Section - 11 Jobs Requiring Procedures

PURPOSE

Due to their inherent hazards and to ensure compliance with Occupational Health and Safety Act and Related Regulations, various jobs will require procedures, permits and/or other documentation, drawings or specifications to outline legal and company compliance.

SCOPE

Jobs Requiring Procedures packages are to be used by Superintendent as a means of providing basic health and safety awareness information to Workers and Subcontractors above the Constructor's Health and Safety Requirements.

RESPONSIBILITIES

Health and Safety Team Responsibilities:

- Develop a package relating to jobs that require additional direction and company specific expectations.
- Provide annual review of the Jobs Requiring Procedures package.
- Comply with all the requirements as defined under the Occupational Health and Safety Act and Regulations.
- Assist in developing corporate health and safety documentation, policies and procedures where required.
- Distribute and communicate information to the appropriate parties regarding any nonconformance or deficiencies reported.

Senior Management Responsibilities:

- Ensure all company employees receive the appropriate training and workplace specific overviews.
- Comply with all the requirements as defined under the Occupational Health and Safety Act and Regulations.
- Ensure that the equipment, materials and protective devices are provided, maintained in good condition and used as prescribed.
- The measures and procedures prescribed are carried out in the workplace.

Supervisors Responsibilities:

- Review and ensure the Jobs Requiring Procedures package is followed by all Subcontractors and workers.
- Ensure, where reasonably possible, that every Subcontractor, worker and visitor at the workplace complies with all Occupational Health and Safety Act and Regulations.
- Works in the manner and with the protective devices, measures and procedures required by the Occupational Health and Safety Act and Regulations.
- Advise a worker of the existence of any potential or actual danger to the health or safety of the worker of which they are aware of.
- Take every precaution reasonable in the circumstances for the protection of a worker.
- Where so prescribed, provide a worker with written instructions as to the measures and procedures to be taken for protection of the worker.

Workers Responsibilities:

- Follow the requirements of the Jobs Requiring Procedures package as directed by your supervisor.
- Advise Supervisor if experiencing any difficulties with assigned tasks, or if assigned tasks are beyond perceived limitations or medically not capable of performing tasks.
- Works in the manner and with the protective devices, measures and procedures required by the Occupational Health and Safety Act and Regulations.
- Report to his or her Supervisor any contravention of the Occupational Health and Safety Act and Regulations or the absence/defect in any equipment or protective device.

PURPOSE

Due to their inherent hazards and to ensure compliance with legislation various jobs on-site will require procedures, permits and/or other documentation, drawings or specifications. These will include, however should not be limited to:

- Lock-out/Zero Energy Requirements
- Hot Work Requirements
- Access to and Work on Roof Areas
- Scaffold and Platform Erection and Dismantling
- Shoring of Trenches
- Rigging and Hoisting
- Confined Space
- Scaffold, Platforms and Tower Crane Erection and Dismantling
- Severe Weather and Lightning Safety
- Ergonomic and Manual Material Handling
- Power and Hand Tools
- Hearing Conservation Program
- Heat Stress
- Cold Stress
- Working at Heights and Fall Prevention Plan
- West Nile Plan
- Spill Prevention
- Asbestos Awareness
- Lead
- Silica
- Chemical Storage and Use
- Biological and Chemicals

Provision of these procedures will be the responsibility of the Subcontractor performing the job.

The **Health and Safety Coordinator** must ensure that the above procedures, drawings, or specifications are provided by the Subcontractor prior to commencing work on the jobsite.

Where drawings or specifications cannot be provided until equipment or material arrives on-site, the job should not commence until these have been provided to the Supervisor.

All procedures, drawings and specifications must be reviewed by the Supervisor and where deemed necessary, the Health and Safety Consultant, to ensure compliance with legislation and site policy.

DISTRIBUTION The distribution of procedures, drawings and specifications is the responsibility of the Subcontractor. The Subcontractor must submit to the Supervisor their site specific procedures as they relate to potentially hazardous work.

RECORDS Copies of all procedures, drawings or specifications will be maintained on file by the Superintendent and forwarded the Health and Safety Coordinator upon completion of the project.

LOCK-OUT/ ZERO ENERGY REQUIREMENTS

- A project specific procedure must be prepared by the Subcontractor to ensure the health and safety of all workers affected by or required to lock-out, block-out, and / or blank-off a potential source of energy or work with live electrical components.

Definition:

- "Energy Control" - means to neutralize all potential sources of energy or power in the equipment/ machinery to be worked on. No part of the equipment should be capable of inadvertent activation or movement, which may lead to personal injury. Removing a fuse, closing a valve or turning a switch is not an acceptable isolation from the energy source.

Be Aware Of All Potential Energy Sources

Hydraulic	Pneumatic	Thermal
Electrical	Gravitational	Residual
Chemical	Radioactive	Refer to specs

Requirements (ref. Reg. 213/91 s.188/189)

- It is the responsibility of the Subcontractor and the site superintendent to identify when and where the work may require the de-energization and isolation of an energy source. The Site Superintendent must also identify how the sources of energy will be de-energized, brought to a zero energy state, locked out of service and tested.
- Written procedures for lock-out and energy control shall be submitted to the Project Manager and implemented prior to performing work.
- When a job requiring potential exposure to an energy source such as hot tapping, work on live electrical conductors or circuits, x-ray testing of pipes, etc. procedures must be prepared by the Subcontractor and reviewed by the Project Manager prior to work.
- The Site Superintendent must ensure the workers have been oriented to the project, the hazards and the Energy Control Procedures to be followed. Proof of training must be kept available for review.
- Where the procedures are affected by the facilities or workers of the client, procedures will follow the requirements of and be approved by the client.
- **Padlocks and Danger Tags -** Where there is a danger of equipment being energized, the motor switch on all individual motor drives shall be locked in the open position. It shall be the responsibility of each Subcontractor to maintain an adequate supply of safety locks. Each Subcontractor employee affected shall affix his/her own lock and, in addition, a danger tag shall also be applied to the switch handle bearing:
    - Date
    - A brief description of the work being done
    - The Subcontractor's company name and worker's name
    - Site superintendent's name
    - Emergency phone numbers.

  The tag and locks shall remain in place until the work has been completed. In the case where air, steam or liquid is the motivating power, the valves shall be locked in the closed position after the system has been bled and then tested to assure it is de-energized.

Where a lock has been abandoned or must be removed due to an emergency, the Project Manager shall be notified and the Subcontractor must follow an approved lock abandonment procedure.

HOT WORK REQUIREMENTS

Hot Work presents many hazards on a construction project. Not only do the risks of fire and explosion due to flammable gases, vapours, mists and dusts exist, there is also a potential for injury due to sparks and slag falling from above onto unsuspecting workers.

Definition

"Hot work is any work or process which produces higher temperature surfaces, flames, sparks, electrical discharges, flash or slag, etc."

Hot work is particularly hazardous when performed in locations where flammable or combustible materials are present.

Requirements

Hot work requirements will apply to designated areas only as determined by the Project Manager or client.

All cutting, welding and grinding equipment must conform to CSA and Fire Code requirements.

Where cutting or welding is to be done overhead, the Subcontractor shall have arranged for a fire watch with an approved fire extinguisher to be stationed below. Any cutting or welding done 1.5 metres (5 feet) above the floor must be roped off for 6 metres (20 feet) in all directions.

The Subcontractor shall provide fireproof tarpaulins where it is necessary to cover equipment or materials.

BE AWARE OF CONDITIONS THAT MAY RESULT IN FIRES AND INJURIES

- improper storage of flammables, combustibles and gases
- improper handling of flammables and gases
- welding, cutting and grinding near flammables and combustibles
- careless smoking
- failure to ground or bond while transferring flammable liquids
- damaged cylinders, hoses, torches, vehicles and tar kettles
- welding and cutting overhead without signage and fire watch
- lack of protective devices (fire blankets, extinguishers, standpipes)
- failure to clean up or purge systems of residual contaminants, etc.

It is the responsibility of the Subcontractor to identify when, where, and how Hot Work is to be performed.

Procedures for performing of the Hot Work shall be provided in writing. When a request is made by a Subcontractor to perform Hot Work, they shall submit their procedures to the Project Manager and Site Superintendent.

ACCESS TO AND WORK ON ROOF AREAS

The Occupational Health and Safety Act and Regulations for Construction Projects specify minimum requirements for fall prevention. Falls are the leading cause of injury and fatalities in construction.

The following requirements have been prepared to ensure the health and safety of workers on the project.

Requirements

The following requirements apply to all Subcontractors, suppliers, inspectors and representatives of the owner who may require access to the roof area.

It is the responsibility of all Subcontractor's or other party requiring roof access to prepare a fall prevention plan that includes the precautions and emergency/rescue plan for work on the roof. The Subcontractor must identify why, when, where, and how their work is to be performed.

Procedures for the work, the method of fall arrest or travel restraint, barriers, signage and supervision must be provided. Procedures should also address such issues as work during inclement weather (wind, ice, snow, etc.) and submitted to the Site Superintendent and Project Manager.

The Subcontractor must then ensure the workers have been oriented to the job, the hazards and the Roof Access Procedures to be followed.

