BACHLY CONSTRUCTION

EMPLOYEE FIELD HEALTH AND SAFETY GUIDELINES

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1.0 INTRODUCTION

The Employee Field Health and Safety Guidelines are one component of our Health and Safety Program. These principles and guidelines apply to all employees who perform work for Bachly Construction.

One of the most important issues facing Bachly Construction today is staff health and safety. Recent amendments to the *Occupational Health and Safety Act* (the Act) place an increasing onus on all staff to work together to ensure healthy and safe working environments. Bachly Construction is committed to managing health and safety issues using a dynamic set of standards to identify and control workplace hazards.

These Guidelines outline the basic health and safety precautions and procedures that must be implemented to ensure your safety. They been developed with a view to recognize, evaluate and then eliminate or control all conditions or situations that have the potential to adversely affect the health and safety of our staff or the business operations of the company. These principles will be periodically reinforced through general and specific training sessions.

All employees performing work for Bachly Construction are to work in compliance with the Act, any applicable Regulations, codes and standards. In addition, all employees performing work for Bachly Construction are to follow and abide by the principles and procedures contained within these Guidelines as well as any specific Client health and safety requirements.

2.0 ADMINISTRATIVE POLICIES

2.1 Site or Project Orientation Policy

Policy

Employees must report to the Site Supervisor or Client contact prior to performing work on a site or project to determine the specific requirements for orientation to the site or project. Job site walkthroughs should not be performed until the orientation requirements for the site or project have been satisfied.

Employees shall ask the following questions of the Site Supervisor or Client contact prior to conducting any site review:

1. Standard Projects

(a) What are the site-specific safety standards set by the owner, project manager or general contractor?

(b) Are there any areas on site which are considered dangerous or areas we should pay particular attention to?

(c) Are there any areas which we should not enter or remove ceiling tiles due to the presence of asbestos?

2. For Pharmaceutical/ Bio Projects the following questions must also be asked:

(a) Are there any rooms or areas to which access is prohibited?

(b) Are there any rooms or areas where an acute allergic reaction could be experienced (e.g., penicillin)?

(c) Are there any areas of the roof which should be avoided due to hazardous exhaust from the roof stacks?

Training

This policy will be reviewed during employee orientation (to the Employee Field Health and Safety Guidelines).

References

1. Section L – Orientation, Health and Safety Program Manual.
2. Section 2.7 – Employee Conduct Policy, Employee Field Health and Safety Guidelines.

2.2 Joint Health and Safety Committees Policy

Policy

A Joint Health and Safety Committee has been established for the company.

The Joint Health and Safety Committee (JHSC) is an essential part of Bachly Construction's Internal Responsibility System for Health and safety. Equal numbers of management and worker representatives will participate in JHSC meetings. The members representing workers will be selected by the workers they are to represent. The JHSC will meet regularly and at least every three months.

Workers should raise health and safety concerns with their direct supervisors, and if unresolved, with their JHSC representative in order that they be raised at the next JHSC meeting. Minutes of meetings will be prepared and posted on the Health and Safety Bulletin Board at Head Office to ensure the communication of any health and safety issues and resolutions to all parties in the workplace.

Training

One management and one employee Health and Safety Representative will receive specialized training in health and safety. These Committee members will serve as certified members for the Joint Health and Safety Committee (JHSC). This certification involves training in the identification and control of hazards, and in health and safety law.

The Certification involves training in two mandatory elements: Basic Certification and Workplace-Specific Hazard Training. Basic Certification provides an overall knowledge of health and safety that applies to all workplaces. Workplace-Specific Hazard Training focuses on significant hazards in your workplace. It addresses methods to assess, control and/or eliminate hazards.

References

1. Section M – Joint Health and Safety Committees, Health and Safety Program Manual.

2.3 Incident/ Accident Reporting Policy

Policy

All employees must report health and safety concerns, incidents or accidents, immediately to their supervisor. Employees performing work on a site or project should first report the concern or occurrence to the Site Supervisor or Client contact at the site, and then to their direct supervisor (Bachly Construction management). The concern or occurrence must be included in the Site Visit Report and a copy provided to a CEL Health and Safety Representative. Site or project specific emergency procedures for contacting internal and external emergency response agencies should be followed by employees. Employees have the right to refuse unsafe work, to leave the site or project and to return after the health and safety concern has been addressed and the site or project is safe.

If an employee must seek medical treatment during off-shift hours due to a work related injury or illness, the employee must report this treatment to their direct supervisor as soon as possible and prior to returning to their regular job duties.

An investigation will be conducted to determine the root causes of all 'near misses', incidents or accidents so that appropriate corrective action can be implemented to prevent a recurrence. The direct supervisor will be responsible for coordinating the investigation using the Supervisor's Investigation Kit.

Training

This policy and basic emergency response and accident investigation procedures to be followed will be reviewed during employee orientation.

References

1. Section 2.4 – Early and Safe Return to Work Policy, Employee Field Health and Safety Guidelines.
2. Section P– Incident/ Accident Investigation and Reporting, Health and Safety Program Manual.
3. Section G – Emergency Planning, Health and Safety Program Manual.
4. Section J – Early and Safe Return to Work Program, Health and Safety Program Manual.

2.4 Early and Safe Return to Work Policy

Policy

Bachly Construction has developed and implemented an Early and Safe Return to Work Program to accommodate, where possible, employees that sustain injuries arising out of or occurring during the course of employment. This process will begin immediately after medical treatment has been provided to the injured worker.

When an injury prohibits an employee from performing their regular job duties, temporary modified work (that will not aggravate the injury or illness) will be offered to accommodate the employee. The temporary modified duties will be based on the information provided by the treating healthcare professional on the Functional Abilities Form and through consultation with the injured employee.

If the injury is of a more serious nature and results in a permanent impairment, efforts will be made to work closely with the employee, healthcare professionals and the WSIB to develop long-term modified work that will accommodate the worker's physical limitations or restrictions.

Training

Project or Departmental Managers will receive training in the implementation of the Early and Safety Return to Work Program.

References

1. Section J – Early and Safe Return to Work Program, Health and Safety Program Manual.

2.5 Workplace Hazardous Materials Information System (WHMIS) Policy

Policy

Employees that may use, store or handle hazardous materials must do so in accordance with the WHMIS Regulations and any Client requirements. When hazardous materials are delivered to Head Office or to a site or project, the materials are not to be accepted unless they are properly labeled and unexpired material safety data sheets (MSDS) are available for review.

An MSDS binder will be maintained at Head Office for hazardous materials present in the office workplace to ensure that unexpired MSDS are available for review by workers. MSDS for hazardous materials used on a site or project should be available through the Site Supervisor or Client contact. If an MSDS is unavailable or has expired (is greater than three years old), contact your direct supervisor, Human Resources or a Health and Safety Representative for information on obtaining an unexpired MSDS.

Training

All employees will receive training in WHMIS.

References

1. Section N – WHMIS Program, Health and Safety Program Manual.
2. Section 2.6 – Designated Substances Policy, Employee Field Health and Safety Guidelines.
3. Section 4.7 – Personal Protective Equipment, Employee Field Health and Safety Guidelines.

2.6 Designated Substances Policy

Policy

Employees must meet with the Site Supervisor or Client contact to determine if designated substances may be present on a specific site or project. The Owner of the site or project is responsible to provide information regarding the presence of designated substances at the site or project to the 'constructor' for the project. In turn the constructor is obligated to relay such information to all contractors or subcontractors performing work on the project.

When there is likelihood of worker exposure, a control program will be instituted that includes engineering controls, work practices, hygiene practices, record keeping and medical surveillance, if applicable. The Joint Health and Safety Committee (JHSC) will be consulted with regard to both the assessment and the control program.

Training

Employees that may be exposed to designated substances on sites or projects will receive instruction and training in the hazards of exposure, personal hygiene and safe work practices, and in the use, cleaning and disposal of respirators and protective clothing. Employees will receive hazard specific training for designated substances from an external training provider.

References

1. Section N – WHMIS Program, Health and Safety Program Manual.
2. Section 2.5 – WHMIS Policy, Employee Field Health and Safety Guidelines.
3. Section 4.7 – Personal Protective Equipment, Employee Field Health and Safety Guidelines.

2.7 Employee Conduct Policy

Policy

All employees that are working at or visiting Client sites or projects are expected to comply with the Bachly Construction Employee Field Health and Safety Guidelines, legislative and Client health and safety requirements. If any requirements contained within these Guidelines conflict with applicable legislative or Client requirements, the more restrictive requirements shall be followed. In these circumstances, employees are to immediately advise their direct supervisor of the nature of the conflict.

The following guidelines for employee conduct apply to all employees:

- Employees must report to the Site Supervisor or Client contact prior to performing work on a site or project in accordance with the 'Site or Project Orientation Policy' to determine the specific requirements for orientation to the site or project.
- Employees must report all accidents, near misses and unsafe conditions to the local Site Supervisor or Client contact and their direct supervisor immediately.
- Do not operate any machinery, tools or equipment that you are not qualified to operate.
- All employees are to properly use all required personal protective equipment in accordance with Bachly Construction or Client requirements.
- Intoxication due to or possession of alcohol or illicit drugs will not be permitted on Bachly Construction sites or projects. The use of prescription drugs is permitted as prescribed by a physician provided they do not adversely affect or impair a worker's ability to perform job their duties in a safe and effective manner.
- Serious or repetitive violations of Bachly Construction health and safety policies or procedures, the *Act* or the Regulations by staff performing work for Bachly Construction will result in the application of progressive disciplinary measures up to and including termination of employment.

Training

This policy will be reviewed during employee orientation.

References

1. Section B– Health and Safety Responsibilities, Health and Safety Program Manual.
2. Section 2.1 – Site or Project Orientation Policy, Employee Field Health and Safety Guidelines.
3. Section 4.4 – Duties of Workplace Parties, Employee Field Health and Safety Guidelines.

3.0 ACCIDENT PREVENTION POLICIES

3.1 Personal Protective Equipment Policy

Policy

Employees must review the personal protective equipment requirements with the Site Supervisor or Client contact for sites or projects. In addition, workers should assess the hazards in their work area to determine other personal protective equipment (PPE) requirements. The PPE selected must be appropriate for the circumstances and used by employees while performing work at sites or projects. All personal protective equipment must be Canadian Standards Association (CSA) approved.

Employees will be provided with hard hats, safety glasses, tear-away fluorescent safety vests, retro-reflective stripes and hearing protection, as required. Protective footwear is not provided to employees. Employees are to wear hard hats and protective footwear until the completion of the project.

Training

Employees will be trained on the proper selection, use, fit, maintenance and storage of the PPE they are required to use.

References

1. Section 4.7 – Personal Protective Equipment, Employee Field Health and Safety Guidelines.
2. Section 4.8 – Fall Prevention and Protection, Employee Field Health and Safety Guidelines.

3.2 Fall Prevention and Protection Policy

Policy

All employees must ensure that they are adequately protected at all times from exposure to fall hazards.

