only be used for temporary service and should be always maintained in good condition. They should be routinely inspected for frayed, torn, or split cords and damaged plugs or connectors. All damaged cords must be repaired or replaced immediately.
11. Place temporary electrical cords so as to minimize tripping hazards.
12. Never replace a blown fuse with a larger capacity fuse.
13. Cover plates should be in place on all switches and outlets.

14. Jacketed electrical cords should be used with portable electric tools and with extension lamps in boilers, tanks, or other grounded enclosures.
15. Energized wiring in junction boxes, circuit breaker panels, etc. must be protected from accidental contact whenever it is left unattended.
16. Damaged electrical cords will be removed from service.
17. Non-conductive material should be used to form the handles on portable hand lamps and there should be no metallic connectors between the lamp guard and the socket shell.
18. Always make certain that plug connector configurations match as they are intentionally designed that way to prevent hazardous, or even fatal, electrical connections.
19. Avoid using electrical tools and equipment in or around damp or wet areas.
20. Fire extinguishers or type “BC” (carbon dioxide) or “ABC” (multipurpose dry chemical) should be readily available in the event of an electrical fire. Type “A” (pressurized water) shall not be used on electrical fires. Halon type extinguishers are acceptable but are no longer manufactured.
21. Synthetic fiber type clothing can be readily ignited and melted by an electrical flash. Flame retardant garments made of either cotton or wool fabrics are recommended for employees working with electricity.
22. Defective electrical equipment must be reported to your supervisor immediately and removed from service.
23. Do not work on any circuits when standing on metal or in water.
24. Temporary lighting lamps that are broken or burned out must be replaced as soon as possible. Do not remove bulbs from other areas to provide lighting.

Lockout

1. A Site-Specific Lockout Procedure will be developed for supervisors and workers working on live electrical and mechanical systems.
2. Workers must review the lockout procedures prior to working on electrical systems or mechanical systems (i.e., pressurized systems) where lockout is required and abide strictly with these practices and procedures developed for this project. Supervisors and team leads will provide this training as needed.
3. A formal system of lockout must be implemented and include personal locks and tags for each worker affected by the lockout protocols.
4. Supervisors, team leads or workers not abiding by the lockout program will be disciplined accordingly which may lead to immediate termination of employment dependent upon the circumstances and discretion of the General Superintendent and/or Construction Manager.

Electrical Safety – GFCI Protection

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. Continuity and polarity test meter.
3. Portable electrical equipment: Includes extension cords and power tools that are used on 120-volt systems at 20 amps or less and are not hard-wired to a permanent electrical system.
4. Ground Fault Circuit Interrupter (GFCI): Is a device that detects current leakage in an electrical circuit and trips the circuit when the leakage current is greater than 5mA. When used outdoors or in a wet or damp location, portable electrical equipment, including temporary lighting and chop saws, must be protected by an approved Class A ground fault circuit interrupter. The interrupter must be installed at the receptacle or on the circuit at the panel.

Three types of GFCIs can be used:

- a) A GFCI receptacle can be used in place of a standard receptacle.
- b) A portable GFCI when plugged into a standard receptacle converts it into a GFCI receptacle.
- c) A GFCI circuit breaker combines leakage current detection with the function of a circuit breaker.

Safe Work Practice

1. The following will be used to prevent nuisance tripping of GFCI:
 - a) Mount GFCI receptacles and circuit breakers in a dry locations. If this is not possible, use portable GFCI that are rated as “rainproof”.
 - b) Connect only one power tool to each GFCI.
 - c) Cover power tools to protect them from the rain when they are not in use.
 - d) Store power tools and extension cords in a dry location.
 - e) Maintain extension cords and power tools in good condition.
 - f) Use extension cords that are rated for hard usage or better.
 - g) Do not use extension cords longer than 45m (150ft).
2. Extension cords and power tools will be tested when first put into service, following repairs, and every three months.
3. Extension cords and power tools will be checked daily for damage by the persons using them. Any damage found must be repaired before the cord or tool is used.

Excavations/Trenching

Prior to excavation you must ensure that there are no Underground Utilities in the area. (Refer to **Safe Job Procedure: Locating Underground Utilities**).

The base document for this Safe Work Practice is the *OHSA Regulations for Construction, Part III Reg 222 - 242* as it provides LCE with a defensible reason why we do what we do to ensure adequate sloping for varied soil conditions. Contact a Geo-Technical Engineer if you have any doubt about the excavation work you are performing.

Note: Excavations deeper than 20ft (6m) must be done in accordance with written instructions of a qualified registered professional engineer or geoscientist.

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. Equipment and materials required to ensure excavations/trenches are secured against collapse.

Safe Work Practice

1. Utilities must be located prior to starting an excavation in any area likely to have underground utility services (e.g., gas, steam, water, sewer or electrical lines). The location and alignment of these services are to be marked in the work area. (Refer to **Safe Job Procedure: Locating Underground Utilities**).
2. Underground hazards, such as utilities or similar hazards must be assessed and exposed prior to excavation of the ground with powered equipment. Refer to locates, drawings, as-built drawings, surveys, etc., or call the proper authority to have these services located.
3. All work shall be done with hand tools when working within 1m to the proximity of underground services. Probing with sharp, or pointed tools, to determine the location of underground services, such as gas or electrical, is not permitted.
4. Adequate signage, barricades and/or road closures must be put into place to ensure the safety of crews, motorists, and the public for excavation projects on or adjacent to roadways or alleys.
5. No worker shall enter any excavation (including trenches) greater than 1.22m in depth unless the trench or excavation has been made safe through sloping, shoring, or engineering suitable for the soil type, length and depth of the excavation.
6. A ladder or stair scaffold shall be provided in the immediate area where workers are employed in excavations greater than 1.22m in depth. Ladders must extend from the bottom of the excavation to at least 1m above the ground level.
7. Trees, poles, or any other objects, which may be undermined, or made unstable by the excavation process must be removed, supported, or otherwise protected from the excavation process.

8. Crews are reminded to always “LOOK UP” at excavation sites to ensure that equipment related to the excavation site is not near overhead power lines or other hazards. If power line is present, refer to LCE **Safe Job Procedure, Overhead Powerlines**.
9. A clear area, of at least one metre in width, must be maintained on the sides of the excavation. Excavated material must be kept back a minimum distance of 1m from the edge of the trench and 1m from any other excavation.
10. Heavy equipment (e.g., excavators, backhoes, dump trucks, vac-trucks, etc.) must not be placed close to the edge of an excavation unless additional bracing has been installed or were permitted as per a professional engineer’s certification.
11. In all excavations, the side walls shall be “trimmed” or “scaled” to remove any loose materials, rocks, or other objects, which might endanger workers.
12. In pits, quarries, and similar excavations the height of unstable faces must not exceed the maximum safe reach of the excavating equipment being used.
13. Determining excavation safety includes examining the top of excavations for soil cracks, water saturation, vibration, weather, previous excavations and the soil type.
14. **HARMFUL ATMOSPHERES.** Prior to entering any excavation, be alert to the possibility that the atmosphere in the excavation may be hazardous due to large amounts of dust, vapours, or gases, or a reduction of oxygen in the excavation. Harmful atmospheres (methane, H₂S) should be expected on a project for any location at or near:
 - bog, swamp or marsh, including cranberry fields
 - landfill or contaminated sites
 - working in a live sewer
15. If a harmful atmosphere may exist in an excavation, do not enter, or immediately exit, the excavation and contact the supervisor or H&S Coordinator.
16. Excavation work adjacent to roadways, or other locations where vehicle traffic may be a factor, a determination as to whether the traffic may constitute a vibration hazard must be made. If it is determined that vibration could be a factor, the excavation must be reviewed and certified by a professional engineer.
17. Water must not be allowed to accumulate in excavations where it may affect the excavation’s stability or endanger workers.
18. Frozen soil cannot be used as reasons for heavier loading or reduced shoring.
19. Trench support systems must be inspected daily and maintained in fully effective condition.
20. Walkways across excavations must be at least 1.5m wide, and if crossing an excavation over 1.2m deep, be equipped with guardrails. Walkways must be secured to prevent dislodgement.
21. Powered machines excavating banks will be positioned so that the operator is on the side away from the bank and with the boom positioned closest to the side of the excavation.

22. Determining Soil Type:

- a) It is recommended that at least one visual and at least one manual analysis be completed to determine soil type. If it is determined that the soil is a layered with different soil types, it should be classified in accordance with its weakest layer. However, each layer may be classified individually where a more stable layer lies under a less stable layer.
- b) **Caution:** Conditions may change after the initial determination, e.g., saturation of the soil after a heavy rain. In these situations, a reassessment must be completed to ensure the soil type is correctly identified and the corresponding safety provided by sloping is adequate.

23. VISUAL TESTS. A visual analysis is used to determine information about the excavation site. In general, the soil adjacent to the excavation, the soil forming the sides of the open excavation, and the soil taken from the excavation can be used to conduct a visual test, observe:

- a) **Soil as it is excavated.** Estimate the range of particle sizes and the relative amounts of the particle sizes. Soil that is primarily composed of fine-grained material is cohesive material. Soil composed primarily of coarse-grained sand or gravel is considered granular material. Soil that remains in clumps when excavated is cohesive. Soil that breaks up easily and does not stay in clumps is granular.
- b) **The side walls of the excavation and adjacent to the excavation.** Crack-like openings such as tension cracks could indicate fissured material. If chunks of soil spall off a vertical side, the soil could be fissured. Small spalls are evidence of moving ground and are indications of potentially hazardous situations.
- c) **Identify layered systems.** Examine material within to identify if the layers slope toward the excavation. Estimate the degree of slope of the layers.
- d) **The area adjacent to the excavation.** Search for evidence of surface water, water seeping from the sides of the excavation. Sources of vibration may affect the stability of the excavation face. Existing utilities and other underground structures indicate previously disturbed soil.

24. MANUAL TESTS. Manual analysis of soil samples should be done in addition to the visual tests to classify the soil type more accurately. Any of the following five manual tests can be used:

- a) **Plasticity:** Mold a moist or wet sample of soil into a ball and attempt to roll it into threads as thin as 1/8in in diameter. Cohesive material can be successfully rolled into threads without crumbling. For example, if at least a two-inch (50mm) length of 1/8in thread can be held on one end without tearing, the soil is cohesive.
- b) **Dry strength:** If the soil is dry and crumbles on its own or with moderate pressure into individual grains or fine powder, it is granular (any combination of gravel, sand, or silt). If the soil is dry and falls into clumps which break up into smaller clumps, but the

smaller clumps can only be broken up with difficulty, it may be clay in any combination with gravel, sand, or silt. If the dry soil breaks into clumps which do not break up into small clumps and which can only be broken with difficulty, and there is no visual indication the soil is fissured, the soil may be considered un-fissured.

- c) **Thumb penetration:** The thumb penetration test can be used to estimate the unconfined compressive strength of cohesive soils. Type 1 soils with an unconfined compressive strength can be readily indented by the thumb; however, they can be penetrated by the thumb only with very great effort. Type 3 soils with an unconfined compressive strength can be easily penetrated several inches by the thumb and can be molded by light finger pressure. This test should be conducted on an undisturbed soil sample, such as a large clump of spoil, as soon as practical after excavation to keep to a minimum the effects of exposure to drying influences. If the excavation is later exposed to wetting influences (rain, flooding), the classification of the soil must be changed accordingly.
- d) **Other strength tests:** Estimates of unconfined compressive strength of soils can also be obtained by use of a pocket penetrometer or by using a hand-operated shear-vane.
- e) **Drying test:** The purpose of the drying test is to differentiate between cohesive material with fissures, un-fissured cohesive material, and granular material. The procedure for the drying test involves drying a sample of soil that is approximately one inch thick (2.54cm) and six inches (15.24cm) in diameter until it is thoroughly dry:

If the sample develops cracks as it dries, significant fissures are indicated. Samples that dry without cracking are to be broken by hand. If considerable force is necessary to break a sample, the soil has significant cohesive material content. The soil can be classified as an un-fissured cohesive material and the unconfined compressive strength should be determined.

If a sample breaks easily by hand, it is either a fissured cohesive material or a granular material. To distinguish between the two, pulverize the dried clumps of the sample by hand or by stepping on them. If the clumps do not pulverize easily, the material is cohesive with fissures. If they pulverize easily into very small fragments, the material is granular.

25. Sloping Requirements: The sloping requirements are based on the determination of the soil type.

- a) **Type 1 soil, sloping requirements: beyond the depth of 1.2m gradient shall be 1:1.** Is hard, very dense, and only able to be penetrated with difficulty by a small sharp object. Has a low natural moisture content and a high degree of internal strength. Has no signs of moisture seepage; and can only be excavated by mechanical equipment.
- b) **Type 2 soil, sloping requirements: beyond the depth of 1.2m gradient shall be 1:1.** Is very stiff, dense and can be penetrated with moderate difficulty by a small sharp object. Has low to medium natural moisture content and a medium degree of internal strength; and has a damp appearance after it is excavated.

- c) **Type 3 soil, sloping requirements: from the bottom of the trench gradient of 1:1.** Is stiff to firm and compact to loose in consistency or is previously excavated soil. Exhibits signs of surface cracking and or signs of water seepage. If it is dry it may run into a conical pile and has a low degree of internal strength.
- d) **Type 4 soil, sloping requirements: from the bottom of the trench a minimum gradient of 3:1.** Is soft to very soft and loose in consistency, very sensitive and upon disturbance is significantly reduced in natural strength. Runs easily or flows unless it is completely supported before excavating procedures. Has almost no internal strength. Is wet or muddy; and exerts substantial fluid pressure on its supporting system.
- e) **Solid Rock Excavation, gradient can remain vertical.** When breaking/excavating rock, excavation walls may be vertical provided the side walls shall be “trimmed” or “scaled” to remove any loose materials.

NOTE: If safe depth and sloping requirements cannot be achieved then an adequate shoring/support system must be installed before a worker enters an excavation as per *OHSA Regulations for Construction, Part III Reg. 234 – 242*. Throughout this section there is a description of how to organize, install engineered support systems, and build shoring for supporting the sides of an excavation.

Keep in mind that the slope angle should be increased if conditions require a greater level of safety. Two specific conditions where this applies are:

Signs of distress: The actual slope must be less than the maximum allowable slope. In these situations, the slope will be cut back to an actual slope which is at least 1/2 horizontal to one vertical (1/2H:1V) less steep than the maximum allowable slope.

Additional loading: The actual slope must be reduced below the maximum allowable slope when loading from stored material or equipment, operating equipment, or traffic are present.

Excavation Fall Protection

When performing excavation and trenching work, the *OHSA Regulations for Construction, Part II Reg. 26* must be used to provide guidance and direction on how to apply fall protection requirements to excavations. There are prescriptive regulatory requirements that provide clear direction for when fall protection is required for vertical fall hazards, however, there are no prescriptive regulatory requirements that provide clear direction for when fall protection is required, and how the regulatory requirements are to be applied to the sides of excavations. Bump lines and guardrails are the most desirable method to protect against fall hazards. Excavations will be guarded to prevent persons from falling into the excavation. This will be done by using barricades, guardrails, bump lines or steel modular fencing.

Fire Prevention – Construction Sites

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. Fire extinguishers (dry chemical or other type) depending upon the types of fire hazards on the project.

Safe Work Practice

1. All project personnel are responsible for taking appropriate actions to prevent fires.
2. Report fire hazards to the supervisor so that the hazard can be eliminated, or fire suppression equipment can be issued and maintained at the hazard location.
3. Fire watch, fire extinguishers and wetting dry areas are controls to be used for all hot work.
4. Fire prevention measures will be communicated to work crews regularly.
5. No open fires or burning is permitted.
6. Store fuels and combustible products in a manner that reduces fire risk.
7. If a fire occurs, try to extinguish it, summon assistance of fellow workers. If unable to extinguish the fire, raise an alarm and evacuate. Call 9-1-1 to report the fire.
8. The worker who first reported the fire must inform the immediate supervisor about it.
9. Fire suppression equipment must be accessible and in working condition.
10. Tampering with fire suppression equipment is a serious offense and is prohibited.
11. Be aware of the locations of fire extinguishers. Portable fire extinguishers are labeled as to the types or classes of fires they should be used on.

CLASS “A” FIRES occur in materials such as rags, paper, wood and trash.

CLASS “B” FIRES arise from the vapour-air mixtures found with flammable liquids such as gasoline, oil, grease, paints and thinners.

CLASS “C” FIRES are electrical fires, or fires occurring in or near electrical equipment, thereby presenting the additional hazard of electrical shock.

CLASS “D” FIRES involve combustible metals (e.g.: sodium or magnesium).

How to Use a Portable Fire Extinguisher

Pull the pin.

Aim extinguisher nozzle at base of flame.

Squeeze the trigger while holding extinguisher upright.

Sweep the extinguisher from side to side, covering the area at the base of the flame.

REMEMBER: Should your path of escape be threatened... Should the extinguisher run out... Should the extinguisher be ineffective... Should you no longer be able to safely fight the fire... **RAISE THE ALARM AND LEAVE THE AREA IMMEDIATELY.**

Flagging and Barricades

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.

Conditions

There are two types of flagging tape in use:

RED TAPE Danger - Do not enter without authorization.

YELLOW TAPE Caution - Be aware of potential hazards within the area.

Safe Work Practice

1. Prior to entering an area that has been **red flagged**, all personnel must contact the supervisor/team lead and request permission to enter. No entry is allowed until permission has been granted. This may include but is not limited to areas where:
 - a) Rigging and lifting is occurring.
 - b) Entrance into a confined space is required.
 - c) There is imminent danger to life and safety of personnel.
2. Prior to entering an area that has been **yellow flagged**, all personnel must identify potential hazards, either listed or otherwise identified. Once aware of the potential dangers, personnel may then enter the area.
3. Your task in yellow-flagged areas may conflict or add additional hazards to the area which the originating personnel may not be aware of. This may include but is not limited to areas where:
 - a) A piece of process equipment has been removed.
 - b) Non-hazardous/low hazardous equipment is being drained.
 - c) Maintenance work is being conducted.
 - d) There is potential for injury or work occurring that is not a normal occurring activity.
 - e) Swing paths of cranes, backhoes, graders, etc.
4. Flagging tape must be installed to completely encompass the area containing the potential hazard. When the task has been completed or the potential hazards have been removed, the flagging tape must be removed and placed back into storage or placed in the appropriate disposal container.
5. The flagging tape of a work area shall be of a uniform color.
6. Barricades are made from metal, wood or concrete. Barricades are used to reduce or eliminate potential risks or hazards by limiting access to:
 - Excavations
 - Fuel tanks
 - Propane tanks
 - Heaters
 - Open holes
 - Temporary hoses/piping crossing a road

Flammable and Combustible Liquids

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. Fire Extinguisher and available emergency response and or personnel.
3. Approved fuel containers.
4. Safety Data Sheet (SDS).

Safe Work Practice

1. Flammable and combustible liquids must be stored in designated storage areas, away from sources of ignition and the direct sun.
2. Containers with flammable and combustible liquids must be kept tightly closed to prevent hazardous vapour loss when not in use.
3. Only approved safety containers (CSA, ULC, FM, etc.) are to be used to store flammable and combustible liquids.
4. Equipment fuel tanks must not be filled:
 - while the engine is running
 - while anyone is smoking in or around the vehicle
 - while there is any known source of ignition in the immediate area, including cell phones
5. Volatile or flammable materials must not be carried in or on a vehicle transporting workers unless such materials are carried in an:
 - isolated compartment accessible only from the outside
 - inside compartment separated from all persons by a firewall
 - in approved containers
6. Gasoline and other flammable liquids may only be transferred from one container to another if steps to prevent static electricity accumulation have been implemented. Static electricity may be controlled through the use of container contact or grounding. Glass, plastic, or other non-conductive containers with a capacity of 23 litres or more that are used to transfer a flammable liquid must have static electricity controlled by:
 - limiting flow to less than one metre per second
 - using a nozzle extending to the bottom of the container
 - using anti-static additives, or other effective means
7. Gasoline dispensing from storage containers by means of an approved pump or gravity feed, must be done by utilizing hoses and fittings approved for that purpose.
8. Gasoline must not be used to start fires.
9. If flammable liquids are dispensed or transferred inside a flammable liquid storage room, the room must be adequately ventilated to the outdoors, makeup air ducts must be equipped with fire dampers and the door to the room must be self-closing.
10. Except for packaging used to contain flammable/combustible liquids, combustible shelves, racks, and other materials are not permitted inside

a flammable/combustible liquids storage room/cabinet unless required as part of the fire separation.

11. Keep fuel off clothing and promptly remove clothing that has been soaked with a flammable liquid.
12. Vehicles are never to be refueled under high-voltage powerlines.

Hand Tools

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. Miscellaneous hand tools.
3. Operators Manual.

Safe Work Practice

Inspection requirements for use of hand tools

- a) All hand tools supplied by the Employer or employees will be maintained in safe working order.
- b) Hand tools shall be inspected regularly and before using. Tools or handles that are cracked, broken, or deformed shall be removed from service. Impact tools such as wedges, pins and chisels shall be kept free of mushroomed heads.
- c) Employees, while working from heights, shall place tools, supplies and materials in a safe location so that these are not knocked off, or caused to slide off due to vibration, or they shall guard the danger area below. All loose parts, scrap, tools, and supplies shall be removed from these elevated work areas when the repair or inspection is complete.
- d) Employees using hand tools are to be provided with Personal Protective Equipment (PPE) when exposed to falling, flying, abrasive and splashing object, or harmful dusts, fumes, vapours, or gases.
- e) The PPE should be matched against the hazard to provide the required level of protection.

General requirements for safe use of hand tools

- a) Do not use tools for jobs for which they are not intended.
- b) Do not apply excessive pressure on tools.
- c) Carry sharp or pointed tools in a heavy belt or apron rather than pockets, and hang tools at your sides, not behind your back.
- d) Carry tools in a manner that does not interfere with using both hands when climbing a ladder or a structure.
- e) Wear appropriate personal protective equipment (safety glasses, gloves, etc.).
- f) Maintain tools carefully, keep them clean and dry, and store them properly after use.
- g) Inspect tools for defects prior to use.
- h) Replace cracked and broken handles on files, hammers, sledges, and screwdrivers.
- i) Re-dress burred or mushroomed heads of tools such as chisels.
- j) Exercise extreme caution when using tools near live electrical circuits. Do not use cushion grip handles as a replacement for insulated handles.

- k) Pull on wrenches and pliers. Never push unless you are using an open hand.
- l) Face adjustable wrenches forward and turn the wrench so that pressure is against the permanent jaw.
- m) Do not increase leverage by adding sleeves to increase tool length.
- n) Do not cut or chip towards you when using cutting tools or chisels.
- o) Do not re-dress, grind, weld or heat-treat hammer heads.
- p) Do not use one hammer to strike another.
- q) Do not use a dull chisel. Re-dress heat-treated tools with a whetstone rather than a grinder.

Metal-Cutting Hand Tools

Chisels

1. Factors determining the selection of a cold chisel are the materials to be cut, the size and shape of the tool, and the depth of the cut to be made.
2. The chisel should be made heavy enough so that it will not buckle or spring when struck.
3. A proper sized chisel should be selected so that the blade is used rather than the point of corner. Also, a hammer heavy enough to do the job should be used.
4. Employees shall wear safety goggles when using a chisel and should set up a shield or screen to prevent injury to other workers from flying chips. If a shield does not afford positive protection to all exposed employees, then glasses with side protection should be worn.

Hack Saws

1. Hacksaws should be adjusted in the frame to prevent buckling and breaking but should not be tight enough to break off the pins that support the blade. Install blade with teeth pointing forward.
2. Pressure should be applied on the forward stroke not on the back stroke. If the blade is twisted or too much pressure is applied, the blade may break and cause injury to the hands or arms of the user.

Files

1. Selection of the right kind of file for the job will prevent injuries and lengthen the life of the file.
2. The extremely hard and brittle steel of the file chips easily, the file should never be cleaned by striking it against a vise or other metal object. A file-cleaning card or brush should be used.
3. For the same reason, a file is not to be hammered or used as a pry. Such abuse frequently results in the file's chipping or breaking causing injury to the user. A file should not be made into a center punch, chisel, or any other type of tool because the hardened steel may fracture in use.
4. A file is never to be used without a smooth, crack-free handle; if the file should bind, the tang may puncture the palm of the hand, the wrist, or other part of the body. Under some conditions, a clamp-on raised offset handle may be useful to give extra clearance for the hands. Files are not to be used on lathe stock turning at high speed (faster than three turns per file stroke) because the end of the file may strike the chuck, dog, or face

plate and throw the file (or metal chip) back at the operator hard enough to inflict serious injury.

Wood-Cutting Tools

Edge tools are to be used so that if a slip should occur, the direction of force will be away from the body. For efficient and safe work, edge tools are to be kept sharp and ground to the proper angle. A dull tool does a poor job and may stick or bind.

Wood Chisels

1. Inexperienced employees shall be instructed in the proper method of holding and using chisels.
2. Handles are to be free of splinters.
3. The wood handle of a chisel struck by a mallet is to be protected by a metal or leather cap to prevent it from splitting.
4. The work to be cut must be free of nails to avoid damage to the blade or cause a chip to fly into the user's face or eye.

Hand Saws

1. Saws should be carefully selected for the work they are to do. For crosscut work on green wood, a coarse saw (four to five points per inch) is to be used.
2. A fine saw is better for smooth, accurate cutting in dry wood. Saws are to be kept sharp and well set to prevent binding.

Torsion Tools

Socket wrenches are safer to use than adjustable or open-end wrenches.

Open-End or Box Wrenches

1. Open-end or box wrenches shall be inspected to make sure that they fit properly and are never to be used if jaws are sprung or cracked.
2. When defective, they shall be taken out of service until repaired.

Adjustable Wrenches

1. Adjustable wrenches are used for many purposes. They are not intended, however, to take the place of standard open-end, box or socket wrenches.
2. They are used mainly for nuts and bolts that do not fit a standard wrench. Pressure is always applied to the fixed jaw.

Pipe Wrenches

1. Pipe wrenches, both straight and chain tong, shall have sharp jaws and be kept clean to prevent slipping.
2. The adjusting nut of the wrench is to be inspected frequently. If it is cracked, the wrench shall be taken out of service. A cracked nut may break under strain, causing complete failure of the wrench and possible injury to the user.
3. A piece of pipe "cheater" slipped over the handle shall not be used to give added leverage because this can strain a pipe wrench to the breaking point. The handle of every wrench is designed to be long enough for the maximum allowable safe pressure.

4. A pipe wrench should never be used on nuts or bolts because the corners will break the teeth of the wrench making it unsafe to use on pipe and fittings. Also, a pipe wrench, when used on nuts and bolts, damages their heads. A pipe wrench shall not be used on valves, struck with a hammer, nor used as a hammer.

Pliers

1. Side-cutting pliers sometimes cause injuries when short ends of wires are cut. A guard over the cutting edge and the use of safety glasses will help prevent eye injuries.
2. The handles of electricians' pliers are to be insulated. In addition, the electricians shall wear the proper electrical rated gloves if they are to work on energized lines.
3. Pliers shall not be used as a substitute for a wrench.

Screwdrivers

1. The practice of using screwdrivers for punches, wedges, pinch bars, or prys shall not be allowed.
2. The tip of a screwdriver must be kept clean and sharp to permit a good grip on the head of the screw.
3. The part to be worked on must never be held in the hands; it should be laid on a bench or flat surface or held in a vise. Always use the correct type and size of screwdriver for the job.
4. No screwdriver used for electrical work shall have the blade or rivet extending through the handle. Both blade and handle shall be insulated except at the tip.

Hammers

1. A hammer is to have a securely wedged handle suited to the type of head used. The handle shall be smooth, without cracks or splinters, free of oil, shaped to fit the hand, and of the specified size and length.
2. Employees shall be warned against using a steel hammer on hardened steel surfaces. Instead, a softhead hammer or one with a plastic, wood, or rawhide head should be used. Safety goggles or safety glasses shall be worn to protect against flying chips, nails, or scale.

Carpenters or Claw Hammer

1. The faces shall be kept well-dressed at all times to reduce the hazard of flying nails while they are being started into a piece of wood. A checker-faced head is sometimes used to reduce this hazard.
2. Eye protection is advisable for all personnel working with or adjacent to hammer operations.

Hoisting and Rigging Safety (General)

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.

Safe Work Practice

1. Before use, inspect all cables, chains or wire rope rigging components for wear and tear and replace if necessary.
2. Observe local government safety regulations and guidelines for use of cable clamps, safety latches, chains, and slings.
3. Know rated capacity of cable, chain or wire rope being used.
4. Avoid overloading rigging assemblies and exposing rigging to sudden jerks. Sudden, unexpected movement may result in failure of rigging components.
5. Wear appropriate personal protection equipment consistent with the hazard, including hard hats, CSA footwear, safety glasses and work gloves.
6. Loads to be lifted shall be checked for balance and the rigging inspected to ensure a safe and balanced condition.
7. Personnel shall not stand or work under suspended loads.
8. Awkward loads or loads maneuvered in wind must have taglines attached to control the load.
9. Review the area for utility lines, tree limbs and other overhead safety hazards.
10. Personnel working tag lines should review area for slipping, tripping, and falling hazards. If not possible to eliminate them, then take precautions to avoid them.
11. Rigging and slinging work may only be done by or under the supervision of qualified and authorized workers.
12. When signaling is required, visual signals are preferred. Signals must only be given by one person at a time and the signal person must have a clear, unobstructed view of both the load and the operator of the lifting equipment.
13. Store and use hoisting equipment with care to prevent damage. Cable clips, shackle pins, heel pins, wedge sockets, anchors, sheaves, and slings must be visually inspected prior to use and installed and used in accordance with the requirements of the OHSA Regulation and the manufacturer's recommendations.
14. Avoid sharp bends, pinching, and kinking in rigging components. Thimbles should be used in sling eyes. In a choker hitch, slings must be long enough, so the choker fitting chokes on the webbing and not on the other fitting.
15. Don't wrap the hoist line around the load. Attach the load to the hook by a sling.
16. Don't use nylon and polyester slings at temperatures in excess of 82°C.
17. Safe working loads of rigging components must be determined by a manufacturer's specification.

18. Sharp edges and corners of the material being rigged must be protected to prevent damage to the choker. Use softeners to prevent slippage and damage.
19. All components must be of an adequate strength for the application. Only forged alloy steel load-rated hardware (stamped or tagged with its SWL) may be used for overhead lifting. Ensure that the safe working load of all hardware is compatible with the rope or chain used with it.
20. Do not use open hooks. Safety hooks, or shackles (shackle pins must be secured) must be used for all hoisting operations.
21. Make sure loads are balanced in the hook. Eccentric loading can result in a hazardous reduction in capacity. Open hooks are not to be used in any circumstances where accidental dislodgement of the load from the hook could cause injury to workers.
22. Tag lines must be used when hoisting and rigging loads and rigging must not be rigged from unsound structural points.
23. Hooks which have opened more than 15% of the normal throat opening or twisted more than 10% from the original plane of the hook or are otherwise cracked or defective must be removed from service.

Sling Configurations

The term "sling" includes a wide variety of configurations for all fibre ropes, wire ropes, chains, and webs. The most commonly used types in construction are explained here.

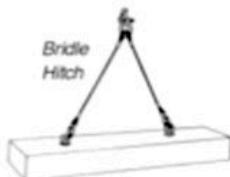
Single Vertical Hitch

The total weight of the load is carried by a single leg. This configuration must not be used for lifting loose material, long material, or anything difficult to balance. This hitch provides absolutely no control over the load because it permits rotation.



Bridle Hitch

Two, three, or four single hitches can be used together to form a bridle hitch. They provide excellent stability when the load is distributed equally among the legs, when the hook is directly over the centre of gravity of the load, and the load is raised level. The leg length may need adjustment with turnbuckles to distribute the load.