SCAFFOLD AND PLATFORM ERECTION AND DISMANTLING

The Occupational Health and Safety Act and Regulations for Construction Projects specify minimum requirements for the erection and dismantling of scaffold and work performed where the hazard of falling may exist. The Project Safety Program has further defined these requirements as they apply to work on scaffold. Falls are the leading cause of injury and fatality in construction.

The following requirements have been prepared to ensure the health and safety of workers on the project.

Requirements

The following requirements apply to all Subcontractors and suppliers who may erect or dismantle a scaffold or work platforms on the project.

It is the responsibility of the Subcontractor requiring the use of scaffolding and/ or platforms to identify when, where, and how their work is to be performed. Procedures for the progress of work, method(s) of fall arrest, emergencies/ rescue and pre-use certification/ inspection activities must be provided to the Site Superintendent and Project Manager.

Every scaffold and/or work platform must be erected/ dismantled and inspected by competent person(s). Proof of training or competency must be available and provided when requested.

Based on the completion of an inspection by a competent person, the provision of the applicable Engineers Drawings, where required, work may commence.

The Subcontractor must then ensure their workers are oriented to the project, the hazards and the procedures to be followed.

SHORING OF TRENCHES (EXCAVATIONS)

The Occupational Health and Safety Act and Regulations for Construction Projects specify minimum requirements for the design and installation of support systems in trenches (excavations). (Regulation 213/91, sec. 222- 241).

The following standards have been prepared to ensure the health and safety of all workers affected by or required to work in, or near excavations.

Definitions

Excavation is a man made cavity or depression in the ground, formed by the removal of earth. (e.g. trenches, tunnels shafts, deep foundations, or open excavations).

Trench is an excavation in the ground in which its depth is greater than its width (measured at the bottom)

Engineered means an excavation or trench shoring system, designed for a specific project or location, assembled in place and which cannot be moved as a unit.

Systems

Hydraulic means a system capable of being moved as a unit, designed to resist the earth's pressure form the walls of the excavation by applying a hydraulic counter pressure through the struts.

Pressure in relation to the wall of an excavation, means the lateral pressure of the earth on the wall calculated in accordance with generally accepted engineering principles and includes hydrostatic pressure and pressure due to surcharge

Shoring is a construction procedure used solely to maintain the walls stability in an excavation. Shoring is used for the protection of any workers who may be required to enter the excavation.

Trench is an excavation in the ground in which its depth is greater than its width (measured at the bottom).

Trench Box is a unit which is capable of protecting workers in case of cave-in of trench walls. Trench boxes must be capable of supporting trench walls granted the space between the trench wall and the box must be backfilled.

Surcharge excessive load or weight which can affect trench stability.

Soil Types [section 226 Reg. 213/91]

Type 1 Soil (a) is hard, very dense and only able to be penetrated with difficulty by a small sharp object;
(b) has a low natural moisture content a high degree of internal strength;
(c) has no signs of water seepage; and
(d) can be excavated only by mechanical equipment.

Type 2 Soil (a) is very stiff, dense and can be penetrated with moderate difficulty by a small sharp object
(b) has a low to medium natural moisture content and a medium degree of internal strength; and
(c) has a damp appearance after it is excavated.

Type 3 Soil (a) is stiff to firm and compact and loose in consistency or is previously-excavated soil;
(b) exhibits signs of surface cracking;
(c) exhibits signs of water seepage
(d) if it is dry, may run into a well defined conical pile; and
(e) has a low degree of internal strength.

Type 4 Soil (a) is soft to very soft and loose in consistency, very sensitive and upon disturbance is significantly reduced in natural strength;
(b) runs easily or flows, unless it is completely supported before excavating procedures;
(c) has almost no internal strength;
(d) is wet or muddy; and
(e) exerts substantial fluid pressure on its supporting system.

Requirements

There are many hazards associated with trenching. The following is a listing of some of the more typical hazards present; prior to, during and after excavating.

Soil Conditions - site superintendents and workers must understand that different types of soil conditions can influence the stability of the trench walls. The following is a listing of soil conditions which must be assessed prior to excavating and/or working in and around trenches;

- soil type
- soil properties for the top to bottom and along the length of the excavation may vary
- water, vibration, cracks, surcharge, exposure to the weather
- trenches left open
- previously excavated soil
- moisture content in the soil

Soil conditions dictate the measures and procedures for trenching. The types of support systems for trenches will relate directly to the soil conditions, the required depth of the trench and weather workers are required to enter the trench.

The three means for supporting trench walls other than solid rock are sloping, shoring and trench boxes. Trenches must be made safe prior to workers entry when ever the following conditions are true:

- the trench is deeper than 1.2 metres (4') (if the trench is not 4' deep, however, the potential for a cave-in exists, precautions must be taken to make it safe)
- a worker is required to enter the trench
- a worker is required to be closer to a wall than the height of the wall, furthermore, if an excavation may affect the stability of an adjacent building or structure, precautions must be taken to prevent damage to the structure. The precautions shall be specified in writing by a professional engineer.

Acceptable Sloping Methods

Sloping - (type 1 & 2 soil) walls must be sloped within 1.2 metres of its bottom, having a minimum gradient of one horizontal to one vertical

Sloping - (type 3 soil) walls must be sloped from its bottom with a slope having a minimum gradient of one horizontal to one vertical

Sloping - (type 4 soil) walls must be sloped from the bottom, having a minimum gradient of three horizontal to one vertical

Shoring

Shoring is a means of supporting trench walls and used to prevent the movement of soil, foundations, underground utilities and roadways. The two most commonly means of shoring are timber and hydraulic. These two methods are described and well illustrated in “Trenching Safety” published by the Construction Safety Association of Ontario.

The minimum requirements for shoring are included in Excavation Shoring And Timbering (metric Sizes)- Regulation 213/91

Support systems for the walls of excavations must be installed as follows;

- progressively in an excavation of Type 1, 2 or 3 soil and;
- in advance on an excavation in Type 4 soil (if practicable)

These support systems must provide continuous support.

Removal Of support systems shall only be done;

- immediately prior to the excavation being backfilled
- under the supervision of a competent person

Trench Boxes

Trench boxes are used to protect workers from the possibility of cave-ins, however, are not intended to support the walls of a trench. Boxes are placed into trenches which have not been shored-up. As with shoring systems, after the placement of the trench box and prior to workers entering the trench box, the space between the box and the trench wall must be backfilled.

Trench boxes must be designed to ensure that they are able to withstand any lateral forces that they may be subjected to. These boxes should be designed by a professional engineer, with a signed letter stating the conditions for the trench boxes intended use.

Vibration - can affect the stability of trench walls. Vibration will often emanate from sources such as equipment, vehicle/pedestrian traffic and or other nearby operations such as blasting, pile driving, earth moving and compacting. All workers must be aware of the effects and dangers associated with vibration and ensure that appropriate precautions are taken to ensure that vibration does not affect the walls of trenches.

Conditions at the top of the trench - sources of surcharge must be identified and appropriately placed at the top of the trench to ensure that the walls of the trench are not adversely affected. [e.g. ensure that equipment, machinery and excavated soil is placed back as far as possible from the edge of the trench (minimum of 1 metre from the edge of the walls). Furthermore, workers must also remain back as far as possible from the edge of the trench walls.

Equipment, materials and tools must always be placed a safe distance back from the top of the excavation walls, to ensure that they are not accidentally knocked into the trench possibly hitting a worker in the trench.

Utilities - hidden and/or visible utilities pose many potential hazards to those excavating and/or entering trenches, therefore, appropriate precautions must be taken prior to digging. Making contact with utilities can possibly affect the stability of the trench, cause an explosion upon contact, create an explosive/toxic environment in the trench, and/or pose an electrocution hazard.

Underground Utilities - such as gas, electrical, water and telephone must be located prior to digging. Utilities companies will locate and mark their underground services free of charge.

Overhead Power Lines - special precautions must be taken in and around overhead power lines to avoid contact and/or encroaching on the minimum allowable distances as outlined in Regulation 213/91 Section 186 (see below). Never assume power lines are de-energized.

nominal phase-to phase voltage rating	**minimum distance**
750 to 150, 000 volts	3 metres
more than 150,000 to 250,000 volts	4.5 metres
more than 250,000	6 metre

Loose Rocks - precautions must be taken to ensure that loose rocks or other materials that may slide roll or fall onto a worker, are stripped.

Barriers - must be placed around excavation/ trench walls more than 2.4 metres deep which a person could fall into and which are not slopped in accordance with legislated requirements. The barrier must be at least 1.1 metre high.

Confined Spaces - may exist in trenches if the trench has limited access/egress and/or where the atmosphere may pose a hazard to the worker (toxic, oxygen deficient or explosive atmosphere). Special precautions must be taken to ensure that entry into confined spaces is done in accordance with company policies.

Surrounding Foundations - may become a source of a potential hazard if they are near trench walls and/or if they are in the failure zone. In this type of circumstance, you may usually consider the soil to be Type 3 soil and therefore, should take the appropriate precautions.