A guardrail system should be used to protect an employee if the employee is exposed to the hazard of falling greater than 2.4 metres (7.8 feet). If it is not possible to protect the employee using a guardrail system, then the employee must be protected from the fall hazard using a travel restraint, fall restricting or fall arrest system. Guardrails are commonly used to protect edges of the slab, floor or roof areas and floor openings during construction.

All employees must be protected using a travel restraint, fall restricting or fall arrest system when exposed to the hazard of falling a distance of greater than 3.0 metres (9.8 feet); a distance of greater than 1.2 metres (3.9 feet) if the work area is used as a path for a wheelbarrow or other equipment; or, falling into operating machinery, a liquid, a hazardous substance or object through an opening on a work surface.

Trips, slips and falls can also be prevented by paying close attention at all times to the surrounding work area and terrain. Do not walk while looking at equipment or ceiling spaces. **'Walk, Stop, Look.'** Also, never walk backwards to get a better view of something. **'Turn Around, Walk Forward, Stop, Turn Around.'**

Training

Employees that may use a fall protection system will be adequately trained in its use and given adequate oral and written instructions by a competent person prior to use of the fall protection system.

References

1. Section 4.8 – Fall Prevention and Protection, Employee Field Health and Safety Guidelines.

3.3 Access to Roof Areas Policy

Policy

Employees that will access the roof areas of buildings during the course of their work must first meet with the Site Supervisor or Client contact to review any orientation and fall protection requirements that will apply to these work areas. Also, confirm that discharges form roof stacks are not hazardous prior to accessing roof.

Employees should ensure that safe access to and egress from the roof area is available prior to entering the roof area.

Training

This policy will be reviewed during employee orientation.

References

1. Section 4.8 – Fall Prevention and Protection, Employee Field Health and Safety Guidelines.
2. Section 4.9.1 – Access to Roof Areas, Employee Field Health and Safety Guidelines.
3. Section 4.9.11 – Ladder Use, Employee Field Health and Safety Guidelines.
4. Section 4.9.12 – Stairs, Employee Field Health and Safety Guidelines.

3.4 Access to Trenches Policy

Policy

Whenever practicable, employees are discouraged from entering trenches. No employee shall enter an unprotected trench where the depth of the trench exceeds 1.2 metres (3.9 feet). Assess the hazards associated with the trench prior to entry and ensure that safe access to and egress from the trench is available prior to entry. Do not enter a trench without approval from the General Contractor.

Training

Employees that regularly perform work activities in and around trenches will be considered for hazard specific training in trenching operations. Employees will receive training in trenching operations from an external training provider.

References

1. Section 4.9.2 – Trenching, Employee Field Health and Safety Guidelines.
2. Section 4.9.11 – Ladder Use, Employee Field Health and Safety Guidelines.
3. Section 4.9.19 – Confined Spaces, Employee Field Health and Safety Guidelines.

3.5 Access to Work Areas Policy

Policy

Access to work areas above or below ground must be provided by stairs, runway, ramp, ladder or construction hoists (elevators) for construction sites or projects. Employees are to ensure safe access to and egress from work areas above or below ground is available prior to entering these work areas.

Training

This policy will be reviewed during employee orientation.

References

1. Section 4.8 – Fall Prevention and Protection, Employee Field Health and Safety Guidelines.
2. Section 4.9.11 – Ladder Use, Employee Field Health and Safety Guidelines.
3. Section 4.9.12 – Stairs, Employee Field Health and Safety Guidelines.

3.6 Work Platforms Policy

Policy

Employees are not to operate elevating work platforms (i.e., scissor lifts, Genie lifts) and are to avoid the use of scaffolding. Elevating work platforms are only to be used when operated by a trained operator. Work platforms should only be accessed when properly guarded.

Training

This policy will be reviewed during employee orientation.

References

1. Section 4.8 – Fall Prevention and Protection, Employee Field Health and Safety Guidelines.
2. Section 4.9.11 – Ladder Use, Employee Field Health and Safety Guidelines.
3. Section 4.9.12 – Stairs, Employee Field Health and Safety Guidelines.
4. Section 4.9.13 – Work Platforms, Employee Field Health and Safety Reference Guidelines.

3.7 Site or Project Access And Parking Policy

Policy

Employees must use designated access routes and parking areas when working at or visiting sites or projects. Driveways, laneways, walkways or emergency vehicle routes must not be blocked or restricted at any time by employee vehicles.

Employees will be reimbursed for the cost of parking in commercial parking lots. However, employees will not be reimbursed for parking tickets or fines incurred for parking illegally when visiting sites or projects.

Training

This policy will be reviewed during employee orientation.

References

1. Section 4.9.16 – Vehicle Safety, Employee Field Health and Safety Guidelines.
2. Section 4.9.17 – Traffic Protection Plan, Employee Field Health and Safety Guidelines.

3.8 Confined Space Entry Policy

Policy

Whenever practicable, employees are discouraged from entering confined spaces. No employee shall enter a confined space unless they have received explicit permission from their Departmental or Project Manager and have completed appropriate hazard specific training in confined space entry and rescue.

A confined space entry and rescue plan specific to the confined space and work activities must be prepared and reviewed with all entrants, attendants and rescuers prior to any employee entering into a confined space.

A confined space is a space to which or from which access or egress is restricted and in which, because of its construction, location, contents or work activity to be performed therein, a hazardous gas, vapour, fume or oxygen-deficient atmosphere may occur such as:

Caissons	Sewers	Vaults	Pits
Excavations or Trenches	Shafts	Vessels	Valve chambers
Man Holes/ Catch Basins	Tanks	Voided Concrete Slabs	

Training

Employees that are required to enter into a confined space will receive hazard specific training in confined space entry and rescue procedures prior to entry. Employees will receive training for confined entry and rescue from an external training provider.

References

1. Section 4.7 – Personal Protective Equipment, Employee Field Health and Safety Guidelines.
2. Section 4.9.2 – Trenching, Employee Field Health and Safety Guidelines.
3. Section 4.9.18 – Lockout/ Energy Isolation, Employee Field Health and Safety Guidelines.
4. Section 4.9.19 – Confined Spaces, Employee Field Health and Safety Guidelines.

3.9 Work Over Or Around Water Policy

Policy

Employees working around water that is deep enough to drown in shall wear a lifejacket, unless appropriate controls are in place to prevent the employee from falling into the water. Prior to work over or around water, appropriate rescue equipment, trained workers and rescue procedures must be in place in the event a rescue is required.

Training

This policy will be reviewed during employee orientation.

References

1. Section 4.8 – Fall Prevention and Protection, Employee Field Health and Safety Guidelines.
2. Section 4.9.21 – Working Over and Around Water, Employee Field Health and Safety Guidelines.

3.10 Working Alone Policy

Policy

Whenever practicable, workers will not perform relatively higher risk work activities when they are the only person on site (e.g., accessing roof areas, visiting projects at remote or isolated locations).

Training

This policy will be reviewed during employee orientation.

References

1. Section 4.9.22 – Work Alone, Employee Field Health and Safety Guidelines.

3.11 Electrical Equipment Policy

Policy

Bachly Construction employees are not to operate any power or hand tools or any construction equipment, vehicles, machinery or mechanical/electrical equipment during visits to a site or project. If operation of any of this type of equipment is required it shall be performed by a qualified person employed by the Client or contractor on site.

Only competent, trained and authorized persons are permitted to operate electrical equipment. This includes operation of circuit breakers, switches, generators, battery systems and all other electrical equipment that would not normally be accessible to the public.

If operation of electrical equipment is required it shall be performed by a qualified person employed by the Client or contractor on site.

Employees should not enter areas or work around equipment with exposed live electrical parts.

Training

This policy will be reviewed during employee orientation.

References

1. Section 4.9.5 – Power and Hand Tools, Employee Field Health and Safety Guidelines.
2. Section 4.9.20 – Commissioning of Equipment, Employee Field Health and Safety Guidelines.

4.0 EMPLOYEE REFERENCE GUIDELINES

4.1 LEGISLATIVE REQUIREMENTS

In Ontario, workplace health and safety is regulated by the provincial government's Ministry of Labour (MoL). Part of the function of the MoL is to monitor an organization's health and safety performance and compliance with the Act and applicable Regulations.

If, during a routine visit or an accident investigation, it is deemed by the MoL inspector that the employer, a supervisor, a worker or a subcontractor is not working in compliance with the legislative requirements, orders may be issued to achieve compliance.

Orders made by an MoL inspector may be issued in the form of a 'stop work' or a compliance order. Compliance orders will specify a time period for compliance – either immediate or by a fixed date. Failure to comply with the order or failure to meet with the legislative requirements contained in the Act or the Regulations can result in charges against the employer or any other individual in the organization that can result in substantial penalties.

Every person who contravenes or fails to comply with a provision of the Act, the Regulations or an order by an MoL inspector, upon conviction, is liable for a fine of not more than $25,000, per offence, or to imprisonment for a term of not more than twelve months, or both. If a corporation is convicted of an offence, the maximum fine that may be imposed upon the corporation is $500,000, per offence.

4.2 THE INTERNAL RESPONSIBILITY SYSTEM (IRS)

The Internal Responsibility System (IRS) is the fundamental concept upon which the Act is based. The IRS encourages addressing health and safety issues and concerns within the work area, department or the organization without the intervention of external agencies such as the MoL.

The IRS encourages all staff and the Joint Health and Safety Committee to bring forth concerns, ideas and solutions relating to health and safety issues so that these issues may be resolved in a timely and efficient manner. Management must respond to these concerns and implement policies, programs and procedures in order that work may be performed in a healthy, safe and effective manner.

In order for the IRS to be effective, all parties within the workplace must accept and share the responsibility and accountability for health and safety in the workplace. It is essential that all workplace parties have input and actively participate in the development and implementation of workplace specific policies, programs and procedures.

Open communications, cooperation, accountability for and commitment to improving workplace health and safety practices are integral to the continuous improvement of workplace health and safety.

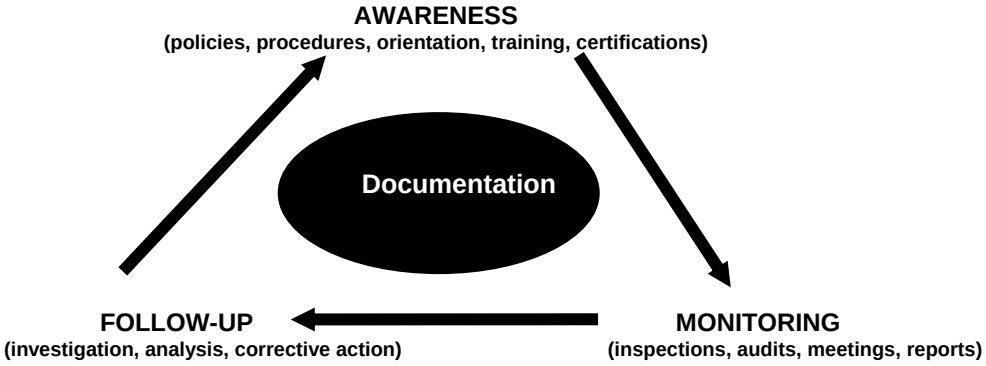
If the IRS fails to adequately address health and safety issues in the workplace, the MoL has the authority to intervene in order to enforce the law.