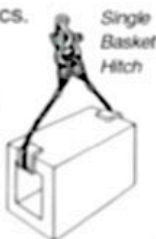


Caution: Load may be carried by only 2 legs while 3rd and 4th merely balance it.



Single Basket Hitch

This hitch is ideal for loads with inherent stabilizing characteristics. The load is automatically equalized, with each leg supporting half the load. Do not use on loads that are difficult to balance because the load can tilt and slip out of the sling.



Double Basket Hitch

Consists of two single basket hitches passed under the load. The legs of the hitches must be kept far enough apart to provide balance without opening excessive sling angles.

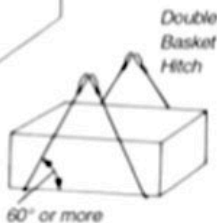


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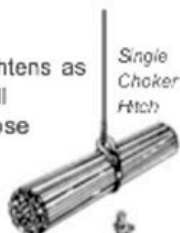
Double Wrap Basket Hitch

A basket hitch that is wrapped completely around the load. This method is excellent for handling loose materials, pipes, rods, or smooth cylindrical loads because the rope or chain exerts a full 360-degree contact with load and tends to draw it together.



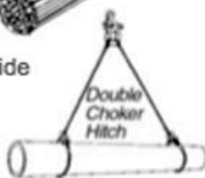
Single Choker Hitch

This forms a noose in the rope and tightens as the load is lifted. It does not provide full contact and must not be used to lift loose bundles or loads difficult to balance.



Double Choker Hitch

Consists of two single chokers attached to the load and spread to provide load stability. Does not grip the load completely but can balance the load. Can be used for handling loose bundles.



Double Wrap Choker Hitch

The rope or chain is wrapped completely around the load before being hooked into the vertical part of the sling. Makes full contact with load and tends to draw it together. If the double wrap choker is incorrectly made and the two eyes are placed on the crane hook, the supporting legs of the sling may not be equal in length and the load may be carried by one leg only. Do not run the sling through the hook, permitting an unbalanced load to tip.

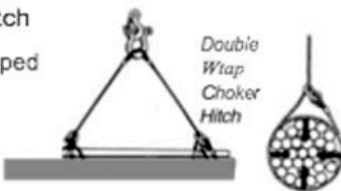


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Estimating Working Load Limits (WLL)

Because it is difficult to remember all load, size, and sling angle combinations provided in tables, some general rules can be used to estimate working load

limits for common sling configurations. Each rule is based on the working load limit of a single vertical hitch of a given size and material and on the ratio H/L .

H is the vertical distance from the saddle of the hook to the top of the load. L is the distance, measured along the sling, from the saddle of the hook to the top of the load. If you cannot measure the entire length of the sling, measure along the sling from the top of the load to a convenient point and call this distance l . From this point measure down to the load and call this distance h . The ratio h/l will be the same as the ratio H/L .

H/L or h/l will apply equally to the following rules for different sling configurations. The efficiencies of end fittings must also be considered to determine the capacity of the sling assembly. The smaller the sling angle, the lower the working load limit.

Safety Tips

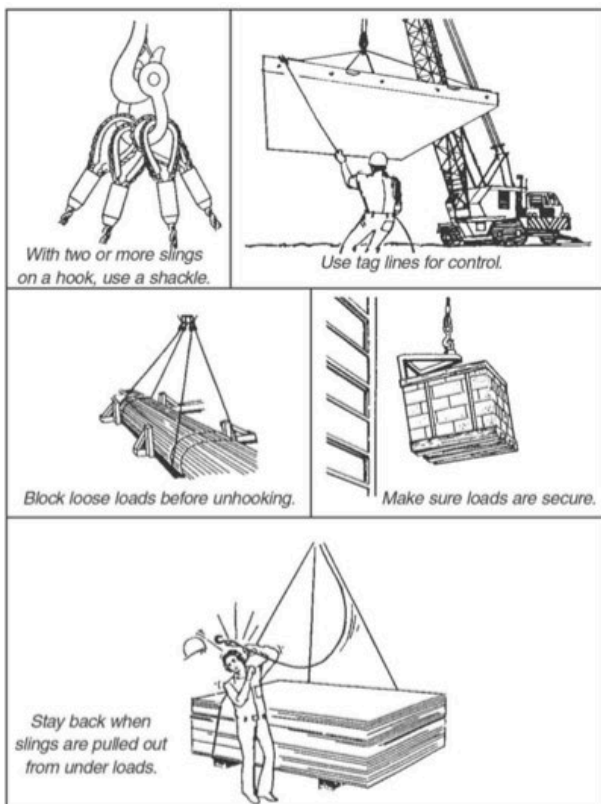


Image from: Infrastructure Health and Safety Association, 2012 Edition Construction Health and Safety Manual. Section 24 page 6

Maintenance and Rejection Criteria

This safety requirement and procedure affects any employee who uses slings and sling products to lift, secure, and move loads.

The following information is to be used as a guide for inspecting synthetic and wire rope slings. Inspection frequency is based regulatory requirements and manufacturer specifications. A sling inspection program specific to the types of slings in use on the Project will be implemented.

Safe Work Practice

1. The following inspection criteria is required for all slings used on a LCE project:
 - a) **Wire rope slings** will be removed from service when the following conditions are present:
 - Three or more randomly distributed broken wires in one rope lay between end connections or more than one broken wire in one lay of an end connection
 - Wear, scraping or corrosion on one-third the original diameter of outside individual wires
 - Kinking, crushing, bird caging, or any other damage resulting in distortion of the wire rope structure
 - Evidence of heat or arc damage
 - Corrosion of the rope or end attachments
 - Reductions of normal rope diameter, by any cause, in excess of:
 - 0.4mm for diameters up to and including 8mm
 - 1mm for diameters greater than 8mm up to and including 19mm
 - 2mm for diameters greater than 19mm up to and including 29mm, or
 - 3mm for diameters greater than 29mm
 - b) **Synthetic web slings** will be removed from service when any of the following conditions are present:
 - The length of an edge cut exceeds the thickness of the web
 - The penetration of abrasion exceeds 15% of the webbing thickness taken as a proportion of all plies
 - Abrasion occurs on both sides of the webbing and the sum of the abrasion on both sides exceeds 15% of the webbing thickness taken as a proportion of all plies
 - Warp thread damage up to 50% of the sling thickness extends to within 1/4 of the sling width of the edge or exceeds 1/4 the width of the sling
 - Warp thread damage to the full depth of the sling thickness extends to within 1/4 of the sling width of the edge or the width of damage exceeds 1/8 the width of the sling
 - Weft thread damage allows warp thread separation exceeding 1/4 the width of the sling and extends in length more than twice the sling width

- Any part of the sling is melted or charred or is damaged by acid or caustic chemicals
 - The sling load rating is missing
 - Stitches in load bearing splices are broken or worn
 - End fittings are excessively pitted or corroded, cracked, distorted, or broken
 - A combination of the above types of damage of approximately equal total effect are present
- c) **Hooks** will be removed from service when any of the following conditions are present:
- Hooks opened more than 15% of the normal throat opening measured at the narrowest point or twisted more than 10 degrees from the plane of the unbent hook
 - The hook has lost 10% or more of its cross-sectional area
 - The hook is cracked or otherwise defective
 - Wear or damage exceeds any criteria specified by the manufacturer
2. Slings will be inspected after any unusual situation that may have damaged it, such as overload, accident, or fire. It will not be returned in service until its continued safe operation has been verified.
3. Only persons with sufficient experience and knowledge to properly apply the criteria for rejection should perform inspection.

Hot work – Welding, Cutting, Burning

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. Eye protection is required for chipping. A welder's helmet is required for arc welding and tinted goggles for gas welding.
3. Class ABC fire extinguisher (4A:60BC).

Safe Work Practice

1. Only authorized and qualified persons are permitted to use acetylene or propane fired devices.
2. Inspect equipment prior to use. Alert your supervisor if the equipment requires repair or removal from service.
3. Never weld, cut, or do other hot work on drums, tanks, barrels, or other containers until you are absolutely certain that all materials which, when subjected to heat may produce hazardous (poisonous, explosive, flammable, etc.) vapours, have been removed.
4. A Class ABC fire extinguisher of adequate size must be kept nearby, ready for use when welding, cutting, brazing, or burning.
5. Always wear appropriate, approved eye protection when welding, cutting, brazing, or burning to protect against sparks, debris, and ultraviolet rays.
6. Gases and metal fumes present a health hazard to welders. Good ventilation and/or respiratory protective equipment must be present or employed to minimize the hazard.
7. All welding operations must be screened effectively to eliminate the possibility of exposure to coworkers or the public from welding flash. Twelve metres is the recommended minimum distance from which the arc flash should be seen with the naked eye.
8. No welding, cutting, or burning is to be conducted from above without warning others of the impending hazards associated with same. The area below must be flagged off to keep workers or others from entering the area.
9. If an arc welding machine is wet, thoroughly dry and test it prior to use.
10. Spread coiled welding cables out and attach the ground lead securely to the work.
11. Never coil welding cables around your body when welding.
12. Wear non-combustible clothing and fasten collars and sleeve cuffs. Never wear cuffed pants or overalls or open footwear when welding, brazing, burning, etc.
13. Combustible products in the area must be removed or the tasks conducted elsewhere to eliminate the potential for fire. Hot work should be identified as such, with a fire watch attendant monitoring the area when warranted.
14. All associated equipment must be maintained in good condition as per the manufacturer specifications. Oxy-fuel systems must be equipped with flash arresters to eliminate the possibility of reverse flow within the system.

15. All compressed tanks (e.g., oxygen, acetylene, etc.) carrying a controlled product must be transported upright and secured against movement. Products that are not compatible with one another, such as grease around oxygen must be stored separately from one another.
16. All containers when not in use must contain the protective caps to prevent accidental dislodgment of the valve stem. Containers that are emptied should be marked "MT".
17. Tasks associated with cutting, welding, and burning may emit harmful fumes, and as such the user is required to wear respiratory protection.
18. Close all cylinder valves and bleed the lines when work is finished. Hoses with leaks, burns or worn areas must be replaced or repaired.

Housekeeping

Tools and Materials Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. Brooms and shovels.
3. Spill kits and waste containers.

Safe Work Practice

1. Each worker must be responsible for keeping their work area clean and tidy.
2. All personnel must help to keep work sites clean and free of tripping/slipping hazards by depositing refuse in designated containers.
3. Scrap materials must be collected in a timely manner. Daily clean-up will be conducted by each worker or more often if conditions are warranted.
4. Construction debris must not be allowed to accumulate within access/egress routes where it will pose a slipping/tripping hazard.
5. Construction debris, scrap lumber, or oily rags pose a fire hazard. Such debris must be cleaned up regularly.
6. All surplus construction materials must be returned to their designate storage area at the end of each shift.
7. Work areas must be always maintained free of debris and obstructions. Tools, loose objects, oil, grease, power cords and other materials left lying around are hazards.
8. Materials, tools, and equipment must not be stored in stairways, corridors, catwalks, ramps, passageways, and exits. Materials stored overhead must be protected against falling into work areas.
9. All materials must be stacked or stored in a manner that permits safe access to and egress from a work area.
10. To prevent slipping, falling or collapse, all materials must be properly stacked and stored. Pipe, conduit, or tubing should be stacked within pipe racks or stacked and blocked to prevent movement. Lumber must be stacked properly to prevent shifting and/or collapse.
11. Power cords must not be left lying exposed in obvious access/egress areas as they pose a serious tripping hazard.
12. Broken glass or other sharp objects must be disposed of in containers other than standard garbage cans. Sharps must be disposed of within "sharps containers".
13. Salvage lumber must have protruding nails removed and stacked in a safe manner in a storage location.
14. Any spill of toxic, flammable, or corrosive materials must be cleaned up immediately using the method described in the appropriate Safety Data Sheet (SDS) or on the container label. Spills over 20 litres, or any spill into a water course, must be reported to the H&S Coordinator immediately.
15. Chemical waste must not be dumped into sewage systems or the like.

Jack Hammer

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. Respiratory protection as needed.

Safe Work Practice

Before Using the Hammer

1. Read the operator's instruction manual.
2. Be sure electric models are properly grounded to reduce the risk of fire and electric shock. This is not necessary for double insulated models. Use a ground fault circuit interrupter (GFCI) for maximum safety protection.
3. Be sure the extension cord is a length long enough for the distance from the receptacle to the tool.
4. Check all bits to see that they are sharp. If not, sharpen according to the manufacturer's instructions. Always use eye protection when operating a grinder.
5. Where chipping into floors or other concrete assemblies, be certain to verify that no electrical or other utility hazards exist. X-raying of the floor may be required prior to beginning related activities.

Operating the Jackhammer

1. Always disconnect the electric power before inserting or removing tools.
2. Be sure all tools are properly locked into the unit before operating.
3. Keep all bystanders, children, and pets out of the work area.
4. Prevent back injuries by using your leg muscles to lift the machine into operating position.
5. Allow the tool to do the work by using a grip light enough to maintain control.
6. Take rest breaks as needed.
7. If stopping work for a short period of time or for the day, unplug the electricity.

Ladders – Portable

Portable ladders must meet CSA, ANSI, or other standards acceptable to the OHSA. Portable ladders purchased and used by LCE will be rated CSA “Grade 1” or ANSI “Type A” (Heavy Use). Ladders must be rated as non-conductive when used close to energized electrical equipment or power lines.

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.

Safe Work Practice

Ladders must be inspected for defects prior to use. Ladders with broken rungs, split rails, worn or broken safety feet, frayed or damaged ropes must be taken out of service and reported to your immediate supervisor.

1. The ladder must be long enough for the job. Ladders used for ascending or descending from one level to another must extend at least one metre above the upper landing except where there is restricted clearance, and the ladder is adequately secured.
2. Wooden ladders should not be painted, since this may hide serious defects that may develop. A wood preservative or clear finish should be used to protect the ladder.
3. Ladders must not be coated with paint or other coating that impairs the process of inspecting the condition of the ladder.
4. Metal ladders or wires reinforced wooden ladders must not be used near energized electrical equipment unless permitted by manufacturers' specifications.
5. Place the ladder on a solid, firm, flat surface. The feet of extension or stepladders should be level. A board may be necessary to ensure that it's level or to prevent it from sinking into soft ground. Keep the area around the base of the ladder uncluttered.
6. When you use a stepladder, make certain that it's fully open and that its spreader is locked securely. Both railings of the top section of a straight ladder must be resting on a firm support. NEVER use a stepladder as a fixed ladder.
7. Use the 4:1 rule with straight ladders. This means that the ladder should be placed one foot away from the base for every four feet in height to the place where the top of the ladder rests.
8. Always make sure that a ladder is not placed in front of a door that opens toward the ladder unless the door is blocked, locked, or guarded.
9. Ladders that are used in locations where they may be struck by workers or equipment must have a watcher stationed at the bottom. Ladders must not be left standing in such a location when not in use.

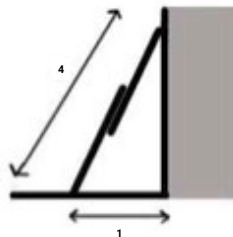


Illustration Credit: IHSAA Construction Health & Safety manual.

10. Ladders used in corridors, stairwells or aisles must be barricaded.
11. Do not place ladders against panes of glass.
12. When using a ladder, always securely “tie-off” the ladder to prevent it from slipping.
13. Obtain assistance when handling a heavy or long ladder.
14. NEVER stand on the top two rungs of any ladder including the top step or platform of a ladder.
15. NEVER place a ladder against an unstable surface.
16. Make sure that the locking device is fully secured on extension ladders before using them.
17. Unless a ladder is designed for additional weight, only one person should be on the ladder. Ladders are to be used by one person at a time unless on opposite halves of a gang ladder.
18. Go up and down a ladder facing the ladder, taking only one step at a time. Hold the side rails with both hands when climbing up or down a ladder. Do not hold on to the rungs when going up or down a ladder.
19. NEVER climb a ladder “one-handed” while carrying something in the other hand. Use a hand line to raise or lower large objects, tools, etc.
20. Workers on ladders must use suitable hoisting equipment to lift or lower heavy or bulky items.
21. Keep your body centered between the rails of the ladder and don't over-reach when working on ladders.
22. Do not attempt to reach too high as you may lose your balance.
23. Do not use stepladders or straight ladders horizontally for platforms or scaffolds.
24. Transport ladders with the feet to the rear and the top of the ladder higher than anyone in front of you. Wet wooden ladders conduct electricity and should not be used when working on, with or around electrical equipment or electrical power sources.
25. Never use ladders during strong winds except in emergencies, and then only when securely “tied-off”.
26. Do not use ladders in a horizontal position as components of runaways or scaffolds unless they are part of an engineered or pre-manufactured system.

Job-Built Ladders

1. Job-built ladders must have:
 - a) Side rails constructed from #2 - Grade or better 4cm x 9cm dimensions for ladders up to five metres (16ft) in length, and from #2 - Grade or better 4cm x 13.5cm dimensions for ladders between five metres (16ft) and 7.3 metres (24ft) in length.
 - b) Cleats and spacers no less than 2cm x 6cm dimensions for ladders up to five metres (16ft) and 2cm x 9cm dimensions for ladders between five metres (16ft) and 7.3 metres (24ft).
2. Side rails of job constructed ladders must not be notched, dapped, tapered or spliced.

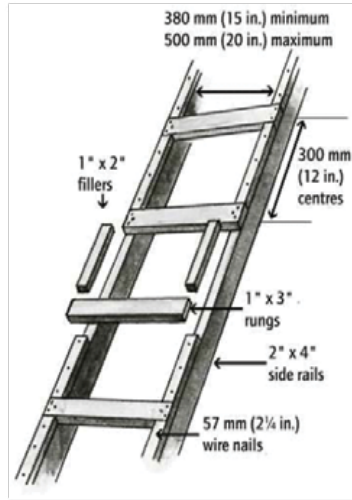


Illustration Credit: IHSA Construction Health & Safety manual.

Ladder Maintenance

1. Ladders should be inspected once every three months and a record of said inspections should be kept on file for future reference.
2. Untreated wooden ladders should be stored in dry areas to prevent moisture or water absorption.
3. When transported on a vehicle, ladders should be properly secured and supported.
4. Ladders constructed from fibreglass should be cleaned and sprayed lightly with a clear or pigmented lacquer or paste wax once every three months.
5. Check all ladder hardware, nuts, bolts, spreaders, etc. for tightness and good repair. Examine and replace worn or frayed ropes on extension ladders.
6. Do not attempt to straighten a bent or bowed ladder. Dispose of it.

Lifting – Manual Materials Handling

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.

Safe Work Practice

This practice affects any project personnel who, because of their job duties, is exposed to the hazards of lifting and handling materials. The key to safe lifting is to keep your back in balance. If you bend at your waist and extend your upper body to lift an object you upset your back's normal alignment and your centre of balance. This forces your spine to support the weight of your body and the weight of the object. This situation is called "overload." You can avoid overloading your back by bending your knees and keeping the load as close to your body as possible. Follow these techniques:

1. Test the load – Prior to lifting an object, test the weight of the object by lifting a corner. If the object is too heavy or bulky, get help from a fellow worker or use a mechanical device, such as a hoist or cart.
2. Inspect the object for any splinters, nails, sharp edges, or slippery conditions.
3. Plan the move by checking your path of travel to make sure that it's clear of any obstacles or hazards, such as spilled water or oil. Remove before picking up the object.
4. Use a wide, balanced stance with one foot ahead of the other. A solid base of support reduces the likelihood of slipping and jerking movements.
5. Grip the load firmly which prevents the object from suddenly slipping out of your hands. You may need to use gloves or lifting handles if the load is too difficult to grasp.
6. Bend your knees – This is the single most important rule to follow. When you bend at your knees instead of at your waist, the forces on your back are more evenly distributed. This also lets the strong muscles in your thighs do the lifting.
7. Bring the object as close to your body as possible which reduces the force it exerts on your back.
8. Tighten your stomach muscles as the lift begins allowing your stomach muscles to support your back.
9. Keep your head and shoulders upright to keep the normal inward curve in your lower back.
10. Lift with your legs as the strength of your legs decreases the stress on your lower back.
11. Slowly lower the object by bending your knees and keeping your back upright. Don't let go of the object suddenly.

Hard to Reach Loads

Reaching into a bin or container to lift an object makes the standard lifting procedure next to impossible. So:

1. Stand with your feet at least shoulder distance apart.

2. Slightly bend your knees.
3. Start to squat, bending your hips and knees, not your waist. This movement is the same one you make when you lower yourself into a chair.
4. Slide the load as close to your body as possible and raise yourself using your leg and hip muscles.
5. Tighten your stomach muscles as you lift, and, if possible, brace your knees against the side of the bin or container for additional support.
6. Get help if the load is more than moderately heavy.
7. Loads that are above shoulder height can be difficult to lift. If you must, use a step stool or ladder maintaining three points of contact to avoid over-reaching. Test the weight of the object and if the object is manageable, slide it towards you and hug the load close to your body as you descend. If possible, hand the object down to a co-worker before descending.

Loading/Unloading Dump Trucks

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. All dump trucks must be equipped with an audible backup alarm.

Safe Work Practice

1. Truck drivers must be alert to workers, moving equipment and materials being transported when entering and traveling on the project site.
2. Truck drivers must wear a hard hat, safety boots and high visibility vests whenever they leave the cab of their truck on a project site.
3. Truck drivers are to remain in the truck while awaiting their turn to be loaded and during the loading procedure.
4. The excavator/loader operator will position trucks by means of communicating to the driver with hand signals and the excavator horn. Trucks should be spotted so that the loading machine does not swing over the truck cab.
5. Persons outside the truck must stand clear of loading operations. Minimum six metres (20ft) in front or back and sides of the dump truck including if the truck is towing a pony. The restricted area also includes the complete swing radius of the excavator counterweight and the bucket.
6. Truck drivers and other operators of equipment must wait until equipment is stationary before driving into the swing radius of cranes, excavators, or shovels when such equipment is in operation.
7. Truck drivers may leave the loading position only once they have received the signal to do so from the excavator operator and visually confirmed that it is clear and safe to proceed.
8. Truck drivers must always travel at appropriate speeds. The project speed limits are as follows:
 - a) 15 km/h when passing work crews.
 - b) 30 km/h when traveling on sub/base gravels.
 - c) 60 km/h when driving in optimum conditions.
9. Whenever possible, work on site will be organized so that the need to back trucks is minimized, and if possible, eliminated.
10. Staging areas to conduct transfers will be established in a safe location to minimize the risk of truck drivers being hit by the movement of trucks and/or equipment.
11. Anyone who is required to approach the truck being loaded will:
 - a) Make eye contact with both the excavator/loader operator and the truck driver.
 - b) Wait for the excavator/loader operator to stop loading operations before entering the restricted area (have operator ground bucket and lock out controls) and never go between the machine and the slope.
 - c) Never go beneath a suspended boom/bucket.

- d) Leave the restricted area in full view of the truck driver and the excavator/loader operator. Loading may only restart once the person has left the restricted area.
12. Trucks may only be driven with the box raised in the following situations and after a visual inspection has confirmed that no overhead hazards exist.
 - a) When it is necessary to loosen a load by rocking the truck with the box raised.
 - b) When fly spreading gravel with the box raised.
 - c) When moving the truck requires added traction by raising the box.
 13. Never position yourself under the raised box of a truck unless it is safely blocked up from the frame of the truck by a heavy timber or other safety device.
 14. Truck drivers present in the morning will attend the Toolbox Talks or Pre-Task Plans being conducted.

Ground Personnel and Spotters

1. Ground personnel must maintain a minimum distance of 1.5 times the length of the truck box while loads are being dumped due to tip-over hazard.
2. Workers must wear a hard hat, safety toed boots, high visibility apparel (vests, arm and leg bands for night work) when their regular duties are spotting/guiding trucks at a dump site.
3. Truck drivers must maintain visual contact with Spotter(s) and ground personnel and will stop immediately if visual contact is lost. Movement may only resume once it has been determined that the Spotter and ground personnel are in a safe position.
4. Spotters and ground personnel will communicate with truck drivers through driver's side window unless there is a hazard on the driver side that puts the spotter and ground personnel at risk.
5. Truck drivers must follow the Spotter's instructions and never assume they are clear to proceed.
6. Spotters must be positioned on the driver's side of trucks. Alternatively, if there is a hazard on the driver's side that puts the spotter at risk, the spotter will perform their duties in clear view of the driver on the passenger side of the vehicle.
7. Spotters will walk in areas where the driver is able to observe the Spotter and will not walk in between the truck and pup.
8. Spotters must never walk behind a reversing truck. If a spotter needs to move with the truck they must do so while following the front of the cab in sight of the driver.
9. The use of cell phones is not permitted by anyone operating a truck or any ground personnel involved in loading/dumping operations.

Mobile Equipment

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. Correct equipment attachment(s).
3. ABC Fire Extinguisher.
4. Operators Manual.

Safe Work Practice

Working with and around mobile equipment is a significant safety concern. During the movement of mobile equipment there are numerous opportunities for personal injury and property damage. The following procedures will ensure safety.

1. Employees operating vehicles, haulage equipment and mobile equipment must maintain a valid driver's license with the correct classification for the vehicle/equipment operated.
2. Personnel must not operate mobile equipment unless they have been adequately instructed in the safe use of the equipment and have demonstrated to a supervisor that they are competent to operate the equipment. This rule does not apply when a trainee is operating the equipment under the supervision of an authorized instructor.
3. Unauthorized personnel must stay off powered mobile equipment while the equipment is in motion.
4. Operators of mobile equipment or vehicles are responsible for the safe operation of the equipment. They must maintain full control of the equipment and must comply with all laws and rules regarding the operation of the equipment.
5. The operator must inspect the equipment before the start of their shift and thereafter as required to be sure the safe operating condition of the equipment. Any defects or conditions affecting the safe operation of the mobile equipment shall be reported to the supervisor. Any maintenance or repairs necessary for the safe operation of the equipment will be made before the equipment is used. As a minimum the pre-use inspection will include:
 - a) Fluid levels.
 - b) Steering.
 - c) Braking.
 - d) Lights.
 - e) Horn.
 - f) Brakes.
 - g) Tires.
 - h) Attachments.
 - i) Leaks.
 - j) Warning Beacon (if so equipped).
 - k) Backup Warning Alarm.
 - l) Windshield.
 - m) Fire Extinguisher.

6. A Mobile Equipment Logbook will be kept for each machine to record details of inspection and maintenance.
7. If an operator has reason to believe that the equipment or a load is hazardous, they must report it to their supervisor.
8. Mobile equipment should be shut down while servicing is done unless continued operation is essential and alternate safety measures are taken.
9. Service and maintenance must be done by qualified and authorized personnel.
10. Operating controls must be clearly marked as to their function.
11. Windshields, side and rear windows, and rear-vision mirrors must be maintained to provide clear vision to the operator.
12. Mobile equipment must have a mirror or mirrors providing the operator with an undistorted reflected view to the rear of the mobile equipment.
13. Mobile equipment must be equipped with a Falling Object Protection System (FOPS) if the mobile equipment could be struck by falling, flying, or intruding objects or material. All mobile equipment on the project engaged in clearing, and all forklift trucks, including all-terrain forklift trucks and zoom booms, will be equipped with FOPS.
14. Mobile equipment operating on rough or uneven terrain must be equipped with a Roll-Over Protective Structures (ROPS). All ROPS equipped mobile equipment will have seatbelts, and seatbelts will be worn by the operator when operating the equipment.
15. Steep edges of travel routes and dumps must be guarded (curbed) to prevent mobile equipment from going over the edge. The minimum height of the curb is 1/4 the outside tire diameter for the tires of the largest machine regularly using the area. Curbs should be of substantial construction, and while it may be impracticable to contain large machines, a well-constructed curb of the recommended height will provide warning to the operator that the machine is near the edge.
16. A worker other than the operator may ride on mobile equipment with a ROPS for the purpose of training or maintenance if the equipment is operated in an area with no significant risk of rollover.
17. Exposed moving parts on mobile equipment which are a hazard to the operator or to other workers must be guarded according to a standard acceptable to the MOL/OHSA, and if a part must be exposed for proper function it must be guarded as much as is practicable consistent with the intended function of the component.
18. Ensure that workers are clear of the mobile equipment before operating it. If the operator's view of the work area is obstructed, the operator must not move the equipment until precautions have been taken to protect the operator and any other worker, including:
 - a) immediately before the movement, the inspection by the operator on foot of the area into which the equipment will be moved,

- b) direction by a signaler stationed in a safe position in continuous view of the operator and having an unobstructed view of the area into which the equipment will move, or
 - c) direction by a traffic control or warning system.
19. Establish a “safety clear zone” directly downhill when excavating and there is possibility of rocks or other objects rolling downhill. Access to the “safety clear zone” must be controlled to prevent personnel or equipment from being hit by rolling objects.
 20. When operating mobile equipment, carry the load no higher than necessary to avoid limiting vision.
 21. Before starting work, ensure that you are aware of all mobile equipment operating in and around the site.
 22. Do not take shortcuts across areas where mobile equipment is working.
 23. Immediately before putting mobile equipment in motion, the operator will check loads for condition of blockings, hold-downs, lashings, and clearance signals.
 24. Project personnel who drive vehicles or operate equipment shall not allow unauthorized persons to drive, operate, or ride on these vehicles or equipment.
 25. Project personnel shall effectively use steps, handrails, and/or grab irons, and face the equipment when mounting or dismounting from vehicles or equipment.
 26. The driver or operator of a vehicle or equipment is responsible for the safety of all passengers.
 27. The mobile equipment operator is the only worker allowed to ride the equipment unless seats or other safe facilities for other workers are provided and used. Workers must not ride with any part of their bodies outside the vehicle or equipment or stand in or on any vehicle or equipment unless protected against being thrown off balance. Riders must wear seatbelts.
 28. Vehicles and equipment shall not be operated at a speed which will endanger any person or property. The driver or operator must always keep their equipment under control and always drive according to conditions, slowing down ahead of curves, on wet roads, steep ramps, for heavy traffic, or poor visibility.
 29. Operators must not leave the controls unless the equipment or vehicle has been secured against movement by setting parking brakes and transmission locks, lowering any blades, buckets, or forks to the ground and chocking wheels where necessary.
 30. Operators must obey all signs governing the movement, operation, or parking of vehicles on any work site or public or private road.
 31. When an operator is present, riders shall notify and secure their permission before getting on or off the vehicle or equipment.
 32. Persons shall not get on or off moving vehicles or moving equipment, except in an emergency.
 33. Vehicles and mobile equipment shall be always kept in gear or appropriate drive range when moving and shall be put in the proper

- designated gear or range before starting downgrade. Free-wheeling or coasting downgrade in neutral is prohibited.
34. Equipment must be positioned so that no swinging portion can come within 60cm (2ft) of any obstruction in any area accessible to workers. If this is not possible, entry into such areas must be prevented by barriers or other effective means.
 35. Lights, flares, or other warning devices shall be posted when parked or disabled vehicles, or equipment or road conditions create a hazard to vehicle or equipment traffic.
 36. Drivers shall be certain that all persons are clear before starting or moving mobile equipment.
 37. Vehicles and mobile equipment shall be brought to a full stop and the horn sounded before they are driven into a building entrance.
 38. Vehicles and mobile equipment operator's cabs shall be kept in a neat and tidy condition. The possession of reading material other than the Operator's Manual in the cab of vehicles or mobile equipment is prohibited.
 39. Portable in ear music devices and radios are not allowed on projects.
 40. Vehicles and equipment shall follow at a safe distance. Passing shall be limited to areas of adequate clearance and visibility. Passing on a downgrade is prohibited except that slow moving or working equipment may be passed in areas of adequate clearance and visibility.
 41. In the event a vehicle or mobile equipment catches fire, the driver or operator shall stop the vehicle, turn off the engine, set the parking brake, and if possible, block the vehicle or equipment wheels on the downgrade side to protect other workers and equipment. Activate the fire suppression system, or use portable extinguisher, and call for help as soon as possible.
 42. Supplies, materials and tools, other than small hand tools, shall not be transported with project personnel in vehicles or mobile equipment unless such vehicles or mobile equipment are specifically designed to transport supplies, materials, and tools safely and securely. Aerosol cans shall not be transported in cabs.
 43. Tools and equipment carried in any part of a vehicle or piece of mobile equipment where workers are riding must be placed or secured to prevent injury to workers.
 44. Operators must keep the cab, floor, or deck of mobile equipment free of materials, tools or other objects that could create a tripping hazard, interfere with the operation of controls, or interfere with exiting the vehicle.
 45. Project personnel must not operate vehicles or mobile equipment while impaired by alcohol, fatigue, sickness, or drugs (prescription or recreational).
 46. All trucks, front-end loaders, graders, and dozers that are operated at night shall have lights on both ends as required for safe operation.
 47. Operators must use running lamps or illuminated headlamps during daytime hours.