Access/ Egress - a properly secured ladder should always be used to gain access to or egress from a trench. Always maintain three point contact and follow proper ladder safety precautions as outlined in our Employee Guidelines.

Housekeeping - maintaining good housekeeping practices in the trench and above trenches will reduce many slip and trip hazard.

Traffic - vehicle and pedestrian traffic (construction and/or public) may pose a hazard, to the trenching operation. Precautions must be taken to ensure the safety of traffic around trenches. This may include the use of traffic barriers, signal persons and signs.

All workers must be made aware of the above noted common hazards associated with work in and around trenches and follow established safe work procedures

Safe Trenching Guidelines

Assess the site conditions:

- contact all applicable local utilities and ensure that they locate and mark all existing and old underground utilities
- determine the type of soil and when required have a professional engineer determine the soil type (obtain written description of the soil type for the area of the trench)
- determine the safest means for making the trench safe (sloping of walls/shoring of walls or use of trench boxes). This will be done, based on the type of soil and the location of the work area (e.g. overhead electrical conductors, adjacent structures, etc.)
- never enter a trench or excavation which is not adequately sloped or otherwise protected!

HOISTING AND RIGGING

The Occupational Health and Safety Act and Regulations for Construction Projects specify minimum requirements for hoisting and rigging. (Regulation 213/91, sec. 150 - 156, 168 - 180).

The following standards have been prepared to ensure the health and safety of all workers affected by or required to work with or near hoisting and rigging operations.

Definition

Hoisting is the action that occurs when a load is raised or lowered either by manual or mechanical means.

Rigging is the means of attaching a load to a hoisting device by means of either a combination of ropes, chains, slings, hooks, etc.

Requirements

Everyone involved with a rigging and hoisting operation have specific responsibilities. Accountability must start from the employer through to the worker.

The employer is responsible for:

- developing and implementing a safe hoisting and rigging procedure
- training all personnel
- appointing competent supervision
- utilizing competent operators, and
- ensuring that all material, hoisting and rigging equipment is in good repair and properly load rated

The site superintendents/foremen are responsible for:

- overall supervision of the hoisting and rigging crew
- ensuring that the materials and equipment are properly rated and in good repair
- appoint a competent and trained signalperson
- ensuring that proper procedures are followed, and
- ensuring the overall safety of the hoisting/ rigging crew and other personnel

The worker is responsible for:

- inspecting equipment and materials for damage
- reporting all deficiencies to their site superintendent
- follow the approved hoisting/ rigging procedures
- wear all necessary PPE pertaining to the task
- only perform tasks when proper training has been provided (e.g. signaling, rigging, etc.)

Hoisting and Rigging Guidelines

Determining the weight of all loads is the single most important hoisting and rigging precaution, however other factors must be addressed during hoisting and rigging operations:

- never exceed the safe working load of the equipment, hardware, and gear being used
- examine all equipment, hardware, and gear before each use. Destroy all damaged goods immediately
- report all unsafe conditions, material, equipment, etc. immediately to the site superintendent
- take weather conditions into account before attempting any hoisting and rigging operations
- make sure all signals are understood and communicated clearly and concisely

- be aware of all overhead power lines. Minimum safe distances are:

nominal phase-to phase voltage rating	minimum distance
750 to 150, 000 volts	3 metres
more than 150,000 to 250,000 volts	4.5 metres
more than 250,000	6 metre

- do not pass raised loads over other workers
- hoisting equipment shall be operated only by competent, authorized operators
- full visibility must be obtained by the operator of the hoisting equipment at all times
- operators shall not attempt to raise a load that is in excess of the maximum rated load
- hoisting of personnel on cranes, machinery, or mechanized equipment is prohibited except when:
- conventional access equipment cannot be used and
- the platform that the worker(s) is on is designed by an engineer and meets all the requirements of applicable legislation
- barriers, warning signs and/ or ground spotters shall be utilized when loads are being raised
- operators shall not leave any raised load unattended
- all equipment logs, documentation, and mechanical certifications shall be made available at all times
- daily pre-operational checks using a checklist should be followed
- avoid sharp bends, pinching, and kinks in cables, slings, ropes, chains, etc.
- do not use a hook unless it has a safety catch that is operational
- always attach the load to the hook of the crane and not to the rope or ball
- ensure that all outriggers of the hoisting equipment are on a solid surface
- ensure that the hoisting equipment is level after the outriggers are engaged
- the operator shall be in possession of a written Record of Training at all times when operating hoisting equipment
- the owner of a crane or a similar hoisting device shall keep a permanent record of all inspections, tests, and modifications to each unit
- a crane or a similar hoisting device shall be set up, assembled, extended, and dismantled only by a competent worker

Where the procedures of the Subcontractor are affected by another Subcontractor or the owner, the Project Manager and Site Superintendent will coordinate the procedures to be used by all parties.

The Subcontractor must ensure their workers have been oriented to the project, the hazards, and the Hoisting and Rigging Procedures to be followed. Proof of training and orientation must be available.

CONFINED SPACE ENTRY REQUIREMENTS

If required, a project specific confined space entry procedure must be prepared by the Subcontractor and submitted to the Site Superintendent and Project Manager at least forty eight (48) hours prior to a planned entry.

Definition (ref. O. Reg. 632/05):

"Confined Space" means a fully of partially enclosed space.

That is not both designed and constructed 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:

Recognize All Confined Spaces:

Sewers, Tanks, Processes, Caissons, Vessels, Pits/ Trenches, Shafts, Vaults, etc.

Requirements :

1. It is the responsibility of the employer to ensure that their workers and/or Subcontractors do not enter or work in a confined space unless all the requirements of the O. Reg. 632/05 have been met. Furthermore, the employer must provide to the Constructor a copy of the written program for the confined space and detail the methods that will be used to implement and maintain the program.
2. As a minimum and in accordance with the legislative requirements the program must include;
    - A method for recognizing each confined space to which the program applies;
    - A method for assessing the hazards to which workers may be exposed;
    - A method for the development of one or more plans;
    - A method for the training of workers;
3. An entry permit system that sets out the measures and procedures to be followed when work is to be performed in a confined space to which the program applies.
4. The Subcontractor must ensure that a rescue plan has been developed and workers involved in the work are capable of executing the plan, furthermore, the plan must define the types of equipment necessary to execute the rescue.
5. The Subcontractor must appoint a competent supervisor/foreman to supervise the operation at all times.
6. The Subcontractor must detail the methods that will be used to ensure the isolation of potential energy sources necessary to prevent inadvertent activation or a release of energy through systems/equipment/materials that could harm the entrants.
7. The Subcontractor shall test the atmosphere of the confined space prior to entry and continuously monitor the confined space while occupied.
8. Where a confined space is to be entered the Subcontractor shall review procedures with the workers involved: entrant, attendant and rescuer.
9. The Subcontractor must then ensure the workers are trained in confined space entry/ rescue, oriented to the job, the hazards and the location specific confined space entry procedures to be followed.
10. Where more than one employer is required to enter a confined space, the employers shall only enter based on strict adherence to the details of the coordination plan as provided by the Constructor.

SCAFFOLD, PLATFORMS AND TOWER CRANE ERECTION AND DISMANTLING

The Occupational Health and Safety Act and Regulations for Construction Projects specify minimum requirements for the erection and dismantling of scaffold and work performed where the hazard of falling may exist. The Project Safety Program has further defined these requirements as they apply to work on scaffold. Falls are the leading cause of injury and fatality in construction.

The following requirements have been prepared to ensure the health and safety of workers on the project.

Requirements

The following requirements apply to all Subcontractors and suppliers who may erect or dismantle a scaffold, swingstages or a tower crane on the project.

1. It is the responsibility of the Subcontractor requiring the use of scaffolding and/ or tower crane to identify when, where, and how their work is to be performed.

2. Procedures for the progress of work, method(s) preventing tools or equipments from falling, fall arrest, emergencies/ rescue and pre-use certification/ inspection activities must be provided.

3. Every scaffold and tower crane must be erected/ dismantled and inspected by competent person(s). Proof of training or competency must be available and provided when requested.

4. Based on the completion of an inspection report and the provision of the applicable Engineering Drawings, where required, work may commence.

5. The Subcontractor must then ensure their workers are oriented to the project, the hazards and the procedures to be followed.

SEVERE WEATHER AND LIGHTNING SAFETY

Severe weather conditions such as tornadoes, lightning, hail, blizzards, ice storms and heavy rain are monitored by Environment Canada, 24 hours a day, 7 days a week. If a severe weather storm is on the horizon, the weather service issues watches, advisories and warnings through the media, thus allowing time for preparation to safe guard against property damage, personal injuries and loss of life.

Upon receiving information from weather forecasters that a severe weather condition is imminent, the Project Manager will make the decision to Stand Down:

- When appropriate, initiate the Stand Down procedure to shut down operations or processes that may pose a hazard or where associated equipment may be damaged.
- Direct all employees to cease work and take shelter in the designated safe location
- Remain in the shelter until given further instruction or direction to proceed with safe work.

General Lightning Guidelines

Storms may develop quickly and arrive with little warning. Please respond as quickly as possible to all alerts or warnings provided by Environment Canada.