4.3 DUE DILIGENCE

Where there has been a contravention of the Act or Regulations, resulting in charges by the MOL, there is a legal defence (*due diligence*) available to a constructor, employer or supervisor. These parties must prove, individually, that they have done everything reasonable in the circumstances to comply with the strict duties imposed by the legislation in protecting the health and safety of their workers.

It should be noted that non-compliance with the Act and Regulations may result in penalties issued to corporation(s) and the individual(s) responsible for the care and control of the workplace. Contravention of the Act or Regulations is a strict liability offence. This means that employers, constructors, supervisors and workers that are directly or indirectly involved with the contravention, may be personally guilty of an offence and have the onus to prove that they were duly diligent in ensuring their duties and obligations with respect to health and safety have been fulfilled.

Formal policies, safe operating procedures and supporting documentation (i.e., minutes of management meetings, training sessions attended, equipment checklists, etc.) are essential in demonstrating the legal defence of *due diligence*. Bachly Construction must be able to prove that all reasonable precautions have been implemented, their effectiveness have been monitored and deficiencies have been corrected, where required. *Due diligence* is the result of a well implemented and dynamic Health and Safety Program and cannot be developed to address charges once they have been laid. The diagram below illustrates the importance of documentation as a major component in the implementation of a health and safety management system.



4.4 DUTIES OF WORKPLACE PARTIES

The duties listed in these Guidelines have been modified from the Act. A complete listing of duties for all workplace parties can be found in the Act and in the applicable Regulations.

4.4.1 Duties Of An Employer

An 'employer', under the Act, is defined as:

> "A person who employs one or more workers or contracts for the services of one or more workers and includes a contractor or subcontractor who performs work or supplies services and a contractor or subcontractor who undertakes with an owner, constructor, contractor or subcontractor to perform work or supply services."

The employer shall:

- Prepare, post, and review annually, a written occupational health and safety policy.
- Develop and maintain a program to implement the occupational health and safety policy.
- When appointing a supervisor, appoint a 'competent person'. The Act defines a 'competent person' as a person who:
  - i) is qualified because of their knowledge, training and experience to organize the work and its performance;
  - ii) is familiar with the provisions of this Act and the regulations that apply to the work; and,
  - iii) has knowledge of any potential or actual danger to health and safety in the workplace.
- Provide information, instruction and supervision to a worker to protect the health and safety of a worker.
- Inform a worker, or a person in authority over a worker or workplace, about any hazards in the workplace and outline the control strategies that must be implemented to prevent exposure to that danger.
- Carry out such training programs for workers, supervisors and Joint Health and Safety Committee members, as prescribed.
- Review annually the effectiveness of the training programs that have been implemented.
- Where so prescribed, provide a worker with written instruction as to the measures and procedures to be taken for the protection of the worker.

- Provide all equipment, materials and protective devices, as prescribed, and provide training in their safe use and their limitations.
- Ensure that all equipment, materials and protective devices provided to workers are maintained in good condition and are used correctly.
- Post in the workplace a copy of the Act and Regulations and any explanatory information, in English and the majority language of the workplace, outlining each worker's rights and responsibilities; JHSC information (meeting minutes, workplace inspection reports); the WSIB Form 82 'In All Cases Of Injury/ Disease' poster; and, Regulation 1101 – First Aid Requirements.
- Ensure that the measures and procedures prescribed in the Act and Regulations are carried out.
- Report 'critical injuries' to the MoL.
- Comply with any orders and requirements of inspectors, directors and other agents from the MoL.
- Take every precaution reasonable in the circumstances for the protection of a worker.

4.4.2 Duties of a Constructor

A 'constructor', under the Act, is defined as:

> "A person who undertakes a project for an owner and includes an owner who undertakes all or part of a project by himself or by more than one employer."

A 'Project', under the Act, is defined as:

> " a construction project, whether public or private, including,
>
> (a) the construction of a building, bridge, structure, industrial establishment, mining plant, shaft, tunnel, caisson, trench, excavation, highway, railway, street runway, parking lot, cofferdam, conduit, sewer, watermain, service connection, telegraph, telephone or electrical cable, pipe line, duct or well, or any combination thereof,
>
> (b) the moving of a building or structure, and
>
> (c) any work, undertaking, or any lands or appurtenances used in connection with construction."

A constructor shall ensure that:

- The measures and procedures prescribed by the Act and Regulations, are carried out on a Project
- All employers and persons performing work on the project are working in compliance with the Act and Regulations
- The health and safety of every worker on the project is protected

4.4.3 Duties Of A Supervisor

A 'supervisor', under the Act, is defined as:

> "A person who has charge of the workplace or authority over a worker."

A supervisor must:

- Ensure that all workers work in compliance with the 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 the supervisor is aware.
- Ensure that each worker: is aware of and complies with the principles outlined in the Health and Safety Program; follows the specific safe operating procedures; and, utilizes any engineering controls, safeguarding devices or other equipment deemed necessary.
- Ensure that work is performed in a safe manner and that any personal protective equipment, devices or clothing that is required to be used or worn by workers, is properly used and maintained.
- As prescribed, provide a worker with verbal and written instructions outlining the measures and procedures to be followed for the worker's protection.

- Respond to concerns raised by any workers under their jurisdiction and/ or the Joint Health and Safety Committee.
- Investigate the causes of 'near miss' situations, incidents or accidents and implement strategies to prevent a recurrence of the event.
- Take every precaution reasonable in the circumstances for the protection of a worker.

4.4.4 Duties of a Worker

A 'worker', under the Act, is defined as:

> "A person who performs work or supplies services for monetary compensation."

To balance the employer's general right to direct the workforce and control the production process in the workplace, the Act provides the following rights (or duties) for workers:

Right to Know – of the potential or actual hazards to which he or she may be exposed and how to effectively control their exposure to these hazards.

Workers must receive the necessary education and training to perform their jobs in an effective and safe manner. Workers have the right to be informed regarding the hazards associated with their work and the workplace specific preventive measures to be utilized to control exposure to these hazards. The Workplace Hazardous Materials Information System (WHMIS) program addresses the right to know with respect to the storage handling and use of hazardous biological, chemical and physical agents.

Right to Participate – in the process of identifying and resolving workplace health and safety concerns through membership on the Joint Health and Safety Committee.

Workers have the right and the responsibility to provide input to and have direct involvement in the development and implementation of the safe operating procedures that must be followed by workers to perform their work duties safely.

Right to Refuse Unsafe Work – which they believe is dangerous to their own health and safety, or that of another worker, without reprisal.

Prior to a work refusal by a worker, the worker should discuss their concerns with their immediate supervisor and, if necessary, the Joint Health and Safety Committee in an effort to address the concern within the work area or department. Certified members of a JHSC have the right to 'stop work' they deem to be dangerous to any worker.

Workers also have duties and responsibilities as prescribed by the Act. Each worker must:

- Work in compliance with the provisions of the Act and Regulations for their workplace.
- Report immediately to the Site Supervisor or Client contact and their direct supervisor any contravention of the Act or Regulations and the absence of or defect in any equipment or protective device that could endanger themselves or another worker.
- Report immediately to the Site Supervisor or Client contact and their direct supervisor any accidents, illness or 'near miss' incidents.
- Understand and adhere to relevant workplace specific health and safety policies and safe operating procedures.
- Use or wear the protective clothing, equipment or devices required for protecting health and safety and ensure that they are properly maintained.
- Not remove or make ineffective any guard or protective device or control system.
- Not operate any equipment, vehicle or device that they have not been trained and authorized to use.
- Not work in a manner that will endanger themselves or any other worker.
- Participate in the Early Safe Return to Work Program.

Right to Refuse Work – where workplace violence is likely to endanger himself or herself.

4.5 THE WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

The purpose of the Workplace Hazardous Materials Information System (WHMIS) is to reduce workplace illness and injury by increasing worker awareness and understanding of the hazards associated with exposure to hazardous biological, chemical or physical agents. WHMIS Regulations provide the right to know about the hazards of workplace materials. An employer has a duty to ensure that hazardous materials are not used, handled or stored at a workplace unless the requirements prescribed by the WHMIS Regulations concerning identification, material safety data sheets and worker instruction and training are met.

Bachly Construction will provide WHMIS training to our employees that are required to visit sites or projects. In turn, all employees are expected to comply with the WHMIS Regulations. Material Safety Data Sheets will be made available on sites or projects and will be kept current (less than three years old). If you do not understand the information provided on the MSDS, do not hesitate to ask your direct supervisor for assistance.

Containers used for storage and handling of hazardous materials will be labeled appropriately using the hazard symbols prescribed by the WHMIS Regulations. Two types of labeling are required by WHMIS: supplier and workplace labels. The WHMIS hazard symbols are used on supplier labels and identify hazardous products according to the criteria for six classes. One or more of these hazard symbols may appear on the Supplier Label depending upon the classes of hazard into which the controlled product falls.

The following is a list of the hazard symbols used on supplier labels.

Class A: Compressed Gases

A compressed gas is any product, material or substance that is kept under pressure in a container. Examples include: compressed air, carbon dioxide (fire extinguishers), propane, oxygen, ethylene oxide, and welding gases.

Class B: Flammable and Combustible Materials

Flammable chemicals are easily ignited and burn vigorously. Combustible chemicals will burn, but are more difficult to ignite. Flammable and combustible materials are classified according to six divisions, but all are identified by the same hazard symbol. The six divisions of flammable and combustible materials are:

Division 1: Flammable Gas
Division 2: Flammable Liquid
Division 3: Combustible Liquid
Division 4: Flammable Solid
Division 5: Flammable Aerosol
Division 6: Reactive Flammable Material

Examples include: propane, butane, acetylene, ethanol, acetone, turpentine, toluene, kerosene, Stoddard solvent, spray paints, varnish, ammonia and chlorine.

Class C: Oxidizing Materials

Substances that readily give up oxygen. By supplying oxygen, oxidizing materials can accelerate the development of a fire and make it more intense; cause substances that do not normally burn readily in air to burn rapidly; and, cause combustible materials to burn spontaneously without the presence of obvious ignition sources such as a spark or flame. Examples include: organic peroxides, bromine, sodium chlorite and some metal oxide compounds.

Class D: Poisonous and Infectious Materials

Substance or products that are poisonous or infectious are classified according to three divisions. Unlike Class B materials, all are identified by different hazard symbols. The three divisions of poisonous and infectious materials are:

Division 1: Serious Toxic and Acute Health Effects
Division 2: Chronic and Other Toxic Health Effects
Division 3: Biohazardous Infectious Properties

D-1: Serious Toxic and Acute (Immediate) Health Effects

Class D-1 materials are poisonous substances that can cause serious health effects such as loss of consciousness, coma or death within seconds, minutes or hours of exposure (acute health effects). Many Class D-1 substances may also cause long term (or chronic) health effects. Examples include: carbon monoxide, sodium cyanide, sulphuric acid, toluene-2,4-diisocyanate (TDI), and acrylonitrile.