48. Mobile equipment being operated 30 minutes before sunrise or 30 minutes after sunset must have and use lights that adequately illuminate the direction of travel, the work area, and the cab instruments.
49. All mobile equipment employed on the project will be equipped with an audible back-up warning device. The automatic audible warning device will activate whenever the equipment controls are positioned to move the equipment in reverse and will be audible above the ambient noise level.
50. Wheeled mobile equipment that depends on engine power for steering, and power failure will result in loss of adequate directional control, a supplementary system must be provided to enable the operator to steer to a controlled stop.
51. Buckets, forks, booms, hoists, and other load handling attachments installed on mobile equipment must be of a type specified by the equipment manufacturer or certified by a professional engineer.
52. Mobile equipment used for lifting or hoisting must be operated within the safe working load limits. Requirements include:
 - a) Mobile equipment designed for lifting, hoisting or similar operations must have a permanently attached placard, visible to the operator displaying the rated load limits of the equipment.
 - b) A load chart must be displayed if the rated load varies with the reach of the equipment and if the equipment is modified the employer must ensure that the rated load and the load chart reflect the new load ratings.
 - c) Hydraulic excavators used for lifting or hoisting will:
 - NOT be used to lift, lower, or move personnel in the bucket or suspended from the boom or bucket of the excavator
 - Have load charts applicable for the excavator and available in the cab
 - Be operated by an excavator operator qualified to make the lift
 - Require the load to be hooked up by a qualified rigger
 - Not exceed the rated capacity to lift the load safely
 - Require manufacturers lifting points or engineered attachment for the purpose of attaching slings, rated for the full capacity of the excavator
 - Be level and on stable ground
 - Require work Procedures that minimize the risk to workers near the boom or bucket
 - d) Hydraulic excavators will NOT be used to lift, lower, or move a slung load when:
 - Lifting or lowering in proximity of workers there is a possibility of the worker being struck
 - Using open hooks and it may cause a hazard to workers
 - Lifting loads without calculating weights or making test lifts
 - Travelling with a slung load unless the manufacturer has addressed it

- Performing a single lift with two excavators without first informing all the workers involved and the supervision of a qualified supervisor

53. Cell phone use is not permitted while operating mobile equipment, including hands free devices. Operators that must use a cell phone will stop the mobile equipment, lower all attachments, and lock the operating controls. Extra precautions should be taken to ensure the workers and public are not placed at additional risk due to the work stoppage.
54. Personnel working around mobile equipment are not permitted to use a cell phone. All calls must be taken on breaks and away from the active work area.

Power Tools – Pneumatic

Equipment Required

1. CSA approved safety footwear, approved safety headgear and hi-visibility apparel are required.
2. All workers must use personal protective equipment suitable and necessary for the hazards of the work being performed.
3. Hearing and eye protection as required.
4. Read the operating manual for the tool.

Safe Work Practice

1. Only authorized, and trained workers may use pneumatic tools.
2. Pneumatic-impact tools require two safety devices: an automatically closing valve and a retaining device to hold the tool in place to prevent it from being fired accidentally. Additionally, employees must use safety eye wear to protect against flying debris.
3. The operating trigger on portable hand-operated equipment shall be located to minimize the possibility of its accidental operation and shall be arranged to close the air inlet valve automatically when the pressure of the operator's hand is removed.
4. Inspect the tool before connecting to the air supply. Ensure screws and caps are securely tightened.
5. Check hoses for cuts or bulges and replace if defective.
6. All pneumatically driven nailers, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 100 psi pressure at the tool, shall have a safety device on the muzzle to prevent the tool from ejecting fasteners, unless the muzzle is in contact with the work surface.
7. Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tools from becoming accidentally disconnected.
8. Pneumatic tools must be held against the work surface before pulling the trigger.
9. Safety features must not be disengaged or overridden.
10. Operating triggers must never be held in the “on” position while moving between work positions.
11. Operating triggers must never be secured in the “on” position under any circumstances.
12. The air supply must be disconnected before adjustments or repairs are made to the tool.
13. The manufacturer-specified air pressure for tools, hoses and fittings must never be exceeded.
14. Safety “whip-checks” must be attached at all air hose connections.
15. Do not use compressed air to blow debris or clean dust from clothes.
16. Where practical, avoid laying hoses across pedestrian and vehicular access routes.
17. Air-powered tools include air hoses; Workers should ensure hoses do not present tripping hazards.

18. Air-powered grinders require the same type of guarding as electrical grinders.
19. Compressed air shall not be used for cleaning purposes except with an air blowgun limited to 30 psi static pressure at the outlet nozzle and then only with effective chip guard and PPE.
20. The manufacturer's safe operating pressure for hoses, pipes, valves, filters, and other fittings shall not be exceeded. All hoses exceeding 1/2 inch inside diameter shall have a safety device at the source of supply or line to reduce pressure in case of hose failure.

Power Tools - Portable

Power tools improve employee efficiency in job performance. The safety objective with these tools is to protect users from inflicting harm on themselves and others. Proper selection, use, care, and supervision of portable power tools can prevent abuse of these tools and eliminate or reduce employee injuries. Power hand tools must meet CSA standards and be operated the OSHA and manufacturer instruction. Also:

1. Portable power tools shall be inspected regularly and before using and maintained in safe working order.
2. Tools with missing or broken guards, nicked or frayed electrical cords, broken plugs, broken switches, damaged equipment housing, or missing or broken tool retainers shall not be used and must be tagged and removed from service.
3. Inspect tools, power cords and electrical fittings for damage prior to each use. Repair or remove from service and replace damaged equipment.
4. Ensure all belt and pinch point guards are in place and functioning.

Safe Work Practice

1. Protection from electric shock while using portable power tools has been described as 'depending upon third wire protective grounding'. "Double insulated" tools provide more reliable shock protection without third wire grounding. Tools in this category are permanently marked by the words "double insulation" or "double insulated."
2. All electric power tools shall be effectively grounded. The exceptions are double insulated and cordless type tools.
3. Electric cords shall be inspected periodically and kept in good condition. Heavy-duty plugs that clamp to the cord should be used to prevent strain on the current-carrying parts if the cord is accidentally pulled.
4. Electric saws are usually well guarded by the manufacturer, but employees must be trained to use the guard as intended. The guard should be checked frequently to be sure that it operates freely and encloses the teeth completely when it is not cutting and encloses the unused portion of the blade when it is cutting.
5. Circular saws shall not be jammed or crowded into the work. The saw is to be started and stopped outside the work.

Power Tools - Electric

Equipment Required

1. CSA approved safety footwear, approved safety headgear and hi-visibility apparel.
2. Personal Protective Equipment suitable and necessary for the hazards of the work being performed.
3. Hearing and eye protection.
4. Read the operating manual for the tool.

Safe Work Practice

1. Electrical tools include drills, circular saws, reciprocating saws, mitre-box and shop saws, stationary band saws, jig/saber saws, rotary die grinders, soldering irons, percussion tools, grinding wheels, buffers, wire brushes, sanders, and routers. Employees must recognize and protect themselves from shock, noise, cuts, burns, and other potential hazards by using proper guards and safety equipment and devices.
2. Portable power tools are designed for tasks and if used for other purposes other hazards may be created. Additionally, the extreme mobility of these tools and their power sources creates significant hazards.
3. Vibration minimization is usually a tool design function. If extreme vibration of the tool is a problem to the employee, using isolation pads within the machine or between the handles and the operator may be an option.
4. Tool guards must be provided where possible. Tools such as circular saws, belt sanders, and abrasive wheel grinders should be equipped with guards that effectively prevent the hands and fingers of the operator from encountering blades and nip points.
5. Safeguarding energy sources must be practiced with all power tools. Electrical safeguards, controls for gasoline and other flammable liquids, and controls for air and fluids under pressure must all be in place.
6. Employees using power tools are to be provided with Personal Protective Equipment (PPE) when exposed to falling, flying, abrasive and splashing objects, or harmful dusts, fumes, vapours, or gases. The PPE should be matched against the hazard to provide the required level of protection.
7. Do not wear loose clothing, gloves or jewelry while using revolving/rotating power tools.
8. Switch tools off before connecting them to a power supply.
9. Do not use electric tools in wet or damp locations without a Ground Fault Circuit Interrupter.
10. Ensure tools are properly grounded or are double insulated.
11. Keep power cords clear of tools during use.
12. Suspend power cords over aisles or work areas, when possible, to minimize tripping hazards and prevent damage to the cords
13. Do not carry electrical tools by the power cord.
14. Avoid octopus (overloaded) connections.
15. Prior to using tool, accurately determine and mark the location of utilities.

Abrasive Wheels Tools

1. All grinding machines shall be supplied with sufficient power to maintain the spindle speed at safe levels under all conditions of normal operation.
2. Grinding machines must be equipped with safety guards in conformance with the requirements of Canadian Standards Association (CSA), for the use, care, and protection of abrasive wheels.
3. Cup-type wheels used for external grinding shall be protected by either a revolving-cup guard or a band-type guard. All other portable abrasive wheels used for external grinding shall be provided with safety guards, except as follows:
 - a) When the work location makes it impossible, a wheel equipped with safety flanges shall be used.
 - b) When the work location makes it impossible, a wheel equipped with safety flanges shall be used.
 - c) When wheels two inches or less in diameter which are securely mounted on the end of a steel mandrel are used.
 - d) When safety guards are required, they shall be so mounted to maintain proper alignment with the wheel, and the guard and its fastenings shall be of sufficient strength to retain fragments of the wheel in case of accidental breakage.
 - e) When safety flanges are required, they shall be used only with wheels designed to fit the flanges. Only use safety flanges of a type and design and properly assembled to ensure that the pieces of the wheel will be retained in case of accidental breakage.
4. All abrasive wheels shall be thoroughly inspected and ring-tested before mounting to ensure that they are free from cracks and defects.
5. Grinding wheels shall fit freely on the spindle and shall not be forced into place. The spindle nut shall be tightened only enough to hold the wheel in place.
6. All employees using abrasive wheels shall be protected by eye protection equipment.

Power Tools - Gasoline

Gasoline-powered tools are commonly used in construction activities. Gasoline-powered tools present serious hazards and must be operated only by trained personnel and adequately guarded to prevent fires and injuries.

Equipment Required

1. Personal Protective Equipment (hardhat, CSA footwear, eye and hearing protection, face shield when operating Cut-Off/Quick-Cut, gloves when handling material).
2. Saw guards.
3. Stable platform, level work area.
4. Fire extinguisher, emergency services.
5. Read the operating manual for the tool.

Personal Safety

1. Stay alert, watch what you are doing and use common sense when operating a power saw. Do not use saw while tired or under the influence of drugs, alcohol, or certain medications.
2. Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts. Loose clothes, jewelry, or long hair can be caught in moving parts.
3. Avoid accidental starting. Be sure switch is OFF before plugging in. Carrying saws with your finger on the switch or plugging in saws that have the switch ON invites accidents.
4. Remove adjusting keys or wrenches before turning the saw ON. A wrench or a key that is left attached to a rotating part of the saw may result in personal injury.
5. Do not overreach. Always keep proper footing and balance. Proper footing and balance enable better control of the saw in unexpected situations.

Gasoline-Powered Tools

1. All gasoline-powered tools shall be stopped while being refueled, serviced, or maintained, and fuel shall be transported, handled, and stored in approved safety cans. All cans shall be properly labelled.
2. Safeguarding energy sources must be practiced with all power tools. Electrical safeguards, controls for handling gasoline and other flammable liquids, and controls for air and fluids under pressure must all be in place.
3. When gasoline-powered tools are used in enclosed spaces, the applicable requirement for concentrations of toxic gases and use of (PPE) Personal Protective Equipment shall apply.

Ensure Equipment Is Safe for Use

1. Use the correct saw/blade for your application. The correct saw will do the job better and safer at the rate for which it is designed. Do not use the saw for purposes not intended – for example, do not use the saw for slicing meat.

2. Do not use the saw if the switch does not turn it “ON” or “OFF”. Any saw that cannot be controlled with the switch is dangerous.
3. Always shut off saw before making any adjustments for changing blade or accessories.
4. Keep the saw sharp and clean. Properly maintained saws, with sharp cutting edges, are less likely to bind and easier to control. When mounting saw blades, be certain that the arrow(s)/indicator(s) on the blade matches the direction of the arrow marked on the tool and that the teeth are also pointing in the same direction.
5. Inspect guards before using. Keep guards in place. Check moving parts for binding or any other condition that may affect the normal operation of safety features of the saw. If damaged, have saw serviced before using the saw. Many accidents are caused by poorly maintained saws.
6. Guarding may not be possible on some equipment such as chain saws. In those cases, other safety features should be in place (e.g., blade brake, anti-kickback design, etc.).
7. Do not alter or misuse saw. Any alteration or modification is a misuse and may result in serious personal injury.
8. The use of any other accessories not specified may create a hazard. Accessories that may be suitable for one type of saw may become hazardous when used on an inappropriate saw.
9. Saw service must be performed only by qualified repair personnel. Service or maintenance performed by unqualified personnel may result in misplacing internal wires and components which could cause serious hazard.
10. When servicing a saw, use only suitable replacement parts. Follow instructions as found in the manual accompanying the saw. Use of unauthorized parts or failure to follow maintenance instructions may create a hazard.
11. Use only the recommended blades for materials, RPM and sizes. Regularly check and tighten the blade and the blade-attachment mechanism.

Cut-Off/Quick-Cut Saw

Conditions

1. Ensure that the machine is properly set up prior to using it. This includes:
 - a) Oil and gas are at the required levels.
 - b) The correct saw blade has been chosen for the material being cut – ensure that the RPM rating is appropriate for the saw and direction indicators are correct.
 - c) The saw blade is firmly secured.
 - d) All protective guards are in place on the tool and are fully functioning to provide maximum coverage.
2. Ensure that the engine is stopped and allowed to cool down prior to refueling and wipe off any spilled fuel.

Safe Work Practice

1. Before using the Cut-Off Saw you must:
 - a) Use suitable eye and face protection before proceeding with the cut.
 - b) Ensure that you are familiar with the cut-off saw operations prior to using it.
 - c) Do not wear loose clothing and tie back long hair while operating the cut-off saw.
 - d) Ensure that the immediate work area is clear of tripping and slipping hazards.
 - e) Know the location of the machine shut off switch.
 - f) **WARNING!** When cutting metal, a cut-off saw generates sparks, which can ignite clothing and combustible material in the immediate area.
 - g) Do not use damaged blades!
2. When making a cut:
 - a) Do not twist or force the blade, just guide the blade as the cut is made.
 - b) Ensure that the engine does not labor when cutting.
 - c) Be aware of the hazard of kickback when cutting materials and understand how to prevent such hazards (not forcing the blade into the material, using water when cutting concrete, etc.).
 - d) Use water as a lubricant when cutting concrete. Doing this not only assists with a smooth cut but also lengthens the life of the saw blade and reduces the amount of dust generated by the cut.
 - e) Hold the saw firmly with both hands and position your body to the side of the saw – Do not work directly over top of the saw.
 - f) Do not use the side of the abrasive blade to grind.
 - g) If the saw stalls, remove it from the cut before attempting to restart.
 - h) Always reduce the pressure being applied as you near the end of the cut.
 - i) Limit the use the cut-off saw inside a trench or in enclosed areas to reduce the amount of accumulated exhaust fumes which could affect workers. If cut-off saw use cannot be limited inside a trench, ensure

that there is adequate ventilation to remove the exhaust fumes from the work area.

Care of Blades

1. Blades become dull from cutting regular materials. If you find yourself forcing the saw forward to cut instead of just guiding it through the cut, chances are the blade is dull or coated with material.
2. When cleaning material from blade, shut off the saw and remove the blade.
3. Remember, blades are designed to cut, so handle carefully. Wipe the blade with kerosene or similar solvent to remove material. Unless you are experienced in sharpening blades, we recommend you do not try.

Structure Raising and Parging

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. Excavation equipment and hand tools, mechanical or otherwise.
3. Cart chop saw.
4. Levelling shims.
5. Grade Rings or concrete modoloc.
6. Lifting hooks and chains for any heavy lifting.
7. Parging mix and tools.
8. All Confined Space Equipment, paperwork, trained personnel.
9. Fall restricting guard or other means of fall protection.

Safe Work Practice

Parging and structure raising operations have an element of risk not normally encountered in other aspects of construction, and therefore requires good planning and execution of work and all personnel will comply.

1. Traffic control plan designed to meet Book 7 and *OHSA Regulations*, if work is being completed within or near a roadway.
2. Delineation or protection barrier set, to separate the work from those not involved in this specific job/safe work practice and the public.
3. Use the correct saw and tools for the application.
4. Fall Restricting Guard must be used to protect workers from fall hazards. If guard is not available, other adequate means of fall protection is required to complete this practice. If none is available or an adequate fall protection plan cannot be made. Do not continue with this Work Practice and consult your supervisor.
5. Supervisor and all workers involved in the raising or parging process shall hold a safety meeting/toolbox talk including addressing the specific hazards of the operation, the possibility of a fall hazard when structure has been opened. Lifting and lowering techniques when handling heavy objects. Traffic control plan, etc.
6. Where you may be excavating with mechanical equipment follow the **Safe Work Practice: Excavating**.
7. Locate the desired structure using Design plans, GPS or Total Station which are most accurate, though swing tie measurements are used also when these are not available. Bar finders can be used to locate structures or steel plates that may be on top, though this method may not be as accurate.
8. Dependent upon the location of the structure to be raised. A Traffic control/protection Plan must be set up in accordance with *MTO Book 7, the OHSA, and LCE's H&S Policy*. Prior to working in any road or right of way.
9. Mark the desired cut/dig location of the structure on the surface (asphalt/other).
10. Cut and remove asphalt if necessary. Follow the Safe Work Practice for cutting with saw in this section of H&S Policy.

11. Excavate to the top of the structure. **NOTE:** If excavation is to be done with the use of a machine. Proper Safe Work Practice while excavating must be followed, as noted in this section of the H&S Policy.
12. Before opening or removing the lid from the structure. A protection perimeter must be set to delineate the area of work, in order to protect workers and others from the possibility fall hazard. Only those working directly on the structure who have participated in the safety briefing and are aware of the possibility of the presence of an open hole/fall hazard are permitted to be within this area.
13. Determine the level of adjustment to raise the structure to the desired elevation. Overall level of adjustment from the surface to the structure - frame and cover (6in standard size) = the Level of adjustment needed through grade rings/Moduloc.
14. Gather the necessary material together at the location of the structure being raised. (Frame and cover, adjustment rings, shims, etc.) Before removing the lid/steel cover from the structure.
15. Prior to removing the lid from the structure the underside must be checked using a gas detector as per the Confined Space Procedure located in this section of this H&S Policy to ensure no combustible or other atmospheric hazards are present.
16. If result of the atmospheric test is negative of any atmospheric hazard, proceed with this Safe Work Practice. If the result of the test is positive do **not** continue with the Work Practice. Consult your Supervisor and the Confined Space Safe Work Practice in this section of the H&S Policy to determine how to proceed.
17. With negative results you may remove the lid/steel plate from the structure. **NOTE:** Always be aware of the opening/fall hazard and your surroundings when the hole is open. Keep an eye on your fellow co-worker to avoid any incidents. At any time that the work is paused or discontinued. The fall restricting guard or lid must be placed back over the top of the opening.
18. Clean off the surface of the structure to allow for the grade rings/moduloc to sit flush to the surface.
19. Install grade rings/moduloc as per OPSD.
20. Set frame and cover and shim as necessary to desired grade.
21. Backfill and pack with granular material to the desired level.
22. Finish with asphalt or concrete depending on spec or staging.

Parging

To complete Parging, “Break the Plane” (as termed in the *MOL Confined Space Guideline*) with your hand(s) or sit on the edge of the structure on the surface “breaking the plane” with your feet. This does not qualify as a Confined Space Entry. If this section is being completed in conjunction with the above process of Raising a Structure, begin this procedure at step #7.

If this process is being done at a later time the Parging process must begin with the first step below:

1. Supervisor and all workers involved in the raising or parging process shall hold a safety meeting/toolbox talk. Addressing the specific hazards of the

operation, the possibility of a fall hazard when structure has been opened. Lifting and lowering techniques when handling heavy objects. Traffic control plan, etc.

2. Dependent upon the location of the structure to be raised. Traffic control/protection must be set up in accordance with *MTO Book 7, the OHSA, and LCE's H&S Policy*. Prior to working in any road or right of way.
3. Before opening or removing the lid from the structure a protection perimeter must be set up to delineate the area of work to protect workers and others from the possible fall hazard. Only those working directly on the structure who have participated in the safety briefing and are aware of the presence of the open hole and the possibility of a fall are permitted to be within this area.
4. Gather desired materials together at the location of the structure. (Parging tools, concrete mix etc.) Before removing the lid/steel cover from the structure.
5. Prior to removing the lid from the structure the underside must be checked using a gas detector as per the Confined Space Procedure located in this section of this H&S Policy to ensure no combustible or other atmospheric hazards are present.
6. If result of the atmospheric test is negative, proceed with this Safe Work Practice. If the result of the test is positive, do **not** continue with the work. Consult your Supervisor and the Confined Space Safe Work Practice in this section of this H&S Policy to determine how to proceed.
7. With negative results you may remove the lid/steel plate from the structure. Immediately place the fall restricting guard over the opening of the structure.
8. Prepare parging/mortar mix.
9. Fill the required area below the lid with the mixture.

Supporting Excavated Utilities

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. Materials and equipment required to construct support structures.
3. Adequate means to ensure the trench/excavation is safe (sloped or shored).

Safe Work Practice

This applies to excavation of existing underground utilities including power, gas, communications, water, and sewer. Refer to **Safe Work Practice: Locating Underground Utilities**.

1. Underground utilities must be accurately located prior to any ground disturbance activity. Work with the utility owner/designate to locate underground utilities before digging or excavating. Exposing underground utilities must be done with techniques that will prevent the utility from being compromised, e.g., hydro-vac or hand digging.
2. Coordinate with the utility owner to have a representative on site to provide specific instructions on what is required to adequately support utilities exposed during excavating.
3. Support exposed utilities in accordance with instructions received from the utilities company. Ensure temporary support structures remain in place until the utilities are buried and supported by the fill material in accordance with approved practices/standards.
4. Guidelines for Planning Work include:
 - a) Temporary support structures will be used to prevent sag, bending or deflection of pipelines during excavation and backfill. Temporary support structures should be made of either wood or steel.
 - b) If a temporary support structure is required:
 - Supports must be installed prior to excavating above or below the Utility
 - Support beams must rest on firm, undisturbed soil and will not bear directly on the Utility
 - Beam(s) placed across the trench/excavation should extend at least one metre (3ft 3in) on either side of the trench/excavation
 - Methods and materials used must be approved by the Utilities Owner
 - c) The Utility Owner's representative must inspect the temporary support structure to ensure it adequately supports the pipeline.
 - d) The temporary support structure used may be a suspended type or placed directly under the Utility. Support beams will be of sufficient strength to support the weight of the Utility. Wood beams should be grade No. 1 Spruce-Pine-Fir (S-P-F) or equivalent.
 - e) Supporting pipelines from below the pipe will be done with a structure with sufficient strength to prevent bending, sag, or deflection. Options for construction include the following:

- f) Suspending utilities from a support beam May be done with nylon sling retaining straps, chains, or minimum 10 mm rope, dependent upon the material of the unsupported Utility.
- g) Excavation/trench wall support may be required to support pipelines running parallel and in close proximity to the excavation. Support requirements are dependent upon soil conditions.

Tag Lines

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.

Safe Work Practice

1. Tag lines are to be used on any load hoisted:
 - Above the waist
 - If the load is more than 10ft horizontally
 - In congested areas
 - Where windy conditions exist
2. Tag line is to be held when:
 - The load is hoisted off the ground until the load is steadied and ready to swing
 - Anytime during hoisting when obstacles or wind make it necessary to steady the load
3. Tag line will not be:
 - Wrapped around employee's hand during hoisting
 - Longer than required for the job
 - Tied to anything but the load during hoisting
 - The tag line is to be free of knots and loops
4. Position crane in proper location to make the lift.
5. Hook up rigging (wire rope, nylon slings, etc.) to the load.
6. Determine which point on the load is best to attach the tag line for best control and safe handling.
7. Attach the tag line to the load.
8. Ensure riggers are aware of the destination of the load and are in contact with each other.
9. Signal the crane operator to hoist the load off the ground so that it is clear with rigging and tag lines secure.
10. Check that the path to the intended destination is clear of personnel and obstacles. Inform personnel in the area of your intentions.
11. Signal the crane operator to hoist the load off the ground enough so that it is clear of any obstacles or possible snag points.
12. Ensure the landing site is suitable for the load.
13. Signal operator to swing the load into place.
14. When the load reaches the laydown point, signal the operator to lower the load to the point where tag line is accessible to the worker who is placing the load.
15. Control the load with the tag line until it is no longer possible to control the load effectively and safely with the tag line.
16. At this point take control of the load with hand, watching closely for pinch points.

17. Slowly lower the load onto secure support of dunnage. Lower the crane hook until rigging is loose enough to unhook from the load. Unhook rigging and tag line.
18. Signal the crane operator up until rigging is clear of all obstacles.

Temporary Lighting Systems

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.

Safe Work Practice

1. All jobsite temporary lighting that will be hard wired is to be installed by a qualified electrician in accordance with all applicable acts and codes.
2. Temporary lighting must be constructed of materials rated for use in construction and contain a ground to eliminate the hazard associated with shock. "Brewery cord" used in the past is NOT acceptable on the project.
3. Lighting shall be installed in a manner which will minimize potential damage to the wiring, fixtures, or light bulbs. If lighting is positioned in an area which places the bulbs at risk of breakage, the bulbs shall be protected with protective cages.
4. If temporary lighting has been installed in public walkways check that bulbs are operating.
5. Temporary lighting circuits are to be used for lighting only. No one shall remove a light bulb from a temporary lighting circuit and replace it with an outlet allowing them to plug in an electrical tool or appliance.
6. Always avoid contact with the wires strung for temporary lighting. Frequent relocation of circuits can loosen connections, break insulation, and create other hazards.
7. Beware of tripping and shock hazards from wires strung overhead and underfoot.
8. Take care that wires do not contact steel door frames in final stages of the work when temporary lines often pass-through doors that may be accidentally closed on them.
9. Where it is not feasible to install lighting into an electrical utility grid. The use of plug in, battery powered, or generator lights will be used to illuminate the work and or pedestrian walkways where lighting has been reduced or removed due to construction activities.
10. Always replace broken or burned-out bulbs to maintain lighting levels in walkways, stairwells, work areas, halls or alleyways and other areas where lighting has been reduced or removed due to construction activities.
11. When temporary lighting is removed from service, check the wiring fixtures for breakage and damage. Repair any damage and/or replace any broken fixtures prior to placing the lighting in storage.

Traffic Control

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. Reflective wrist and leg bands while conducting work at night.
3. Traffic control paddle, and lighted wand if working at night.
4. Traffic Control signs.
5. Communication and warning devices when needed (e.g., two-way radio, air horn).
6. Traffic Control Plan.

Safe Work Practice

1. Traffic control will be done in accordance with the Traffic Control Manual Book 7 for Work on Roadways, MTO, OHS Regulations for Construction, Reg. 67 - 69, and applicable Provincial/Municipal requirements and LCE's Traffic Control Plan.
2. Only trained Traffic Control Persons (TCP) will be used to control traffic.
3. Traffic control plan will be designed by the Supervisor or the project manager, and the following requirements will be implemented:
 - a) traffic control requirements and arrangements and procedures are communicated in a pre-task crew briefing for the work
 - b) required traffic control devices and procedures are in place before the start of work and are removed when they are no longer required
 - c) traffic control personnel are positioned in a safe location away from hazards such as rail crossings and environmental hazards
4. When two or more TCPs are required to control traffic, one of the TCP will be designated responsibility to coordinate of changes in traffic flow.
5. Traffic control signs and devices must be positioned and used as specified in the Traffic Control Manual. Signs and traffic control devices must be located to allow traffic to move by or through the work area in a controlled manner and, if necessary, to come to a controlled stop with due regard for the prevailing weather and road conditions.
6. Traffic control signs and devices must be installed and removed in a sequence which best protects workers during this phase of a traffic control operation.
7. Signage advising of TCP ahead must be placed in advance of each TCP's station. The signs must be removed promptly when a traffic control person is no longer on duty at that station.
8. TCPs will be used when:
 - a) It is necessary to institute a one-way traffic system by or through a work zone and the circumstances do not allow self-regulating single lane traffic controlled by signs and other devices as specified in the *Traffic Control Manual*, and a traffic signal system is not used.
 - b) Work-related traffic cannot safely self-regulate to move in or out of the work area or safely coordinate with other traffic.

- c) An existing traffic control system, or an existing traffic signal light system, is not adequate to regulate traffic.
 - d) The work encroaches into an intersection so as to interfere with regular traffic movement.
 - e) Traffic speed or volume is a hazard to workers while setting up or removing other traffic control devices.
 - f) Other traffic control devices are not available in an emergency.
9. A traffic control person must stand in a safe position with a clear unobstructed view of the approaching traffic. The initial safe position will be on the shoulder of the road.
 10. TCPs will not enter the travelled portion of the roadway while vehicles are still moving. All attempts to stop vehicles will be done from the side of the road (shoulder). TCPs will only move to the driver's side of the lane under their control once the first vehicle has stopped.
 11. TCPs will be positioned at least 25m (80ft) away from the work area unless circumstances or space requirements, such as working at or near an intersection, dictate otherwise.
 12. Traffic control operations during daytime will require the following:
 - a) Use of a traffic control paddle meeting the requirements as specified in the Traffic Control Manual and, if necessary, to control fatigue, a non-conductive support staff for the paddle.
 - b) High visibility apparel meeting the requirements of the *OHSA Personal Protective Equipment Standard, High Visibility Garment*, or the *Class 2 or 3 of CSA Standard Z96-02, High-Visibility Safety Apparel*.
 - c) An effective means of communication when traffic control persons are not visible to each other, which under no circumstances means a system of two-way radios, passing batons, or similar items to indicate the last vehicle traveling through the zone under control.
 13. Traffic control operations during nighttime or poor visibility will also require the following:
 - A flashlight fitted with a red signaling wand
 - Immediate access to spare batteries for the flashlight
 - Wrist and lower leg bands fitted with a minimum 5cm (2in) wide fluorescent retro-reflective strip about their entire circumference
 14. A traffic control person must make all traffic control directions and signals precisely and deliberately so that the meaning can be clearly understood.
 15. Hand signals for communicating traffic direction change and controlling movement of traffic will be as provided in TCP Signals.
 16. Appropriate measures will be taken to control airborne dust. The primary means to accomplish this will be wetting the travelled surfaces or calcium.