If you do find yourself out in the open and you cannot get to the designated safe location:

- make yourself as small a target as possible but never lie down on the ground. Instead, crouch down in a baseball catcher's stance, put your hands on your knees, and duck your head.
- Count the time difference between seeing the lightning and hearing the thunder. Every second represents about 300 metres. So six seconds is about 2 km. Lightning can reach you even if the storm is 16 km away and there's a clear sky above you.
- Use the 30-30 rule: seek shelter when lightning is 30 seconds away or closer. Stay inside until directed my management or 30 minutes have passed since you last hear thunder or see lightning.
- When inside, stay away from windows or doors and avoid contact with electrical equipment, metal walls, and other conductors.

National Lightning Safety Institute - www.lightningsafety.com

GENERAL ERGONOMICS PRACTICES

Manual Material Handling:

- Size up materials to be handled. If an object appears to be awkward in shape or too heavy, it may require additional help to be handled safely. When in doubt, ask for assistance.
- When attempting to handle materials with co-workers, communicate with each other prior to handling the material to eliminate guessing. Workers, who communicate well, are less likely to be injured.
- All nails or other materials that may puncture skin should be removed from the object immediately.

The following, are considerations, which should be made prior to and during the lifting of materials manually;

1. Squat and grab hold of object

2. Lift with your Legs

3. Keep your back straight – DON'T TWIST!

- Assess the lift (size, shape, etc.) and plan the route.
- Keep your feet apart with one foot beside and one behind the load. tuck arms and chin in.
- Pelvic tilt.
- Tilt the object forward, test weight and bring object close to your stomach.
- Using your leg muscles to lift, straighten up
- Turn with your feet. DON'T TWIST YOUR BACK.

If you feel that you are unable to lift a load safely, do not hesitate to inform your supervisor or foreman. Your supervisor or foreman will find someone to assist you.

Tools

- Where possible, reduce repetitive motions by using power tools instead of hand tools (e.g. use drill with screwdriver attachment instead of manual screwdriver)
- Stop and stretch occasionally and vary the activities to be completed; perform repetitive motions over shorter periods.
- Wear gloves that fit properly with power tools to reduce vibration or purchase power tools with vibration minimizing handles. Gloves that are too large can get caught in machinery, and those that are too small can restrict blood flow.
- Use tools properly and maintain them as per manufacturer's instructions (e.g. poorly maintained tools require more force to use)
- If possible, purchase tools that are more user-friendly (e.g. softer grips, requires less grip strength to handle)

Other Factors (eg. Awkward and Static Positions, temperature)

- Reduce the amount of time spent either in an awkward or static position (e.g. working with hands above the shoulders for more than 2 hours per day)
- If possible, review and revise work procedures to reduce or omit awkward positioning.
- If possible, reduce the amount of time required to work in cold environments (e.g. working cold temperatures can reduce blood flow).
- Ask for assistance with difficult tasks
- Keep everything within easy reach and at a comfortable height

POWER AND HAND TOOLS

Hand Tools

People may use hand tools for chipping, cutting, chiseling, scraping, prying, digging, gouging, making holes, stirring paint, propping doors open, and taking the lids off cans.

General Hand Tool Guidelines

- Keep tools, equipment and materials orderly. There should be a place for everything and everything should be kept in its place.
- Hand held tools must be inspected prior to each use.
- Never use tools or equipment with defective or worn parts. All damaged tools must be reported to your site superintendent.
- Keep hand held tools free of grease and oil to ensure that they can be handled properly.
- Tools with “mushroomed” heads or any deformations are dangerous and must be replaced or repaired.
- Do not carry sharp-edge or pointed tools in your pockets.
- Use tools that are of the proper size; never extend handles with pipe, etc.
- Use tools only for the purpose for which they are intended: for example, do not use a wrench as a hammer or a screwdriver as a chisel.
- Never place any tool or other loose object on stairways, catwalk tops of stepladders or any other position where they can fall and injure someone below, or cause someone to trip.
- Do not drop or throw tools or other materials from a ladder or other heights.

Power Tools
General Power Tool Guidelines

- All equipment/ tools must be inspected for defects prior to each use. Tools must be effectively guarded and used in a safe manner.
- Workers must ensure that all required guarding is fully functional as per manufactures recommendations.
- Ensure electrical tools are grounded. If the cord is cut or frayed, or the motor casing is defective, tag the tool to identify it as defective and have the tool repaired or replaced before use.
- Do not operate electrical power tools or run electrical cords in damp or wet areas.
- Ground Fault Circuit Interrupters (GFCI) must be used for all electrical tools used outdoors or in wet locations. GFCIs detect any current leaking to ground from a tool or cord and quickly cut off power before damage or injury can occur.
- Do not leave power tools running when unattended.
- All tools and equipment must be stored so they do not create a hazard for other workers on the project.

Grounding

- Grounded can be defined as an approved three-wire cord with a three-prong plug.
- Make sure the tool is grounded and the cord polarized or double-insulated.

- You can identify two-pronged polarized tools because one prong is larger than the other.
- Never cut off or bend back the ground pin on a three-prong plug—or use a two-prong cheater or adapter—to make the plug fit in a two-pole outlet.
- Double-insulated tools are labelled as CSA approved.

Cords

- Inspect tool cords and extension cords daily for damage.
- Keep cords clear of the tool during use.
- Inspect tool cords and extension cords for kinks, cuts, cracked or broken insulation, and makeshift repairs.
- Do not use the cord to lift, lower, or carry an electric tool.
- Do not disconnect the tool by yanking or jerking on the cord.
- Protect cords from traffic. Run them through conduit or between planks along either side. If necessary, run cords overhead above work or travel areas.
- If any cord feels more than warm to the touch, check the circuit for overloading.
- Report any shocks from tools or cords to your site superintendent.
- Outdoors or in damp or wet locations indoors, use a Type A GFCI.

POWDER-ACTUATED TOOLS

Employees who are required to use a powder-actuated tool (HILTI and Ram-Set gun) must be competent and adequately trained by the manufacturer of the tool or other certified training facility for each specific model of tool being used. Each employee must provide a valid training certificate at orientation if they are required to use any powder-actuated tool.

Tools must be cleaned and maintained according to the manufacturer's instructions by trained competent personnel. When using powder-actuated tools, CSA approved hard hat, hearing and eye protection must be worn as a minimum standard as defined in the site specific procedures. All cartridges and shots must be secured in a locked container on site allowing for authorized use only. Never leave spent or unspent shot on the floor. All spent and unspent cartridges must be disposed in a container of water as Appropriate Provincial Health and Safety Regulation.

THE HEARING CONSERVATION PROGRAM

The Hearing Conservation Program has been designed to identify areas of the facility which emit excessive noise levels, implement control measures to eliminate/ control excessive exposures to noise and periodically monitor the noise levels in the facility and hearing abilities of our employees.

To facilitate the implementation of the Hearing Conservation Program, the following basic steps will be followed:

1. Assess
- current worker exposure to workplace noise,
- current control measures in place,
- noise levels in all areas of the shop (at least yearly)

2. Control
- through the implementation of the required control measures to reduce/eliminate possible harmful exposure levels encountered by employees/ visitors

3. Training
- all employees will receive training on the harmful effect of excessive noises and methods of control

4. Monitor
- employees hearing abilities (upon hiring and at least once/year)

The overall goal of the Hearing Conservation Program is to prevent workers from sustaining workplace Noise Induce Hearing Loss. Achieving this goal will help maintain a high quality of life for employees, help maintain the worker's ability to hear audible warning signals at work/ home and will also help prevent unnecessary worker's compensation costs which must be paid if a claim is filed.

Note: Failure to maintain a Hearing Conservation Program could result in excessive loss to the Company through the inability to establish a defense for "Noise Induced Hearing Loss" Workplace Safety and Insurance Board Claims by employees or former employees of the Company who have established a claim for Noise Induced Hearing Loss.

WORKPLACE NOISE ASSESSMENTS

On a yearly basis, complete workplace Noise Exposure Assessments will be performed. These yearly assessments will include Noise Sampling throughout the entire facility and may also include individual Noise Sampling (over an eight hour workday) for specified job functions. The terms and conditions of the Noise Assessments will be done in consultation with the Joint Health and Safety Committee. A designated worker representative of the Committee will be present at the beginning of the noise sampling and/ or during the entire noise sampling process.

The necessary results (respecting confidentiality) of the noise sampling will be made available to each member of the Joint Health and Safety Committee. Upon receiving the results of the noise sampling, the Committee will assess the noise levels in various areas of the facility and/ or noise exposure levels to specific employees.

Noise assessments will be conducted in three steps:

Step 1 Assessment of General Noise Levels

The Health & Safety Team will ensure that a "General Noise Survey" is conducted no less than 6 months after starting operations to determine the general noise levels throughout the facility**.** This will be done, using a Noise Level Meter to determine operations or areas where workers may be exposed

to hazardous noise levels. This general noise survey is simplistic in nature and will outline if there is a potential noise problem. The information gathered from the general noise survey will be used to conduct detailed noise surveys where required. The "Noise Survey Form" found in the appendix should be used.