D-2: Chronic (Long Term) and Other Toxic Health Effects

Class D-2 includes materials causing all health effects other than those which are both serious and acute. The effects of Class D-2 materials range from minor immediate effects (i.e., a rash) to chronic effects such as cancer and adverse effects on the reproductive system. Examples include: asbestos fibres, mercury, ammonia, acetone, benzene, propane, silica, lead and cadmium.

D-3: Biohazardous Infectious Properties

Class D-3 identifies biohazardous infectious materials that are any organism or its toxin that has proven to cause, or is believed to cause, disease in animals or humans. Organisms that cause disease in animals are a concern because that disease could be transmitted to humans. Examples of some of these organisms include:

- bacteria (e.g., legionella and salmonella)
- viruses (e.g., rabies, Hanta virus, Hepatitis B and HIV-AIDS)
- parasites (e.g., Lyme's disease)
- fungi (e.g., mould and spores)

Class E: Corrosive Materials

Class E corrosive materials can attack and destroy metal and human tissue. They can be in the form of a liquid, solid or gas. Many products are not necessarily identified as being either an acid or a base (alkaline), but may be very corrosive. Examples include: acids such as sulphuric and nitric acids, bases such as ammonium hydroxide, caustic soda and potassium, and other materials such as ammonium, chlorine, and nitrogen dioxide.

Class F: Dangerously Reactive Materials

Under certain environmental conditions, Class F materials may undergo vigorous polymerization, condensation or decomposition; become self-reactive under conditions of shock or increase in pressure or temperature; and, react vigorously with water to release a toxic gas. These sudden releases of energy can lead to an explosion. Examples include: acrylonitrile, styrene, vinyl chloride, benzoyl peroxide, picric acid and aluminum chloride.

Workplace labels are required when controlled products are generated in the workplace or have been transferred from a supplier labeled container to an alternative container. Workplace labels must include:

- Product Identifier
- Safe Handling Instructions
- Statement that an MSDS is available for the product

In addition to the labeling of storage containers in the workplace, the contents of process piping (including valves), process vessels and reaction vessels are required to be identified through the use of colour coding, labels, placards or other modes of identifications that must be communicated to workers through training programs. It is very important for our employees to be aware of and understand Client labeling requirements for these types of process systems.

Overexposure to hazardous substances can cause or contribute to serious adverse health effects that may affect your skin, nervous system, kidneys, liver, lungs and other systems in the body. Since these materials are used on a daily basis in many workplaces, it is important that our employees are able to understand the associated hazards and the control strategies to be implemented.

4.6 DESIGNATED SUBSTANCES

The Act provides for the 'designation' of certain substances that are known to be particularly hazardous. Eleven substances have been designated with separate regulations for each substance. The Act defines a designated substance as:

> '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.'

When a designated substance is present in the workplace, the Act requires the employer to review the work methods and assess the likelihood of worker exposure. This assessment is to determine if a health hazard exists for workers and whether or not a control program is required. The assessment will include the following:

- information regarding the use, handling, storage and disposal of the designated substance;
- the actual and potential exposure of workers to the substance; and,
- the methods and procedures required to control that exposure.

When there is likelihood of worker exposure, a control program must be instituted that includes engineering controls, work practices, hygiene practices, record keeping and medical surveillance, if applicable. The Joint Health and Safety Committee (JHSC) must be consulted with regard to both the assessment and the control program.

The following is a list of the designated substances addressed by the regulations:

- Acrylonitrile
- Arsenic
- Asbestos
- Benzene
- Coke Oven Emissions
- Ethylene Oxide
- Isocyanates
- Lead
- Mercury
- Silica
- Vinyl Chloride

It should be noted that the designated substance asbestos is covered by two separate designated substance regulations, one for asbestos encountered during construction activities and the second for asbestos in all other workplaces. If your workplace contains any of these substances or your co-workers may be exposed to them in the course of their work, your direct supervisor should be notified of their presence and the manner in which they are used.

4.7 PERSONAL PROTECTIVE EQUIPMENT (PPE)

The following general requirements apply to all staff:

1. Only CSA approved PPE supplied by Bachly Construction may be used. Damaged or defective PPE must not be used.
2. Bachly Construction provides hard hats, safety glasses, tear-away fluorescent safety vests, retro-reflective stripes and hearing protection to employees. Protective footwear is not provided by Bachly Construction.
3. Employees are responsible for all PPE issued to them by Bachly Construction.
4. Employees will be trained on the proper selection, use, fit, maintenance and storage of the PPE they are required to use.
5. When you require additional PPE, contact your direct supervisor.
6. If the site or project safety requirements for PPE exceed Bachly Construction requirements, employees are expected to conform to those more stringent requirements.

Protective Headwear

CSA Class 'E' hard hats must be worn at all times while on construction projects or where the risk of overhead hazards exist. Conformance with Client requirements is expected for all other sites.

Protective Footwear

Construction safety footwear (CSA Grade 1 'Green Patch') must be worn at all times while on construction projects. Conformance with Client requirements is expected for all other sites. Open toed shoes or sandals are not appropriate for industrial workplaces.

Protective Eyewear

Protective eyewear appropriate for the circumstances must be worn when performing tasks that pose a risk of eye injury. Prescription glasses must meet the applicable CSA or ANSI standards and should be equipped with side shields.

Hearing Protection

Employees are required to wear appropriate hearing protection when working in areas where noise levels are higher than 85 dBA. If you cannot hold a conversation without raising your voice, hearing protection is likely required. Follow postings and notices even when exposure is intermittent or short in duration.

Respiratory Protection

Appropriate National Institute for Occupational Safety and Health (NIOSH) approved respiratory protection must be worn when the hazard of inhalation of a noxious gas, fume or dust exists. Employees are not to perform work in environments where self-contained breathing apparatus (SCBA) is required. These environments include: oxygen deficient environments and environments where the hazard cannot be eliminated through engineering or mechanical controls (i.e., ventilation).

Protective Clothing

Full length pants and shirts with sleeves (at least three inches in length) are the minimum requirements for protective clothing on sites or projects. Tear-away fluorescent safety vests must be worn by employees when working in areas where vehicular traffic is present. If working around vehicular traffic at night time, employees must also wear retro-reflective stripes around their arms and legs. Other protective clothing may be required depending upon the hazard or Client requirements.

4.8 FALL PREVENTION AND PROTECTION

When workers are involved in work activities where there is the potential for them to fall from a work surface, appropriate controls must be implemented to reduce or eliminate the hazard of falling. A Fall Prevention/ Protection Plan must be developed to protect workers exposed to fall hazards. Workers exposed to fall hazards must be trained in the methods of fall prevention and fall protection used in the Fall Prevention/ Protection Plan prior to exposure to a fall hazard.

Definition: A **work surface** is any area where an employee will stand or otherwise occupy in order to perform work and includes: the ground, a floor, the surface of a roof, a scaffold platform, an elevating work platform, the ground at the edge of a trench, a catwalk, runway or ramp, a boat or other similar vessel, a bridge, structural steel or any other surface from which an employee is required to perform work. A work surface must be at least 460 millimetres wide measured at its least lateral dimension in order for an employee to be permitted access to the surface to perform work.

A written site or project specific Fall Prevention/ Protection Plan must address:

- Legislative Requirements
- All actual and potential fall hazards
- The correct procedural methods and equipment to be employed to protect workers from all fall hazards (e.g., a full body harness, suitable anchor point and appropriate connecting devices).
- The correct procedures to assemble, inspect, use, maintain and disassemble the fall protection system and subsystems.
- Rescue procedures for a worker suspended in a fall arrest system or safety net specific to the site or project.
- The training records for supervisors and workers.

4.8.1 Fall Prevention

Fall prevention should be the first consideration when protecting workers exposed to fall hazards. Several common methods of fall prevention include the use of restricted areas/ bump lines, guardrail systems and travel restraint systems.

Definition: **Fall prevention** involves the use of a system or systems to prevent a fall from occurring by physically preventing worker access to areas where fall hazards exist.

4.8.1.1 Restricted Areas/ Bump Lines

Definition: **Bump lines** are an assembly of components designed and installed to alert a worker before they enter a fall hazard area on the surface of a roof.

- Any area within 2 metres (6.5 feet) of the open edge of the surface of a roof is designated as a 'restricted area'.
- Bump lines establish a barrier 2 metres (6.5 feet) from the open edge of a roof surface to alert workers on the roof surface before they enter the restricted area or fall hazard area.
- Bump lines consist of portable weighted posts supporting a taught chain, cable or rope that is located 1.1 metres (3.6 feet) above the surface of the roof.
- A worker that requires access to the restricted area must be protected from falling by a suitable guardrail system, protective covering, travel restraint system, fall restricting system, fall arrest system, safety net or other suitable means.

4.8.1.2 Protective Coverings

Definition: A **protective covering** is designed and installed to prevent a worker from falling through an opening on a work surface.

- All openings on work surfaces are to be protected using a guardrail system or a protective covering.
- A protective cover must completely cover the opening, must be securely fastened and must be adequately identified as a protective covering.
- At a minimum, the protective covering must be able to withstand a live load of 2.4 kilonewtons/ square metre (2.4 kilopascals or 50 lbs./ square foot).
- Protective coverings that must be removed temporarily for the purpose of performing work must be replaced immediately after the work has been completed. The worker must be protected from falling by a travel restraint system, fall restricting system, fall arrest system, safety net or other suitable means while the protective covering is removed.
- Floor openings or changes in elevation in some industrial facilities may not be identified due to process requirements. Always be aware of your surroundings and footing. Protective coverings such as grating should be visually inspected before walking on to ensure they have been properly replaced after removal.

- Generally, on construction projects, the 'constructor' for the project is obligated to provide protective coverings for openings on work surfaces.

4.8.1.3 Guardrail Systems

Definition: A **guardrail system** is an assembly of components designed and installed to provide a barrier to prevent a worker from falling from the open edge of a work surface.

- A guardrail system must be installed at the open edge of all work surfaces where there exists the potential for a worker to fall greater than 2.4 metres (7.8 feet).
- A guardrail system must consist of a top rail, intermediate rail and a toe board
- The top rail of a guardrail system must be at least 0.9 metres (2.9 feet) but not more than 1.1 metres (3.6 feet) in height.
- A guardrail system, if located at the perimeter of a work surface, must be located within 300 millimetres (1 foot) of the edge surface.
- For high rise or scaffold work where the general public may be at risk from material or debris falling through the guardrail system, a solid or mesh guardrail system shall be installed.
- Sections of guardrail systems that must be removed temporarily for the purpose of performing work must be replaced immediately after the work has been completed. Workers in the area must be protected from falling through use of a travel restraint system, fall restricting system, fall arrest system, safety net or other suitable means while the guardrail system is removed.
- Generally, on construction projects, the 'constructor' for the project is obligated to provide guardrail systems at the open edge of work surfaces.