The other aspect of traffic safety concerns construction and pedestrian traffic. This part is multi-faceted with the need to protect both our own workforce and the public from hazards. Dump-trucks and heavy equipment are equipped with back-up alarms; it is against the law to disable these alarms and any trucks or equipment found to have non-functional back-up alarms must be reported to the supervisor and sent off-site and or repaired immediately.

Equipment or trucks are not permitted to reverse unless under the direction of a signal person. Any truck reversing without a signal person must be reported to the supervisor; drivers will receive one warning before they are removed from the site.

Individuals responsible for traffic control need to remember that the public has very little appreciation for the speed and movement of construction equipment; they will sit in blind spots and try to fit into places they shouldn't out of ignorance. It is our responsibility to protect them from themselves while they are on our sites so please remain vigilant and stop people cutting through areas travelled by construction equipment and give our operators plenty of room to maneuver.

Safe Job Procedures

Safe Job Procedure (SJP) is a formal step-by-step instruction of how to perform a job safely and efficiently from start to finish while minimizing identified hazards.

OHSA Responsibilities

Occupational Health and Safety Act and Regulations for Construction Projects (OHSA) is Ontario's cornerstone legislation for workplace health and safety. Enforced by the Ministry of Labour, OHSA's overarching role is to ensure protection for workers from workplace hazards.

Employers

It is the responsibility of the Employer to follow duties set out in *OHSA Regulations for Construction, Act Part III Sec. 23-26* to take reasonable and practical measures to have site equipment and materials made available and maintained in accordance with the applicable regulations and manufacturer's specifications.

Supervisor

It is the responsibility of the Supervisor to follow duties set out in *OHSA Regulations for Construction, Act Part III Sec. 27* to take reasonable and practical measures to have site equipment serviced, maintained, and operated by qualified personnel. The Supervisor is responsible to ensure workers have received proper instruction and training in the safe use of related equipment and personal protective equipment prior to performing this type of activity.

Worker

It is the responsibility of the Worker(s) to follow duties set out in *OHSA Regulations for Construction, Act Part III Sec. 28* to adhere to the safety requirements regarding this specific task. The Worker will advise the Supervisor of any damage, deviation in operation, excessive wear, etc., prior to using equipment or related materials.

Operators Manual

Read and understand all manuals and documents created and provided by the manufacturer with information regarding operation and instruction of tools, equipment, devices. If you do not know how to operate a piece of equipment obtain advice from your Supervisor.

Asbestos Containing Materials (ACM)

Equipment Required

1. Personal protective equipment suitable and necessary for the hazards of the work being performed.
2. Disposable work gloves. Respirator is optional.
3. Water (amended) source for wetting ACM material prior to cutting/breaking.
4. Plastic (6 mil or thicker) poly sheets or equivalent disposal bags and duct tape, lined bin for placing ACM. Adequate signage, sticker, decals, or tape.
5. Clean water for washing hands, face and/or respirator.
6. Non-powered tools for cutting ACM, e.g., Manual chain cutters.
7. Synthetic sling(s) for lifting ACM pipe.

Hazards

Information regarding Asbestos Hazards can be found in *OHSA Regulations for Construction and the regulation Asbestos on Constructions Projects* and in *Buildings and Repair Operations, O. Reg. 278/05*.

Asbestos is the generic name for a group of naturally occurring fibrous minerals. Asbestos colour may range from white to a pale yellow, green, or blue. Asbestos fibres cause lung scarring (asbestosis), lung lining scarring (pleural scarring), cancer of the lung lining (mesothelioma) and/or lung cancer. Time lapse before the disease becomes evident may be 20-40 years after exposure. Workers who smoke have a 10-15 times greater risk of lung cancer from asbestos exposure than workers who do not smoke.

OHSA and MOL have set a maximum exposure limit of 0.1 fibres/cc and lists asbestos as a known human carcinogen. Asbestos is an ALARA substance (exposure to be kept As Low as Reasonably Achievable), which means that no exposure is permitted.

The high strength, flexibility, heat and chemical resistance, and frictional properties of asbestos led to its widespread use in electrical insulation, high strength asbestos cement products, pipe covering, floor tiling and asphalt. The hazard posed by asbestos is its friability – the ease with which it can be crumbled or pulverized. Products with “bound” asbestos do not pose a hazard unless they are cut, sawn, ground or sanded.

New construction materials do not normally contain asbestos. LCE employees and subcontractors are not likely to encounter asbestos unless working on or with construction materials produced before 1980. The most common asbestos work on LCE sites will be using a non-powered tool such as a chain pipe-cutter to cut a pipe and remove it from an excavation during decommissioning of sewer or water lines.

Actions if ACM is Suspected

1. If you believe there may be asbestos where you are working alert your supervisor immediately who will:
 - alert workers in the vicinity to the presence of the material

- restrict access to the area
 - inform the H&S Coordinator without delay
2. No work will continue in the hazard area before workers who may be affected are protected.
 3. Testing will be done on a sample amount of ACM for due diligence purposes, and to determine if there is any risk to workers. Work may continue while the testing is completed. If the testing determines that there is a risk to the worker(s), crews must STOP WORK and determine a new course of action.

Low Risk Work

LCE employees can only perform Low Risk (Type 1) asbestos work defined as ACM removal: Work activity on/in proximity to non-friable asbestos-containing material, where the material may be disturbed/removed and there is no significant release of asbestos fibre including:

- Working near material containing asbestos, provided that the asbestos material is not disturbed. Removing non friable asbestos-containing material provided there is minimal dust disturbance (i.e., asbestos cement pipe)
- Removal of manufactured products containing asbestos where sanding, cutting or similar operations are not required. Do not use power tools to cut or drill which may create dust
- Removal of intact pipe and any loose pieces that may be broken off. If there are any loose pieces of ACM on the ground where work has taken place not contained by poly, it may be necessary to remove portions of nearby fill as it may be considered contaminated. An example applicable to work performed as part of projects would be removing and lifting asbestos containing pipe with a synthetic sling

Crew Safety Briefing

A briefing must be completed prior to starting work containing ACM, or if ACM is suspected. The crew safety briefing must be documented and include the following:

1. Type of known/suspected ACM that will/may be encountered so personnel are able to recognize it.
2. The hazards of exposure to asbestos fibres and the means to prevent exposure.
3. Safe Handling Procedure:
 - Ensure ACM is not disturbed or damaged in any way that would produce a dust or powder. Do not use power actuated tools
 - Restrict access to the designated asbestos work area and only allow persons wearing appropriate protective equipment to enter the work area. Removable gloves are required
 - When non-powered hand tools are used to cut, shape or drill ACM, wet the material to minimize release of airborne asbestos fibres. Only handle and remove wet ACM product, never handle when dry

- Place ACM to be disposed in/on a minimum 6 mil poly bag or tarp, seal with duct tape, place in lined bin which is contained in a secure area
- Do not dry-sweep to clean up ACM or use compressed air for any cleaning purposes
- Ensure asbestos waste is delivered to an approved dump site that conforms to provincial and municipal requirements. For approved sites, contact the Regional Office of the Ontario Ministry of Environment. Transport drivers must be informed of the precautions that must be taken and vehicles may be required to carry signs or placards specifying the nature of the cargo. (Refer to the *Transport of Dangerous Goods Act*)

Confined Space Awareness/Entry

Conditions

Work in and around confined spaces requires special consideration. Confined spaces have hazards not normally encountered in the workplace and can quickly develop hazards that are immediately dangerous to life and health (IDLH). Accidents in confined spaces are almost always multiple fatalities with half of the fatalities being would-be rescuers. MOL has developed stringent regulatory requirements for working in confined spaces which are found in the *Occupational Health and Safety Act and Regulation (OHSA) Section C. O. Reg. 632/05*. All LCE work involving confined spaces must follow these regulatory requirements.

Defining Confined Space

All the following criteria must be met for the area defined as a confined space:

- fully enclosed or partially enclosed
- that is not both designed or intended for continuous human occupancy
- and in which atmospheric hazards may occur because of its construction, location, or contents or because of work that is done in it

Confined Spaces to be Entered as part of LCE projects can include storm and sewer manholes. Confined space entry work may involve tie-ins to existing systems. Entry into other types of confined spaces may also be required.

Hazard Assessments and Safe Job Procedures are developed by trained personnel and those involved in the entry. Safe Job Procedures will be developed in consultation with the Supervisor, H&S Coordinator or the worker health and safety representative in accordance with regulatory requirements.

No confined space will be entered unless there is a completed Hazard assessment, Entry permit and Rescue procedures form.

Confined Spaces Training

LCE will provide training for all employees that are involved in the confined space entry process prior to work in confined spaces. This training includes:

- Certified Confined Space Entry training, and the annual refresher
- specific confined space hazards associated with the facility, location, or operation
- how to use and calibrate the instrumentation; how to sample, exposure limits such as 8-hour, 15-minute STEL and Ceiling
- proper use, limitations of protective equipment, clothing and other safety equipment required
- permit entry requirements and other procedural requirements for conducting a confined space entry
- conditions that would prohibit entry
- duties and responsibilities of the confined space entry team

- how to recognize symptoms of overexposure to probable air contaminants
- method(s) for alerting standby personnel
- safe work procedure for summoning rescue or other emergency services
- use of communication equipment for communicating with entry and emergency/rescue personnel
- rescue plan and safe work procedure for each type of confined space
- use of emergency rescue equipment
- first aid and CPR
- work location and confined space configuration to minimize response time

Note: Subcontractors for LCE must operate to the same standard of training for their personnel for confined space.

Isolation of Hazards

Before LCE personnel are allowed to enter a confined space, it must be isolated so that no hazardous materials will enter the space by:

- closing valves and locking in the closed position using a double block and bleed
- blinding and blanking lines
- disconnecting lines
- locking-out all switches and controls for motors and pumps
- blocking or restraining moving parts
- de-energizing equipment
- See also Lockout in this section

Pre-Entry Testing and Continual Monitoring

Thorough atmospheric testing will be done prior to entry into any confined space and will continue while staff are occupying the confined space. During entry: Where possible, the probe should be inserted through the inspection port or other opening before removing doors or covers. The confined space should be tested for possible hazards in layers of approximately 1.2m (4ft) from the top of the space to the bottom. Atmospheric testing will generally be required for:

- oxygen content
- flammable/explosive gases and vapours
- toxic air contaminants
 - All gas monitoring shall be done with a calibrated gas monitor
 - Gas monitors shall be outside of the confined space in the control of the Attendant, the probe attachment shall be lowered with the Entrant at chest level. If an alarm sounds, the Attendant shall raise, and the Entrant shall leave the confined space immediately. In areas of high noise, alarm adapters or other solutions shall be used to ensure workers are able to hear the alarm

- Unless otherwise indicated, all gas monitors are set at 10% LEL, the allowable limit for cold work. If conducting hot work, the supervisor must ensure that a competent person changes the settings on the gas monitor to 5% LEL (the allowable limit for hot work)

The activities required for compliant atmospheric gas testing and monitoring include:

- calibrating and pre-testing gas testing instruments according to the manufacturer's instructions (Note: A "bump test" will be required prior to each use)
- testing for atmospheric hazards prior to entry
- testing in all areas of the confined space:
 - light gases, such as methane, will accumulate at the top of the space
 - heavy gases, like H₂S, will accumulate at the bottom
 - gases tend to accumulate near or in pipes and ducts leading into or out of the space
- recording testing and monitoring results
- monitoring for atmospheric and other hazards regularly during entry into the confined space

The most common toxic gases to expected in confined spaces:

- hydrogen sulphide (H₂S)
- carbon monoxide (CO)
- carbon dioxide (CO₂)
- sulphur dioxide (SO₂), plus
- methane (CH₄)

The atmosphere of a confined space is acceptable (safe) when the following conditions are maintained:

- oxygen: 19.5% to 23.5%
- flammability: less than 20% of the Lower Explosive Limit (LEL)
- toxicity: less than 50% of the exposure limits as listed in the OSHA

Access Control

Access to the confined spaces is controlled through physically securing access points, and through the entry permit system. All confined space entry on projects require an Entry Permit that:

- specifies the means, procedures, and practices for safe entry in accordance with the hazard assessment and safe work procedures established
- verifies that all protective measures required have been reviewed with the entry personnel
- provides authorization and approval for:
 - location and date of entry
 - type of work to be conducted inside the confined space

The following conditions will be met before each re-entry into the confined space:

1. Atmospheric testing is conducted, and re-entry permitted only if the results are acceptable (safe).
2. The confined entry supervisor must verify that all precautions and other measures on the permit are still in effect.
3. Only operations or work originally approved on the permit can be conducted.

Entry Equipment

The following equipment may be required for entry into confined spaces:

- rescue and retrieval equipment:
 - tripod or Davit system and hoist
 - life line
 - full body harness
 - first aid equipment
 - fire extinguisher(s)
- equipment for purging and ventilating the space:
 - ventilation fan
 - collapsible hose
 - power source or power cable
- gas detection equipment:
 - gas detector
 - calibration tools, equipment and gases
 - required sensors for gases expected
 - extension hoses/tubing and wands
 - intake filters
- communications equipment (intrinsically safe when required)
- personal protective equipment and clothing as may be required:
 - respirators
 - gloves
 - hard hat
 - hi-visibility clothing/vest
 - fall arrest or restraint equipment
 - eye protection
 - safety footwear
 - hearing protection
- special tools as required, e.g., non-sparking, intrinsically safe
- other safety equipment as may be required:
 - lockout devices to ensure isolation
 - barriers or guardrails around openings

Ventilation

The following important points for ventilating a confined space will be adhered to:

- Ventilation must ensure that there is adequate clean respirable air is supplied for each worker inside a confined space
- If tests are not within allowable limits, the confined space will be purged with fresh air before entry (Note: purging and ventilating does not remove the need to test and monitor)
- Test the atmosphere again after purging and prior to entry
- Cleaning, purging and/or venting is required to ensure that there is clean respirable air in the confined space
- Hang hose vertically with end about two feet off the floor
- Situate the blower away from traffic or other contamination
- Locate blower at least five feet away from confined space opening to avoid recirculating air
- Ensure vehicle exhaust or exhaust from a gas-powered blower is not blown into confined space

Exceptions: In most situations LCE personnel will not need to use mechanical ventilation to ensure a safe respirable atmosphere. Continuous ventilation is not required in a confined space where:

- the atmosphere is continuously monitored, recorded, and shown to contain clean respirable air, and the space has:
 - an internal volume suitable for the occupant
 - a record of atmosphere during entry every 15 minutes, and
 - no contaminants other than exhaled air

Natural ventilation can be used to control of airborne contaminants in a confined space only if the rate of airflow through the space is monitored and determined to be sufficient to maintain concentrations of airborne contaminants below the applicable exposure limits. Natural ventilation cannot be used to ventilate a confined space that has a high hazard atmosphere, or if the natural ventilation could draw air other than clean, respirable air into the confined space.

Emergency Rescue

Prior to entering a confined space, the parties involved must design a rescue plan for that specific entry in the event of an emergency and their roles in such a rescue. The primary method of rescue for confined space entry on LCE projects will be by remote retrieval using the tripod/davit and hoisting apparatus.

Availability of external rescue services and notification of entry into confined spaces must be managed as part of the Permit system. **Note:** LCE staff are not permitted to conduct any horizontal confined space entry or horizontal rescue.

Records

An Entry Permit must be completed every time a confined space entry occurs. The original permit will need to be readdressed, updated or redone if:

- the foreperson or acting foreperson changes
- the conditions in the confined space change
- during work, a person becomes concerned about the safety of the workers or the public because of factors not considered in the original permit

When a new crew member is added, the permit shall be reviewed with the new member and the person who verified the permit.

All Entry Permits shall be submitted to and stored by the Supervisor upon completion of work. The permits shall be kept for one year or the two most recent records for each category of Confined Space, whichever comes first.

Cranes and Hoisting Operations

Cranes and hoisting operations have an element of risk not normally encountered in other aspects of construction, and therefore requires good planning and execution of work. Regulatory information can be found in the *OHSA Regulations for Construction O. Reg. 213/91 Cranes, Hoisting and Rigging Reg. 150 - 180*. All personnel will comply with these regulations and this Safe Job Procedure. All crane work is contracted out. Review **LCE Safe Work Practice, Hoisting and Rigging Safety (General)**.

Application

This safe work practice applies to all mobile cranes, truck mounted cranes, self-erecting mini tower cranes and boom trucks with a capacity of 2,000 kg or more used on projects by LCE and subcontractors.

Standards and Regulatory Compliance

All cranes, hoisting and rigging will comply with the MOL *Occupational Health and Safety Act and Regulation (OHSA)*, in particular *Cranes and Hoisting and Rigging*. All applicable Standards will be adhered to, including the following:

- § CSA Standard Z150-1998, *Safety Code for Mobile Cranes*
- § ANSI Standard ANSI/ASME B30.5-2004, *Mobile and Locomotive Cranes*
- § ANSI Standard ANSI/ASME B30.22-2005, *Articulating Boom Cranes*
- § CSA Standard Z248-2004, *Code for Tower Cranes*
- § ANSI Standard ASME B30.4-2003, *Portal, Tower, and Pillar Cranes*
- § ASME B30.20-1993 *Below-the-Hook Lifting Devices*

General Guidelines for Hoisting

Cranes and hoisting equipment shall be inspected daily by the Crane Operator and recorded in a Daily Inspection Log. All defects and repairs shall be recorded on the Crane Logbook. Deficiencies that compromise the safety of the crane shall be corrected prior to use.

Shackles and other positive locking devices must be used to fasten rigging. The weight of the hook, spreader bar, load block and other material to be lifted must be included when calculating the total weight of a load.

General Requirements for Crawler, Truck and Hydraulic Cranes are:

1. Only authorized personnel shall enter the crane cab or operate the crane.
2. Weather conditions and wind speed should always be considered before handling a load. Wind speed gauges will be provided by the crane owner. The maximum allowable wind velocities indicated on the Engineer Lift Study will be adhered to at all times for all Engineered Lifts. When wind speeds are in excess of 25 km/h (15 mph), the crane/rigging superintendent will determine the requirements for all lifts. No lifts will be permitted if wind speeds exceed 50 km/h (30 mph).

3. The crane operator must make sure all other personnel are clear of the crane before starting and/or moving the crane. There must be a Crane Walker when moving/transporting lifts.
4. Close cooperation between the crane operator and signal person must be exercised. The crane operator shall not make any move unless signals are clearly understood.
5. Hoisting operations shall be suspended when an electrical storm is imminent.
6. Hoisting of loads over personnel is not permitted.
7. Hoisting operations performed during hours of darkness or limited visibility shall have adequate lighting and signaling arrangements.
8. The Crane Operator must know the total weight of the load being lifted, as well as the operating radius for the lift. (i.e., the operating radius is the distance from the crane center of rotation to the center of gravity of the load). The Crane Operator must apply the information to lift the load within the load capacity of the crane. All radius checks are to be confirmed with a measuring tape or other legal measuring device.
9. The following information must be known for all lifts:
 - Total weight of the item to be lifted
 - Total weight of the rigging required for the lift
 - Weight of the load block and hook or headache ball and hook plus the weight of the load line
 - Effective weight of auxiliary items attached to the crane but not in use such as stowed job, headache ball, rooster sheave, etc.
 - Boom length
 - Boom angle and maximum radius
 - Percent (%) of rated capacity while in operation
 - Proximity to other structures or lines
 - Soil conditions
 - Wind velocity and temperature extremes
 - Level of crane or hoist
10. Crane Operators shall only take signals from a designated Crane Signaler. The Crane Signaler will be identified to the Crane Operator before the lift. Signaling can be with hand signals or two-way radio and must be established before the lift.
11. All lifts require pre-lift communication with all involved parties to discuss the lift. Designate a crane signal person, rigger, and personnel to control tag lines. Lifting procedure should be discussed as well as wind, weather constraints, and adjacent hazards. All non-involved personnel must be kept clear of the lifting area. Where required an Engineer Lift Study must be completed and a Lift Plan developed and communicated before the lift.

Crane Inspection and Maintenance

It is the responsibility of the Crane Owner (or supplier of a mobile crane) to ensure the crane is inspected daily, weekly, and monthly or at intervals recommended by the original equipment manufacturer. In the absence

of specific intervals, the crane must be inspected in accordance with the requirements of *CSA Standard Z150-1998- Safety Code for Mobile Cranes*.

Rigging Requirements

1. All rigging shall be visually inspected prior to each use. Defective rigging shall not be used.
2. All rigging shall be clearly labeled to show the Working Load Limit (WLL). The WLL of rigging is based on a 4:1 design factor for alloy steel chain slings and chain fittings, 5:1 design factor for wire and synthetic slings and fittings, and 10:1 for any rigging components used for hoisting personnel.
3. When slings are applied to sharp edge loads, the sharp edges must be protected with softeners to prevent damage to the slings.
4. Shackles shall be used with the pin to the eye of the sling or lifting lug. Pins shall not be in contact with the running part of any sling. Shackles shall have the pins secured if there is potential for them to turn. This is mandatory when shackles are used as a component for hoisting personnel.
5. All hooks shall have functioning safety latches. Hooks and other rigging components shall be attached in a secure manner. Open hooks shall only be used when attaching or disconnecting the hook and would place a worker in a dangerous position. Job Hazard Assessment must be used to establish the hazards and methods to protect against those hazards involved in the use of open hooks.
6. Hooks and other lifting attachments on the buckets of front end loaders and backhoes are prohibited from use unless designed and certified by a professional engineer.

General Items

- The rigger/user shall inspect slings daily and only use properly rated slings
- Position the hand so it cannot be caught between the load and adjacent objects when guiding a load. Tag lines should be attached to guide loads
- Natural or synthetic ropes should never be used on hot loads or where exposed to open flames, sparks, or slag
- Softeners shall be used to protect slings/wire ropes from being cut on sharp edges
- Rigging equipment damaged to the extent to compromise the rated capacity shall be destroyed
- Slings should be double wrapped in a choke application
- Tag lines will be used in accordance with the **Safe Work Practice: Tag Lines**

Pre-Lift Meetings

A crew briefing must be held after the Lift Plan has been completed and prior to the lift. Guidelines for conducting the Pre-Lift Meeting are as follows:

1. Ensure that a copy of the Lift Plan is readily available.
2. Ensure the Pre-Task Inspection (PSI) is readily available.

3. Assemble all personnel involved with the lift (supervisor(s), operators, riggers, etc.).
4. The Crane/Rigging Superintendent is to review the Critical Lift Plan with all personnel involved to conduct a discussion and explanation of the following points:
 - a) What is to be lifted and how?
 - b) Where the load is to be placed?
5. Where the crane(s) are to be set up?
6. How the load is to be rigged?
7. Determine the rigging needed.
8. Who is responsible for what?
 - a) Who is in charge of the lift?
 - b) Which Crane Operators will be operating which cranes?
 - c) Who is responsible for rigging the load?
 - d) Who will help in the rigging?
 - e) Who will be the designated Signal Person?
9. Explain:
 - a) The path the load will take.
 - b) How the load will be placed.
10. Examine the site for:
 - a) Proper set up of the crane(s).
 - b) Necessary equipment in place.
 - c) Any obstructions, hazards, or other factors that may interfere.
11. Ask all personnel:
 - a) "Do you understand what is required for the lift?"
 - b) "Do you have any questions or points that need to be clarified?"
 - c) "Do you have any concerns regarding the lift?"
12. If there are any concerns or problems at this stage then the concerns and problems will be addressed, and the review process repeated.
13. The lift will be postponed until all factors are discussed and concerns have been addressed and all personnel involved are confident and prepared to make the lift.

Fall Protection

As set out in the *OHSA Regulations for Construction O. Reg. 213/91 Reg. 26*, **Fall protection** is required whenever there is a hazard of a fall from 3m (10ft) or more, or a fall hazard from a lesser height which involves an unusual risk of injury. The fall hazard area extends 2m (6ft 6ins) back from any unprotected edge plus the height of any elevated work platform such as a ladder. For example, a worker five feet up a ladder is in the fall hazard area if within 11ft 6in from a slab edge. Any worker within the fall hazard area must use fall protection such as guardrails, fall restraint or fall arrest equipment, or a safety monitor.

A **Fall Protection Plan** is required if:

- a fall of 7.5m (25ft) or more may occur and there are no permanent guardrails to protect workers
- a safety monitor and control zone or other work procedures to protect workers are used
- OHSA directs that a Fall Protection Plan is required

The **Fall Protection Plan** will include (and the risks assessed for) the following:

- fall hazards expected
- fall protection systems to be used
- assembly, maintenance, inspection, use and disassembly procedures for fall protection system
- rescue procedures

Safe Job Procedure

1. The **locations** that require fall protection include but are not limited to:
 - Falls from a height of 10ft (3m) or more, or when a lesser height involves unusual risk of injury
 - If you could fall a vertical drop onto an active traffic area
 - Floor openings during construction of structures
 - Activities atop of equipment or operating machinery
 - Work from ladders, scaffolds, and elevating work platforms
2. The **hierarchy of choice** for fall protection will be as follows:
 - a) Eliminate the need to work at heights by design or work planning.
 - b) Use guardrails.
 - c) Fall restraint.
 - d) Fall arrest.
 - e) Other methods acceptable to OHSA such as safety nets, or control zones and safety monitor.
3. **Guardrails** will be constructed in accordance with the following guidelines:
 - a) Top rails will be 102cm to 112cm (40in to 44in) in height above the work surface.
 - b) Mid rails will be placed approximately midway between the underside of the top rail and the top of the toe-board.

- c) Toe-boards will be installed to protect workers from tools, materials, equipment, or debris falling off the edge of the work surface, and the danger of slipping off the work surface due to the environmental conditions or work practices.
 - d) Uprights are to be at 2.4m (8ft) maximum centers, except a scaffold where 3m (10ft) maximum spacing is allowed.
 - e) Guardrails must be designed to withstand a horizontal load to the rail of 550N (125lbs) and a downward load of 1.5kN per metre (100lbs per foot).
 - f) Wooden top rails must be at least 38mm x 89mm (2in x 4in) for 2.4m (8ft) centres and 38mm x 140mm (2in x 6in) for 3m (10ft) centres.
 - g) Wooden uprights must be installed with the narrow dimension facing the open edge.
 - h) Top rails and mid rails will be attached to inside of upright supports.
4. Workers installing guardrails must be protected from falling.
 5. Guardrails or other fall protection systems must be installed for work over water if a drowning hazard exists.
 6. Where guardrails must be removed for work, permission to remove them must be obtained from the site supervisor. When fall prevention devices are temporarily removed, workers must be protected by other fall restraint or fall arrest devices.
 7. Guardrails and barricades that are temporarily removed must be replaced at the earliest opportunity. Areas unguarded because of such removal are not to be left unattended.
 8. Daily inspection of guardrails or fall prevention systems will be completed by the supervisor.
 9. Ensure when building a deck that the guardrails are installed immediately after the joisting plywood or Q-decking are set. Guardrail protection must be increased to allow for any raised work platform in the danger area.
 10. Materials and tools being stored must be 10ft back from the edge except for tools being used and working amounts of materials. Proper lift ropes and containers are to be used for hoisting tools and equipment.
 11. The danger zone beneath overhead workers shall be barricaded off to protect other workers and the public from the possibility of falling tools or equipment. If it is not feasible to barricade as above, a watchman will be posted.
 12. In situations where guardrails are impracticable, a fall restraint system must be used.
 13. Fall restraint systems or work positioning systems prevent workers from falling from the position or prevent them from travelling to an edge from which they could fall. They include safety belts or harnesses, lanyards, lifelines, and any other connecting equipment used to secure a worker to an individual anchor or horizontal lifeline system.
 14. Equipment used for fall restraint will comply with the following requirements:
 - a) Fall restraint equipment will be CSA approved and will not allow the worker to reach the point of fall.
 - b) A fall protection harness will be worn with a non-shock-absorbing lanyard.

- c) Lanyards must be attached to an anchor point which will withstand a loaded force of not less than 3.5kN (800 lbs).
15. Where it is not feasible to use Fall Restraint equipment (e.g., danger area such as work on the unguarded edge, properly constructed scaffolding should be used.
 16. When fall restraint devices are temporarily removed or are impracticable, workers must be protected by fall arrest equipment.
 17. Fall arrest systems stop a worker in mid-fall before striking a lower surface. They include personnel nets or full body harnesses with lanyards, shock absorbers, lifelines (vertical or horizontal) and other connecting equipment used to secure the worker to an anchor.
 18. Independently anchored lifelines and safety harnesses are required for all workers on swing stages which are 3m or more above a floor or grade. (This does not apply where a boatswain's chair is suspended by a block and tackle system, acceptable to the OHSA, which is manually operated by the worker in the chair.)
 19. Fall arrest equipment shall be CSA approved to support 22kN (5,000lbs) and not allow the worker to fall more than 1.2m.
 20. Anchors for fall protection must meet the following general requirements:
 - a) A lifeline, or a lanyard used without a lifeline, must be secured to an anchor.
 - b) An anchor plate with multiple attachment points designed to support combinations of suspension lines, tie-back lines and lifelines must be certified in writing by a professional engineer.
 - c) A temporary anchor must be removed upon completion of the work.
 21. Anchors used in a fall arrest system must:
 - a) Have an ultimate load capacity of at least 22kN (5,000 lbs.) in any direction required to resist a fall, and;
 - b) When permanent, be certified in writing by a professional engineer as having the required load capacity.
 22. Unless designed and certified by an engineer, vertical lifeline and lanyard fall arrest combinations must:
 - a) Meet the requirements of *Canadian Standards Association Standard Z259.2-N1979, Fall Arresting Devices, Personnel Lowering Devices, and Lifelines*.
 - b) Have a breaking strength of not less than 26.7kN (6,000 pounds).
 - c) Extend to within 1.2m of a safe working level.
 - d) Not exceed 91m (300ft) in length.
 - e) Be installed and used in a manner that minimizes swing.
 - f) Only be used by one worker at a time (unless the vertical lifeline is part of a ladder safety device).
 - g) Be secured to an independent point of anchorage for each vertical lifeline.
 - h) Be protected from abrasion, at points of attachment and elsewhere, as necessary to prevent chafing or abrasion caused by contact with sharp rough edges.
 - i) Be free of knots and splices except at the termination point.

- j) Be made of wire rope when a tool is used that could sever, abrade or burn a lifeline.
 - k) Not be made of wire rope if working near an energized electrical conductor or in another work area where a conductive lifeline cannot be safely used.
23. Termination knots or splice must not reduce the breaking strength of a vertical lifeline to less than 22kN (5,000 lbs.).
24. A wire rope vertical lifeline must not be used when there is potential for contact with energized electrical conductors.
25. The swing-fall hazard in a vertical fall arrest system must meet the following requirements:
- a) A vertical lifeline must be installed and used so swing-fall hazard is minimized.
 - b) A “thumb rule” is for every 10 units of longitudinal distance, 4 units of perpendicular distance is permitted, thus keeping the swing fall angle within 22 degrees.
26. Permanent horizontal lifeline systems must be certified by a professional engineer.
27. Temporary horizontal lifeline systems used for fall arrest must meet the following requirements:
- a) the horizontal lifeline must be a minimum 12 mm (1/2in) diameter wire rope with a minimum breaking strength of 89kN (20,000 pounds).
 - b) the lifeline must be free of splices except for end terminations.
 - c) the span must be at least 6m (20ft) and not more than 18m.
 - d) end anchors and connecting hardware (e.g., shackles and turnbuckles) must have an ultimate load capacity of at least 71 ken (16,000 pounds).
 - e) the lifeline must have an unloaded sag of approximately the span length divided by 60.
 - f) the elevation of the line at any point must be at least 1 metre above the work surface.
 - g) the worker’s free fall distance must be limited to 1.2m.
 - h) a minimum of 3.65m (12ft) of unobstructed clearance must be available below the work surface.
 - i) no more than three workers may be attached to a horizontal lifeline.
 - j) the horizontal lifeline must be installed so that it does not impede the safe movement of workers.
28. The free fall limits in a fall arrest system must meet the following requirements:
- a) A personal fall arrest system without a shock absorber must limit the free fall of a worker to 1.2m.
 - b) A personal fall arrest system with a shock absorber can allow free fall of up to 2m or the limit specified in the manufacturer’s instructions, whichever is less.