A "Detailed Noise Survey" should be conducted once the results have been received from the general noise survey, it will be easy to determine which operations or areas will require a detailed noise survey (those with high intermittent or high average decibel readings). A detailed noise survey should be made at each of the noted locations to determine the time-weighted average exposures to workers in those areas.

Note: All noise surveys should be conducted during normal operating conditions, by a trained and competent person.

Step 2 Assessment of Individual Exposure to Noise

Some workers job descriptions lead them to various areas of the facility throughout the working day, therefore, individual monitoring should be conducted to determine actual noise exposures throughout the working day.

The employee should be equipped with a tamperproof Personal Noise Dosimeter to monitor the worker's exposure to noise for the entire shift

Step 3 Assessment of Current Control Measures

The final assessment which should be performed is an assessment of the current control measures in use and there effectiveness. This assessment will include information such as the area/ worker being assessed, exposure levels, current control measures and their effectiveness.

Workplace Noise Assessments serve many purposes and will be used to:

(a) determine specific noise levels at each employee’s workstations and/or worker exposure to noise throughout the working day

(b) assessing the current control methods and implementation of more effective control methods

(c) setting company policies for working in areas with excessive noise (e.g. mandatory use of hearing protection and equipment to be used)

(d) ensuring compliance with the legislative requirements

CONTROL MEASURES

Hearing Conservation control measures must be implemented to prevent workers from any detected harmful workplace noises. According to provincial laws, workers are currently allowed to be exposed to noise levels of up to 85 dBs- calculated over an eight hour day without the use of hearing protection. The Company will consider noise exposures of 85 dBs, over an eight hour period, to be potentially hazardous and will implement control measures when noise levels are greater than 85 dB.

Every noise problem brakes down into three components, (a) a source of radiation sound energy, (b) a path along which the sound energy travels, (c) a receiver, the human ear. The following are the control measures which may be used, individually or used in combination, to prevent Noise Induced Hearing Loss:

- **Controls At the Source**
- **Controls Along the Path**

- **Controls At the Worker**

Controls at the Source

Controlling noise at the source is the most desired control strategy. This generally means modifications to existing equipment, processes and/or structures at the design stage of machinery and/or processes. The following are some samples of Noise Control Measures at the Source:

- place resilient vibration mountings under vibrating machinery
- regular maintenance equipment and replacement of worn parts
- substitution of equipment with less noisy equipment
- change the method of processing

Controls along the Path

It may not be feasible to attain the desired control levels at the source. The next step is to implement control measures along the path when possible and practical. Noise reduction along the path can be achieved through various means such as:

- enclosures around the source of noise
- increasing the distance between the source and the worker
- placing a shield between the worker and the source
- use of acoustical materials on the walls, floors and ceilings to absorb the sound waves
- etc.

Controls at the Worker

Using Controls at the Worker practices are generally the least desirable method of control. Controls at the Worker come in three general forms:

1. Personal Protective Equipment (hearing protection - muffs or plugs)
2. Enclosure of the Employee (isolating the employee from the noise)
3. Administrative Controls (regular job rotations during a shift to keep noise exposures to "acceptable levels")

All three methods of controlling noise at the worker are commonly use in the workplace, with the use of Hearing Protection generally being the most frequently used because of it's suspected low cost. Unfortunately this method of control also has the chance of being ineffective and therefore, becoming costly due to hearing loss sustained by employees. Reasons for control at the worker being ineffective may include some of the following reasons:

- workers may not use the protective devices when and as required
- workers may use protective devices incorrectly due to discomfort and/or lack of training
- site superintendents may not enforce the use of hearing protection
- employers fail to conduct benchmark and regular audiometric testing of employees

Heat Stress

Heat stress is a situation where a body is exposed to a level of heat to which its cooling capability cannot cope with, resulting in the body's core temperature rising beyond safe limits. Heat stress is directly affected by the temperature of a working environment and is also greatly affected by the humidity in the air. If the humidity in the air reaches 100% it means that the air is completely saturated with moisture and cannot absorb any more, completely negating any benefits that the body gets from sweating. The longer a worker is exposed to heat the better the body becomes at adjusting to the heat. If a worker is not used to working in the heat then he/she should take a week or two to get acclimatized. This period of acclimatization will help workers deal with the heat and reduce the chances of heat induced health effects. The following are examples of the different types of heat-induced problems

Heat Rash – resulting from plugged sweat glands, a red bumpy rash develops with severe itching. Treatment involves rinsing the skin with cool water and changing into dry clothes. Washing regularly and keeping skin dry will reduce the occurrence of heat rash.

Heat Cramps – resulting from a lack of salt from sweating, painful cramps develop in arms and legs or stomach that occur suddenly at work or can develop later on in the day. These cramps are also a precursor to more serious health problems. Moving to a cooler area and drinking electrolytes will help relieve these cramps. To prevent cramps from developing, reduce activity levels and/or heat exposure, drink electrolytes regularly. If symptoms persist, seek medical attention.

Heat Exhaustion – resulting from fluid loss and inadequate salt and water intake, the body's natural defenses against higher temperatures start to break down. Signs include heavy sweating, cool moist skin, increased core body temperature, worker is fatigued with a weak pulse, nausea and vomiting develop, worker is very thirsty, worker can also be panting or breathing very rapidly. If these symptoms develop, medical aid must be sought. This condition can very easily lead to heat stroke. Treatment of heat exhaustion mainly consists of seeking medical attention. However, while medical attention is being sought, move the worker to a cool location, provide drinking water or electrolytes. Prevention of heat exhaustion includes reducing activity levels and/or heat exposure. Drink fluids regularly.

Heat Stroke – heat stroke is a complete failure of the body's cooling system. The definition of heat stroke is a core body temperature over 41^0C and any one of the following symptoms, weakness, confusion, odd behavior, hot/dry red skin, a fast pulse, headache or dizziness. Workers may pass out and have convulsions. If a worker develops symptoms of a heat stroke an ambulance must be called immediately. While waiting for the paramedics, remove excess clothing, fan and spry cool water on the person, provide drinking water if the person is conscious. Prevention of heat stroke includes reducing activity levels in extreme temperatures.

The control program for heat stress on site will include the following

- Longer rest breaks for employees - On days with higher temperatures, employees will take longer coffee and lunch breaks to provide ample time to cool off
- Adequate amounts of cool drinking water – Drinking water will be kept in employee's trailers in adequate amounts so that employees always have cool water if it is required
- Worker pace will be decreased – During the parts of the day with excessively high temperatures, workers will slow down the pace of their work

- Workers will monitor each other to ensure that anyone exhibiting signs of a heat related disorder will be brought to a cool place and be provided with drinking water until they recover
- Re-distribute site information and review with those affected using our Daily Job Hazard Analysis (JHA) Report.

Cold Stress

Cold stress refers to the process of excessive heat loss which leads to compensatory mechanisms to regulate core body temperature. Dressing warmly, in layers - Preserving an air space between the body and the outer layer of clothing will help retain body heat. Choose fabrics such as cotton or wool that insulate but also allow sweat to evaporate. It is especially important to protect the feet, hands, head, and face. These parts of the body are farthest from the heart and are the hardest to keep warm. Almost half your body heat can be lost through the head, so cover it up as well.

Keep dry - Wetness greatly increases the chance of cold stress. Always have extra clothing available if there's a chance you could get wet. Keep your feet dry, they are very susceptible to frostbite.

Take a break - You may think it's wise to keep on working in cold temperatures. After all, working makes you break a sweat and you feel warmer. But if you become fatigued during physical activity, your body loses its ability to properly retain heat. This causes rapid cooling which can quickly lead to cold stress. When you take a break, be sure to replace lost fluids and calories by drinking warm, sweet, caffeine-free nonalcoholic drinks and soup.

Eat right - A proper diet provides your body with the nutrients it needs to withstand cold stress. A restrictive diet may deprive your body the ability to work well in cold temperatures.

Don't work alone - In cold-stress prone environments; a buddy system should be used. Look out for one another and be alert for the symptoms of cold stress.

Learn what to look out for - The effects of cold stress may not be apparent to its victim. The first symptoms of hypothermia are uncontrollable shivering and the sensation of cold. The heartbeat slows and may become irregular, and the pulse weakens. As the condition worsens, severe shaking or rigid muscles may be evident. The victim may also have slurred speech, memory lapses, and drowsiness. Cool skin, slow, irregular breathing, and exhaustion occur as the body temperature drops even lower. This is a serious condition requiring immediate medical attention.

Frostbite – Frostbite can occur without accompanying hypothermia. Frostbite occurs when the fluids around the body's tissues freeze. The most vulnerable parts of the body are the nose, cheeks, ears, fingers, and toes. Symptoms of frostbite include coldness and tingling in the affected part, followed by numbness; changes in skin color to white or grayish-yellow, initial pain that subsides as the condition worsens, and possibly blisters. Frostbite can cause irreversible tissue damage and requires immediate medical attention.

The control program for Cold stress on site will include the following

- Longer rest breaks for employees - On days with lower temperatures, employees will take longer coffee and lunch breaks indoors or in heated locations.
- Ensure adequate layers of clothing and protective body wear prior to starting the work day.