4.8.1.4 Travel Restraint Systems

Definition: A **travel restraint system** is an assembly of components designed and used to physically restrain workers from accessing the open edge of a work surface where a fall hazard exists.

- A travel restraint system typically consists of a full body harness and a connecting device attached to a suitable anchor point.
- The most commonly used connecting devices are either a self retracting lifeline or a lifeline used with a rope grab attached to an appropriate anchor point.

4.8.2 Fall Protection

Fall protection systems should be the final control measure considered when protecting workers exposed to fall hazards. Fall protection systems protect a worker by limiting the free fall distance and absorbing some of the energy that can be transferred to a worker after a fall has occurred. Several common methods of fall protection include the use of fall restricting systems, fall arrest systems and safety nets.

4.8.2.1 Fall Restricting Systems

Definition: A **fall restricting system** is an assembly of components designed and used to restrict the free fall distance of a worker to a specified distance after a fall has occurred.

- The system must be setup and used (in accordance with the manufacturer's instructions) so that a worker's free fall does not exceed 0.6 meters (1.9 feet).
- An effective fall restricting system can be established limiting the distance between the attachment point on a workers full body harness and the anchor point to less than 0.3 meters (0.9 feet). A common example is a metal rail or wire rope anchor system used to restrict a workers fall when climbing a vertical access ladder.

4.8.2.2 Fall Arrest Systems

Definition: A **fall arrest system** is an assembly of components designed and used to safely arrest a free fall and minimize the risk for potential compounding injuries from the dynamic forces which are developed during the fall.

- A Personal Fall Arrest System typically consists of a full body harness and lanyard equipped with a shock absorber (energy absorbing device), unless the use of the shock-absorber will cause the worker to hit the ground, object or surface below the work, connected to an appropriate anchor point. Lifelines, chokers and other connecting devices are commonly used as part of a fall arrest system.

4.8.2.3 Safety Nets

Definition: A **safety net** is an assembly of components designed and installed to minimize injury to a worker after a fall.

- Safety nets must be designed, tested and installed in accordance with recognized standards (i.e., CSA or ANSI standards).

4.8.2.4 Fall Rescue Plan

Prior to using a fall arrest system or a safety net on a project, an employer must develop a written procedure for rescuing workers in the event a worker's fall is arrested by such systems. A written Rescue Procedure is mandatory whenever a fall arrest system is used.

4.9 ACCIDENT PREVENTION

To assist in the prevention of workplace incidents and accidents, some information has been provided regarding some of the typical health and safety issues that are often encountered on Bachly Construction sites or projects.

4.9.1 Access to Roof Areas

- A fall prevention and protection plan that will provide the methods that must be implemented during access to roof areas by employees must be followed.
- The plan must include an emergency rescue plan in the event an employee is suspended in a fall arrest system. In addition, the plan should address the issues of work during inclement weather such as wind, rain, thunderstorms, ice and snow storms.
- All employees must receive an orientation to the hazards associated with the work to be performed and the site or project specific roof access procedures to be followed.

4.9.2 Trenching

The following standards have been prepared to ensure the health and safety of all workers affected by or required to work in the proximity of an excavation or trench.

Definitions

Excavation: An **excavation** is a man made cavity or depression in the ground, formed by the removal of earth. Examples include: trenches, tunnels, shafts, caissons and open cut holes.

Trench: A **trench** is an excavation in the ground in which its depth is greater than its width (measured at the bottom of the excavation).

Shoring: **Shoring** is a construction procedure used to assist in maintaining the stability of the walls of a trench or excavation. Shoring is used for the protection of workers who may be required to enter the excavation.

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

Trench Box: A **trench box** is a unit of shoring which is an engineered shoring system capable of protecting workers in case of cave-in of trench walls. The space between the trench wall and the trench box must be backfilled.

Pressure: **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

Surcharge: A **surcharge** refers to a load that bears on the walls of a trench or excavation and can affect trench stability.

Soil Types

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 and 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.

4.9.2.1 Requirements

There are many hazards associated with trenching. The following paragraphs identify a number of considerations that must be contemplated in order to safely perform an excavation.

4.9.2.2 Soil Conditions

Supervisors and workers must understand that different types of soil conditions can influence the stability of the trench walls. The following is a listing of factors that affect soil conditions which must be assessed prior to excavating or working in or around trenches:

- soil type
- soil properties may vary from the top to bottom and along the length of an excavation
- water, vibration, cracks, surcharge, exposure to the weather
- trenches left exposed to air for extended periods of time
- previously excavated soil
- moisture content in the soil

The three means for supporting trench walls are sloping, shoring and trench boxes. Trenches must be protected from cave-ins or loss of ground prior to workers entering the trench when the following conditions apply:

- The trench is greater than 1.2 metres (3.9 feet) in deep (however, even if the trench is less than 1.2 metres deep the potential for a cave-in exists and appropriate controls must be implemented prior to entry to ensure the trench is safe);
- A worker is required to enter the trench;
- A worker is required to be closer to a trench wall than the height of the trench wall; and,
- 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.

4.9.2.3 Acceptable Sloping Methods

Types 1 & 2 Soil: The walls of the trench must be sloped within 1.2 metres (3.9 feet) of the bottom of the trench, having a minimum slope gradient of one horizontal to one vertical.

Type 3 Soil: The walls of the trench must be sloped from the bottom of the trench, having a minimum slope gradient of one horizontal to one vertical.

Type 4 Soil: The walls of the trench must be sloped from the bottom of the trench, having a minimum slope gradient of three horizontal to one vertical.

4.9.2.4 Shoring

Shoring is used as a means of supporting trench walls and preventing the movement of soil, foundations, underground utilities and roadways. The two most common means of shoring an excavation or trench are timber and hydraulic shoring. These two methods are described and well illustrated in Appendix A of 'Trenching Safety' prepared by the Construction Safety Association of Ontario.

Support systems for the walls of an excavation must be installed as follows:

- Progressively in an excavation of Type 1, 2 or 3 soil; and,
- Prior to excavating in an excavation of Type 4 soil (if practicable).

These support systems must provide continuous support.

The removal of support systems shall only be done:

- Immediately prior to the excavation being back-filled; and,
- Under the supervision of a competent person.

4.9.2.5 Trench Boxes

Trench boxes are also used to protect workers from the possibility of cave-ins. 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, the space between the trench box and the trench wall must be back-filled to reduce the kinetic energy created by moving soil.

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

4.9.2.6 Vibration

Vibration can affect the stability of trench walls. Vibration will often emanate from sources such as equipment, vehicle or pedestrian traffic and 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 stability of the trench walls.

4.9.2.7 Conditions at the Top of the Trench

Sources of surcharge must be identified and appropriately located at the top of the trench to ensure that the stability of the trench walls are not compromised. All equipment, machinery, excavated soil and all other objects that may cause additional loading on the trench walls must be kept at a distance of at least 1 metre (3.2 feet) away from the edge of the trench.

In addition, all equipment, materials and tools must always be kept at a safe distance away from the edge of the trench or excavation to ensure that they do not fall onto workers that are performing work in the trench.

4.9.2.8 Utilities

Visible, overhead or underground utilities such as gas, electrical, water and telephone pose a potential hazard and must be identified or located prior to breaking ground on an excavation. Making contact with utilities can affect the stability of the trench; cause an explosion upon contact; create an explosive or toxic atmosphere in the trench; and pose an electrocution hazard to workers. The appropriate utility companies must be contacted to arrange for utility locates prior to breaking ground.

4.9.2.9 Overhead Power Lines

Special precautions must be taken in and around overhead power lines to avoid contact or encroachment on the minimum allowable distances as prescribed by the Regulations. Always assume power lines are energized.

nominal phase-to phase voltage rating	**minimum distance**
750 to 150, 000 volts	3 metres (9.8 feet)
greater than 150,000 to 250,000 volts	4.5 metres (14.7 feet)
greater than 250,000 volts	6 metres (19.6 feet)

4.9.2.10 Loose Rocks

Precautions must be taken to ensure that loose rocks or other materials that may slide roll, or fall into the trench and onto workers are stripped prior to entry by workers into an excavation.

4.9.2.11 Barriers

If the walls of an excavation or trench are not sloped or cutback, barriers must be placed around the perimeter if the depth of the trench or excavation is greater than 2.4 metres (7.8 feet). The barrier must be at least 1.1 metres (3.6 feet) in height. In addition, all excavations must be secured at the end of the day with a protective covering or appropriate barriers to prevent the public from falling into the open excavation. Failing to adequately secure an open excavation is an offence under subsection 263(2) of the federal *Criminal Code*.

4.9.2.12 Confined Spaces

Confined spaces may exist in excavations where there is limited access or egress and in which a hazardous gas, vapour, dust or fume or an oxygen deficient atmosphere may occur. Site or project specific confined space procedures must be followed in accordance with accepted safe industry practices and Client requirements. Special precautions must be taken to ensure that entry into confined spaces is done safely and in accordance with approved procedures.

4.9.2.15 Surrounding Foundations

Surrounding foundations can affect the stability of the trench walls. In these circumstances, the soil should be considered to be previously excavated (Type 3) soil and appropriate shoring precautions should be implemented.

4.9.2.16 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 adhere to the appropriate safety precautions for ladder use.

4.9.2.17 Traffic Control

Vehicle and pedestrian traffic (construction or public) can pose a hazard to a trenching operation due to surcharges applied to the top of the trench or due to vibration. Precautions must be taken to ensure the safety of traffic around trenches. This may include the use of traffic barriers, signal persons and signs.

4.9.2.18 Safe Trenching Guidelines

Assess the site or project conditions:

- Contact all applicable local utilities and ensure that they locate and mark all underground utilities.
- Ensure that any overhead power lines are identified and de-energized or protected by other appropriate means.
- Determine the type of soil and when required have an appropriately qualified professional engineer determine the soil type (obtain a written description of the soil type for the area of the trench).
- Determine the appropriate controls to be implemented to protect the specific trench (i.e., sloping or shoring).

NEVER ENTER A TRENCH OR EXCAVATION THAT IS NOT ADEQUATELY SLOPED OR SHORED.

4.9.3 Housekeeping

- All major pathways and work platforms shall be kept clean and free of obstructions at all times.
- Emergency exits and doors leading into electrical rooms or panels must not be obstructed under any circumstances.

4.9.4 Compressed Gas Cylinders

- Bachly Construction employees are not to handle or connect compressed gas cylinders.
- All compressed gas cylinders are to be secured in an upright position during storage, transport or use.
- Empty compressed gas cylinders should be stored separately from full or partially full containers.
- Upon discovery of a compressed gas leak from a cylinder, hose, valve or other connection, notify the Site Supervisor or Client contact and your direct supervisor immediately.