29. A lifeline used as part of a ladder safety device must meet the requirements, or acceptable standards.
30. A double line system, where the lifeline and equipment suspension line are rigged through a common control descent device, must not be used unless the system and Safe Work Practice of its use are acceptable.
31. Safety belts, harnesses, lanyards, lifelines, connecting hardware anchors and other devices must be:
 - a) Inspected by a qualified person before use on a work shift.
 - b) Kept free from substances and conditions that could contribute to their deterioration, and
 - c) Maintained in good working order.
32. A device or part that is defective must be removed from service.
33. After a fall arrest system has arrested the fall of worker, it must be removed from service and re-certified by the manufacturer or its authorized agent or by a professional engineer.
34. When fall arrest systems are not practicable or will result in hazards that are greater than if the system were not used, a safety monitor/control zone system or other Safe Work Practice/Procedure may be used upon approval by the supervisor.
35. When workers will always remain further from the unguarded edge than the width of the control zone, no other fall protection system need be used.
36. If a worker will be working within 2m of the control zone, the line defining the control zone must be established by a raised warning line 36in high or other equally effective means at all times during such work.
37. The duty of the safety monitor is to ensure that the work activity in the control zone is performed in accordance with the fall protection plan and in a manner that minimizes the potential for a worker to fall.
38. A safety monitor must:
 - a) Be experienced in the work overseen and trained in the role of safety monitor.
 - b) Be present at all times when a worker is in the control zone.
 - c) Have complete authority over the work as it relates to the prevention of falls.
 - d) Engage in no other duties while acting as the safety monitor.
 - e) Be located so as to have a clear view of the work.
 - f) Be able to have normal voice communication with the workers being protected.
 - g) Be instantly distinguishable from other workers.
39. Only workers required for the work may be inside the control zone.
40. A safety monitor may monitor a maximum of eight workers.
41. The safety monitor's name and a copy of his training records must be supplied to the Supervisor prior to work commencing in the control zone.
42. Floor openings and pits must always be barricaded or covered with adequate planking securely fastened in place. All temporary covers for floor openings must be marked to indicate their purpose. The standard symbol for marking covers for floor openings is a large circle with an "X" through it marked in red or orange paint.

Locating Underground Utilities

Safe Job Procedure

1. Determine if work activities will involve ground disturbance. Ground disturbance includes, but is not limited to, the following:
 - a) Mechanical digging (excavating/trenching).
 - b) Horizontal or vertical drilling, boring and auguring.
 - c) Installing soil anchors.
 - d) Pile driving.
 - e) Extreme ground loading such as cranes.
 - f) Soil densification.
2. Place a call to Ontario One Call minimum of five days before the anticipated work start date indicating:
 - a) Who you are.
 - b) What company you are working for.
 - c) Whether or not the information is for planning/engineering or for excavation (or other ground disturbance activities).
 - d) Request “as-built” drawings and standard plate-map information.
 - e) Where and when the ground disturbance will occur.
 - f) Depth of ground disturbance.
 - g) Whether or not the ground disturbance is on public or private property.
3. Obtain the as-built drawings for the area where ground disturbance activities will occur. The Ontario One Call can contact the following utility owners associated with the project for as-built drawings:
 - Hydro
 - Natural Gas
 - Telephone and Cable
 - Fibre Optics

For complete list of Ontario One Call numbers: ontarioonecall.ca.

4. Contact other underground utility owners that are not covered by Ontario One Call and obtain as-built drawings.
5. Obtain and review design drawings for relatively up-to-date information obtained from as-built drawings and surveys.
6. Obtain and review as-built drawings for recently completed project work.
7. Conduct a site survey to compare information obtained through Ontario One Call, contact with utility owners and design drawings. If there are any discrepancies with the information received and/or site conditions the supervisor must advise the utility owner. The supervisor will then work with the utility owner to accurately identify, mark, and locate the utility. Document the information provided by the utility owner.
8. Determine if further site investigation is required to identify, accurately mark and locate underground utilities. This will be required when Ontario One Call and/or other accurate information such as-built drawings are not readily available. Detailed site investigation and extra efforts to locate underground utilities will be required for abandoned residential and industrial sites, and for new construction.

9. Identify the location of the underground utilities on site using any or all of the following techniques as may be appropriate for the conditions:
 - a) Ontario One Call, municipality, and/or owner(s) of adjacent properties to locate utility services that tie-in to or run through the site.
 - b) Site investigation and survey noting evidence of existing, or pre-existing, utility services above ground and how they may be tied into underground utility services.
 - c) Hydro-vac services.
 - d) Line-locate services.
 - e) Municipal, utility company or site owner personnel, and their knowledge of the site.
 - f) Electronic devices such as line tracer (Scope) and Ground Penetrating Radar (GPR).
10. Use the following techniques to locate underground street lighting conduit as Ontario One Call does not indicate locations of this utility:
 - a) Determine if street light poles are within the area of the ground disturbance.
 - b) Identify poles and junction boxes in area and make an initial assessment of likely locations where the lines are placed in the ground.
 - c) Use a line locator to trace the line. Mark the trace as indicated in 13. below.
 - d) Positively locate the depth and alignment of the electrical conduit by hand digging and/or hydro vac. Street light conduit is typically buried between 0.5 and 1.0 metres below the surface.
11. Use a gas detector and respirator (if required), and strictly adhere to Confined Space Safe Entry Procedures if removal of a utility manhole lid is required to check the information received from the utility owner.
12. Mark the location of the underground utility alignments/locations using survey stakes, flags and/or spray painting the ground. Use the correct color coding for identifying the type of utility (Table below). An off-set method of marking may be used, but this must be explained to all persons involved in the work.

Colour codes for marking underground utility lines (universal standards)	
Electrical power lines, cables, conduits and ducts, or lighting wires and cables	Red
Gas, oil, petroleum, steam, or gaseous material	Yellow
Telephone, communications, cable TV, alarm or signal lines, wires, cable, conduits, or ducts	Orange
Water lines or pipes	Blue
Sanitary sewer, storm sewer, culvert, or drain lines	Green
Temporary survey markings	Pink
Limits of proposed excavation	White
Irrigation, reclaimed water, or slurry lines or pipes	Purple

13. Mark all utilities located by hydro-vac with a painted stake that indicates depth of the underground utility. Photo-log the details of the hydro-vac exposed utility. Record depth of the utility, the type, diameter, etc. If the hole must be back-filled pending future work, and a painted stake is not practical to mark the site (e.g., a road surface or driveway), an accurate survey of the hydro-vac location must be taken and recorded. Whenever possible, the stake marking the depth should be cut-off and buried in the hole. Accurate GPS recording of the location and depth is another preferred method.
14. Determine if ground disturbance activities will occur within 40 metres of any underground utility on site. If so, further actions may be required to avoid contact with an underground utility as outlined in the subsequent points. If not, no further actions are required, and ground disturbance activities can proceed.
15. Obtain Permits as required by the utility owners before starting any ground disturbance activities.
16. Incorporate the Ontario One Call, as-built drawings, utility owner's, site survey and Permit information into the work plan.
17. Determine if the ground disturbance activity requires a ground disturbance checklist to be completed and signed-off prior to starting the ground disturbance activities. A Ground Disturbance Checklist is required for all the following:
 - a) "High Risk" work, which is any ground disturbance within 10m or a buried utility that is electrical, gas, fibre optic, or a high-pressure force main of any kind.
 - b) All utilities work on or near 400 Hwy's.
 - c) Any ground disturbance on Major Roadways.
18. Notify the utility owner before the start of any on site work as required by permit or utility owner directions.
19. Brief the crew on all utility information applicable to their work as detailed in the work plan. Crews must have access on site to all utility locate information and applicable drawings. Complete a pre-task hazard assessment and crew briefing daily, and before starting any ground disturbance work. A re-assessment and additional briefing(s) will be required if conditions or information changes. The crew briefing must include, and document, details on the following:
 - a) Ground Disturbance Checklist when required to be used.
 - b) Location of utilities in the work area including alignment and expected depth.
 - c) How the utilities are marked on the surface.
 - d) Physical features of the buried utility.
 - e) The one-metre hand expose zone around the utility, and where mechanical excavation is not permitted until the utility has been exposed and positively located.
 - f) Equipment positioning.
 - g) Limits of mechanical excavation around the utility (including breaking the ground surface by mechanical means).
 - h) Duties of the swamper.

- i) Excavation safety (sloping/shoring for excavations over 4ft deep).
 - j) Overhead power line safety and safe limits of approach.
 - k) Personal protective equipment requirements.
 - l) Emergency procedures and contact numbers.
20. Establish a one metre “hand-dig only” zone around the underground utility until such time as the underground utility is exposed and positively located through hand-digging or hydro-vac.
21. Use mechanical equipment to break/remove a hard surface such as asphalt or compacted earth to a depth of no more than 0.3m.
22. Follow best practice expose and positively locate the position of the underground utility (alignment and depth) using acceptable methods, such as hydro-vac or hand digging, whenever mechanical ground disturbance will occur within 3m of an underground utility.
- a) **Hydro-Vac:** Use the hydro-vac to “pot-hole” and expose the underground utility. Mark the utility as described in point #13 (above).
 - b) **Excavator and Hand-Digging:** Remove the hard surface using mechanical means to a depth of no greater than 0.3 metres. Hand-dig (pothole) to expose the utility. The excavator may be used to remove soils above the hand-dug hole, but only to a depth less than the hand dug hole. The hole will be dug until the utility is located.

The utility must be located at sufficient intervals so that the location (horizontal and vertical) of the utility at any point is known. The supervisor must identify and plan to expose the utility on the Pre-Task Planning or Work Sketches. It may be necessary to do additional locates on the utility, depending on the information obtained through the initial locate program, in order to determine locations where the utility alignment changes.

23. DO NOT assume the utility is not there if it cannot be found in the location marked during the initial locate process. Also, if an underground utility is found nearby where it is expected to be, DO NOT assume it is the utility that you were looking for. Contact the utility owner and determine why the utility is not in the expected location.
24. Use a swamper during mechanical excavation in the area adjacent to the one-metre hand expose zone. The swamper must actively look for movement (e.g., utility contact), soil consistency, foreign objects identifying underground utilities, and encroachment on the one-metre hand expose zone. The swamper and equipment operator must be vigilant for signs of previous ground disturbance that might indicate an underground utility such as a trench patch, variations in soil types, and/or back-fill/bedding materials.
25. DO NOT use mechanical excavation any closer than 0.5m* from a utility. Mechanically excavating this close to any utility is only permitted once the utility has been positively located (depth and alignment) as described above. Hand dig only within 0.5m from the utility; unless, another distance is specified in the written Job Hazard Assessment (JHA), or other written instructions, issued and signed off by the project owner, employer, and or supervisor. Extra-caution is required when mechanically

excavating close to underground utilities as some lines, in particular gas lines, can have risers or plugged ends of connections that protrude from the line. *Note: Some utility owners specify the no mechanical excavation zone around their utility.

26. DO NOT assume abandoned lines are de-energized or unpressurized. Contact the utility owner immediately if unmarked and/or abandoned lines are discovered.
27. Use a bucket with a flat edge when digging with a back-hoe or excavator whenever possible. Avoid using a bucket with teeth.
28. Use sloping or shoring appropriate for the work and soil conditions to protect workers entering a trench or excavation. (Refer to **Safe Work Practice – Excavations and Trenching**).
29. Support exposed utilities to prevent damage. (Refer to **Safe Work Practice – Supporting Excavated Utilities**).
30. Report all utility contacts immediately to the H&S Coordinator and the utility owner. Some of the common LCE contact numbers are:
 - a) Ontario Hydro 1-800-434-1235
 - b) Utilities Kingston 613-546-1181
 - c) Union Gas (Ontario One Call) 1-800-400-2255
 - d) Bell Canada (Ontario One Call) 1-800-400-2255
 - e) Cogeco Cable (24hr tech support) 1-866-879-7179

NOTE: Contact information for projects are often included in the contract documents. These should be included when creating emergency plans.

Lockout – De-energizing Equipment

Many serious injuries occur because lockout procedures are not used. These injuries can be prevented. De-energization and lockout procedures will be used during all projects by all project personnel whenever maintenance, cleaning, repair, or installation work is performed on any machinery or equipment.

LCE will use training and safe procedures to ensure that no worker is injured because of the inadvertent start-up of equipment or machinery or the unexpected release of energy.

Equipment Required

1. Personal Protective Equipment (hard hat, CSA footwear, eye and hearing protection when required, gloves).
2. Lockout devices (scissor clips, locks, valve locks, blanks, chains, tags, etc.)

Safe Job Procedure

Only authorized persons (i.e., those trained in lockout procedures) are to work on machinery or equipment requiring the use of lockout procedures.

1. The supervisor responsible for the work will authorize the lockout, then inform the workers affected by the lockout of the extent and duration of the lockout procedure.
2. All possible sources of contact with energy sources, mechanical hazards, or chemical materials will be identified before lockout procedures commence.
3. Once the possible energy sources, mechanical hazards, or chemical materials have been identified, steps will be taken to isolate them from the area to be worked on.
 - a) Pneumatic:
 - Where the machine/equipment is supplied with compressed air from a compressed air system, locate the main shut-off valve to the machine, turn it off, and secure it in the closed position. Gate or ball valve lock adapters may be used for this purpose
 - You may have to secure certain parts of the machine with chains, blocks, slings, or pins to prevent movement once the air pressure is bled off
 - Bleed any air tanks or remaining air in the system
 - b) Hydraulic:
 - Where the machine/equipment is supplied hydraulic power, or has its own built in hydraulic system, press the start/stop button for the hydraulics
 - Bleed off any other energy storing devices such as accumulators. Find the disconnect switch, breaker, and control power
 - Turn them off and lock them out. Press the start/stop button to check that the machine will not start. Check also that there is no hydraulic pressure on the gauge

4. Once all the sources of hazard have been isolated from the work area as described above, means must be taken to prevent that isolation procedure from being removed or deactivated by someone else. This can be accomplished by placing a key operated lock (no combination locks) securing the isolation device or process. Using a lock is particularly suited for locking electrical junction boxes and valves, but is not practical for most blocking, and blanking applications.
5. After applying your locks, test the effectiveness of the lockout. Make certain everyone stands clear, then have the controls (push buttons, switches, etc.) operated to ensure that the machine/equipment will not move. Ensure the equipment controls are returned to the off or neutral position immediately after the test.
6. Relieve or restrain any residual or stored energy, and ground electrical energy stored in capacitors. Test with appropriate test equipment and/or visually check to determine energy sources have been neutralized.
7. **IMPORTANT** - Steps must be taken to ensure that the lockout:
 - a) procedures cannot be circumvented and/or bypassed (accomplished using locks), and
 - b) will prevent the machinery or equipment from being started, re-engaged, or moved while work is in progress.
8. When more than one person is involved in the installation, repair or maintenance process on equipment or machinery that is locked-out by means of a lock, each person must place their own personal lock at every point of lockout that is being used. A multiple lock hasp is to be used for this purpose. In the event that a previously locked-out switch or panel does not have a multiple lock hasp, contact the person whose name appears on the lock. Both workers will together apply a multiple lock hasp and then (re)apply their personal locks to the hasp.
9. Only the person who has placed the lockout device at the point of lockout can remove it. When a worker is unable to remove their own lockout device, the supervisor may remove it, but only after every effort has been made to contact the worker. The supervisor then takes full responsibility for the removal of the lockout device. This task may not be delegated.
10. A clearly visible tag must be affixed which indicates that the machinery or equipment is being locked-out. The tag will state that there is danger to the personnel who are working on the machinery or equipment if it is restarted, re-engaged, or moved.
11. All locks and tags are to remain on the equipment or machinery while it is being worked on. As personnel finish their work, they are to remove their own lock and tag.
12. When all work has been completed ensure:
 - that all tools and repair equipment are removed from the process before reactivating the equipment or machinery
 - any defective guards or safety devices are repaired or replaced
 - all components are properly installed including guards and safety devices
 - the equipment or process is free of incomplete work, obstructions, and other unnecessary items

- you know the sequence for lock removal and start-up, particularly if you are the employee removing the last lock(s) and,
 - everyone is clear and remains clear of danger during start-up
13. On completion of the work, remove your personal lock, (and multiple lock hasp where applicable) and restore power to the machine or equipment.
 14. In the instance where work is discontinued overnight or on weekends, and no one else is to continue the work, locks should be left in place. When work is to be carried on by a second shift, the oncoming shift must install their locks before the outgoing shift removes theirs. Alternatively, the Supervisor may install a lock of their own for the duration of the shift change.
 15. Removal of a lock will be the sole responsibility of the worker to whom the lock belongs. A Supervisor may remove a lock only if every reasonable measure has been made to contact the worker, and where the supervisor has fully ensured that it is safe to do so.

Lockout Exceptions

It may be necessary for some work that part or all of the equipment to be energized or in operation during the work process. Whenever this is necessary, written work procedure will be developed and followed. In addition, these general rules will be adhered to:

1. Only that part of the equipment that is vital to the process will be energized. All other parts are to be de-energized, restrained, etc. and securely locked-out.
2. Workers engaged in such operations will be fully trained in the safe work procedures and authorized to carry out the work.

Note: Other methods/practices may be used to ensure workers are protected from energy sources provided prior approval is received from the MOL/ESA. In these instances, it will be the responsibility of the supervisor to arrange for MOL/ESA approval through consultations with the local MOL/ESA Officer.

Obstructed Vision / Back-up Alarms

When a vehicle or equipment operator's vision is obstructed, the unit will not be moved until suitable precautions have been taken to protect the operator and any other workers from possible injury.

Equipment Required

1. CSA approved safety footwear, approved safety headgear and hi-visibility apparel are required.
2. All workers must use personal protective equipment suitable and necessary for the hazards of the work being performed.

Safe Job Procedure

1. The following action will be taken prior to moving whenever a vehicle or mobile equipment operator's view is obscured:
 - a) an inspection, on foot, of the area into which the equipment will be moved, or
 - b) direction by a signal person wearing a high visibility vest and stationed in a safe position in continuous view of the operator and having an unobstructed view of the area into which the equipment will move, or
 - c) direction by a traffic control person or warning system.
2. Risk of hitting pedestrians and co-workers will be reduced by using audible warning devices. Mobile equipment will be equipped with a back-up warning device, and vehicle operators should sound their horn before backing.

Power Line Safety

This procedure will be followed whenever personnel or mobile equipment will be working around or passing underneath that has the potential to reach the arc area around an overhead power line, either intentionally or due to mishap. This includes but is not limited to the following equipment: excavators, dump trucks, hydro-vac units, cranes, high loads on deck trucks, etc. Refer to **Safe Job Procedure: Locating Underground Utilities, Safe Work Practice: Excavations/Trenching** and *OHSA Regulations for Construction, Electrical Hazards Reg. 181-195*.

Equipment Required

1. CSA approved safety footwear, approved safety headgear and hi-visibility apparel.
2. CSA approved hearing protection and safety glasses or over the top safety glasses as required.
3. Gloves as required.
4. Support poles to elevate line.
5. Power line warning signs “Danger Due to Overhead Wire”.
6. Flags placed on lines.
7. Barricades to prevent entry into hazardous or restricted areas.

Conditions

Personnel working near power lines face serious hazards from contact with power lines and related equipment such as transformers. Risks include:

- Direct contact with an energized line
- Tools, equipment, or other conductive material contacting the power lines resulting in an indirect contact
- Arc-flash over from high voltage power lines
- Inductive currents
- Weather

Electrical current passing through the body can cause third degree burns, irregular heart action or stoppage, or the stoppage in breathing. Arc flash-over will result in severe thermal or flash burns. Inductive currents and stored charges on metal objects beneath a power line can result in a shock or spark that could ignite fuel during refueling.

Planning and Communication

1. Inspect the work site prior starting work or positioning equipment to locate and identify overhead power lines, underground power lines, and electrical equipment.
2. Determine the voltage of the power lines and then determine the safe limits of approach. If this cannot be determined a utility representative may be contacted to determine the voltage.
3. If working within the safe limits of approach distances you must ensure that any required permit has been received from the utility owner and that any requirements are understood by the crew.

4. In advance of working in the vicinity of power lines and/or in advance of passing underneath a power line, a site-specific Daily Hazard Discussion and or PSI must be completed by the personnel carrying out the work. This Daily Hazard Discussion, hazard assessment must identify any site-specific hazards and provide plans to eliminate or control those identified hazards.
5. Implement safety measures to prevent power line contact or arcing. These measures can include, but are not limited to, the following:
 - a) De-energizing the power lines.
 - b) Power line guarding, e.g., flagged warning line casing/insulating.
 - c) Power lines displaced or rerouted.
 - d) Placing warning signs indicating overhead line location and voltage.
 - e) Grounding equipment to reduce/eliminate inductive currents.
 - f) Using a qualified spotter.
6. Night work activities around power lines introduce unique hazards and as such a specific hazard assessment must be completed by the crew. Immediately prior to carrying out any power line crossing activity or engaging in any task in Close Proximity* to power lines, the equipment operator and the designated spotter MUST stop and discuss the steps outlined in this safe job procedure, any other safety related hazard controls required and shall.

*If the equipment has the capability to encroach or reach to within seven metres of the power line, then you are considered to be in "Close Proximity". Seven metres is to be measured at ground level, from directly beneath the closest overhead power line.

Setting-up Warning Signs and Barriers

- Warning signs are to be placed a minimum on the poles, on both sides of the right of way and in plain view of those traveling in either direction under the lines
- Warning signs shall be approximately 50cm x 70cm and be of standard design
- Flagging ribbons at 18in are to be placed on the overhead power lines. Flagging shall have high visibility markings or be orange in colour
- Signs and support posts must be in place before the job begins and must remain in place until the job is completed, or unless otherwise specified by a utility representative

Safe Work Practice

1. Personnel must consider all electrical wires and equipment as "live" until they are confirmed to be otherwise.
2. Only a licensed electrician should connect, maintain, or modify electrical equipment or installations.
3. No worker shall approach, and no equipment shall be operated within 7m of a live overhead power line unless:
 - The worker is, or the operation is directed by, a competent employee, OR

- At least the following clearances, as set out in the following table, are maintained between the worker or the equipment and the overhead power line conductors:

Limits of Approach	
Voltage Rating of Powerlines	Minimum Distance
750 or more volts, but not more than 150,000 volts	3 metres
More than 150,000 volts but not more than 250,000 volts	4.5 metres
More than 250,000 volts	6 metres

4. These minimum distances apply to all objects, including scaffolding, hand tools, ladders, mobile equipment, etc.
5. The limits of approach applies to all parts of the equipment, including booms, hoisting cables and any part of the load being raised. Distances must be increased for any change in boom angle, swing of hoisting cable and the load while being raised, lowered, or moved laterally, to ensure that safe distance is maintained at all times.
6. If the safe limits of approach (as noted above) from overhead power lines cannot be maintained, a utility representative may be required on site. In this case a site-specific Job Hazard Assessment must be completed prior to work activities taking place, by the personnel carrying out the work and the crew team lead.
7. Movement of dump trucks, backhoes, cranes, and similar equipment near power lines will require the use of a signaler. This person will warn the operator when any part of the equipment, or load, approaches the minimum allowable distances.
8. Work around power lines should only be done during daylight hours or with sufficient and adequate artificial lighting (light towers, light plants) in place.
9. Be advised of the potential hazard that exists when excavating or performing any earthwork in close proximity to the base of a power pole. "Guy wires" or their anchors may become damaged or undermined, resulting in the instability of the utility pole.
10. The preferred manner by which equipment shall be walked under a power line shall be in the forward position. Only under circumstances of having been discussed by the crew and documented on a PTP, shall reverse direction be used.

Safe Work Practice: Power Line Crossing Activity

1. It is mandatory that regulated safe limit of approach distances are maintained for people and equipment. A spotter must be assigned to assist equipment working near power lines.
2. Spotter must wear high visibility apparel. This gives warning to the operator if the equipment begins to encroach on the safe limits of approach.
3. Anytime the minimum distance is not maintained the Spotter will signal the operator to back away from the line.

4. The spotter shall signal for one piece of equipment at a time which is all allowed to pass under a line.
5. The spotter and the operator shall discuss and verify their plan prior to commencing activities.
6. The Spotter oversees providing direction to the operator in order that the equipment may be advanced safely underneath and beyond the overhead power line. At no time shall an equipment operator proceed under or encroach on an overhead power line until instructed to do so by the Spotter.
7. The operator shall lower, curl or otherwise lower the boom and any attachments to a height which will allow the equipment to safely pass underneath the power line and shall keep the equipment attachments in such a position until the equipment has passed safely underneath.
8. The Spotter shall remain in his position until the equipment has passed under the power line.
9. The Spotter shall always remain within view of the operator while equipment is working around or passing underneath a power line.
10. The Spotter must always remain outside of the power line area and must be in a position to reasonably assess how close the equipment, it's boom and any attachments are getting to the power line.
11. Any worker in the vicinity may give the signal to STOP should the need arise and has proceeded beyond the far set of "goal posts" to a safe distance.
12. If equipment meets a power line, the operator must stay in the machine. Ground personnel and Spotters must NOT approach. Refer to **LCE's Emergency Response** procedure.
13. Be aware that many electrical lines have breakers in them that will stop the flow of electrical current in the event of contact. These breakers may be set with timers which can re-energize the line unexpectedly.
14. If the machine must be exited, jump off; do not step off. Shuffle away from the equipment until you are at least 10m away. Avoid jumping onto damp ground.

Company Rules

Policy Statement

LCE will provide and enforce rules, practices and procedures that support the goal of zero accidents and incidents with our employees and subcontractors. Compliance is mandatory with zero tolerance for non-compliance. Any required deviations shall be communicated without delay to the H&S Coordinator and/or Site Supervisor. Rules, practices, and procedures are regularly reviewed, and revisions made based the following activities:

- Reviewing inspection, incident investigation and first aid records
- Observing project personnel performing their work activities
- Evaluating project personnel and Joint Health & Safety Committee recommendations
- Reviewing regulatory requirements
- Analyzing new work processes and contract specifications

Supervisory staff is responsible for ensuring personnel they supervise understand and comply with all rules, practices, and procedures.

Practices, and Procedures of Rules

This section contains company rules and project rules. For all task/work related procedures refer to **Module 3: Safe Work Practices**. Other procedures specific to the H&S program requirements are found in the section of the manual to which they pertain. For example, all information on incident reporting is found in **Module 10: Investigations and Reporting**.

Rules, practices, and procedures require periodic revision. Workers are encouraged to consult their immediate supervisor or the LCE H&S Coordinator if rules, practices, or procedures require development or revision.

Enforcement

Rules, practices, and procedures reflect legal compliance requirements; therefore, willful, or negligent non-compliance with LCE rules, practices or procedures will result in disciplinary action.

Subcontractors are responsible for their own safety, and they must comply with LCE's H&S program. If subcontractors are observed doing something that may cause a health or safety hazard to anyone, it must be reported to the LCE site supervisor.

Disciplinary Procedures

Personnel that do not follow prescribed standards are subject to the following typical disciplinary actions:

1. **first offence:** verbal warning - supervisor will record event in daily journal.
2. **second offence:** written warning - to be kept in the individual's personnel file.
3. **third offence:** minimum three-day suspension without pay; up to termination of employment.

There are some situations/events that may require immediate, more serious disciplinary action. For example, behaviours or practices that shows a blatant and deliberate disregard for health, safety or the environment, such as:

- actions that could or did result in harm to another person
- equipment/property damage due to negligence
- contamination of a watercourse resulting in long-term effects
- Trained employees entering a confined space and not following required procedures
- Supervisors who knowingly or unknowingly allow an illegal confined space entry

In these situations, the disciplinary process shall be:

1. **first offence:** written warning and time off without pay (3-day for workers; 5-days for supervisors). Warning filed in the individual's personnel file.
2. **second offence:** termination of employment.

Some situations are serious enough to warrant automatic termination of employment. These include:

- Employees operating LCE licensed vehicles without a valid driver's license or with a driver's license under suspension
- Employees entering a confined space without confined space training
- Committing or threatening acts of violence causing harm to any other person
- Working impaired (e.g., under the influence of drugs or alcohol)
- Engaging in criminal activity (e.g., arson, theft)
- Repeated non-compliance regardless of whether it is a repeat of the same offence

Disciplinary Records

Records of disciplinary actions will be kept in the individual's personnel file. Supervisors are required to keep their notes in the event of an investigation into an incident, accident, a coroner's inquest, or the legal prosecution of individuals.

Duty to Report

All employees must immediately report to your supervisor or the People Development (HR) department, if you are arrested, detained, or charged with

a violation under the *Criminal Code of Canada* or other Canadian laws related to your official duties.

LCE Employee Rules

1. Maintain a goal of 100% compliance with respect to wearing required Personal Protective Equipment (PPE), including but not limited to: hardhat, safety vests and safety footwear (CSA approved) on all LCE jobsites.
2. Ensure the requirements of LCE's Health and Safety program are implemented, supported and enforced.
3. All managers, supervisors and workers must be familiar with the current version of the Occupational Health and Safety Act and Construction Regulations sections that apply to their work activities.
4. Ensure Subcontractors are made familiar with, and work in a manner with protective equipment and procedures as required by the *Occupational Health & Safety Act and Regulations, and LCE Health & Safety Policy*.
5. Supervisor must always supervise work on their site and if they must leave the site, appoint someone in charge who is a competent person as defined in *Section 1 (1) Occupational Health & Safety Act*.
6. All supervisors must carry out the company's enforcement and ensure that disciplinary warnings given appropriately and documented according to policy.
7. Daily Safety Talks (Toolbox talk) are held and attended at all jobsites.
8. Ensure attendance at required meetings for the purpose of reviewing work and Health & Safety activities, and incident trends to determine necessary corrective actions.
9. Work areas are inspected prior to commencement of work.
10. Immediate action is taken to correct sub-standard practices and conditions identified through inspections or as reported to management/supervisor personnel.
11. Workers shall evaluate any/all tasks using LCE's Pre-task Safety Inspection (PSI) forms, to assess hazards and implement controls prior to beginning a task or when circumstances change during task completion.
12. Workers must consult with the supervisor before proceeding with any task if there are any concerns or questions regarding the safety of a work procedure.
13. Supervisors shall mandate LCE employees to fill out Pre-task Safety Inspection (PSI) forms when completing tasks.
14. Every reasonable precaution is taken for the protection of workers, subcontractors, and the public.
15. Personnel are informed of any potential or actual dangers to their health and safety and instructed in LCE safe work practices and legal requirements.
16. Every work-related accident, incident, or near miss must be immediately reported to the supervisor. All incidents are required to be investigated.
17. All employees will cooperate with incident investigations.
18. Any worker that visits the hospital must be accompanied by another employee when possible and must complete the applicable paperwork

required. Any hospital visits related to a workplace incident must be reported immediately to H&S Coordinator.