- Adequate amounts of warm drink during breaks may be available in the employee trailer.
- Worker pace will be decreased to avoid excess sweating – During the parts of the day with excessively low temperatures, workers will slow down the pace of their work or take breaks in warm locations.
- Workers will monitor each other to ensure that anyone exhibiting signs of a cold related disorder will be brought to a warmer place and be provided with a warm drink until they recover
- Re-distribute site information and review with those affected using our Daily Job Hazard Analysis (JHA) Report.

WORKING AT HEIGHTS AND FALL PREVENTION PLAN

All Employees – Typical fall from heights hazards that are encountered by workers in construction include, however are not limited to the following;

- Elevator shaft openings
- Stair well openings
- Perimeter openings
- Roof tops
- Excavation, Trench or Caisson openings
- Work off ladders
- Elevated work platforms
- Etc.

Fall from heights can be eliminated through the use of any of the following control strategies alone and/or in combination with others;

1. When possible implement policies restricting certain types of work that put worker at risk of falling from heights
2. Training on Recognition/Evaluation and Control of falls from heights
3. Installation of guardrail systems or floor coverings;
4. Use of Travel Restraint system;
5. Use of Travel Restrict system and
6. Use of Fall Arrest systems when necessary

Falls from Heights Plan

Policies for prevention of falls from heights;

1. All workers must receive fall prevention training prior to the commencement of work
2. Workers are not allowed to access any unguarded roof areas at any time unless a roof plan has been implemented and the worker has received training on the plan.
3. Workers must not enter areas where guardrails or floor coverings around/over floor openings, elevator shafts are not present.
4. The installation of guardrails around openings and handrails on stairs will only be completed by trained workers utilizing travel restraint systems when necessary. This must be done under the direction of the Site Superintendent.
5. Excavation or Trench openings that are not sloped in accordance with the legislative requirements and that a worker could fall into more than 2.4 metres deep shall be protected by an appropriate barrier (Subcontractor's responsibility). This will be monitored by the Site Management Team and workers.
6. Caissons must be adequately guarded by the Subcontractor. This will be monitored by the Site Management Team and workers.
7. Work off ladders will be limited, however, should a worker be required to work off a ladder, the following must be remembered;
    - the ladder must be in safe working condition and must be inspected prior to use;
    - the ladder must be secured (top and bottom) (stabilizers can also be used to assist with stabilization)

- the ladder must be of an appropriate length and design for the work. Extension ladders must extend 900 millimetres (3 feet) above the floor or landing
- set the ladder up in accordance with the manufactures instructions and as a minimum for extension ladders a ratio of 1 foot out for every 4 feet up
- three point contact must be maintained while on the ladder;
- ladders are generally intended for access/egress, therefore work from ladders should only be short in duration
- maintain clean footwear while ascending or descending from a ladder
- never set up ladders near live electrical conductors

8. Work off Elevated Work Platforms may be required from time to time. This work will only be performed by trained workers. Fall protection must be used at all times while in powered elevated work platforms.

West Nile Plan

Step 1

	Identify High Risk Locations on site
1	
2	
3	
4	
5	

Examples:

- Puddles after rain
- Buckets/ Barrels
- Stagnant water
- Tire tracks
- Grade depressions
- Clogged drains, roof drains
- Catch Basins

Step 2

	Circle the following activities that apply to reduce the risk.
1	*Remove* standing water at location.
2	Create *Drainage* (**advised activity**)
3	*Agitate* or *circulate* water with pump.
4	Use a ***larvicide*** or ***adulticide*** (Note: Trained personnel only. Larvicides requires applicator to obtain MOE Permit)

Step 3

	Identify worker controls
1	Review with designated H&S Committee
2	Send information to subcontractors
3	Hold Meeting with workers
3a	Advise workers to assess the risk at work area(s)
3b	Advise workers to wear long sleeves and pants (preferably light in colour)
6	Report dead Crows and Blue Jays
7	Post information and Notices

Meeting

Date: _____
Time: _____
Place: _____

Key Attendees: _____ _____
_____ _____
_____ _____
_____ _____

Spill Prevention and Response

(reference Regulation 260/11)
Procedures for Workers and Site Superintendent Staff

- All equipment and machinery must be inspected by a competent person to ensure its competency. This inspection must also ensure leaks are controlled.
- Appropriate storage containers must be used for all hazardous substances and stored in a manner to prevent contact with incompatible materials and to prevent damage. Only one day's supply of hazardous material may be stored inside the building.
- Daily circle checks of vehicles, equipment and machinery must be conducted by the operator and proof of inspection must be made available upon request.
- Toolbox talks must be conducted for all workers to identify requirements for proper storage of materials (e.g. bermed, capped, etc.), dispensing of fuels, and circle checks of equipment/vehicles and reporting of spills.

CONTAINMENT OF SPILLS/LEAKS/DISCHARGES

- Equipment, machinery may be equipped with "diapers" where necessary to contain leaks generated through operations. Excessive leaks must be reported and equipment removed from shop/ site.
- Secondary containment will be provided where necessary for stored containers and used at all times. These must be maintained in good condition and be free of any contamination (waste, ice, snow, water, etc.).
- Workers will be instructed in dispensing procedures for fuels and other materials. A drip pan must be used. Bonding and grounding requirements must also be considered.
- Spills containment equipment will be maintained in the shop in case of emergencies. Workers must be trained in the use and limitation of equipment and other leak containment.
- The locations for the spill containment equipment will be well-identified (e.g. Spray paint markings, or Posters, etc.) within the shop. Site superintendents will be trained in spill response procedures.

The Site superintendent must be notified of all spills, immediately. The following procedures should be followed;

Scenerio #1 – Spill (Clean-up is possible)

IN CASE OF SPILL!

CONTAIN SPILL IMMEDIATELY
(only if safe to do so)

NOTIFY SITE SUPERINTENDENT

SPILL RESPONSE
(determine hazards, early reporting and clean up required)

Scenerio #2 – Spill (Clean-up is not possible/poses risk to worker)

IN CASE OF SPILL!

Back away
Assess the scene - do not enter area
Alert co-workers to evacuate area
Evacuate hazard area
Alert site superintendent and advise of observations, location of spill, etc.
Proceed to designated Staging Area if required/ necessary
Await further instructions

CLEAN UP OF SPILLS/LEAKS/DISCHARGES

- All spills/leaks or discharges must be cleaned up recognizing worker safety first. Proper protective and clean-up equipment must be readily available and used. NO SHORT CUTS. Note: Only authorized and trained workers are allowed to clean up spills.
- Time is of the essence when cleaning up a spill.
- Waste material must be placed in the appropriate containers (45 gal drums with snap rings for hydrocarbon material) and removed to a temporary storage area until disposal has been arranged. Secondary containment must be provided at temporary storage area.
- Clean-up must be done in accordance with company policies, or an approved waste management contractor.
- Should the company be required to clean up an unreported spill or have to summon professional assistance this will be done at cost to the identified subcontractor or, where the responsibility cannot be defined, at cost to all subcontractors. This will also cause an audit of all equipment and equipment inspections to be performed.

DISPOSAL OF WASTE MATERIAL

- When disposing of a subject waste from whatever source (process or spills) we must consider the following:
    - waste hauler identification and registration through MOE
    - end source for subject waste
    - application for an approved client waste drum removal

REVIEW/ REPORTING OF SPILLS/ LEAKS/ DISCHARGES

- All incidents of spills, leaks or discharges must be reported. Management will investigate to determine if external reporting (e.g. Ministry of Environment) is required.
- Failure to report spills will result in discipline to the responsible employee or subcontractor.
- Reports must be made using an approved spill report.
- Spills will be reviewed as part of the companies daily inspection process.

ASBESTOS AWARENESS PROGRAM

(reference Regulation 278/05, amended to 479/10)

DEFINITION OF TERMS

Once asbestos has been manufactured into different products, another set of terms is used to describe.

Loose or Friable
Means that the fibres are relatively free and are more likely to be airborne and respirable. The products are easily broken or crumbled so that fibres can be released into the air.

- a "'friable material' means material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered".

Bound
Means that the fibres are held in place, as in woven materials or rope.

Locked-in
Means that the fibres are trapped or completely surrounded by another material such as cement or plastic.

Encapsulated
Means that there is an impermeable covering or sealant on the exposed surface of the asbestos containing material such as paint, canvas wrap, etc.

Enclosed
Means isolation behind a barrier (i.e. dry wall, sheet metal, etc.).

ASBESTOS HAZARD RECOGNITION

Although the only authoritative method of identifying asbestos is by microscopic analysis, the following rules of thumb are useful to determine where asbestos might be found (places to take precautions). This list should by no means be considered conclusive.

- **The age of the building or equipment**
  Asbestos pipe and boiler insulation was used extensively in many buildings between 1930's and the 1970's. Fireproofing materials, containing asbestos, were frequently sprayed on to columns, beams and steel structures. This practice was stopped in 1975. After this date, substitute materials such as fiberglass, mineral wool, etc., were used.

- **The type of construction**
  Structural steel frame buildings require fire proofing to protect the integrity of the structure during a fire situation, especially for the evacuation of all occupants. This resulted in widespread use of sprayed on or troweled on fireproof coatings most of which contained chrysotile or "white" asbestos.