4.9.5 Power and Hand Tools

- Bachly Construction employees are not to operate any power or hand tools. If operation of this equipment is required, it shall be performed by a qualified person employed by the Client or contractor on site.
- Use the proper tool for the job.
- Inspect the condition of tools for defects or damage before each use. Have defective or damaged tools replaced.
- Ensure that electrical tools are effectively grounded.
- If the cord is cut or frayed, or if the motor casing is damaged or defective, have the cord or tool repaired or replaced before use.
- Do not leave power tools unattended. Always store them in a safe location when not in use.
- Always wear the appropriate personal protective equipment when using power or hand held tools.
- Workers that are required to use or handle radioactive devices must be trained in the safe use, storage and handling of the devices.

4.9.6 Process Machinery and Equipment

- In industrial facilities, all access to moving parts is to be guarded or otherwise protected.
- Never enter areas where exposed moving parts are accessible.
- Always follow site or project specific lockout procedures before entering equipment enclosures. All energy sources must be identified, locked out and de-energized and tested to verify the effectiveness of the lockout.

- Observe and follow all floor demarcations in industrial facilities.
- Never enter a chemical vat, tank or vessel unless it has been tested to ensure safe environmental conditions exist prior to entry. Confined space procedures may have to be implemented prior to entry.
- Fall protection and prevention requirements apply where the risk of a worker falling into a tank, vat or vessel exists.
- All electrical panels are to be considered energized. Only employees authorized by Bachly Construction and the Site Supervisor or Client contact are permitted access to electrical rooms.
- Unauthorized entry to equipment enclosures, chemical vats, tanks or vessels, electrical rooms and any other hazardous enclosures associated with process equipment or machinery by Bachly Construction employees is strictly prohibited.

4.9.7 Mobile Equipment

- Only competent and authorized persons are permitted to operate mobile equipment.
- In some industrial facilities, mobile equipment has the 'right of way'. Check with the Site Supervisor or Client contact to determine the rules governing mobile equipment for the site or project.
- When approaching or crossing the intended path of travel of mobile equipment, ensure that eye contact is established with the operator of the mobile equipment and that it is safe to proceed.
- Never place yourself between operating mobile equipment and a fixed structure or object such as stationary equipment, stored materials or buildings. All workers should stay clear of these potential pinch points.
- Workers performing work in and around mobile equipment on a construction project must wear a tear-away fluorescent safety vest. If the work is being performed at night time, the worker must also wear retro-reflective stripes around their arms and legs.
- Ensure that all rented equipment arrives in proper working order with the manufacturer's operating manual before acceptance from the supplier.
- Maintenance records must be maintained on the site or project for mobile equipment.
- All mobile equipment must be regularly inspected with the details of the inspection recorded in a log book.
- An approved Underwriter's Laboratories (UL) 4A40BC fire extinguisher should be present on all mobile equipment.

4.9.8 Cranes

Many of our sites or projects require the setup and use of tower cranes, mobile cranes and boom trucks in order to facilitate the movement of equipment or materials on the site or project. The following are some legislative requirements which must be met:

- All records of inspection, testing, repairs or modifications for cranes must be maintained and be readily available on the site or project in accordance with the Regulations.
- Once a tower crane has been erected and prior to use, an appropriately qualified professional engineer or a competent worker designated by the professional engineer must visually inspect the crane and provide a signed and sealed written report detailing the findings. If repairs or modifications are necessary to ensure the safe operation of the tower crane, the appropriate corrective measures must be implemented and the crane must not be used until the engineer has re-inspected and approved the changes.
- Only appropriately qualified and licensed crane operators are permitted to operate cranes on sites or projects. Crane operators must ensure their records of training are readily available on the site or project at all times.
- Prior to using the crane, and on a weekly basis after the initial testing, a competent person must perform operational tests on the automatic limit switch and the overload limit device to ensure the devices are operating according to the manufacturer's specifications. These records of testing must be readily available at all times on the site or project. Test blocks, with the weight clearly marked on them, must be maintained on the project while the crane is erected.

- The crane operator must maintain the crane operator's log book for the crane on a daily basis.
- When being assisted by a signal person, the crane operator must ensure that continuous communication is maintained with the signal person. If communication is lost with the signal person, the operator must not continue until communication has been restored.
- At no time are loads to be passed over any workers or other persons. Always try to anticipate the movement of the load and avoid entering the swing path of the load.
- The passing of loads over trailers, public roads and sidewalks shall only be done if the necessary precautions have been taken to ensure the safety of all workers and other persons.
- When operating conditions are such that the boom of the crane swings over the property lines for the site or project, the owners of adjacent properties must be consulted. A diagram should be prepared detailing the proposed swing paths for the crane
- At no time is the operator of the crane to perform lifts which exceed the load rated capacity of the crane.
- Crane operators are to only lift loads which have been properly rigged or have been placed in containers designed for hoisting.

4.9.9 Hoisting and Rigging

- Hoisting areas must be secured with a barrier to prevent public access. Appropriate warning signage must be posted to indicate that overhead work is being performed in the area.
- Never pass underneath any part of a suspended load.
- All rigging equipment, fittings and devices must be of adequate strength for the application. All components must be capable of supporting at least five times the maximum load to which they may be subjected.
- All ropes, hardware and other fittings must be inspected regularly for wear, cracks, severe corrosion, kinks, bird-caging, broken strands, burn marks, chemical damage, deformation or other signs of obvious damage.
- Wire ropes must be lubricated to reduce friction between wires and strands.
- Tag lines must be used to control loads,
- When two or more slings are to be connected to a hook, a shackle should be used.
- Stay clear of loads when slings are being pulled out from underneath.
- Loose loads must be blocked before unhooking.
- All loads must be secure during hoisting.
- Hoisting and rigging operations should be approved by a professional engineer where they exceed 85% of the crane capacity or involve multi-lifts.

4.9.10 Fire Protection

- A minimal rating of Underwriter's Laboratories (UL) 4A40BC fire extinguishers must be used on construction projects.
- Fire extinguishers are to be readily available wherever the potential for fire exists (e.g., during welding, grinding or open flame operations).
- Fire extinguishers must also be available in locations where flammable or combustible materials are stored, handled or used.
- Fire extinguishers must be readily accessible, properly maintained, regularly inspected and promptly refilled immediately after use.
- Fire extinguishers must be secured to all mobile equipment.
- Only trained personnel should use a fire extinguisher. In the event of a fire, follow the site or project specific emergency procedures for contacting the local fire department.

4.9.11 Ladder Use

4.9.11.1 General Ladder Safety

- Always visually inspect ladders prior to use. Ladders that are damaged or defective must not be used and should be removed from the site or project.
- Ensure the appropriate type of ladder is available for the required use.
- Use only heavy duty construction grade CSA approved ladders.

When ascending or descending ladders, the following precautions must be taken:

- Prior to using any ladder, ensure that your footwear is free of mud, snow, grease or other slippery materials.
- Always face the ladder when ascending or descending.
- Workers must ensure that their bodies are kept between the side rails of the ladder. Extending beyond the side rails or straddling a space between a ladder and another object will reduce the stability of the ladder.
- Never carry materials, tools or other objects when ascending or descending from a ladder. Hoist lines or other appropriate methods should be used to transport materials from one work surface to another.
- Always maintain three point contact with the ladder (i.e., two hands and one foot or two feet and one hand).
- Only one person shall be on a ladder at any time.

- Ladders should be set up on a firm level surface. If the base is to rest on soft, uncompacted or rough soil, a mud sill must be used to stabilize the ladder.
- Metal ladders, or ladders with metal reinforcing, must not be used near energized electrical conductors.
- Check for overhead electrical conductors prior to setting up a ladder. Ensure that ladders do not come into contact with or encroach upon the minimum safe distances from energized electrical conductors.
- Ladders placed in or near paths of travel should be protected by appropriate barriers.
- Ladders should not be used horizontally as substitutes for scaffold planks, runways or other service for which they have not been designed

4.9.11.2 Straight, Extension or Job Built Ladders

- Ensure ladders are of adequate length for their intended use. A ladder must extend 0.9 metres (2.9 feet) beyond the landing area.
- Where a ladder is used for regular access and egress between levels, platforms should be provided at each landing area.
- The landing areas at both ends of the ladder must be clear of debris and other materials.
- Straight ladders must be secured at the top and base prior to use. When setting up a ladder, have another worker hold the base of the ladder while securing the top of the ladder.
- Straight ladders should be set up on an angle such that the horizontal distance between the top support and the base is not less than one-quarter or greater than one-third the vertical distance between these points.
- The length of a single section extension ladder must not exceed 9 metres (29.5 feet) in height. A double section extension ladder must not exceed 15 metres (49.2 feet) in height. No extension ladder shall exceed more than 20 metres (65.6 feet) in height regardless of the number of sections.
- A worker must use appropriate fall protection equipment when working off of a straight or extension ladder.

4.9.11.3 Stepladders

- When a brief task must be performed from a stepladder, the height of the ladder should be such that the person using the ladder does not stand higher than the second step from the top. A stepladder may become unstable if the centre of gravity of the person using the ladder extends above the height of the top of the stepladder.
- Ensure the proper stepladder is used and that the ladder is in good condition.
- Do not use a stepladder that is greater than 6 metres (19.6 feet) in height.
- Ensure that the legs of the stepladder are fully spread apart and the locking arms are set to prevent the ladder from becoming unstable during use.

4.9.11.4 Vertical Access Ladders

- Vertical access ladders must be installed in a fixed in position with siderails extending 0.9 metres (2.9 feet) above the landing area.
- The rungs of a vertical access ladder must be at least 15 centimetres away from the surface to which the ladder is attached.
- Vertical ladders that extend more than 3 metres (9.8 feet) must be equipped with a safety cage.
- Vertical ladders that extend above 9 metres (29.5 feet) must have rest platforms offset at intervals of at least every 9 metres (29.5 feet) unless workers on the ladder are using fall protection equipment.

4.9.12 Stairs

4.9.12.1 Construction Stairs

- Stairs must be installed to the uppermost work level in a building or structure that is greater than two storeys high. If stairs will interfere with the work on the uppermost work level, then the stairs are to be installed to within the lesser of two storeys or 9 metres (29.5 feet) below the uppermost work level.
- The two most common types of stairs that will be encountered on construction projects are permanent stairs and temporary stairs.
- Temporary stairs and landings must be able to support a live load of 4.8 kilonewtons/ square metre (4.8 kilopascals or 100 lbs./ square foot). Stairs should not be loaded in excess of their design capacity.
- Stairs must be at least 50 centimetres wide and must have treads and risers of uniform width, length and height.
- A securely fastened and supported wooden handrail must be installed along the entire length of the open sides of each flight.
- Permanent stairs located on construction projects must conform with the requirements of the Ontario Building Code.