19. Workers must inform their supervisor of any physical or mental impairment affecting their ability to work safely (e.g., back problems, epilepsy, etc.), and they mustn't work if the impairment may create an undue risk to themselves or others.
20. Ensure a Health & Safety representative/supervisor accompanies Ministry of Labour (MOL) Officers performing inspections, and that MOL Officers are given the appropriate level of cooperation.
21. Copies of all MOL Inspection Reports are posted at the jobsite and forwarded to the LCE Health & Safety Coordinator on the same day that the MOL Inspection Report is delivered.
22. Regulatory infractions/corrective actions identified on an MOL Inspection Report are corrected without delay, and follow up reports are sent to MOL.
23. All workers must inspect tools, ladders, and equipment prior to using them and be trained in the safe use of the equipment.
24. All workers must not operate equipment unless they are authorized and trained to do so.
25. All safeguards are in place and functional, and no person endangered.
26. All workers must take care of and maintain tools and equipment and keep equipment in good working order to prevent accidents.
27. Drivers of vehicles must observe and adhere to posted speed limits and refrain from driving faster than the road, weather or equipment conditions responsibly allow.
28. All tools, equipment, and material to be transported in a vehicle are stored or restrained safely so these do not pose a hazard in the event of a sudden stop or vehicle accident.
29. Drivers must not leave the controls unless the vehicle has been secured against movement by setting parking brakes and transmission, and chocking wheels where necessary.
30. All workers must enter and leave their work area using safe routes.
31. No worker will leave openings in floors or walls unguarded or uncovered.
32. All workers must use proper lifting techniques to avoid sprains, strains, and back injuries. Get help or use lifting equipment for heavy or cumbersome loads.
33. Horseplay and or fighting are forbidden on company property and jobsites.
34. Firearms are not permitted on LCE property or jobsites.
35. In accordance with the Smoke-Free Ontario Act, and applicable by-laws, smoking in LCE machines, equipment, office(s) and vehicles is forbidden.
36. All workers must use, transport, store and dispose of all hazardous materials in accordance with applicable safety requirements such as outlined by WHMIS, TDG and *Waste Management Acts*.
37. All workers must help new employees recognize hazards and follow proper procedures and answer questions from fellow employees to which they know the answer.
38. All workers must ensure the public is protected from work activities by using signs, barricades, fences, and overhead protection as well as signal persons for directing traffic on public roads.

Project(s) Rules

The following are the same as the Worksite Safety Rules posted at project sites:

1. Required hygiene, first aid, and emergency facilities are provided as required.
2. WHMIS controlled products are identified and labeled, and appropriate Safety Data Sheets (SDS) are readily available on site; and there is compliance with the Act & Regulation and other environmental protection requirements as may be applicable.
3. All workers and visitors must report to supervisor on arrival and when leaving site.
4. All workers and visitors must wear personal protective equipment (PPE) while on site.
5. All workers using respirators must be clean shaven and fit tested.
6. All workers must use fall protection as required by OHS regulations (reg. 26).
7. All workers must help to maintain clear, unobstructed walkways and emergency access routes.
8. All workers must report all known hazards and participate in the safety briefings and meetings.
9. All workers must use the LCE Pre-Task Safety Inspection (PSI) forms prior to beginning a task.
10. Operators, drivers, and passengers must wear seatbelts when vehicle or mobile equipment is moving.
11. Only authorized persons may operate vehicles and mobile equipment.
12. Worker(s) will not enter a job site while under the influence of alcohol, recreational drugs and or illegal drugs.
13. Worker(s) will not enter an excavation deeper than four feet without meeting the excavation criteria set out by the OHS (Sections 222 through 241) or without side wall protection or a documented procedure.
14. Worker(s) will not leave openings in floors or walls unguarded or uncovered.
15. Worker(s) will not engage in horseplay, fighting or practical jokes.
16. No cell phone use while working on site or operating mobile equipment. Calls must be taken away from active work area in accordance with LCE Cell Phone Use Policy.
17. Maintain good housekeeping of work environment.
18. Equipment or trucks are not permitted to reverse on any LCE site unless they are under the direction of a signalperson.
19. Any truck reversing without a signalperson must be reported to the supervisor; drivers will receive one warning before they are removed from the site.
20. Any trucks or equipment found to have non-functional back-up alarms must be reported to the supervisor and sent off-site or have it repaired immediately.
21. Project personnel are not permitted to work when their actions indicate that the work would jeopardize themselves or others.
22. Responsible relations are maintained with members of the public to minimize any inconvenience that may result from construction activities.

Contravention to any of above rules may result in discipline and documented according to policy.

Additional Responsibilities

All supervisors and workers must comply with the duties outlined in the *Occupational Health & Safety Act*, Sections 27 and Section 28.

The Employer, carrying the most responsibility under the OHSA, shall ensure that they fulfill the duties outlined in the *Occupational Health & Safety Act*, Sections 25 and 26 as well as Section 23.



Personal Protective Equipment

The purpose of PPE is to protect the employees of Len Corcoran Excavating Ltd. (LCE) from exposure to workplace hazards and reduces the risk of injury. PPE is not a substitute for more effective control methods and its' use will be considered only when other means of protection against hazards are not adequate or feasible.

LCE's Personal Protective Equipment (PPE) practices include:

1. Conducting workplace hazard assessments to determine the presence of hazards which necessitate the use of PPE.
2. Selecting and purchasing PPE.
3. Reviewing, updating, and conducting PPE/PSI hazard assessments whenever:
 - The scope of work changes
 - New equipment is used
 - There has been an accident
 - Supervisor or employee requests it, or
 - Minimally once every year
4. Maintaining records on hazard assessments.
5. Maintaining records on PPE assignments and training.
6. Providing training, guidance, and assistance to supervisors and employees on the proper use, care, and cleaning of approved PPE.
7. Periodically evaluating the suitability of previously selected PPE.
8. Reviewing, updating, and evaluating the overall effectiveness of PPE use, training, and policies.

Role of Supervisors (and/or designated persons)

Supervisors (and/or designated persons) have the primary responsibility for implementing and enforcing PPE use and policies in their work area including:

1. Providing appropriate PPE and making it available to employees.
2. Ensuring that employees are trained on the proper use, care, and cleaning of PPE as per policy and rules.
3. Ensuring that any PPE training certification and evaluation forms are signed and given to the Health & Safety Coordinator.
4. Notifying the Health & Safety Coordinator when new hazards are introduced or when processes are added or changed.
5. Ensuring that defective or damaged PPE is immediately disposed of and replaced.

Role of Employees

Workers are responsible for:

1. Properly wearing PPE as required.
2. Attending required training sessions.
3. Properly caring for, cleaning, maintaining, and inspecting PPE as required.
4. Following LCE's PPE policies and rules.
5. Informing the supervisor of the need to repair or replace PPE.

Employees who repeatedly disregard and do not follow Personal Protective Equipment policies and rules will be subject to discipline through LCE's Discipline Policy.

Compliance Details

1. All workers and visitors must report to the site supervisor and wear personal protective equipment while on site.
 - a) **Mandatory:** hardhat, safety-toed boots, appropriate clothing and high visibility apparel.
 - **Hardhats** must be worn unless the worker or visitor is:
 - inside a vehicle that provides protection from falling objects
 - operating equipment that is equipped with overhead protection, or
 - in a work location that has been designated by the site supervisor as having no danger of injury from falling, flying, or thrown objects, or other harmful contacts
 - **Safety-toed footwear** must be laced, CSA approved and laced-up to the top of the boot above the ankle
 - **Appropriate clothing** must not be loose fitting or slip over eyes. Clothing must provide protection from weather and job-related hazards. Durable, non-stretch long pants are required, and clothing must not be torn, ragged or loose, and pants must not have cuffs. Gloves appropriate to the conditions must be worn to prevent injury or long-term ailments such as dermatitis. Examples are:
 - Leather gloves - when handling materials to prevent lacerations and/or slivers
 - Rubber gloves - when handling chemicals to prevent burns or long-term skin disorders
 - **High visibility apparel** (vests or clothing) must be worn where there is exposure to the danger of moving vehicles or mobile equipment
 - b) **Job Specific:** eye protection, hearing protection, gloves, fall protection, respirator, PFD, etc.
 - **Eye protection** must be worn when:

- Grinding, chipping, mixing grout, blowing, burning, drilling, welding, or performing other work procedures where exposure to an eye injury hazard is present
- Working with power tools where there is a high risk of flying debris, a full-face shield must also be used or where the tool itself may become a hazard by striking the individual in the face
- Working on or testing electrical equipment energized at a potential greater than 30 volts
- Wearing contact lenses, 20/200 or less vision in either eye, or blind in either eye. Workers wearing lenses must inform their supervisor so the lenses can be removed in case of an accident. Don't wear contact lenses where gases, vapours, flying objects, dust or other materials are present as they may be absorbed by the lenses harming the eye
- **Hearing protection** appropriate to the exposure of noise levels affecting workers on site shall be worn at all times which includes continual exposures over 85 dBA. Examples of noise levels confronting workers on industrial projects are:
 - Chain Saw Operator – 95-100 dBA
 - Heavy Equipment Operator – 91 dBA
 - Pneumatic Drill – 105 dBA
- Foam fitting ear protection must be properly inserted into the ear canal. Improper insertion may cause inner ear damage. Earmuffs must be worn over other types of hearing protection, such as foam plugs where the continuous noise exposure exceeds 110 dBA
- Use **fall protection** when within three metres of any fall hazard. Fall protection must be used in fall hazard areas. Fall hazard areas have the potential for a fall of 3m (10ft) or more, or where there is an injury hazard greater than the hazard of hitting the ground, e.g., above operating equipment or protruding rebar. Guardrails are the preferred method of fall protection, then fall restraint, fall arrest, and other methods
- **Respirator** that has been fit-tested must be worn or carried in locations identified by the supervisor. If any of this equipment is not readily available or is in unserviceable condition, workers must alert the supervisor and it will be provided or replaced. Ensure proper fit when using respirators. To achieve a proper facial seal with the respirator, the worker must ensure that facial hair does not obstruct the seal for the respirator to effectively protect against the inhalation of contaminants
- **Personal flotation devices (PFD)** with at least 200sq.cm (32sq. in) of white or silver retro-reflective material fitted on surfaces normally above the water surface, must be worn properly zippered, buckled, or tied on where a drowning hazard exists



Preventative Maintenance

Tools and Equipment

The tool and equipment maintenance plan will include a tracking system for tools and equipment owned by and leased or rented by LCE. The following loss prevention measures are in effect:

1. Company tools and equipment (including cords, hoses, and cables) must be inventoried.
2. Supervisors are responsible, and will be held accountable, for controlling tools and equipment inventory issued to their crews.
3. Tools and equipment should be stored in secure crew service trucks or tool storage trailers/areas when not in use.
4. Inventories will be conducted periodically by the service truck driver(s), lead hand(s) or safety representative(s) with all loss or damage reported to the supervisor.
5. Proper parking for mobile equipment must be arranged so the equipment is not tampered with or inadvertently started. Ignition keys must not be left in the equipment, and ignition safety switches turned off during off hours.
6. Equipment components that can be dismantled should be stored separately. For example, oxy-acetylene gauges/hoses should be separated from the bottles, and cables should be separated from a welding machine.
7. Fuel and maintenance supplies such as gas, oil and grease must be stored in an area that reduces the potential for unauthorized use or theft. All flammable products must be stored according to the SDS, and ideally in a separate lockable, ventilated storage shed or container.
8. Orderly tool and equipment storage is also a theft deterrent.

Damaged equipment on site shall follow the tag process for return to LCE's shop for maintenance, repair, or replacement. Records will be kept regarding maintenance and inventory.

Designated LCE Shipper/Receiver(s)

Each project site will have a specific person or persons responsible for receiving and shipping materials and equipment. The person(s) assigned will give all delivery slips to the supervisor who will maintain a file system to track all deliveries to and from the site. Beware of the following inadequacies when receiving a shipment:

- Partial shipment
- Damaged shipment
- Inaccurate packing slip
- Inaccurate listings of shipments from the project returned to equipment or material suppliers

Key Control

The supervisor is responsible to designate an employee(s) to be responsible for any key control. An inventory and signature system must be set up to control keys (including vehicle, equipment keys, and or any properties). Spare keys must be locked in a secure container, desk drawer or at LCE Head Office.

Vehicles and Mobile Equipment

All vehicles and mobile equipment used by LCE personnel must be operated and maintained in compliance with H&S Policy, legal requirements, and manufacturer instructions. Vehicle and mobile equipment safety can be achieved through the application of good maintenance practices and operator competency.

Employees who use their personal vehicle for LCE business must maintain the vehicle in accordance the vehicle manufacturer's specifications for maintenance. Any vehicle used to conduct LCE business that is found to be unsafe to operate must be removed from service pending completion of all required repairs.

Basic driver responsibility for vehicle maintenance includes:

- Maintaining oil and fluid levels
- Ensuring tires are properly inflated
- Servicing the vehicle at required intervals
- Keeping the vehicle interior and exterior clean and tidy

LCE managers and supervisors are responsible to ensure all employees who drive while employed are instructed on their responsibilities. Personnel must hold a valid driver's license, for the correct class for the vehicle operated, if they operate a licensed vehicle as part of their duties for LCE.

LCE management will authorize personnel to operate mobile equipment if the operator has achieved competency or is undergoing training to achieve competency. Subcontractors are expected to apply the same criteria for their operators. Unsafe equipment will not be operated until it is repaired.

Personnel with a revoked or suspended driver's license will not be permitted to operate a vehicle on projects. Personnel are responsible to disclose to their manager or supervisor whenever their driver's license has expired or has been revoked or suspended.

Smoking/Vaping in Company Vehicles

In accordance with the *Smoke-Free Ontario Act*, smoking/vaping is not allowed by any employee or passenger in any LCE-owned, leased, or rented vehicle. Tobacco smoke and vapours are recognized as a significant health hazard not

only to the employee who smokes/vapes, but also to those who may be exposed to second-hand smoke/vapour. Any LCE employee who drives their personal vehicle while on LCE business, must not smoke/vape when any other employee is present in the vehicle.

Safe Driving Record

A driver's abstract is required for all personnel that drive an LCE issued vehicle or who receive compensation (e.g., vehicle allowance, mileage) for their personal vehicle while employed on LCE business. The driver's abstract will be requested at the time of hire. Any concerns regarding safe vehicle operation will be noted and actions taken regarding:

- Suspended License
- Impaired Driving Conviction or Citation
- Speeding Tickets or Other Traffic Violations
- Employees with poor driving records may have their driving privileges revoked or suspended

Poor driving record may affect employability if driving is considered part of the employee's work. Employees that receive citations/tickets for traffic violations, impaired driving, or license suspension must report this immediately. Failure to report may result in disciplinary action up to and including termination. Remedial driver training may be required to have driving privileges reinstated.

Vehicle Equipment

LCE-supplied vehicles will be outfitted with adequate bulkheads, storage compartments and tie-down capabilities so tools, equipment and materials can be properly restrained when transported. The following will be supplied and maintained in all LCE-issued vehicles:

- A 5lb ABC fire extinguisher
- Emergency roadside reflective triangles (3)
- Tools sufficient to change a flat tire
- A personal first aid kit

Manager(s) or supervisor(s) will determine if additional equipment is required to be supplied to the vehicle operator, for example, amber beacon.

Personal Vehicle Access to Projects

On-site parking is not recommended as it may facilitate theft of tools and material from the project and may place the vehicle at risk of damage from construction processes. When on-site parking is deemed appropriate by the Construction Field Manager, a method of control must be established to separate the vehicles from the active working areas.

Only authorized vehicles will be allowed on site. Staff or LCE supervision must control vehicle entry. Anyone bringing a vehicle on site must be made aware that it is subject to search when leaving the site.

LCE will try to allow a clear area for temporary drop off parking for accessibility concerns or deliveries to businesses within the project area.

Mobile Equipment

Mobile equipment will only be operated by personnel that have been authorized to do so and are competent to perform the work they are assigned. The requirements for verifying and documenting operator competency will be enforced in accordance with LCE policies and legal requirements.

Project personnel that operate mobile equipment must ensure regular and routine maintenance of the equipment. Maintenance must follow the equipment manufacturer's specifications and/or that specified by the LCE Mobile Equipment Maintenance Program.

Mobile Equipment Operators must conduct daily pre-use inspections and maintain a "Daily Equipment Logbook".

Amber Beacon

Mobile construction equipment must be equipped with a 360 amber warning beacon if they are used under the following conditions:

- entering and exiting lane closures
- entering and exiting work zones beside a public road
- stopping or parking a vehicle in an active work zone in the area immediately beside public roadway
- performing work in the shoulder area of the road and using the vehicle as a safety/warning barrier

Training

Len Corcoran Excavating Ltd. (LCE) recognizes that all work must be done by trained and competent personnel, which is vital to the success of our H&S Program and projects. All LCE personnel must have the skills and knowledge to do their work in a safe and productive manner and we require the same standard for our subcontractors.

Orientation Training

There are two distinct orientation training sessions required before working on LCE sites:

1. Annual Health and Safety Orientation.
2. Site Specific Safety Orientation.

The first is delivered by an LCE representative to establish project/industry-wide baseline expectations for health and safety performance and environmental protection. The site-specific safety orientation training is delivered on site by a site supervisor or designate and addresses important H&S requirements for that specific work site.

Record of Orientation

A record of attendance of persons attending any orientation training will be kept by LCE. Attendees will be issued a training record confirmation with a copy on file.

Annual Health and Safety Orientation

All project personnel will attend the annual LCE H&S orientation prior to accessing project site locations. This requirement applies to LCE employees and subcontractor employees. Topics covered include:

- Scope of projects
- Health & Safety program – Goal of program and overview
- Subcontractor responsibilities for H&S
- Project hazards and safe procedures
- Project first aid
- Reporting incidents and injuries
- Protecting the environment
- Actions during protests
- Important contact information

Site Specific Orientation

LCE employees receive site specific safety orientation when they first report to work at a new site. The orientation will include safety information specific to the site and the expected duties the worker will perform. The Site Supervisor will conduct the orientation session, which must include, but not be limited to:

- A review of Health & Safety program requirements
- The identification of site hazards, and the safe procedures for dealing with these hazards
- How to report hazards, injuries, accidents and near misses
- Information regarding current site-specific safe work procedures in use
- The requirements for personal protective equipment (PPE) to be used on site
- Review of general Workplace Hazardous Materials Information System (WHMIS) education for handling hazardous materials and safe use and storage
- Onsite emergency evacuation and assembly points
- The location of first aid facility(s), services, and emergency equipment
- Name of supervisor and or the site superintendent, and how to contact them
- Names of safety representative/committee members and how to contact them
- Name of H&S Coordinator and how to contact them
- The location of safety reference materials including:
 - LCE H&S Policy manual
 - Safety Data Sheets (SDS)
 - Occupational Health & Safety Act and Regulation (OHSA)

Exceptions to Site-Specific Orientation Requirements

1. **Site Visitors:** May access project site locations without orientation training if they are escorted by an LCE authorized person that has received the project orientation. Visitors must report to the site supervisor first. Visitors may be required to complete a site-specific safety orientation if requested by the site supervisor. Site visitors that do not comply will be removed from the site.
2. **Deliveries and Mechanical Repair Services:** These personnel are not required to complete a site-specific safety orientation if the following conditions are met:
 - the delivery/mechanical repair is at a location pre-designated by LCE or an LCE subcontractor
 - the delivery/mechanical repair location does not interfere or interact with other work activities
 - An authorized LCE employee or LCE subcontractor meets the delivery driver/mechanical service provider and supervises the delivery/repairs
 - the delivery/repair service does not involve frequent or extensive travel on the site right-of-way

The service providers that have a contract to provide regular services to the project may be required to attend the Site-Specific Orientation.

Occupation / Activity Based Requirements

The following is a summary of occupation or activity-based training requirements that may apply:

- Asbestos – for all supervisors and safety representatives that may aid personnel who are handling or removing asbestos
- Electrical Work – all electrical work will be done by ticketed electricians or electrician's apprentice under the supervision of an electrician
- Equipment/Machinery operation – for personnel that operate this type of equipment
- First Aid Certification – for all first aid attendants (One First Aider for every five workers)
- Fall protection – for personnel working at heights
- Lock-out and De-energization – Lock-out training must be given to personnel required to repair, maintain, or operate machinery/equipment where the unexpected energization or startup of machinery/equipment or the unexpected release of an energy source could cause injury
- Musculoskeletal Injury (MSD's) – personnel at risk of MSD's must be educated in risk identification and training in methods of prevention
- Noise – all project personnel are educated on noise hazards and trained on use of hearing protection
- Rescue and Evacuation – personnel designated to provide rescue or evacuation services must be adequately trained including simulated rescue or evacuation exercises and regular retraining, appropriate to the type of rescue or evacuation being provided
- Respirators – personnel required to use a respirator
- Rigging – personnel conducting rigging and slinging work must be under the direct supervision of qualified workers familiar with the rigging to be used and with signals authorized for controlling hoisting operations
- Traffic Control – for traffic control personnel
- Transportation of Dangerous Goods (TDG) – required for all persons who ship, receive and transport dangerous goods
- Tree Pruning – this work will be conducted by certified arborists, or an apprentice arborist working under the direct supervision of a certified arborist, or a qualified electrical worker authorized to do this work
- Tree Felling – this work will be conducted by qualified tree fellers as certified by acceptable certifying agencies such as arborists
- Violence Prevention – workplace violence prevention education and training is for all personnel who may be exposed to the risk of violence in the workplace

Mobile Equipment

Mobile equipment operators must receive adequate instruction/training in the safe use of the equipment including air brake endorsements, if relevant. Assessment of operator competencies must be consistent with the operating instructions for the equipment. LCE will keep a record of the competency assessment on the employee's training file. Subcontractors must be prepared to submit their employee records to LCE.

Confined Space Entry

Confined Space Entry possesses a safety risk with prescribed regulations documented in the OSHA. Staff who are required to perform such work must receive adequate instruction on the safe procedures and use of equipment. They must demonstrate competency to a qualified supervisor or instructor.

Assessment of competencies must be consistent with the OSHA and H&S procedures, and a record of the assessment will be kept in the employee's training file. Subcontractors must be prepared to submit records for their employees to LCE. Competency assessments will include:

- Initial certificate training through an accredited certified training agency, in Confined Space Entry and Working at Heights
- Inspection - proper use of entry equipment including harness, tripod, or davit entry system, use of gas detection equipment
- Proper documentation of entry following prescribed OSHA and H&S policy and procedures

Continuous Training and Supervision

It is the responsibility of the employee and the employee's supervisor to ensure that all work is completed in a manner consistent with prior training, experience, and qualifications. All work must be undertaken in compliance with the H&S program and legal requirements. Re-training may be required should there be any performance deficiencies. Supervisors will be responsible for re-training employees with assistance from the H&S Coordinator. In some situations, the work may be new and therefore require new skills and knowledge training. This training can be delivered in several ways that include but are not limited to:

- Courses delivered by a competent trainer
- Supervised, on-the-job training
- Job coaching by the supervisor or a peer training
- Delivered on-the-job by a qualified peer

The following are some general guidelines to organize training, and on-the-job training in particular:

1. The employee will review applicable written work procedures (as often as required to understand the information). Questions should be encouraged and answered as thoroughly as possible.
2. Encourage the employee to learn with positivity and by focusing on the importance of doing the job correctly with the employee's safety and their importance to the project top of mind.

3. Demonstrate the correct way of performing the task(s). Explain fully what is expected from the employee.
4. Use written and/or practical exercise to test that the employee understands the proper way to perform the task. Correct any errors.
5. Check back periodically to ensure that the employee continues to use the correct procedures, which is part of the day-to-day normal supervisory process.
6. Once the employee is confident, sign-off the employee as trained once they have demonstrated competency, i.e., they can perform the task according to proper procedures. Use the training record designed for this purpose.

Daily Hazard Discussions (Toolbox Talks)

Toolbox Talks are a key component to worker education and training. Toolbox Talks are conducted with a specific topic for discussion, such as a safety rule, safe job procedure, a recent incident, a hazard, etc. Supervisors ensure all crew are present, and therefore Toolbox Talks are accompanied by a sign-in sheet.

Guidelines

1. Toolbox Talks present essential safety information on one main idea for the purpose of on-going education and training of workers.
2. Each supervisor or designate will conduct a Toolbox Talk daily with their crew.
3. Ensure the crew hears and sees the talk. Where possible, use brief demonstrations, simple graphs or displays, safety related materials etc.
4. Discuss recurring problems, incidents or near misses, accomplishments, areas for improvement.
5. Involve the team by encouraging questions and discussion on the topic.
6. Examples of typical Toolbox Talk topics include:

Care and use of personal protective equip.	Back care
Defensive driving	Noise destroys hearing
Eye protection	Operating equipment safely
Fall protection	Participating in the safety program
Guards on equipment	Qualified first aid attendants
Housekeeping on the job	Reporting accidents and hazards
Inspecting equipment before use	Responsibilities
Jobsite emergency procedures	Scaffold safety
Keep out of danger areas	Traffic control
Ladder safety	Upkeep of power tools

Toolbox Talk Records

Use the Daily Hazard Awareness Discussion/Toolbox Talk Record form to document the topic(s) discussed, crew members attending, suggestions, unanswered questions for later comment or follow-up, and any corrective actions recommended or taken. Toolbox Talk Records will be reviewed at the monthly Joint Health & Safety Committee (JHSC) meetings so forward one copy to LCE's Head Office.

Communication

Working Alone Communication Policy

If a worker is working alone, LCE will establish a method of communication to ensure the safety of that worker through:

- a) Electronic communication by phone/radio at regular intervals appropriate to the work hazard. If electronic communication is not practical, the employer will ensure that
- b) the supervisor or designate visits the worker, or
- c) the worker contacts the employer or designate at intervals appropriate to the nature of the hazard.

Public Communications Service Plan

LCE is committed to providing an above average level of client satisfaction through safe work practices and a thorough Public Communications Service Plan. This plan outlines how a project protects the public, proceeds from start to finish, maintains access to buildings, and addresses how stakeholders will be kept informed on the ever-changing conditions throughout the construction zone(s). This will include, but not be limited to; pedestrian walkways, emergency services, deliveries, garbage and recycling pickup, and detour traffic looking to bypass the project.

Public Meetings

LCE attends and participates in any public meetings that are organized to hear concerns, questions, and ideas regarding the upcoming work.

Information Handout for Stakeholders

LCE may create an information to properties and businesses located within the project limits as identified on the drawings. This information will detail what to expect when the first panel of fence is erected on site until the project is completed. Specifically, this will address:

1. Site construction hours.
2. Typical work procedure.
 - a) Main line pipe installation.
 - b) Hydro and streetlight installation.
 - c) Sidewalk preparation and maintaining site access through temporary walkways, packed granular, padded mats, temporary bridges and signage.
 - d) Final road grading and paving procedure.
3. Introduction of site supervisor, H&S coordinator, communication personnel plus contact coordinates.
4. Weekly meeting with stakeholders.
 - a) LCE may meet weekly with the appointed representatives to address any complaints or issues, and to ensure that the parties are current on all LCE efforts.

- b) Ensure all stakeholders are kept current on project status, schedule, service interruptions, etc.
- c) Ensure LCE workforce has a good understanding of all the business needs and stand ready to coordinate and assist with those needs.
- d) Discuss schedules, coordinate servicing requirements, coordinate, and assist with all deliveries, garbage/recycle pickup, utility outages etc.

Media Relations

LCE is an established, highly respected company with a reputation for providing excellent, professional services and strong relationships with our customers. While providing service, the news media may be interested in LCE. We have a responsibility to be open and responsive to their information requests because the media are among the ways our customers and partners build their perceptions of LCE and the work we do in the communities we serve. The president, or a designate, is the principal media contact and company spokesperson, and all inquiries are referred to the office of the president.





Inspections

Inspections are necessary to ensure project hazards are addressed on an on-going basis. The required inspections, who will conduct them, and the frequency of the inspection is summarized below.

Operator Daily Inspections

Pre-use inspections will be conducted by all personnel prior to operating machinery, equipment, and or power tools. Hand tools should also be inspected prior to use. All defective items will be removed from service until they can be repaired. The person using the tools or equipment is responsible for its safe operating condition.

Pre-use inspections will help to ensure tools and equipment are maintained in accordance with applicable standards. These standards include the manufacturer's specifications, standards organizations (CSA, ANSI, etc.), and regulatory requirements.

Mobile Equipment Logbooks

Mobile equipment operators (crane, backhoe, excavator, etc.) are required to maintain an equipment logbook in accordance with regulatory requirements. Logbook entries must detail what was inspected, and the conditions found, e.g., details of the pre-use check – fluid levels, operating controls, etc. Logbooks must be kept with the equipment and be readily available should an inspector request to audit the logbook. Defects identified during inspections must be repaired in a timely manner. Unsafe equipment will not be used.

Renting or Leasing Equipment

Suppliers are required to provide equipment in good and safe operating condition with adequate instructions to operate the equipment in a safe manner. For all equipment rented or leased by LCE a representative will check with the supplier to verify that the equipment is provided good operating condition in accordance with the manufacturer's specifications. If there is evidence that the equipment is faulty, it must not be used until such time that it is in safe operating condition.

Daily Informal Inspections

All project personnel must be constantly aware of the need to correct hazards that may be present. Supervisors perform daily informal inspections as part

of their regular daily activities. All project personnel will help in hazard identification and control using these guidelines:

1. Correct hazards as you find them, whenever you can. Report hazards to your supervisor, both the ones that have been corrected, and the ones still requiring correction.
2. Supervisors will record hazard identification and corrections that occur through the informal inspection process. This is in support of due diligence practices. A short entry in the supervisor's daily logbook will suffice.
3. Ensure hazards that can be corrected are corrected. Refer any hazards that need further follow-up to the site supervisor and/or LCE H&S Coordinator to ensure the hazard is corrected.
4. Know about items that require special attention. This can be done by reviewing the inspection checklist, previous inspection records, and through job knowledge.

Planned Inspections

Informal daily inspections have significant limitations - they commonly identify only the obvious problems and they do not take a systematic approach of work areas to identify all hazards, substandard conditions and practices, and the necessary corrective actions. They are conducted regularly:

- Upon project start-up prior to work commencing to document site hazards that must be addressed prior to the work proceeding.
- Weekly/monthly commencing at the beginning of the second week of work at site. The "Supervisor/Safety Rep Inspection" form will be used for these inspections.
- Planned Inspections will be performed by the site supervisor (unless otherwise delegated) and, where practicable, a worker representative from the work site.

Pre-Inspection Guidelines

1. Review previous inspection reports for the area to be inspected.
2. Develop a checklist of commonly reported hazards.
3. Identify specific equipment, machinery, jobs, etc., associated with accident trends or severe loss potential.

During Inspection Guidelines

1. Using previous inspection reports, note whether the hazards listed were corrected as required.
2. Look for the off-the-floor and out-of-the-way items that would be missed during informal inspections.
3. Systematically cover the whole area. Pay particular attention to specific equipment, machinery, jobs, etc. that have been associated with accident trends or severe loss potential.
4. When unsafe conditions are found, corrective action must be immediately undertaken. Defective items must be removed from service until the

defect has been corrected. All unsafe conditions and defective items must be recorded.

5. Classify items according to their potential for injury or damage. This will lead to a systematic approach toward corrective action and follow-up.
6. Look for root causes of sub-standard conditions, practices, and procedures—not just the symptoms.

Post-Inspection Guidelines

1. Complete an LCE Weekly Inspection Report Form.
2. Copy all items from previous reports that have not been remedied, noting initial detection date.
3. Ensure all sections of the Inspection Report are completed and writing is legible.
4. Forward the Inspection Report to the LCE H&S Coordinator. Keep a copy of the report at the site for future reference as well as for MOL Officer access.

Special Inspections

Special inspections are required if there is a report of a failure or malfunction. These may quickly turn into an investigation if it involved a near miss or injury. This requirement comes from the MOL and OSHA. Special Inspections in response to incidents, accidents or mechanical breakdowns will be done by the most qualified person(s) available.





Incident Reporting and Investigating

Investigating incidents is necessary to prevent incidents from happening again. A properly investigated incident provides key information to educate others encountering a similar situation. The goal of every incident investigation is to prevent a reoccurrence.