  Reinforced concrete structures do not normally require additional fireproofing since the concrete protects the reinforcing steel which provides the critical structural support.

- **The nature of the equipment**
  Asbestos insulation materials were used on equipment exposed to extreme conditions such as high temperatures and corrosive environments. As a result, asbestos can be anticipated on high refractory linings in furnaces and kilns.

  Asbestos cement sheeting was often used in many buildings for roofing, siding and splash protection from corrosive materials.

- **The appearance of the material**
  While mineral wool, calcium silicate and asbestos are quite similar in appearance, other material such as fiberglass is noticeably different. This fact can be used to eliminate certain materials from consideration and analysis.

  In pipe insulation, the corrugated type of materials commonly called “air-cell” insulation (which appears similar to corrugated cardboard) was almost exclusively made with a significant amount of asbestos.

Procedures for Accidental Contact Material Which Could Contain Asbestos

The following procedure has been prepared to limit any potential exposure of personnel to asbestos containing materials.

All piping currently wrapped with plastic encapsulating material, floor and roof tiles, and certain drywall materials will be presumed to contain asbestos. Until further measures are taken to remove or further assess the potential hazards of this material, the following procedures must be followed:

Where contact has been made disturbing or damaging the pipe wrapping:

- back away from the immediate area
- advise co-workers to leave the area
- advise or have co-worker advise the Site Superintendent (preferably have someone remain at the scene to control traffic – both vehicular and pedestrian)
- area will be cordoned off with caution tape and appropriate signage until the expose is limited by competent, prepared professionals
- area will be assessed by a qualified hygienist to determine the risk and expose to the workplace.

Where fibrous materials have been released upon accidental contact:

- do not touch or disturb the material further
- leave contacted equipment or materials at the scene
- back away from the immediate area
- advise co-workers to leave the area
- advise or have co-worker advise the Site Superintendent (preferably have someone remain at the scene to control traffic – both vehicular and pedestrian)
- area will be cordoned off with caution tape and appropriate signage until the pipe wrapping is repaired by competent, prepared professionals
- area will be assessed by a qualified hygienist to determine the risk and expose to the workplace.

DESIGNATED SUBSTANCE PROCEDURES

The purpose of the Designated Substances Program is to ensure that management team, workers and subcontractors understand our policy and their roles and responsibilities as they relate to designated substances in the workplace **(reference Regulation 490/09, amended to 148/12)**. In addition, to ensure that risks associated with the designated substance to employees are identified and eliminated or minimized through the implementation of prevention programs and/or practices.

POLICY

We are committed to providing a safe and healthy workplace for all employees, subcontractors and visitors. This commitment is imperative considering the nature of our operations. As a construction company, our employees and subcontractors, through the normal course of work may be required to work in areas or handle materials that are or potentially could contain designated substances. This includes working with or removal of potential designated substances. To ensure the health and safety of all workplace parties and compliance with legislative requirements, we will implement all necessary policies and programs though our Hazard Assessment.

DEFINITIONS

> **Designated Substance** as defined in the Occupational Health and Safety Act "means a biological, chemical or physical agent or combination thereof prescribed as a designated substance to which the exposure of a worker is prohibited, regulated, restricted, limited or controlled;" These include; Acrylonitrile, Arsenic, Asbestos, Benzene, Coke Oven Emissions, Ethylene Oxide, Isocyanates, Lead, Mercury, Silica and Vinyl Chloride.

It is essential that each Site Superintendent and Workers identify the potential for individual designated substance exposure through the completion of our JHA Procedures (Sections 25 & 26 of our Health & Safety Manual). We require genuine effort into the completion of the report.

The individuals conducting this JHA will be trained to identify individual potential site level hazards including designated substances from the site level activities and identify the necessary control strategies to perform these tasks safety and on time.

Three common designated substances and/or controlled products we may encounter in site work include:

- Lead used in paint applications and in solder used in joints of copper pipe.
- Silica used in concrete, masonry, stone and boiler refractory.

NOTE: We require that a list of all designated substances and/or controlled products at a job site be supplied by the owner of the project prior to commencement of work.

The Superintendent must assess all aspects of scheduled daily work activities using Safety Talks and JHA procedures. All potential designated substances will be defined by the initial JHA document and the site assessments where these hazards and controls will be communicated to all applicable workers.

A pre-job assessment meeting will be conducted to identify the potential for designated substances within the site locations and their likely exposure routes. This information allows our site level activities to take appropriate proactive steps to plan/control exposure of employees and the general public to the designated substances that may be present.

When there is likelihood of site exposure to any designated substance, a third party hazard assessment team will be brought in to identify and institute preventative measures including abatement, engineering controls, work practices, hygiene practices, record keeping and medical surveillance, training, and emergency preparedness.

When there is likelihood of site exposure, appropriate Personal Protective Equipment (PPE) for all personnel to adequate protection will be provided and with instructions covering use care and maintenance instructed. This equipment must meets or exceeds the requirements set out in the applicable codes or site specific needs. All employees shall wear the appropriate PPE where the hazard cannot reduce the potential exposure below the occupational exposure limit. No modification or removal of the specified PPE will be tolerated inside identified area.

Lead Control Program

Every employer shall take all necessary measures and procedures by means of engineering controls, work practices, and hygiene facilities and practices to ensure that a worker's airborne exposure to lead does not exceed the TWA (Time Weighted Average), STEL (Short Term Exposure Limit) or C (Ceiling Limit) **(reference Regulation 490/09, amended to 148/12, section 10)**.

General Precautions Applicable to Type 1, 2 and 3 Lead Work

1. Washing facilities should be provided and used
2. Workers should not eat, drink, and chew gum or smoke in area
3. Place drop sheets below operations that might produce dust, chips or debris
4. Clean dust and waste with HEPA filtered vacuum
5. Clean up after each operation
6. Place dust and waste into dust tight container labeled as lead waste, removed regularly.
7. Inspect work area at least daily to ensure it is kept clean
8. Do not use compressed air or dry sweeping for cleaning work areas or clothes

If there is a potential for hazardous exposure to airborne lead in a construction project, we will ensure that controls are effective and respiratory protection is adequate.

1. No person shall enter, or cause others to enter, a work area which may have excessive airborne particles (contaminated) without properly fitted personal protective equipment.
2. Work area will be identified or taped off, with appropriate signage posted; only essential workers shall be present during the operation.
3. No person shall leave, or cause others to leave the contaminated area without removal of suit and complete showering, unless during an emergency.
4. Workers shall not eat, drink, and chew gum or smoke in the work area.
5. Facial hair must be clean-shaven for proper fit of respirator equipment.
6. A decontamination facility shall be available to the worker consisting of a shower, wash basin with hot and cold water, soap and towels and used by the worker prior to eating, drinking, smoking or leaving the project.
7. Workers using the decontamination facility should first decontaminate protective clothing to be reused on site by vacuuming with a HEPA filter vacuum or by damp wiping.
8. Remove decontaminated protective clothing; place any protective clothing not to be reused on site in a container suitable for lead containing dust & waste.
9. Shower without removing the respirator, then remove and clean the respirator.

Note: The time-weighted average exposure to airborne lead in a work day or work week shall be calculated as follows:

The cumulative daily or weekly exposure shall be calculated using the following formula: C1T1 + C2T2 + ... + CnTn where, C1 is the concentration found in an air sample, and T1 is the total time in hours to which the worker is taken to be exposed to concentration C1 in a work day or a work week. The time-weighted average exposure shall be calculated by dividing the cumulative daily exposure by eight and the weekly exposure by 40 respectively.

A control program for lead will be provide for pre-employment, pre-placement, and periodic medical examinations of workers that include:

a) a medical history that satisfies the requirements of the applicable code for medical surveillance;
b) a physical examination that satisfies the requirements of the applicable code for medical surveillance; and
c) clinical tests that are required by the examining physician and satisfy the requirements of the applicable code for medical surveillance.

Silica Dust Mitigation Methods

The first step in properly managing the production of Silica dust is to identify the presence of silica-containing materials and the types of tasks or work procedures that may potentially create the release of silica dust **(reference Regulation 490/09, amended to 148/12, section 12)**. If silica-containing materials are identified and there is a potential for exposure to silica dust, corrective action must be taken. In deciding which actions provide the most efficient long-term solution, consideration should be given to the procedures that may disturb the silica-containing materials, the location of these materials, the likely levels of exposure, and the cost of the proposed method for controlling the generation of silica dust.