4.9.12.2 Industrial Stairs

- Generally, permanent stairs located in industrial establishments must conform with the requirements of the Ontario Building Code.
- However, industrial stairs that are used only for access for the purpose of performing maintenance work do not have to conform with the requirements of the Ontario Building Code. The rise or run of these types of industrial stairs may not be consistent throughout each flight.
- Always face the stairs when ascending or descending steep industrial stairs.
- Caution must be exercised while using crossovers on conveyor systems. The conveyor system must be locked out and de-energized prior to use of the crossover unless other preventive measures have been established that provide an equal or greater degree of protection.

4.9.13 Work Platforms

4.9.13.1 Scaffolds

- The erection and dismantling of scaffolds must be carried out under the supervision of knowledgeable and competent personnel
- Visually inspect scaffolding platforms prior to using them to access work areas.
- Scaffold planks must be of good quality and free of defects such as loose knots, splits, rot or other damage. Scaffold planks must be provided with cleats or otherwise be securely fastened to prevent them from sliding.
- Scaffolds and other work platforms must be erected using all components required by the manufacturer such as base plates, mudsills, vertical and horizontal bracing, connecting pins and guardrails (as required).
- A means of access to the scaffold platform (such as a ladder or stairs) must be provided and kept free of obstructions.
- Scaffold and other work platforms must be at least 460 millimetres wide.
- Scaffold platforms greater than 2.4 metres (7.8 feet) high must be fully planked across the span of the scaffold frames and must have a suitable guardrail system installed at any open edges.
- Scaffolds must be tied into a building at vertical intervals not exceeding three times the least lateral dimension, including the dimension of any outrigger stabilizing devices
- Where scaffolds cannot be tied into a building, guy lines should be used to ensure stability
- Scaffolds must be erected, used and maintained in a reasonably plumb condition
- Scaffold planks must extend at least 15 centimetres and not more than 30 centimetres beyond the scaffold frames.

4.9.13.2 Scaffolds Mounted on Wheels or Castors

- All castors or wheels must be provided with a secure braking device
- No worker will mount a scaffold unless the brakes are applied and tested
- Workers on scaffolds higher than 2.4 metres (7.8 feet) must wear a full body harness and shock absorbing lanyard and be tied to a fixed structure, if the scaffold is required to be moved
- Ensure the surface is firm and level prior to moving the scaffold

4.9.13.3 Elevating Work Platforms

- The two most common type of elevating work platforms encountered in construction and industry are scissor lifts and powered boom platforms.
- Specific training is required for employees that operate elevating work platforms.
- Elevating work platforms must be operated in accordance with the manufacturer's written instructions.
- Elevating work platforms must be operated on a firm level surface. On slab work platforms are not to be used on rough terrain.
- Scissor lifts must not be operated in the raised position on surfaces where the slope is greater than 1-in-50.
- An elevating work platform must not be loaded greater than its rated working load.
- A travel restraint system must be used at all times while on an elevating work platform.
- A maintenance and inspection tag must be attached near the operating station and the manufacturer's operating manual must be kept with the elevating work platform.

4.9.13.4 Suspended Access Platforms (Swing Stages and Boatswain's Chairs)

- The two most common type of suspended access platforms encountered in construction and industry are swing stages and boatswain's chairs.

- Bachly Construction employees are not permitted on boatswain's chairs
- Specific training is required for employees that operate swing stages
- Fall arrest equipment must be used at all times while on a swing stage
- Do not operate a swing stage without appropriate training and fall arrest equipment

4.9.14 Manual Materials Handling

The following procedures should be considered before and during the manual lifting of materials:

- Plan your route before lifting or moving any material.
- Size-up the load to be handled and determine if the object is too bulky, awkward, or heavy to be lifted safely. If necessary, use a lifting aid or ask a co-worker for assistance.
- During the lifting of objects, employees should: squat to meet the load; keep their feet about shoulder width apart with one foot slightly forward; tuck the chin onto the chest and keep the elbows and the load as close to the body as possible; and, lift the load using the leg muscles to alleviate stress on the back. Avoid any twisting of the trunk while holding a load as it increases the loading on the back.

4.9.15 Protruding Objects

- Appropriate measures must be taken to adequately cover or eliminate the hazards created by protruding objects.
- Protruding objects such as nails, screws and rebar are common on construction projects.
- Stored materials extending outside of shelves or racking systems must also be considered to be protruding objects and controls must be implemented to eliminate these hazards.

4.9.16 Vehicle Safety

- Employees must obey all traffic rules while on public streets, sites or projects.
- Ensure that a safe distance is maintained when travelling behind other vehicles.
- Ensure the area behind your vehicle is clear prior to and while reversing a vehicle
- Do not use cellular telephones while operating your vehicle. Pull off of the roadway to a safe location prior to using cellular telephones.
- When temporarily parking the vehicle on the edge of a roadway, turn on your four-way indicators (hazard lights).
- Turn the ignition off, remove the key and set the emergency brake if a vehicle is to be left unattended.

ALWAYS WEAR YOUR SEAT BELT.

4.9.17 Traffic Protection Plan

4.9.17.1 General

- Worker and traffic safety must be designed into sites or projects. Employers are required to develop a traffic protection plan whenever their employees are exposed to the hazards of vehicular traffic.
- Work duration, road width and traffic volume are some of the key considerations to be contemplated when designing a traffic protection plan. The traffic protection plan must address the vehicular hazards and describe the measures that will be implemented to protect employees.
- Employees will be provided with a tear-away fluorescent safety vest, retro-reflective stripes (for night work), protective headwear, eyewear and footwear, a rooftop beacon light for the vehicle, and the Ontario Traffic Manual Book 7 (Temporary Conditions) – Field Edition.
- Ontario Traffic Manual Book 7 (Temporary Conditions) provides instruction on the use of traffic control devices in temporary construction, maintenance and utility work zones to ensure worker and motorist safety and to minimize the disruption of traffic flow. A copy of the Book 7 – Field edition will be provided to Bachly Construction employees involved in road or bridge construction or the inspection or surveying of sites or projects that have the potential to affect traffic flow on public highways or streets.

- Book 7 – Office Edition provides similar information, but in greater detail than presented in the Field Edition. Book 7 – Office Edition will be available at Bachly Construction head office for reference purposes.

4.9.17.2 Short-Term Duration

- Employees must receive specific training on the traffic protection requirements for short-term duration work activities.

The following general requirements must be taken into consideration by employees when implementing the traffic protection plan for short-term duration work activities:

- Employees must always wear the appropriate personal protective equipment to ensure they are visible to vehicular traffic. A tear-away fluorescent reflective vest (and retro-reflective stripes on the arms and legs for night work or during periods of limited visibility) must be worn at all times.
- Employees must pull their vehicles off as far to the right of the traveled portion of the road as possible. The employee must also ensure the shoulder of the highway or street where they will park their vehicle is wide enough to allow for safe access to and egress from the vehicle.
- Always park your vehicle at least 30 metres (98.4 feet) upstream from the work area.
- Activate the four-way flashers for your vehicle prior to exiting the vehicle.
- Plan an escape route prior to exiting the vehicle.
- Load and unload materials or equipment from the passenger side of the vehicle.
- Avoid turning your back to oncoming traffic. Employees must also be aware of mobile equipment that may be operating in the work area.
- Do not enter onto the paved portion of the road except to cross the road. Road crossings should be made at a ninety degree angle to the direction of the road.
- For more detailed instructions and illustrations regarding the requirements for traffic protection, refer to Book 7 – Field Edition or contact your direct supervisor for assistance.

4.9.17.3 Long-Term Duration

- Generally, for long-term duration work activities that are performed at construction projects, the Constructor for the project is required to develop a traffic protection plan.
- If Bachly Construction has assumed the role of Constructor for the project, the traffic protection plan will be developed and implemented based on the requirements of Ontario Traffic Manual Book 7 (Temporary Conditions) prior to the commencement of work activities at the project.
- If Bachly Construction is not the Constructor for the project, the traffic protection plan for the project will be developed by our Client or a Constructor designated by the Client.
- The traffic protection plan should be reviewed with Bachly Construction employees during orientation to the Project. If the traffic protection plan is not discussed at the project-specific orientation, employees should discuss the issue with the Site Supervisor or Client contact for the Project.
- In all circumstances, Bachly Construction employees must be familiar with the traffic protection plan for the project.

4.9.18 Lockout/ Energy Control

The site, project or Client specific procedures must be understood and followed to ensure the health and safety of all workers affected by or involved with the locking out, de-energizing and control of all potential sources of energy prior to the performance of work on energized systems.

Definition: **Energy control** means to neutralize and make inoperable all potential sources of energy or power in the equipment or 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, such as:

Chemical	**Hydraulic**	**Radiological**
Electrical	**Mechanical**	**Residual**
Gravitational	**Pneumatic**	**Thermal**

4.9.18.1 Requirements

- At no time are our workers to perform any electrical work.
- **NO LIVE WORK** – at no time are any workers to work live.
- It is the responsibility of all supervisors working for Bachly Construction to identify through meetings with Client representatives when and where their work requires the isolation and control of an energy source. The supervisor must also identify and communicate to their employees how the sources of energy will be isolated, brought to a zero energy state, locked out of service and tested to verify the effectiveness of the controls.
- Written procedures for lockout and energy control shall be submitted to the Site Supervisor or Client contact and must be implemented prior to performing work.
- Written procedures must be prepared and submitted to the Site Supervisor or Client contact prior to the commencement of work when a job requires the potential for exposure to an energy source such as hot tapping, work on live electrical conductors or circuits, x-ray testing of pipes, etc.
- The supervisor must ensure the workers have been oriented to the project, the hazards associated with the work to be performed and the Lockout/ Energy Control Procedures to be followed. Proof of training must be readily 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.

4.9.18.2 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 their own individual lock. In addition, a danger tag shall also be applied to the switch handle bearing: a brief description of the work being done; the subcontractor's company name, the worker's name, the supervisor's name, the date and 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 Site Supervisor or Client contact must be notified and the subcontractor must follow an approved lock abandonment procedure.

4.9.19 Confined Spaces

A project specific confined space entry procedure must be prepared prior to a planned entry.

Definition

Confined Space: A **confined space** is a space to which or from which access or egress is restricted and in which, because of its construction, location, contents or work activity to be performed therein, a hazardous gas, vapour, fume or oxygen-deficient atmosphere may occur.

Identify all potential confined spaces, such as:

Caissons	**Sewers**	**Vaults**
Excavations or Trenches	**Shafts**	**Vessels**
Man Holes/ Catch Basins	**Tanks**	**Voided Concrete Slabs**
Pits	**Valve chambers**	

4.9.19.1 Requirements

It is the responsibility of all supervisors working for Bachly Construction to identify when and where their work requires the entry of workers into a confined space.

- A supervisor must be appointed to supervise the operation at all times.
- The atmosphere of the confined space shall be tested prior to entry and continuously monitored while the confined space is occupied.
- Where entry to a confined space is required, the procedures shall be reviewed with all of the workers involved in performing the work including the entrants, attendant and the rescuers.
- All workers must be trained in confined space entry and rescue, receive an orientation specific to the work to be performed and the site or project specific confined space entry procedures to be followed.