Incidents must be reported and investigated. Primary responsibility for reporting is the Supervisor or most senior person at the scene of an incident. Investigations begin at the earliest practical opportunity and will be conducted by the supervisor responsible for the work being performed. Supervisors should be assisted in the investigation by management. Where practicable, a worker representative should participate in the process.

The investigation will:

- require thorough identification and evaluation of all factors contributing to the incident
- identify the root cause(s) of the incident
- provide realistic corrective action(s) necessary to eliminate the cause(s)
- establish when corrective action(s) will be implemented and by whom

Written Investigation Reports are to be submitted to the LCE H&S Coordinator within 24 hours of the incident.

Action After an Incident

1. Ensure no further danger. Secure all hazards before initiating rescue and providing first aid.
2. Provide aid to the injured and transportation to medical care as required.
3. Notify supervisor.
4. Contact LCE H&S Coordinator immediately, who will determine any outreach to Ministry of Labour.
5. Preserve the incident scene. Nothing must be removed from or changed at the incident location until the H&S Coordinator has given the clearance to do so.
6. Start an investigation.

Reporting and Investigating

The following incidents must be reported and investigated:

- all accidents
- near miss and high-risk occurrences
- contact with utilities including:
 - power line
 - gas pipeline
 - communications lines (copper or fibre optic)
 - railroad signal lines or devices
 - water line
 - sanitary sewer line
 - storm sewer line
- damage to railroad property
- unplanned disruptions of rail traffic or contact with a train
- hazardous materials occurrences (road or rail)
- incidents causing disruption of public vehicle traffic
- vehicle/traffic incident involving LCE personnel
- workplace violence incident (threat or actual violence)

The H&S Coordinator will provide the necessary resources to assist in the investigation, including an investigation kit.

Reporting Minor Accidents

All minor accidents must be reported to the site supervisor as they occur. The site supervisor must contact the H&S Coordinator immediately. This includes vehicle incidents and damage to property, materials, tools, or equipment where there is no “serious injury”. Minor accidents will be investigated to determine cause and the means to prevent a reoccurrence.

Reporting High-Risk Occurrences

All high-risk occurrences will be reported as if they were a near-miss incident. The site supervisor must contact the H&S Coordinator immediately. An incident investigation will be completed for all high-risk occurrences to determine cause and the means to prevent a reoccurrence.

Near-Miss Reporting

All near miss occurrences will be reported as if they were an accident. The site supervisor must contact the H&S Coordinator. All near-miss investigations will determine cause and the means to prevent a reoccurrence and will be used as an accident prevention tool. By investigating near misses, it is possible to identify situations that may result in an accident – prior to an actual accident occurring.

Investigations by Outside Agencies

Outside agencies such as Ministry of Labour, police or coroner’s office may conduct investigations after a serious accident and include LCE’s investigation results. The MOL accident investigation report may be released to the police and reports concerning fatalities will be released to the coroner. No other

organizations or individuals will receive the reports. The disclosure restrictions are outlined in the Freedom of Information and Protection of Privacy Act.

Reporting to Ministry of Labour

As per OHSA for *Construction Regulations Appendix C, Reg 834* the LCE H&S Coordinator immediately notifies MOL of the following:

1. Any accident that is fatal or results in a critical injury.
2. A major leak or release of a dangerous substance.
3. A major structural failure or collapse of a structure, equipment, construction support system or excavation.
4. Any blasting accident that results in injury, or unusual event involving explosives.
5. A diving incident that causes death, injury or decompression sickness requiring treatment.

The following guidelines will be observed by LCE employees and subcontractors:

1. Cooperate with MOL personnel and their investigation.
2. Speak to the facts as you know them. Do not provide statements with conjecture or speculation about what has or has not happened.
3. If it appears that MOL is investigating you with implications of fault or guilt, then the following actions should take place:
 - a) Ask the officer “Is this a formal investigation into my personal responsibility for the cause of the accident?”.
 - b) If the answer is “Yes”, then ask “May I retain legal counsel before answering any more questions?”.
 - c) If the answer is “No”:
 - i. tell the officer that this fact is being noted
 - ii. write down the date, time, place persons in attendance and the matter in question
 - iii. get the officer to sign a statement that they are not allowing counsel to be present during questioning
 - iv. ask if you may record the session and if this is denied, note this as well
 - v. ask to review the officer’s notes afterwards to ensure accuracy of your statements
 - d) If the officer is recording the session, make a formal request for a copy of the recording.
 - e) Retain legal counsel at the earliest opportunity and advise counsel on the events.

Police: The police will investigate a fatality and may investigate a serious accident. Their investigation is limited to determining if foul play or criminal negligence was involved. Persons directing work who fail to provide reasonable care in their duties may be charged: *Criminal Code of Canada, Section 217.1*: *Everyone who undertakes, or has the authority, to direct how another person does work or performs a task is under a legal duty to take reasonable steps to prevent bodily harm to that person, or any other person, arising from that work or task.*

Coroner: The coroner may order an inquest in the event of a fatal accident the purpose of which is to prevent reoccurrence of a similar incident. Recommendations for prevention are the focus, but the coroner may also indicate responsibility for allowing the accident to happen. Facts obtained through the coroner's inquest may also form the basis for evidence in a legal proceeding, e.g., for criminal negligence.

Conducting Investigations Process

Conducting investigations is a six-part process:

1. Preparation.
2. Responding to the incident.
3. Preserving the scene.
4. Investigating.
5. Analysis and Recommendations.
6. Reporting and follow-up.

Preparation

The LCE H&S Coordinator will provide an investigation kit, or create one with:

- measuring tape
- pencil/pen
- writing paper—preferably water resistant
- camera with flash or cell phone with camera
- flashlight
- incident report forms

Preserving the Scene

- Photographs and sketches should be taken immediately and especially if the scene may be disturbed
- Investigators will want a clear picture of what happened. Disturbing the scene has the potential to distort the facts
- Any incident required to be reported by MOL must be preserved until permission has been granted by a MOL officer to release the scene

Investigating

The investigation process begins after the scene is secure. Incidents have three stages to consider:

Pre-Contact: What happened prior to the accident? Carefully consider the sequence of events that led up to the accident. The root cause(s) of the accident is most often found here.

Contact: What happened during the accident? Consider how the damage occurred, what protection measures were in place, and how effective or ineffective they were.

Post-Contact: What happened after the accident? Consider factors that minimized or increased the seriousness, such as emergency response times,

first aid availability on site, location and condition of emergency equipment, emergency plans, and was personal protective equipment worn or unused.

Gathering Information

1. At the incident location familiarize yourself with the tasks, materials, environment, personnel, and site supervision.
2. Gather data through photos, measurements, notes, drawings, personnel, etc.
3. Record the information on the Incident Investigation Report form. Use additional pages as may be necessary to record all the information including details on:
 - equipment, machinery, tools, and materials
 - site conditions
 - the environmental conditions
 - work practices and/or conditions
 - worksite supervision
 - personnel involved - occupation(s) and experience
 - protective equipment
 - previous incident records and similar occurrences
 - safe work procedures and other supporting documentation
 - emergency procedures
 - first aid services and treatments
4. Interview personnel and other witnesses who saw the incident. Interviews should be objective with a focus on the facts. Listen and record all statements by:
 - Providing a comfortable environment to put people at ease
 - Keeping confidentiality and providing privacy by interviewing people separately
 - Advising all interviewees the purpose of the interview, e.g., to establish the facts, not to place blame
 - Obtaining the individual's version of how and why the incident occurred. Do not look for confirmation of your own opinion and never argue. Ask open-ended questions that require more than a "yes" or "no" answer
 - Repeating the individual's account once you have heard it. Use diplomacy and consideration to determine what occurred
 - Asking each interviewee for corrective action suggestions
 - Informing the individual of the expected date that the report will be complete
 - Ending the interview on a positive note by thanking the individual for their assistance
5. Gather any available written information that pertains to the incident such as safe job procedures, drawings, manufacturer's information, etc.
6. Review involved supervisor's and worker's personnel information to learn experience, education, training, previous incidents, or injuries, etc. which could be connected to the incident.

Analysis and Recommendations

The analysis, conclusions about accident cause, and recommendations to prevent a recurrence are presented in a report for circulation, action, and follow-up.

Analysis: All accidents are the result of multiple, simultaneous events coming together resulting in a loss. There will be more than one causal factor.

Determine the immediate—how the accident happened—and the underlying (or root) causes—why the accident happened. Immediate causes are self-evident by examining the physical data, interviews, and documentation. Root causes are revealed through examination of the relationship between the tasks, environment, personnel, and management factors. To determine root (underlying) causes, find answers for the following questions, then ask “Why?” or “Why not?”:

Task

- Was a safe work procedure used?
- Had conditions changed to make the normal procedure unsafe?
- Were the appropriate tools and materials available?
- Were the appropriate tools and materials used?
- Were safety devices working properly?
- Was lockout used when necessary?

Material

- Was there an equipment failure?
- What caused it to fail?
- Was the machinery poorly designed?
- Were hazardous substances involved?
- Were they clearly identified?
- Was a less hazardous alternative substance possible and available?
- Was the raw material substandard in some way?
- Should personal protective equipment (PPE) have been used?
- Was the PPE used?
- Were users of PPE properly trained?

Environment

- What were the weather conditions?
- Was poor housekeeping a problem?
- Was it too hot or too cold?
- Was noise a problem?
- Was there adequate light?
- Were toxic or hazardous gases, dusts, or fumes present?

Personnel

- Were workers experienced in the work being done?
- Were workers adequately trained?
- Can they physically do the work?

- What was the status of their health?
- Were workers tired?
- Were they under stress (work or personal)?

Management

- Were safety rules communicated to and understood by all employees?
- Were written procedures and orientation available?
- Were they being enforced?
- Was there adequate supervision?
- Were workers trained to do the work?
- Had hazards been previously identified?
- Had procedures been developed to overcome them?
- Were unsafe conditions corrected?
- Was regular maintenance of equipment carried out?
- Were regular safety inspections carried out?

Recommendations: To prevent a recurrence, recommendations must be linked to the root cause(s), which are tangible and measurable. Tangible means the recommendations are an action or activity that people can identify as being done or not done. They are substantial, definite, and may be clearly observed and evaluated. Measurable means that it is possible to determine if the recommendation has been implemented and effective. Investigators should prioritize recommendations as follows:

- a) Recommendations that will prevent a similar incident from occurring. Remove or change the sequence of events so that the cause(s) of the incident cannot occur again.
- b) Recommendations to prevent injuries if a similar incident reoccurs. If it does, what steps can be taken to ensure there are no injuries? The focus here is usually on equipment, clothing and gear that protects personnel involved in an incident. For example, use of seat belts in a roll-over.
- c) Recommendations to reduce injury severity through correct and adequate emergency response. Providing proper emergency response services such as first aid will help reduce injury severity.

Reporting and Follow-up

The Incident Investigation Report includes all the information gathered and used in the analysis to form conclusions and make recommendations. Forward the completed report to the LCE H&S Coordinator who may distribute to:

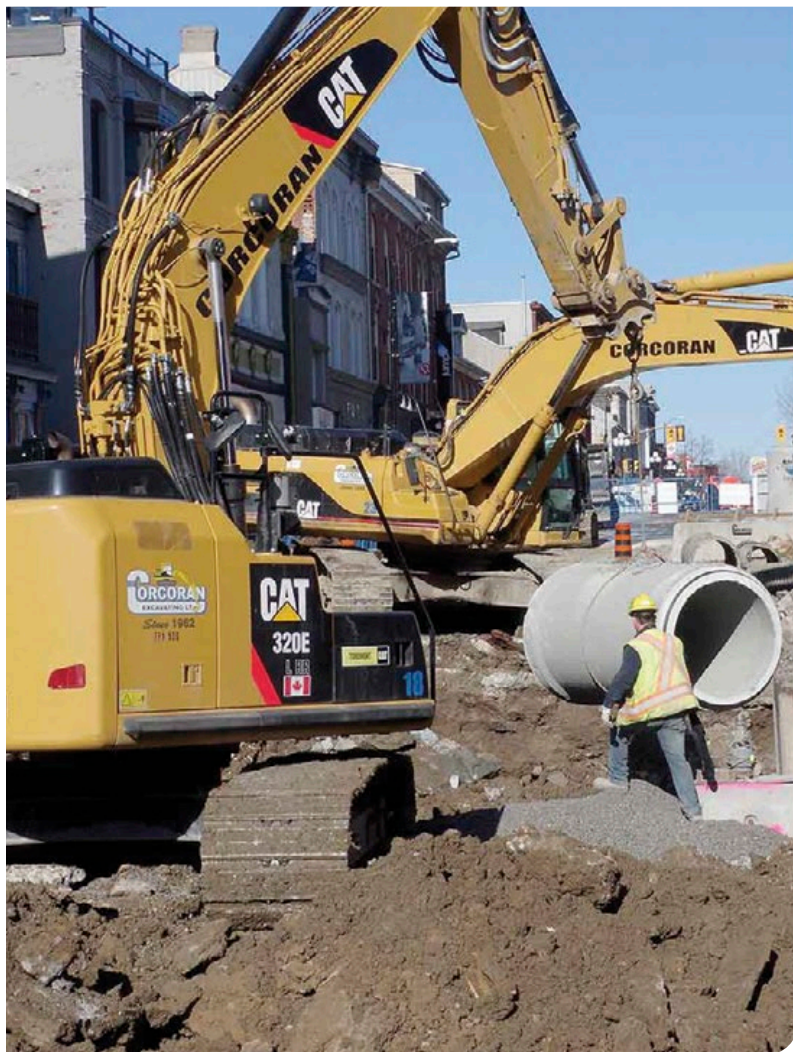
- Joint Health & Safety Committee
- Local Ministry of Labour office

Follow-up is critical for ensuring recommendations are implemented and the Joint Health & Safety Committee's review and comments will help. Recommendations should be assigned to an individual or group for implementation who must be capable of carrying out the recommendations, i.e., they must have the required skills, qualifications, experience, resources, and authority.

Post-Incident Communication

After an incident investigation, the H&S Coordinator will determine what was learned from the incident investigation and how the information will be reported. This information should be reviewed with crews by their site supervisor during a special meeting or as part of the Toolbox Talk or Monthly Safety Meeting.

Also, the H&S Coordinator is responsible for a Safety Alerts, which are reviewed by each site crew as part of Toolbox Talks. Safety Alerts are posted in appropriate locations (i.e., site office and lunch trailers) for review by all site workers.



First Aid and Emergency Preparedness

Policy

Len Corcoran Excavating Ltd. (LCE) will ensure the right people, supplies, services and support are in place to respond to project emergencies. Adequate first aid services will be readily available at each construction site. First aid services help minimize suffering due to job-related injuries and illnesses, reduce absenteeism, and help maintain productivity.

Emergency procedures include emergency response, care of injured workers and reporting requirements. Site specific emergency procedures will be developed and posted on site through the site supervisor with assistance from LCE's H&S Coordinator. The procedures will be thoroughly outlined, made known to all site personnel and enforced.

Site Emergency Planning

Site emergency planning is required to ensure procedures are in place before starting work on project sites. The following will be taken into consideration when developing site specific emergency procedures:

1. The types of emergencies possible/likely at the location.
2. A map or plot plan of the work area that shows evacuation routes and head-count location, as well as the location of emergency equipment, first aid services, fire suppression equipment, telephones, alarms, Safety Data Sheets, and the location of signs for directing emergency service vehicles.
3. The method for reporting emergencies and sounding the alarm, and the all-clear signal.
4. A list of personnel responsible in emergency situations and how to contact them.
5. Procedures and equipment for treating and transporting injured workers.
6. A list of phone numbers for support services (also posted at telephones).
7. Persons responsible for external communication (e.g., press releases).
8. An evacuation and head-count plan.
9. Designated access route(s) for emergency service vehicles.
10. Designated person(s) to meet and direct emergency service vehicles.
11. A routine for notification of workers' emergency contact.
12. Investigation and correction of hazards.

Technical Rescue and Emergency Medical Services

Emergency Services have technical rescue teams trained in:

1. High angle rescue.
2. Confined space rescue.
3. Hazardous materials incidents.
4. Trench/excavation rescue.

All sites must be able to be served by the Ambulance Service to provide advanced life support services for critical injuries or provide airlift emergency transport. These agencies can be reached by calling “9-1-1”.

Site Emergencies General Procedures

1. Take actions to prevent further danger to self and co-workers.
2. Move away from the danger.
3. Assess situation from a safe distance.
4. Call for help. Provide details of the incident.
5. Assist in rescue and care for injured, if safe to do so. If it is not safe, wait for qualified help to arrive to make the situation safe.

Critical Information for 9-1-1 Calls

Anyone making a “9-1-1” call must be prepared to provide the following information:

1. The nature of the emergency, e.g., serious injury, fire, hazardous materials spill, etc.
2. Details that are important to emergency services, such as, gas, smoke, wind, depth of trench, etc.
3. The location – be specific.
4. How to access the site – including routes through the site.
5. Coordination information to guide emergency services to the incident scene and who will meet them.

Emergencies Involving the Public

LCE personnel could potentially witness or be involved in an emergency involving the public. The most likely scenario is a vehicle accident. These guidelines apply:

1. Follow established first aid and emergency procedures to protect LCE personnel and the public.
2. Take the necessary steps to protect yourself and other LCE personnel.
3. Report all crimes immediately to the police by dialing 9-1-1.
4. Offer first aid to injured members of the public and call 9-1-1.
5. Control traffic to assist emergency vehicles to access the emergency scene.
6. Record information about the incident such as time, place, description, circumstances surrounding the incident, details on injuries and treatment, description of damages, etc.
7. Take pictures of the incident, if safe to do so.

8. Report to the LCE H&S Coordinator all incidents that affect project or its personnel.

Vehicle Incidents on Public Roadways

Employees involved in a driving incident must immediately report the incident to their supervisor who will then report such events to LCE H&S Coordinator. Immediately following a vehicle incident:

1. Pull off the road if possible, to avoid obstructing traffic.
2. Place warning reflectors on the road, as necessary.
3. Render first aid to any person who may be injured.
4. Report the accident to your supervisor.
5. Refrain from entering any dispute with the driver of the other vehicle, pedestrians, or bystanders.

As soon as it is safe to do so:

- Record license plate and driver's license numbers of any involved persons (including witnesses)
- Take photographs of the incident and damages sustained to vehicle(s), if feasible and any objects directly involved with or having caused the incident
- Share information, like names and contact information of witnesses, with regulatory agencies such as the local police that may be involved. Make no admission of liability or offer any settlement of claim
- Decide with your supervisor to report the accident to the necessary authorities
- Complete an LCE Incident Investigation Report

Roadside Breakdowns

If a vehicle breaks down, move the vehicle off and away from the travelled portion of the road. This applies particularly to emergency vehicle routes on the project site. Then:

1. Activate vehicle emergency flashers.
2. Set out reflective triangles at 32 m (100ft) behind and 32 m (100ft) in front of the vehicle.
3. Immediately report all LCE vehicle breakdowns to head office.

Hazardous Materials Incident Procedure

If the LCE site is located near major road transportation routes, rail, or industrial process facilities, there is a risk of a hazardous materials incident that could affect project personnel. The incident could be a spill, leak, fire and/or explosion. Other sources may include service vehicles carrying large quantities of hazardous materials. Evacuating the area and reporting the incident is the priority.

1. Turn off machinery and eliminate all sources of ignition.
2. Shut off vehicle engines.
3. Determine the wind direction.

4. Evacuate the scene to the nearest marshaling site upwind from the incident.
5. Make sure everyone is accounted for.
6. Prevent vehicles and bystanders from entering the area.
7. Try and observe if there are any Transportation of Dangerous Goods (TDG) placards visible. Be prepared to report this to the Fire Department and CANUTEC. (See example below.)
8. Call 9-1-1 as noted above and provide details of the incident, including the exact location.
9. Call the LCE H&S Coordinator who will contact CANUTEC at 613-996-6666 or *666.
10. Avoid contact with the hazardous materials (liquid, gas, vapours, smoke, etc.).

TDG Placards



Utility Emergency

LCE will endeavour to have power lines in the work area either re-routed or de-energized prior to work start. Maintaining a safe distance from all electrical conductors is the best way to prevent power line accidents.

If contact with an energized conductor occurs:

1. When operating mobile equipment: remain inside the cab and do not panic.
2. Alert other personnel to what has happened. Instruct them to keep their distance – at least 10m (33ft) from any machine, load, lines, or ground affected by the power lines.
3. Try to remove the contact: Move the equipment away from the line in the reverse direction to that which caused the contact. For example, if you swung left into the wire, swing right to break the contact.
4. If mobile equipment cannot be moved or disengaged from the contact, remain inside the mobile equipment until the electrical authorities de-energize the circuit and confirm that conditions are safe.
5. Report every incident involving contact with a live line to your supervisor who will in turn notify the electrical utility so that inspections and repairs can be made to prevent damaged power lines.
6. If it is necessary for the operator to leave mobile equipment while it is still in contact with the electrical conductor, they must never step-down allowing part of their body to be in contact with the ground while any other part is touching the machine.
7. Due to the ground voltage differential, the operator should jump with feet together, maintain balance and shuffle slowly across the affected

area. Do not take large steps because it is possible for one foot to be in a high voltage area and the other to be in a lower voltage area. The difference can kill.

8. Inspect equipment that has contacted a power line for damage. Affected sections should be repaired.



HIGH VOLTAGE CONTACT will result in electrical current flowing through the equipment to the ground. The ground will then be energized with high voltage near the equipment and lower voltage farther away.

Illustration: Construction Safety Association of Ontario



(BUT STILL DANGEROUS)
The operator should never leave the machine unless absolutely necessary.



Gas Line Contact, Rupture or Leak

LCE will take the required steps to prevent gas line contacts by locating all gas and other underground services before digging. A gas line leak or rupture can be detected by:

- **Sight** - Vapours in the air may be noticeable
- **Smell** - Mercaptan is added to gas to give it a distinctive rotten egg smell
- **Sound** - The hissing sound of gas leaking may be heard

If a gas line rupture or leak is detected:

1. Turn off machinery and engines, and eliminate all sources of ignition.

2. Evacuate buildings and the area and move to nearest marshaling site upwind from the leak/rupture.
3. Do a roll call to account for all workers.
4. Prevent vehicles and bystanders from entering the area.
5. Call 9-1-1 as noted above and provide details of the incident.
6. Call local utility provider (numbers on Emergency contact list). They will require similar details.
7. Notify the LCE H&S Coordinator.
8. Avoid contact with any natural gas or smoke escaping from the pipeline or smoke.
9. Warn people in nearby buildings as gas might enter through drains if the incident is underground.



Legislation Policy

LCE's Health & Safety activities are based on specific legislated requirements which are outlined in the *Occupational Health and Safety Act, Regulation for Construction Projects and Industrial Establishments*. Their purpose is to ensure all workplaces are safe for all workers regardless of whom they may work for. There are also several regulations that must be considered when completing different types of work on sites.

Whenever work is planned, all legislation and applicable regulations be considered before work is executed. Record of this must be documented and completed from the time the estimators are bidding the work through the life of the work project until completion.

The regulations that must be considered, without limitation, are:

1. *Book 7, Ontario Traffic Manual for Temporary Conditions.*
2. *Regulation 1101, First Aid Requirements.*
3. *R.S.O. 1990, Highway Traffic Act.*
4. *Reg 278/05, Asbestos on Construction Projects, and Building Repair.*
5. *Reg 490/09, Designated Substances.*
6. *Reg 623/05, Confined Spaces.*
7. *Reg 381/15, Noise.*
8. *Reg 211/01, Propane Storage & Handling.*
9. *Reg 332/12, Building Code; and*
10. Various Environmental regulations etc.
11. *Occupational Health and Safety Act. Ontario Regulation 213/91. Construction Projects.*

Posting Requirements

In addition to the posting of regulations there are other postings also required by law. These would include but are not limited to:

- a) LCE H&S Policy.
- b) Workplace Violence Harassment & Sexual Harassment Policy.
- c) WSIB Form 82, 1,2,3,4 poster for an injured worker.
- d) Notice of Project, on construction projects.
- e) MOL Prevention Poster.
- f) JHSC members.
- g) First aid certificates.
- h) Emergency plan, 9-1-1 poster, etc.



Occupational Health

LCE will take all reasonable steps to ensure that project personnel, visitors and the public are protected from health hazards through adequate control measures including injury or disease caused by way of physical, environmental, chemical or biological agents.

Noise/Sound

Noise is any unwanted or unpleasant sound that can affect the health of people including stress or hearing damage loss. Workplace noise is not a natural occurrence and is a physical hazard that can be controlled.

Assessment of noise is done to determine if hazards are present, if workers are exposed if they have suffered or are likely to suffer health effects, and if controls are working. Noise testing may be conducted if workers feel that controls are not providing protection.

Reducing noise exposure through engineering controls is preferred, such as installing mufflers, acoustical enclosures/barriers, sound-absorbing material, and reducing structural-borne vibrations mounts and providing proper lubrication. However, if engineering controls are not practical, hearing protection is a must for any noise levels above 85dBA.

Hearing Protection

Hearing protection devices (HPD) are classified by the Canadian Standards Association in Standard Z94.2-14 and fall into one of three classes A, B, or C. The class rating given to a device is dependent upon the amount of noise reduction (attenuation) the HPD provides. Many HPD's have a Noise Reduction Rating (NRR) label on the package.

Type of Hearing Protection	Class	Noise Reduction Rating
Foam Ear Plug	C	20 – 30 dB
Pre-molded Ear Plug	B	20 – 30 dB
Semi-insert	A	20 – 25 dB
Earmuffs	A	25 – 30 dB

Maximum equivalent noise level, dBA	Recommended Class of Hearing Protection
Less than 85 dBA	No protection required
Up to 90 dBA	Grade 1, Class C
Up to 95 dBA	Grade 2, Class B
Up to 100 dBA	Grade 3, Class A
Up to 110 dBA	Grade 2, Class B earmuff and Grade 3 or Class A earplug
More than 110 dBA	Grade 2, Class B earmuff and Grade 3 or Class A earplug

Sound Levels in dB	Duration – Hours per 24-Hour Day
85	8
88	4
91	2
94	1
97	.50
100	.25
Over 110	No exposure

Noise Surveys

Under the Regulations there are requirements for an employer to conduct noise surveys where the decibel level is expected to be above 85dBA. A sound level meter will be used to assess the noise levels. It measures sound in decibels (dB) within the frequency and amplitude that are recognizable by the human ear.

Musculoskeletal Injuries (MSI)

Employees are involved in activities that involve lifting or moving objects/materials, stretching to reach an out of the way item, crawling to reach something at floor level, using a tool while in an awkward position, or repeating the same motions dozens of times an hour. These types of activities may lead to strains and sprains collectively known as Musculoskeletal Injuries (MSI). MSI can be prevented if personnel:

- practice good housekeeping
- plan procedures to ensure the proper tools, equipment and personnel are available
- minimize the distance materials must be moved
- store materials at or above hip height to minimize unnecessary bending
- divide heavy or large loads into smaller loads for easier transport
- use personal protective equipment such as knee pads and gloves
- get help when lifting heavy or bulky objects, and don't swing and throw heavy loads

- use dollies, hoists, forklifts and other equipment to do a job more efficiently
- use correct postures and avoid overexertion—squat technique for lifting by bending at the knees with back straight and head up; reduce twisting and keep loads in front; turn using your feet not your body
- alternate activities
- take part in a fitness program that will build muscle strength and flexibility
- do stretches and warmups before any heavy or repetitive lifting jobs
- take breaks between stages of strenuous jobs

Environmental

An environmental hazard is a state or an event, such as rain, mud, ice and snow, that has the potential to adversely affect a person's health. A hazard assessment must be conducted prior to commencing work and if a hazard is identified then controls must be available and implemented in advance of working.

Heat

Exposure to extreme heat can result in an occupational illness like heat stroke, heat exhaustion, heat cramps, dehydration, or death. Workers who are exposed to extreme heat, work in hot environments or even those engaged in strenuous physical activities, may be at risk for heat stress.

Cold

The two main health hazards of overexposure to cold weather are frostbite and hypothermia. Frostbite occurs when body tissues freeze—most often fingers, toes, nose, cheeks, and ears and can cause permanent tissue damage.

Hypothermia can send body temperatures down to dangerously low levels. Hypothermia can occur in above-freezing temperatures when it's windy, or when a person is exhausted or wearing wet cloths. Untreated, hypothermia can lead to unconsciousness and death.

Chemicals/WHMIS

Chemicals that workers may be exposed to must be identified and addressed prior to commencing work. A hazard assessment must be conducted and if a chemical hazard is identified then a plan must be made prior to working.

The Ontario Government combined 11 of the 12 Designated Substance Regulations into one regulation: *O. Reg 490/09 under the Health & Safety Act*. If a designated substance is found on a work site, the supervisor must ensure the substance is properly identified and the proper regulation is consulted when dealing with the substance. In addition, it is the responsibility of the property owner to inform LCE of the presence of any of these designated substances:

- a) *Regulation 278/05.*
 1. Asbestos on Constructions Projects and in Buildings and Repair Operations.
- b) *Regulation 490/09.*
 2. Acrylonitrile.
 3. Benzene.
 4. Coke Oven Emissions.
 5. Ethylene Oxide.
 6. Isocyanates.
 7. Lead.
 8. Mercury.
 9. Silica.
 10. Vinyl Chloride.
 11. Arsenic, and
 12. Asbestos.

Workers shall be trained to:

- a) Identify the different chemicals and designated substances.
- b) Know the hazards associated with these chemicals.
- c) Take the steps to control the hazard through such things as isolation, covering, etc.
- d) Know who to call.

It is LCE policy to employ the services of a professional company when an uncommon, designated substance or unknown chemical or biohazard is discovered.

Common Designated Substances for LCE

Silica

Silica is a naturally occurring material that is created when crushing aggregates, chipping, grinding concrete or other material containing aggregate. Prolonged exposure to silica that is not controlled can cause numerous health issues such as silicosis (formation of nodules deep in the lung) and lung cancer. Extremely high levels of exposure to silica can be fatal and damage due to breathing silica dust is permanent.

Due to the nature of the LCE business it is impossible to provide a silica dust free environment. What can be done is to reduce the amount of silica dust that workers are exposed, thus providing increased protection, and includes but is not limited to:

- a) Water the aggregate during crushing, or construction process.
- b) Provide enclosed cabs on the vehicles and equipment used.
- c) When cutting, grinding or sand blasting concrete, respiratory equipment is provided; and
- d) During concrete cutting use water to reduce the dust levels.

Asbestos

Asbestos can be found in some construction and demolition material. These sources can cause a variety of health concerns. Should LCE staff encounter asbestos, notify the supervisor to determine if it is Type 1, Type 2, or Type 3. If determined to be Type 1, removal shall follow LCE's asbestos removal process and procedure. Type 2 and Type 3 removal will be done by a certified subcontractor. (Refer to **Safe Job Procedure: Asbestos**)

Lead

Lead may be found in construction/demolition materials. Lead can cause adverse health effects and should be tested. LCE follows Ontario Regulation 490 Health and Safety Guidelines for lead on Construction Projects.

Safety Data Sheets (SDS) and Labeling

SDS must be accessible to employees at their Site Office/Site Trailer, in the Head Office, and with the H&S Coordinator. Any person ordering hazardous materials is responsible for checking that supplier labels have been provided and applied to hazardous materials containers. Applying workplace labels is an alternative to supplier labels when decanting bulk products from properly labeled containers. Workplace labels will have the product name, safe handling information and a reference to the SDS.

PPE

If workers may be exposed to chemicals or biohazards, they must be protected by either the use of:

- a) Administrative controls.
- b) Engineered controls, or
- c) PPE.