There are several basic approaches to controlling exposure to silica dust:

- Ensuring that all potential sources of silica dust are identified.
- Providing a job-specific procedure which outlines in detail the work methods and practices that will be followed on each site. Considerations will include:
    - Availability and delivery of all required tools/equipment
    - Scope and nature of grinding/drilling/chipping/sawing/cutting (or otherwise abrading) of silica containing material work to be conducted
    - Control methods to be used
    - Level of respiratory protection required
- Coordination plan
- Ensuring that the materials (e.g., tools, equipment, personal protective equipment) and other resources (i.e., worker training materials), required to fully implement and maintain the Silica Exposure Control Plan (ECP) are readily available where and when they are required.
- Conducting a periodic review of the effectiveness of the ECP. This would include a review of the available dust-control technologies to ensure these are selected and used when practical.
- Ensuring that all required tools, equipment, and personal protective equipment are readily available and used as required by the ECP.
- Ensuring Supervisors and workers are educated and trained to an acceptable level of competency.
- Maintaining records of training, fit-test results, crew talks, and inspections (equipment, PPE, work methods/practices).
- Coordinating the work with other Contractors, subcontractors, and other employers to ensure a safe work environment.

Silica Disturbance Procedures

General Measures and Procedures for Silica Disturbance Operations;

We will reduce or eliminate worker exposure to silica dust by selecting a combination of the following controls listed in order of preference:

1. Elimination and substitution
2. Engineering
3. Administrative
4. Personal protective equipment

Elimination and Substitution

We recognize the importance of planning the work in order to minimize the amount of silica dust generated.

- During the project planning phase, we will advocate for the use of methods that reduce the need for cutting, grinding, or drilling of concrete surfaces (e.g., formwork planning).
- Whenever possible, we will schedule work when concrete is still wet, because we know that much less dust is released at that time.

Water Spray Systems

These systems are designed to apply water to the cutting or grinding surface to wet the surface and prevent the resulting dust from becoming airborne. Many construction tools/equipment types can be purchased with wet spray attachments. Water can also be manually applied to the concrete surface before and during the work (grinding, drilling, cutting, etc.). Wetting is very effective at reducing dust release at the source and, in fact, may be more effective than local exhaust ventilation for slab and masonry cutting. A drawback to this method of dust control is that the dust is not collected—the wet slurry must be cleaned up so that the dust does not dry and become airborne.

Many of the tools used in concrete finishing can be fitted with wetting attachments. These grinders generally have smaller grinding surfaces that can be used in unique work locations such as window casements.

Water spray systems are available for both stationary and portable masonry and other concrete- or block-cutting tools (e.g., saws). Work surfaces can also be wetted manually or using a water “mister” (e.g., during concrete chipping and jackhammering). A separate water supply system would have to be available on site from a plumbed facility or a portable pressurized tank.

Note: Water spray can effectively reduce exposure levels but is not feasible in many applications (e.g., tuck point grinding and cutting fibrous cement board) because water can result in material discoloration and expansion, building damage, and waste water disposal problems.

Use of water spray controls presents potential safety hazards, which include electrocution, slipping, and potentially hypothermia

When water spray systems are used in our work, we will follow these safe work practices:

- Pneumatic grinders will be used instead of electric-powered grinders if water is the method of control.
- Pressure and flow rate of water will be controlled in accordance with tool manufacturers’ specifications (for cutting saws, a minimum of 0.5 litres of water per minute [0.13 gallons/minute] should be used).
- When sawing concrete or masonry, we will use only saws that provide water to the blade.
- Wet slurry will be cleaned from work surfaces when the work is completed, using a wet vacuum or wet sweeping.

CHEMICAL STORAGE AND USE

Job Site Use and Storage:

- Read and follow all Material Safety Data Sheets (MSDS) and manufacturers recommendations for use, personal protection and disposal.
- Always use adhesives in open or well ventilated areas. If existing ventilation is poor, utilize fans or other means to provide positive circulation in order to reduce workers' exposure to unacceptable limits.
- Store only enough site chemicals for the days use in approved containers
- Store remaining materials on the ground in a controlled area. Manufacturer supplied or equivalent containers must be used stored in their original containers.
- Clothes or shop rags used for cleaning should be removed from the roof nightly and disposed of properly to prevent spontaneous combustion.
- Smoking should be prohibited within fifty feet of any organic solvents used in cleaning or adhesive application.
- Post No Smoking signs where necessary in areas where chemicals are being stored.
- Acetylene or electric welders and equipment producing open flames may ignite solvent vapors. Ensure appropriate distance from these flammable sources.
- Adequate 4A40BC fire extinguishers must be readily accessible at all times is storage areas.

Warehouse Storage:

- Read and follow all Material Safety Data Sheets (MSDS). Identify all adhesives and organic solvents that they contain.
- A separate, isolated, and secured area should be allocated for storage of adhesives and organic solvents.
- Post No Smoking signs at all storage areas.
- Flammable materials must not be stored near building exits.
- Material containers should be handled individually and with extreme care.
- Immediately dispose of all empty containers or containers that have exceeded their shelf life.
- Adequate 4A40BC fire extinguishers must be readily accessible at all times is storage areas.

BIOLOGICAL AND CHEMICAL HAZARDS AND EXPOSURES

Safe work practices and good personal hygiene habits are essential in limiting exposure to various health hazards **(reference Regulation 149/12**). We strongly believe occupational health awareness is important for all its employees, and through education will encourage safe work practices and good personal hygiene in relation to chemical and biological agents. When this hazard is identified, all workers will be provided appropriate training on the chemical and/or biological hazards they may be exposed to.

Routes of Entry

- Ingestion - Entry through the mouth by eating, drinking or smoking with contaminated hands (i.e. lead or organophosphate insecticides). Always wash hands or any affected part of the body immediately after use of a hazardous product
- Skin – When the chemical gets on your skin, it enters your skin, it can reach your bloodstream and enter different parts of your body. The skin protects the internal organs of the body from the outside environment. The skin also has a protective layer of oils and proteins, which help to prevent injury or penetration by harmful substances. An industrial skin disease such as dermatitis is a result of skin contact with workplace substances such as solvents, epoxy resins, acids and cleaning products

- Inhalation - Breathing it through your nose and mouth into your lungs is one of the common routes of entry into the body. Gases, dusts and smoke can enter your body and cause damage to your respiratory system or they can pass through the lungs to other parts of the body
- Injection - Many hazardous agents can be injected into the body inadvertently or otherwise (i.e. stepping on a nail or a hypodermic needle puncturing the skin.)

CHEMICAL AGENTS

Chemical hazards occur when excessive airborne concentrations in the form of a gas, liquid, vapour, fume, mist or dust which can be inhaled or absorbed through the skin.

- Fume - Small solid particles suspended in air formed by molten metals or plastics (i.e. welding fumes)
- Mist - Small liquid droplets suspended in air (i.e. oil or paint spray.)
- Gas - Gases occupy the entire space in which they are contained. They can be changed to a liquid or solid state by increased pressure or decreased temperature. Gases that do not exist as a solid or liquid at room temperature and pressure
- Vapor - Gaseous form of substances normally in a liquid or solid state.
- Dust - Solid particles suspended in air generated by mechanical action on a solid such as grinding or crushing
- Smoke – Formed when a material containing carbon is burned. Smoke generally contains droplets as well as dry particles

BIOLOGICAL AGENTS

Exposure to Biological Agents requires good personal hygiene habits to limiting exposure to various health hazards. We strongly believes occupational health awareness is important for all its employees, and through education will encourage safe work practices and good personal hygiene in relation to biological agents. All workers will be provided appropriate awareness to biological hazards they may be exposed to. Site Orientations will be used on site to communicate ongoing potential exposures.

Routes of Entry:

- Ingestion – Entry of hazardous agents through the mouth by eating, drinking or smoking with contaminated hands. Always wash hands or any affected part of the body immediately after use of a hazardous product
- Absorption – When a hazardous agent touches your skin, it can enter through your skin, into your bloodstream. The bloodstream can then transport the chemical through the body potentially affecting different parts of your body
- Inhalation - Breathing hazardous agents through your nose and mouth into your lungs is one of the most common routes of entry into the body. Gases, dusts and smoke can enter your body and cause damage to your respiratory system or they can pass through the lungs, into your bloodstream and be transported to other parts of the body
- Injection - Hazardous agents can be injected into the body inadvertently or otherwise (i.e. stepping on a nail)

Biological Agents and other potential hazards vectors may occur when excessive airborne concentrations in the form of a gas, liquid, vapour, fume, mist or dust which can be inhaled or absorbed through the skin.

- Fume - Small solid particles suspended in air formed by molten metals or plastics (i.e. welding fumes)
- Mist - Small liquid droplets suspended in air (i.e. oil or paint spray.)
- Gas - Gases occupy the entire space in which they are contained. Changes to a liquid or solid state by increased pressure or decreased temperature. Gases that do not exist as a solid or liquid at room temperature and pressure
- Vapor - Gaseous form of substances normally in a liquid or solid state.
- Dust - Solid particles suspended in air generated by mechanical action on a solid such as grinding or crushing
- Smoke – Formed when a material containing carbon is burned. Smoke generally contains droplets as well as dry particles

Biological Agent Identification and Exposure Prevention Procedure:

1. Where known or potential Biological Agents may exist within the workplace, the Supervisor shall remind workers of the hazards and controls relating to exposures and vectors.
2. Supervisors and workers shall monitor coworkers for symptoms or potential exposures and report any workers having issues immediately.
3. If a worker is exposed to a Biological Agent, move the worker to safe location and ensure contaminated PPE and clothing are removed and call 911.
4. After such incidents supervisors shall produce appropriate investigation reports