4.9.20 Commissioning of Equipment

The Act and Regulations for Construction Projects specify minimum general requirements for the commissioning of machinery and equipment. Bachly Construction employees may be called upon to witness the commissioning of equipment. However, the commissioning of equipment is only to be performed by a qualified contractor.

The installation of equipment and machinery is actually the sum of numerous other tasks. These may include a combination of the following:

- Hot Work Requirements
- Confined Space Requirements
- Lockout/ Zero Energy Requirements
- Hoisting and Rigging

At a given time, any of the above requirements may be applicable. It is the responsibility of the direct supervisor to determine which requirements are applicable. The direct supervisor should then develop and implement a procedure for installing the particular piece of equipment or machinery.

The equipment or machinery should be examined before the job begins. At this point, the supervisor will develop a step by step safety plan incorporating all requirements that are necessary to execute the job safely.

Other items that should be closely examined and addressed prior to the actual receipt of the equipment or machinery are:

- If the potential for worker exposure to hazardous chemicals exists, appropriate WHMIS procedures must be implemented and followed.
- The equipment or machinery should be CSA approved.
- The equipment or machinery should be approved by local hydro authorities.

- All guards and other protective devices must be in place.
- All energy lockout points should be identified.
- Start up and testing procedures must be established and reviewed with workers.
- Identify appropriate blocking points for equipment or machinery to prevent collapse during uncrating and installation.
- Determine the locations of all utilities before the installation of the equipment or machinery.
- Review the Pre-Start Health and Safety Review requirements that may be applicable to the work.

4.9.20.1 Guidelines for Commissioning Procedures

During the start-up and testing of new and existing equipment, there must be careful attention paid to safety. At this time, drive rotations, cranes, transfer cars, conveyors, elevators and safety devices are tested to ensure proper function. Only authorized personnel should be conducting these tests and every effort must be made to ensure the safety of everyone in and around the testing area.

The commissioning team will be recognized as authorized personnel and should be identified in the following manner, vests (labeled) and hard hats (labeled).

- The following items are to be used as a guideline only. Each employer or subcontractor shall submit their own policy to the Site Supervisor or Client contact at least 48 hours before commissioning commences.
- Fixed barrier safety fencing shall be installed prior to the commencement of the commissioning process to restrict entry into the commissioning area to only authorized personnel.
- Caution or danger tape must be installed around any equipment. Signage shall be affixed to the tape or safety fencing. "Danger – Do Not Enter, Commissioning in Progress, Authorized Personnel Only" or a similar warning shall be on the sign. The initial placement of the barriers to restrict access to the commissioning area is the responsibility of the companies or personnel responsible for commissioning.
- Prior to start up, a walkthrough of the area must be conducted to ensure it is free of tools, debris, or equipment and that unauthorized personnel are not present in the testing area.
- If the view of the commissioning area is obstructed, then a spotter(s) must be stationed to notify the start-up person that the area is clear. Appropriate means of communication must be maintained between all parties.
- Lockout procedures will apply during the commissioning phase.
- It will be the responsibility of the supervisor to maintain the caution or danger tape, signage and safety fencing.
- For conveyors, the line shall be "bumped" three times prior to the actual running of the equipment. For other equipment, appropriate methods must be implemented to ensure all personnel are clear of the area (i.e., air horns, radio communications or megaphones).
- If any utilities (e.g., electrical, pneumatic, hydraulic, etc.) are in the commissioning area, then suitable arrangements are to be made to make them accessible outside the commissioning area.
- When commissioning testing is 100% complete and signed over to the owner or constructor, then the danger or caution tape, signage and supports shall be removed.
- All mechanical guards at turntables, drives, pinch points, etc. shall be installed before commissioning is performed.
- The supervisor shall take all reasonable precautions to ensure that the area to be commissioned is secure and no one is placed in danger.
- A strict adherence to these guidelines is required and any deviation may result in immediate dismissal.
- The commissioning procedure, upon its implementation, shall be a topic for a Toolbox Talk and any subsequent changes shall be communicated to and understood by all personnel.
- The Site Supervisor or Client contact reserve the right to edit, modify or delete as necessary.

- At the completion of commissioning, the Client's operations or engineering departments may leave locks and tags on equipment, thus locking and controlling energy(s).
- Further hazard analyses and daily team meetings shall be performed as required.
- Material safety data sheets for chemicals associated with the equipment shall be available.
- An initial "commissioning safety orientation" shall be given to the commissioning team and all affected workers.
- A weekly commissioning coordination meeting shall be held as a "Look ahead and safety review".

4.9.21 Work Over or Around Water

4.9.21.1 General

- Lifejackets must be worn by all workers who are exposed to the danger of drowning in water deep enough for the lifejacket to be effective.
- It must be recognized that lifejackets and personal flotation devices (PFDs) are different. A lifejacket will keep an unconscious person's face out of the water, whereas a PFD does not provide this protection. A PFD is designed to increase the buoyancy of an individual that is conscious while in the water. A buoyant seat cushion is no longer considered to be a PFD.
- Only approved lifejackets may be used at Bachly Construction sites or projects.
- Workers engaging in work activities in or around water must have an effective means of two-way communication (e.g., regular telephone, cellular telephone or a two-way radio) available in the event of an emergency.
- If there is the potential for a worker to drown, at least one worker trained to perform rescue operations shall be available to perform rescue operations in the event of an emergency.
- All workers that work over or around water shall be trained in First Aid and CPR.
- Rescue equipment shall be provided in a suitable location at or near the work location.
- If workers must carry out their duties on ice, then written procedures shall be submitted to the Site Supervisor or Client contact prior to the commencement of the work.

4.9.21.2 Construction Projects

The following legislative requirements apply with respect to work over or around water on a construction project:

- At least two workers trained to perform rescue operations shall be available to perform rescue operations in the event of an emergency.
- Rescue equipment shall be provided in a suitable location at or near the work location
- All workers on the project must be advised of the rescue procedures to be followed and their role, if any, in carrying out a rescue
- The edges of work surfaces that expose a worker to the risk of falling into water that is deep enough for a life jacket to be effective must be protected by a guardrail system, or other suitable barrier, to prevent workers from falling into the water.
- If the guardrails systems need to be temporarily removed in order to perform work in the area, a travel restraint system must be used to prevent workers from falling into the water.
- Rafts, scows, barges and similar vessels are considered to be work platforms when used on construction projects.
- Approved ramps shall be provided for proper access and egress from the boat, if the edge of the boat is significantly above or below the work surface used to gain access to the boat.
- The boat referred to above, shall be power driven if the water is likely to be rough or swift.

- Navigation lights that meet the applicable standards must be used if the craft is operated after sunset and before sunrise or in periods of restricted visibility.

The following rescue equipment is required for work over or around water on a construction project:

- A seaworthy boat equipped with a ring buoy attached to 15 metres (49.2 feet) of polypropylene rope that is at least 9.5 millimetres in diameter, a boat hook and, for every person required for a rescue operation using the boat, a lifejacket;
- The boat referred to above, shall be power driven if the water is likely to be rough or swift;
- If there is current in the water, a line extending across the water downstream with floating objects attached to it that are capable of providing support for a person in the water. The line must be securely fastened at each end to adequate anchorage points; and,
- An alarm system capable of warning a worker of the necessity of carrying out a rescue operation.

4.9.21.3 Work From a Boat or Vessel

- Any boats or vessels used for work on Bachly Construction sites or projects must comply with the Small Vessels Regulations and any other applicable marine regulations. The requirements for the boat or vessel will vary according to the size of the boat or vessel.
- Work procedures for work from a boat or vessel must be reviewed with all workers involved with the launch.
- The positioning and securing of vessels used as floating work platforms shall only be performed by competent, trained personnel.

4.9.22 Working Alone

- Whenever practicable, employees will not be required to work alone. However, in some circumstances employees may be required to work alone and these guidelines will apply.
- Employees working alone must maintain regular communication with their direct supervisor. The frequency of communication should be determined based on the hazards associated with the work that is scheduled to be performed, the remoteness of the work location, the weather and the prior history of incidents or accidents associated with the nature of the work or the work location.
- Workers required to perform work alone must have an effective means of two-way communication (e.g., regular telephone, cellular telephone, two-way radio or e-mail) in the event of an emergency. E-mail should only be used to check-in and should not be used in the event of an emergency situation.
- Ensure that battery operated electronic devices that will be used for emergency communication have been recharged or have fresh batteries.
- The development of a travelling plan detailing the route to be taken to the work location and the estimated time of return may be required during adverse weather or other circumstances. If employees are travelling in extreme cold or have the possibility of travelling in inclement weather conditions, emergency supplies such as warm clothing, blankets and bottled water must be available.
- Employees working alone should check-in upon arrival and at the end of work activities at the site or project.
- Periodic check-ins with other Bachly Construction employees can be an effective way to monitor the safety of an employee when working alone.
- Employees must always be aware of their surroundings when working alone, particularly in remote locations. The security of the work site should be checked at the beginning and before the end of each shift.
- It is imperative for worker's to follow the established safe work procedures when working alone. Safe work procedures have been developed and implemented to mitigate workplace hazards. It is always important to follow established procedures, but of particular importance when performing work alone.
- Ensure that all required first aid or emergency equipment is available and is in good working order.

In the event an employee is overdue in returning from a visit to a site or project or the employee has failed to check-in at the intervals established between the employee and their direct supervisor, the following sequence of steps must be taken to locate the employee:

- Attempt to contact the employee using the established means of communication
- Contact the Client to determine the last point of contact between the employee and the Client's employees, if any.
- For overnight visits, contact the hotel or motel where the employee is scheduled to stay.
- Contact the Human Resources Department at head office.

The Human Resources department will:

- Contact the emergency numbers listed in the employment records of the employee.
- Contact the appropriate Emergency Response organizations having jurisdiction in the areas where the employee was scheduled to perform work.

NOTES:

5.0 EMPLOYEE ACKNOWLEDGEMENT SHEET

Please read this page carefully, sign and tear out of the booklet and then forward to your direct supervisor.

I, _____, acknowledge that I have received, read and understand the Bachly Construction Employee Field Health and Safety Guidelines. Further, I acknowledge that working in a safe manner and in compliance with the Act and Regulations and the organization's safe operating principles and procedures is a fundamental condition of my employment.

Further, I understand that the Employee Field Health and Safety Guidelines have been provided in order to increase an awareness of the types of conditions or situations that could pose a potential hazard to health and safety. These conditions or situations must be prevented from occurring to control worker exposure to hazardous materials and to prevent injury or illness.

I will not hesitate to ask my direct supervisor for assistance if I do not understand any of the information presented in these Guidelines and safe operating procedures.

I also acknowledge that willful or persistent violations of this policy will be considered cause for discipline up to and including termination of my employment.

Signed: _____

Supervisor: _____

Date: _____