If PPE is required it needs to be in good condition, effective and the right PPE for the hazard. Each hazard has its own unique qualities and the use of a generic piece of PPE, such as gloves, is not effective. Read the MSDS to ensure the correct PPE use.

No worker shall attempt to dispose of any designated substance without the proper PPE and instructions, which shall include procedures before, during and after the removal of the substance. If in doubt the area shall be cordoned off and signed indicating the danger, until the proper PPE and/or procedures have been developed.

Proper handling and storage

Hazardous material may include gasoline, diesel and propane used on construction sites. These sources can cause health effects. All hazardous material shall be handled and stored per SDS and or ECA requirements.

Emergency washing equipment

Even with all the precautions, there is always a chance some chemical may enter the eye or contact bare skin. Although most chemicals used by LCE are not lethal, there needs to be washing facilities to enable workers to wash off the chemical.

LCE sites will have handheld eye wash stations accessible to workers in accordance with Standards of Emergency Eyewash. All stations will be maintained and inspected in accordance with the manufacturer's recommendations or at least once a year.

Exposure

For any hazard the goal is to limit the length of time a worker is exposed. There are a couple of ways to determine the exposure limit: the MSDS for a particular chemical and the ACGIH book on Threshold Limit Values. If the exposure limit cannot be determined and the manufacturer cannot provide the information, then no worker is to be exposed to the chemical or biohazard until the limit threshold can be determined.

Transportation of Dangerous Goods

Transportation of Dangerous Goods (TDG) legislation applies to hazardous materials when they are being transported or offered for transport by road, rail, air, or ship. TDG does not apply to hazardous materials when they are used in the workplace (see WHMIS).

TDG controlled materials handled or transported by LCE must be identified and personnel supplied with correct documentation, labeling, placarding and safety markings. Compliance with TDG requires that:

- Dangerous goods are correctly classified
- Containers are labelled properly
- Vehicles are placarded appropriately
- Packaging is of the correct type and classification
- Proper documentation accompanies every shipment
- Accidents involving dangerous goods are reported to the proper authorities
- Emergency response plans are in place
- Personnel that consign and transport dangerous goods are trained and certified

The following personnel must be trained in accordance with TDG and ensure they have in their possession a certificate of training when offering for transport, receiving, handling, or transporting dangerous goods:

- Anyone transporting dangerous goods
- Personnel consigning dangerous goods for transport
- Personnel receiving dangerous goods

TDG regulated materials that are being transported are not regulated by WHMIS while they are being transported. Similarly, WHMIS regulated materials are not regulated by TDG when they are being used in the workplace. This means materials that are to be:

- Used in the workplace, and are marked with TDG labels, need to be checked for compliance with WHMIS requirements
- Shipped by road, rail, air, or ship, and are classified and labelled under WHMIS, need to be checked for TDG compliance

Waste Management

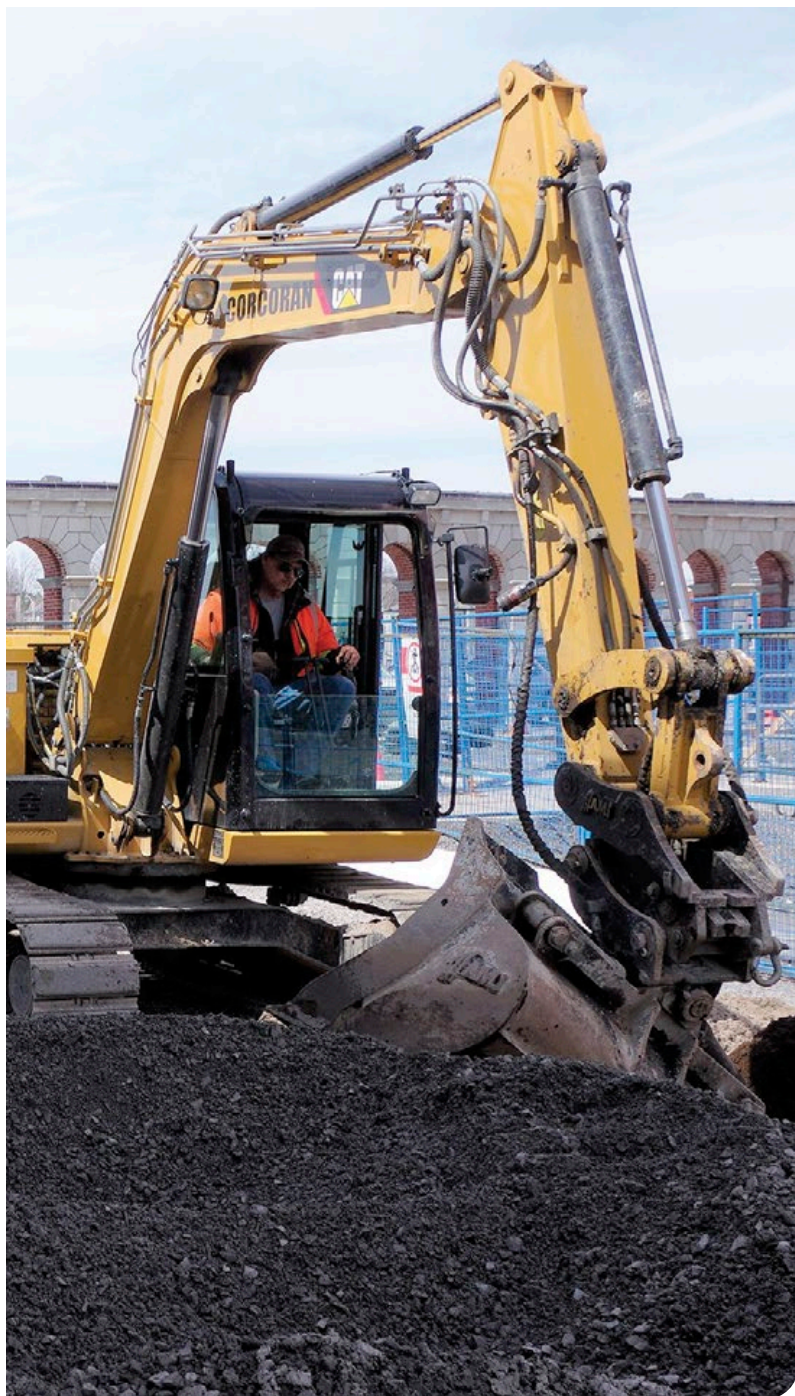
Hazardous waste materials generated during the project will be identified, stored, and disposed of in accordance with applicable legislation. Project personnel handling hazardous waste materials must be informed of the hazards and proper precautions to take. Government representatives should be consulted for proper disposal of these materials if there are questions or concerns.

Education/Training

LCE workers that use or work in proximity of hazardous substances/materials will be current on:

- The hazards of the materials they will be exposed to
- The procedures for safe use, handling, and storage as contained on labels and SDS
- Recognition of symptoms of overexposure and emergency response
- The responsibilities for reporting injuries, and reporting containers that are unlabeled, illegibly labeled or incorrectly labeled





First Aid and Medical Emergencies

Project first aid services, supplies and equipment will be provided as required by the OHS Regulation. In situations where first aid is not the responsibility of LCE, we will make every effort to ensure that the responsible party makes the required provisions.

Treatment and Attendant's Authority

The first aid attendant will be in complete charge of all treatment of injured workers until medical aid is available. They have the authority to decide the best method of transport of injured workers to medical facilities. Supervisory personnel will assist and not attempt to overrule the attendant's decisions relating to first aid or emergency transportation.

Reporting Injuries to First Aid

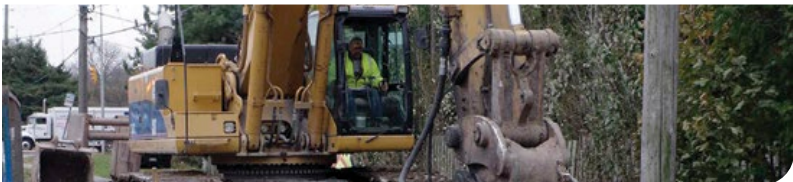
Anyone who sustains a job-related injury or illness, regardless of seriousness, is required to immediately report to the first aid attendant for treatment and must also report the injury to their supervisor. If medical treatment is required, personnel are entitled to choose their own medical practitioner.

A WSIB Form 6 must be completed by any person injured on the job and it must be submitted to head office at the earliest opportunity. (Refer to **Module 17-Injury and Return To Work**).

In the event of a serious incident (fatality or accident resulting in a critical condition with a risk of death), nothing can be removed or changed at the accident location before an MOL representative has given clearance to do so, except where necessary to facilitate rescue operations or to prevent imminent injury. (Refer to **Module 10-Investigations & Reporting**)

Hospital Locations

Map to the nearest hospital location must be posted in a conspicuous location on all LCE sites.





Joint Health and Safety Committee

Len Corcoran Excavating Ltd (LCE) recognizes the importance of having an effective Joint Health & Safety Committee (JHSC), which is an integral part of ensuring a safe and healthy workplace. In addition, LCE honours OSHA legislation requiring the establishment of a Joint Health and Safety Committee (JHSC).

Individual subcontractors, regardless of crew size, are not required to form a separate JHSC on a site/project but may elect to do so voluntarily. Also, LCE may require a JHSC be established at a worksite or project in cases where a need is determined by LCE.

JHSC Guidelines

The JHSC is a medium for workers and management to communicate and exchange information on health and safety matters. The JHSC's purpose is to assist in creating and maintaining a safe place of work. This is accomplished through recommending actions for improving the effectiveness of the H&S program and promoting compliance with the program and regulatory requirements. The JHSC consists of management and worker representatives and acts primarily in an advisory capacity. Management is required to respond to written recommendations within 21 days.

Constituency

The committee will consist of:

- Representation from management and workers where the former is not to exceed the number of the latter
- Substitute members may temporarily replace absent members and be granted the same rights as regular committee members

Records

The committee will keep minutes of all meetings. The minutes will capture all matters discussed at the meeting and include any action items to be addressed. The minutes of the meeting will be signed by both chairs, dated and distributed within one (1) week of the meeting.

Representative Responsibilities

1. Attend and participate in all company-sponsored safety training to maintain familiarity with the *Occupational Health and Safety Act and Regulations*, and *LCE Health & Safety Policy*.
2. Conduct monthly workplace inspections and identify sources of dangers. All observations to be reported to supervisors, recorded on the inspection form and circulated on site and to the office.
3. Ensure all first aid supplies and equipment meet or exceed the standards as specified in the OHSA.
4. Be readily available, accessible, and easily summoned to render first aid of injured personnel until relieved by a more qualified person.
5. Ensure first aid and emergency transportation procedures are adequate, communicated and posted.
6. Ensure communications equipment is tested daily for proper functioning.
7. Wear all personal protective devices or apparel required by all safety rules.
8. Keep records of all first aid treatments rendered in a "First Aid Treatment Record Book", and complete injury report forms as may be required.
9. Maintain patient confidentiality for all treatments rendered.
10. Relay concerns of workers and make recommendations to the Health & Safety Coordinator.
11. Be a role model for current and future H&S standards.

Health & Safety Coordinator Responsibilities

1. Set a good example for all personnel with timely and accurate advice.
2. Keep LCE management informed about Health & Safety requirements at a corporate level.
3. Be knowledgeable and current on H&S legislation, information and procedures; maintain records of training, inspections, injuries, and reports at the office.
4. Liaise with all workplace members who have responsibilities under this policy, including answering questions, researching solutions, and providing advice.
5. Resolve site specific H&S issues in a timely manner and advise on coordinating site specific H&S information sources.
6. Create and implement the LCE Health & Safety program, and review and revise the H&S Policy as required.
7. Address concerns and issues raised by H&S regulatory agencies including matters of non-compliance or response to incidents in a timely and effective manner.
8. Receive advice from project personnel on compliance with MOL, TSSA, TDG and WHMIS regulations.
9. Collect, analyze, and disseminate information and data on inspections and incidents to track H&S performance.
10. Research H&S issues to stay current on developments in industry best practice and regulatory compliance.
11. Aid LCE management, supervisors, and subcontractors when conducting investigations of serious accidents.
12. Complete periodic planned and unplanned site inspections to ensure compliance with H&S program and regulatory requirements.

Violence and Harassment

Len Corcoran Excavating Ltd. (LCE) recognizes that every person has the right to respect, dignity, and protection from all forms of harassment, and is entitled to a safe work environment that is free of violence and threatening behaviour. LCE will take all reasonable steps to protect employees and visitors from workplace violence or harassment.

While there are many definitions, harassment has been defined as:

Any improper conduct by an individual that is directed at and offensive to another person or persons in the workplace and which the individual knew or ought reasonably to have known would cause offence or harm. It comprises any objectionable act, comment or display that demeans, belittles, or causes personal humiliation or embarrassment, or any act of intimidation or threat. It includes harassment within the meaning of the Canadian Human Rights Act (CHRA).

Workplace Harassment

- a) Workplace harassment means engaging in a course of vexatious comment or conduct against a worker in a workplace that is known or ought reasonably to be known to be unwelcome.
- b) Any such actions which occur outside the workplace but have repercussions in the work environment.

Examples of harassing behaviour include but are not limited to:

- Verbal abuse or inappropriate displays of anger
- Bullying behaviour
- Comments or actions which constitute harassment or discrimination under the Ontario Human Rights Code including, but not limited to, sexual harassment and harassment based on race, religion, ethnic background, or disability
- The display, circulation, or electronic transmission of pornographic, racist or other offensive or derogatory text or pictures
- Conduct which interferes with a person's work performance or creates an intimidating, hostile or offensive work environment
- Unfounded complaints which are made in bad faith, in reprisal, frivolously or with malicious intent
- Interfering with a workplace violence or harassment investigation; intimidating a complainant, respondent, or witness; or influencing a person to give false or misleading information
- Reprisal as defined in this policy

- Any other inappropriate, negative, disrespectful, or unprofessional treatment of others; and/or

Failure of supervisors and managers to respond in accordance with this policy to misconduct or allegations of discrimination or harassment may be considered as condoning such behaviour and therefore in violation of this policy.

Workplace Sexual Harassment

- Engaging in a course of vexatious comment or conduct against a worker because of sexual orientation, gender identity, or gender expression, where the course of the comment or conduct is known or ought to be reasonably known to be unwelcome, or
- Making a sexual solicitation or advance where the person making the solicitation or advance is in a position to confer, grant or deny a benefit or advancement to the worker and the person knows or ought to reasonably know that the solicitation or advance is unwelcome.
- Any such actions which occur outside the workplace but have repercussions in the work environment.

Workplace Violence

- The exercise of physical force by a person against a worker in a workplace that causes or could cause physical injury to the worker.
- An attempt to exercise physical force against a worker that could cause physical injury to the worker, their personal property, their family, or their friends.
- A statement or behaviour that is reasonable for a worker to interpret as a threat to exercise physical force against the worker in a workplace that could cause physical injury to the worker.
- Any such actions which occur outside the workplace but have repercussions in the work environment.

Domestic Violence

Bill 168, Occupational Health and Safety Amendment Act requires:

If an employer becomes aware, or ought reasonably to be aware, that domestic violence would likely expose a worker to physical injury in the workplace, the employer shall take every precaution reasonable in the circumstances for the protection of the worker.

Whether the employer ought to have been aware of a situation will depend upon the circumstances. For example, was a former spouse harassing the worker at work by phone calls, showing up at the workplace or waiting in the parking lot on a regular basis?

Employees who believe they are at risk of violence, including domestic violence, must advise LCE who will take appropriate steps including seeking the assistance of the local police. Supervisors and managers may need to be trained to recognize and handle domestic violence that affects the workplace and LCE will work to foster a violence and harassment-free workplace.

Disclosing a Violent History

Employers are required to provide information, including personal information, to workers about a person with a history of violent behaviour if:

- a) The worker can be expected to encounter that person in the course of his or her work; and
- b) The risk of workplace violence is likely to expose the worker to physical injury.

The employer is only permitted to disclose the amount of personal information reasonably necessary to protect the workers from physical injury

Work Refusal

Bill 168 amends the work refusal sections of the OHS Act to make it clear that employees can refuse to work where “workplace violence is likely to endanger” the worker. As well, refusing workers are no longer required to remain near their workstation until the investigation is completed. Workers are only required to remain “in a safe place that is as near as reasonably possible to his or her workstation and available to the employer or supervisor for the purposes of the investigation”.

Resolution Process

If an LCE supervisor or manager is made aware of workplace violence and/or harassment, they will report the incident to the H&S Coordinator for further investigation. Any person who believes that he/she has experienced workplace harassment or sexual harassment may file a complaint or initiate proceedings, without prejudice or fear of reprisal as outlined in the Complaint Resolution Process by following these steps:

STEP ONE: Direct Communication

- a) Workers are encouraged to attempt to resolve their concerns by directly communicating with the person(s) engaging in the unwelcome conduct. An individual may not realize they are being offensive.
- b) Workers are encouraged to consult with their manager/supervisor for assistance.
- c) Workers should keep a record of the discussion, including the date, time of incident, names of any witnesses, where the incident took place and other particulars. However, failure to keep a record of events will not invalidate a complaint.

STEP TWO: Lodge a Complaint

- a) Individuals who do not use Step 1 or who do not have a satisfactory outcome at Step 1, should report the complaint to their supervisor or manager.
- b) If the complaint involves someone in a supervisory position or position of authority, report the complaint directly to the H&S Coordinator who will proceed with an investigation.

- c) Should a manager or supervisor become aware of harassment in the workplace where no complaint has been made, they should report the incident to the H&S Coordinator.

STEP THREE: Formal Complaint

- a) Upon initiation of a complaint, an investigation is conducted by the H&S Coordinator. All matters are investigated in a timely manner.
- b) The investigator(s) interviews the complainant, and the complainant is asked to provide a signed, written statement. The complaint form must contain:
 - i. name(s) of the respondent(s) to the complaint
 - ii. the date or dates of the incident(s)
 - iii. details of the incident(s)
 - iv. names of any witnesses
- c) The complainant is advised that the respondent has a right to know who is making allegations against him/her and will be provided with a copy of the written complaint for their response.
- d) The investigator(s) interview witnesses or others who are identified as potentially having any information relevant to the investigation.
- e) The investigator(s) are responsible to ensure a thorough, fair and impartial investigation of the allegations in the complaint. All individuals involved in the investigation must maintain confidentiality and will not disclose any information except as necessary for the purpose of fully investigating the complaint or taking disciplinary measures. It is critical that confidentiality be maintained to preserve the dignity and self-respect of those involved.
- f) The investigator files a report summarizing the allegations, the investigation results, and addresses whether the complaint(s) is substantiated.
- g) A written draft copy of the report is made available to the complainant and respondent. Identities of witnesses remain confidential and are not included.
- h) A final opportunity for input is given to both the complainant and respondent and their input is provided to the investigator in writing.
- i) If it is concluded that the policy has been violated, steps are taken which may include counseling and/or discipline up to and including termination of employment.
- j) Where, because of an investigation, it is determined or concluded that a deliberately false accusation was made, disciplinary action up to and including termination may result.

Injuries and Return to Work

A disabling injury may happen to anyone. LCE has a moral and financial interest in fair administration of the injury claims management process, which ensures that:

- All employees are treated equally and fairly in administering the compensation system
- Injured employees recover and return to work as soon as possible for their benefit and the benefit of the organization
- Employees receive support to help them return to work
- False claims are identified and contested

The overall goal is to ensure that each claim for compensation is administered as quickly and fairly as possible, and in doing so helps restore the injured worker to full pre-injury earning capabilities as soon as possible. To achieve this goal LCE will:

- Investigate every injury that results in the need for medical attention (Refer to **Module 10- Investigations and Reporting**)
- Process injury compensation claims application forms in a timely manner
- Maintain contact with every worker who is away from work due to injury
- Consult with WSIB medical service providers as to the recovery progress and expected return to work date
- Evaluate the possibility of modified duties and other early return to work opportunities in consultation with the WSIB, the worker, and the worker's physician
- Confer with the injured worker to facilitate their return to ensure that they are fit for work and have clearance from their physician to return to work

Injury Reporting

Employees who sustain a job-related injury or illness, regardless of the seriousness, are required to immediately report it to a first aid attendant for treatment, and to their immediate supervisor. Employees must report the following to their supervisor on the same day of injury:

- a loss of consciousness following the injury
- medical treatment received beyond first aid
- intention to seek medical treatment

- inability to return to their usual job function on any day following the day of injury
- an accident that resulted in the breakage of an artificial member, eyeglasses, dentures, or a hearing aid

The first aid attendant will be in complete charge of all first aid treatment of injured workers until medical aid is available. Supervisory personnel assists but does not attempt to overrule the attendant's decisions relating to first aid or emergency transportation.

The site supervisor must inform the H&S Coordinator immediately if:

- The worker loses consciousness following the injury
- The worker is transported to or directed to go for medical treatment
- The injury is one that obviously requires medical attention
- The worker states that they intend to seek medical attention
- The worker has received medical treatment for the injury
- The worker is unable to return to their usual job because of job induced injury, on any workday after the day of injury
- The accident results in or is claimed to have resulted in the breakage of eyeglasses, dentures, hearing aids or prosthetic devices

For these occurrences LCE must file a WSIB Form 7 no later than 72 hours after the occurrence.

Injury Claims Administration Process

The following is LCE's process to administer a claim for injury or occupational illness.

1. Accompany the Worker to Medical Treatment for Injuries

Injured workers will be accompanied to the medical facility by a representative of LCE. They will provide support, demonstrate concern, and determine the seriousness of the injury to anticipate absence from work. Regardless, the emphasis should be a demonstrated concern for the employee's welfare and condition.

2. Investigate the Injury Occurrence

The occurrence will be investigated as per the requirements outlined in **Module 10- Investigations and Reporting**. Information obtained is important for accurate reporting of information on the WSIB Form 7 – Employer's Report of Injury or Occupational Disease.

3. Report the Injury to the WSIB

LCE must submit the required forms to the WSIB within 72 hours of the injury. LCE must provide payroll information for injuries that require payment of wage loss benefits by the WSIB. The information is entered on the Form 7. It is important to ensure that the information provided is as accurate as possible. Inaccurate information can delay the claim, result in an over or under payment to the worker, and negatively affect LCE's overall claims costs.

4. Check Medical Information

The medical information that can be obtained is limited due to doctor/patient confidentiality; however, it is possible to discuss with the treating physician the prognosis for recovery and expected return to work. The WSIB Case Manager will also be able to review the treating physician's reports. The purpose is to ensure that the injured worker receive the right medical care to help in their return to work.

Some things that the employee should check with the physician and WSIB Case Manager are:

- What is the expected return to work date?
- Is the return-to-work date reasonable given the type of injury and expected work duties?
- Would assessment by an Occupational Physician be beneficial?
- Will there be any work restrictions upon return, i.e., temporary limitations or modifications?

5. Remain in Contact with the Injured Worker

There is an obligation on the part of the worker to actively take part in a process of recovery and return to work. The worker will be required to remain in contact with LCE on a weekly basis until their return to work. The employer will provide the employee with the correct number to call and set a pre-arranged time to call in on a weekly basis, or sooner if the injury is of a minor nature.

Having a genuine interest in the injured employees' well-being is important. LCE will appoint a representative to call or visit injured employees on a regular basis to provide support and encouragement to assist them in a timely return to work. Staying in touch with the worker provides an opportunity to plan better for the worker's return to work.

It is beneficial that employees are encouraged to return to work as soon as possible, but only after they have sufficiently recovered. Caution must be exercised once the worker returns to prevent a re-injury or slowing the recovery process.

6. Review Progress of Recovery and Return to Work with the WSIB

LCE H&S Coordinator will function as the company claims administrator by maintaining contact with the WSIB Case Manager. This is particularly important for claims with a longer duration. Staying connected will help to ensure that the injured worker is getting the treatment they require to aid in a quick recovery. The longer a worker is away from the jobsite the more difficult it becomes to return to work.

A WSIB Return to Work Specialist may be contacted to help facilitate an early and safe return to work.

7. Inform the WSIB of the Worker's Return to Work

Len Corcoran Excavating Ltd.'s claims administrator will follow up with the WSIB when the injured worker is cleared to return to work.

Return to Work

LCE will endeavour to accommodate employee's return to work at the earliest possible opportunity. Long delays can create complications in a safe return such as reduced levels of work conditioning and proneness towards easy re-injury.

Consider the injured worker's physical abilities and limitations and think whether they require a gradual return to work. A shorter workday or lighter duties means that the worker is back sooner, which helps to maintain the work schedule and the routine of working. Self-esteem also improves with the return to productivity.

Effective early and safe return to work requires the:

- Worker's physician to be involved and provide consent to the proposed return to work, (completion of a functional abilities form)
- Worker not to be placed at risk of further injury
- Modified duties proposed do not delay the worker's recovery
- Work is meaningful and productive

Options for early return to work

Modified duties provide an opportunity for the injured worker to be assigned suitable and productive work that will not aggravate the existing injury or impede the recovery process. The workers' physician and adjudicator should be consulted to ensure the proposed work is suitable.

Graduated return-to-work allows the injured worker to gradually return to pre-injury status through shortened workdays. This is usually done over a four- to six-week period with the worker working two hours per day for the first week, four hours the next week, followed by six and then eight hours in the final week.

On-the-job training provides the injured worker with an opportunity to learn and develop new skills. Prior to commencing a training arrangement, LCE will collaborate with the WSIB claims representative.

Contested Claims

There may be times when a claim is investigated further because it:

- a) Does not appear to be arising out of the normal course of employment, or
- b) May be an aggravation of an injury received while working elsewhere.

An investigation will note any discrepancies regarding how the accident occurred/the injury happened, or it will note if the employee did not immediately report the injury. The claim may be contested through the claim's management process outlined on the WSIB website, or through the Office of the Employer Adviser.

Appealing Claims Decisions

A Decision Letter will be issued informing LCE and the worker on whether the claim is being accepted and why. Either party is entitled to appeal the decision. Advice from the Employer's Advisors Office should be obtained.

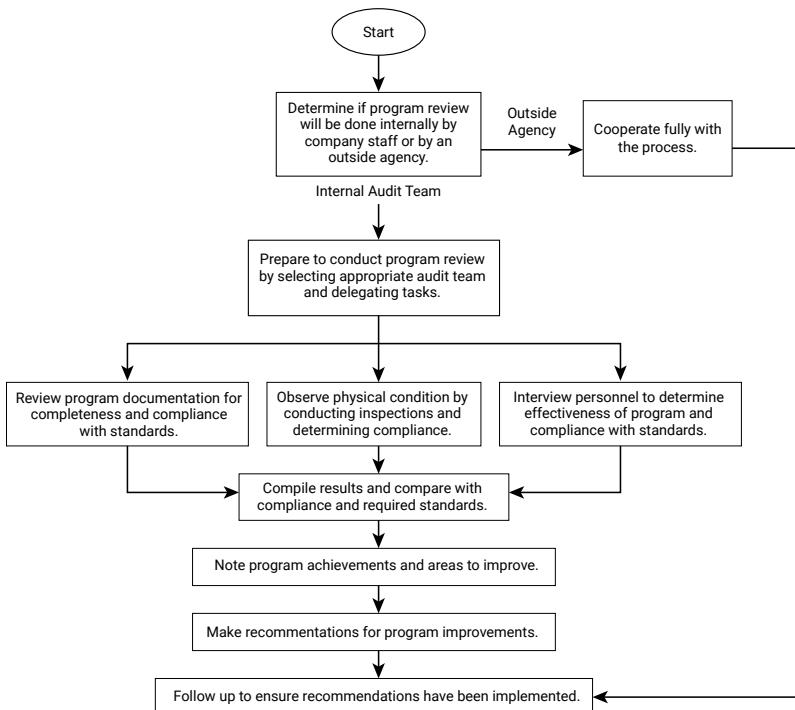
Program Review Procedure

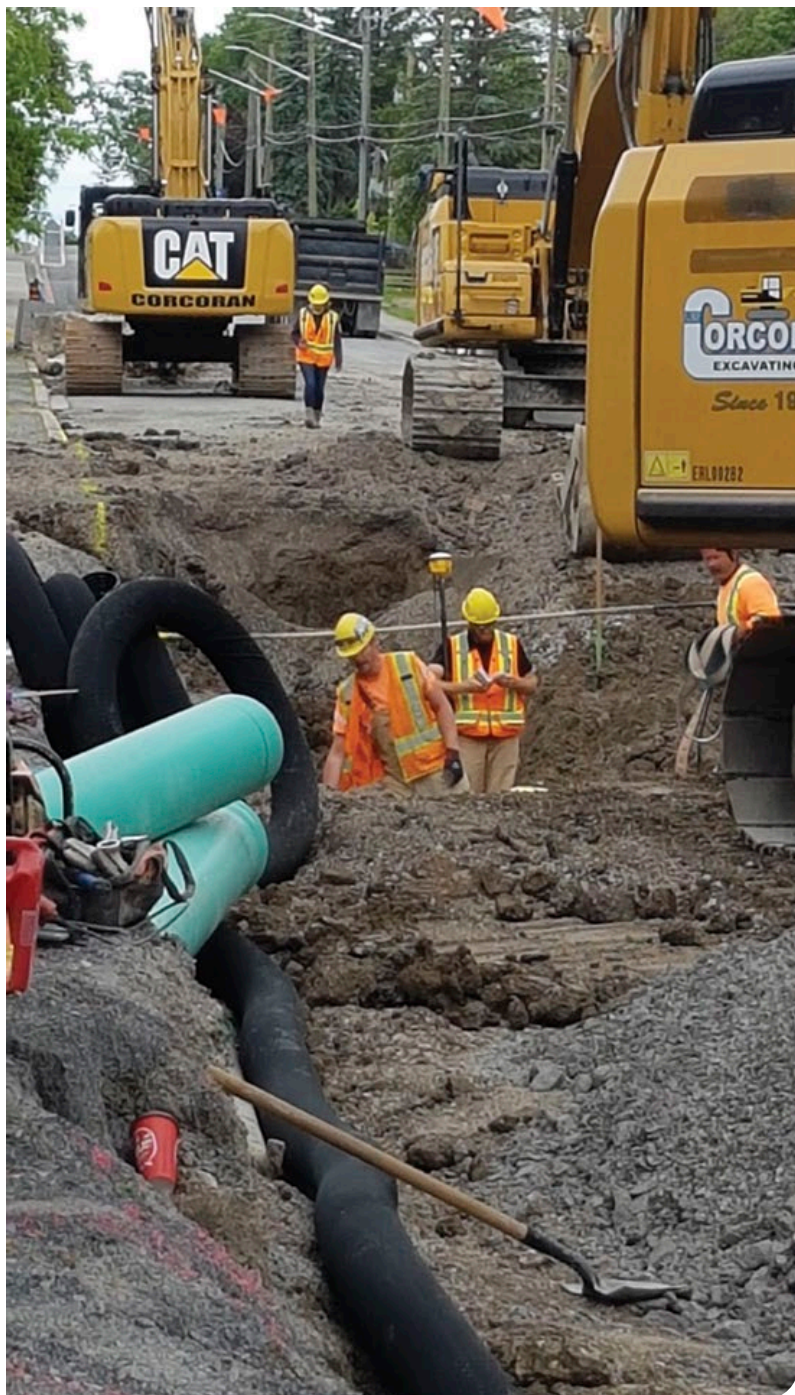
Len Corcoran Excavating Ltd.'s (LCE) management team will continually monitor the effectiveness of the Health & Safety Program and will conduct an annual review. The review will examine all the elements to ensure the program continues to meet Occupational Health and Safety Act, Ministry of Labour and company requirements.

The annual review, based on the Program Review Flowchart, will use an acceptable audit format and include unbiased evaluations. Upon completion of the written report, LCE will:

- Develop an action plan to implement recommended revisions
- Monitor the implementation of the action plan

Program Review Flowchart





Notes





Len Corcoran Excavating Ltd.

Health & Safety Policy

