

To all Staff,

New Alliance Ltd. is committed to protecting all of its resources from accidental loss. Our commitment is to the safety and well being of our employees, our clients and the public.

New Alliance Ltd. is vitally interested in the health and safety of its employees. Protection of employees from injury or occupational disease is a major continuing objective. Management will make every effort to provide a safe, healthy work environment. All supervisors and workers must be dedicated to the continuing standard of reducing risk of injury.

As the employer we are ultimately responsible for worker health and safety. As the undersigned officer of New Alliance Ltd. shall ensure to undertake that every reasonable precaution will be taken for the protection of workers.

As the General Manager, I will hold management accountable for the health and safety of workers under their supervision. Supervisors are responsible to ensure that machinery and equipment are safe and that workers work in compliance with established safe work practices and standards. Workers must receive adequate training in their specific work tasks to protect the workers' health and safety.

Every worker must protect his or her own health and safety by working in compliance with the law and with safe work practices and standards established by the New Alliance Ltd.

It is in the best interest of all parties to consider health and safety in every activity. Commitment to health and safety must form an integral part of this organization, from Senior Management to the workers.

Thank you for your cooperation,

Yours very truly,

Hernan J. Ayala,
General Manager
New Alliance Ltd.

June 26, 2015
Date Approved

To all Staff,

The management of New Alliance Ltd. is committed to providing a work environment in which all individuals are treated with respect and dignity.

Workplace harassment will not be tolerated from any person in the workplace. At no time will any employee harass any other employee, a client, or any member of the public. Everyone in the workplace must be dedicated to preventing workplace harassment. Managers, supervisors, workers & our subcontractors are expected to uphold this standard and will be held accountable by management accordingly.

Workplace harassment means engaging in any course of vexatious comment or conduct against another worker in a workplace – a comment or conduct that is known or ought to be reasonable to be known to be unwelcome.

This standard is not intended to limit or constrain the reasonable exercise of management functions in the workplace.

Workers are encouraged to report any incident of workplace harassment. When an instance of harassment is reported it will be taken very seriously and will be investigated thoroughly. If the allegation is found to be true, the accused will face immediate Progressive Discipline up to and including dismissal. If it has been found that there has been harassment that includes unwanted contact the accused will be dismissed immediately and the issue will be forwarded to the proper authorities for an appropriate investigation. If you are the recipient of harassment of any nature, report it immediately to your supervisor or the person in charge that is not involved in the allegation.

Your allegation will be taken seriously and as such you will be treated with the respect, dignity, and confidence that you deserve. Management will investigate and deal with all concerns, complaints, or incident of workplace harassment on a fair and timely manner while respecting the workers' privacy as much as possible.

Thank you for your cooperation,

Yours very truly,

Hernan J. Ayala,
General Manager
New Alliance Ltd.

June 26, 2015
Date Approved

To all Staff,

The management of New Alliance Ltd. is committed to the prevention of workplace violence and is ultimately responsible for worker health & safety. We will take whatever steps are reasonable to protect our workers from workplace violence from all sources.

Workplace Violence means:

1. The exercise of physical force by a person against a worker, in a workplace, that causes or could cause physical injury to the worker.
2. An attempt to exercise physical force against a worker, in a workplace, that could cause physical injury to the worker.
3. A statement or behaviour that it is reasonable for a worker to interpret as a threat to exercise physical force against the worker, in a workplace, that could cause physical injury to the worker.

Violent behaviour in any workplace is unacceptable and shall not be tolerated. This standard applies to every person under contract, working on behalf of and property under the control of New Alliance Ltd. Every person is expected to uphold this standard and work together to prevent workplace violence.

There is a workplace violence program that implements this standard. It includes measures & procedures to protect workers from workplace violence, a means of summoning immediate assistance and a process for workers to report incident, or raise concerns.

As the employer, we shall ensure this standard is implemented and maintained and all workers, supervisors, visitors & subcontractors have the appropriate information and instruction to protect them from violence in the workplace.

Supervisors will adhere to this standard and the supporting program. Supervisors are responsible for ensuring that the measures & procedures are followed by the workers and that workers have the information they need to protect themselves.

Every worker must work in compliance with this standard and the supporting program. Workers are encouraged to report any incident of domestic or workplace violence. When an instance is reported it will be taken very seriously and will be investigated thoroughly. If the allegation is found to be true, the accused shall be dismissed based upon the investigations of the authorities. If you are the recipient of a violent act of any nature, please report it immediately to your supervisor or the person in charge that is not involved in the allegation.

Your allegation will be taken seriously and as such you will be treated with the respect, dignity, and confidence that you deserve. Management will investigate and deal with all concerns, complaints, or incident of workplace harassment on a fair and timely manner while respecting the workers' privacy as much as possible.

Thank you for your cooperation,

Yours very truly,

Hernan J. Ayala,
General Manager
New Alliance Ltd.

June 26, 2015
Date Approved

INTRODUCTION

Our fundamental goal is to be recognized as the most successful civil contractor in Ontario. To accomplish this, the organization shall be committed to providing an accident free workplace and become the leaders of tomorrow through safety, quality and performance.

New Alliance Ltd. does not expect you to work in an unsafe or unhealthy manner at any time. The local, provincial and federal occupational health & safety legislation, OH&SA and applicable regulations are the minimum standards for our work and shall be referred to for specific direction in certain issues and policy. Please remember the Ontario Occupational Health & Safety Act outlines the responsibilities that we are required to comply with. For more on these responsibilities please refer to the Ontario Occupational Health & Safety Act:

- Section 23 to 27 – Duties of Constructor
- Section 25 & 26 – Duties of Employers
- Section 27 – Duties of Supervisors
- Section 28 – Duties of Workers

As the General Manager the extent of my responsibility includes managing our safety, health & environmental program and ensuring that our standards contained within this manual are complied with. I urge everyone to cooperate in order to continue to make our workplace a healthy, safe and entirely accident free. For any safety, health or environmental concerns please contact me immediately at the office (905) 637 – 8883, thank you.

Sincerely,

Hernan J. Ayala
General Manager
New Alliance Ltd.

June 26, 2015

Date Approved

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SECTION 1 – COMMITMENT TO SAFE PROMOTIONS

SCOPE: Our health & safety program includes the promotion of our standards & safe work procedures (STA/SWP/Task Analysis) contained within. The promotion of our standards shall help promote a safe, healthy accident free work environment. Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity while under the guidance of New Alliance Ltd.

PURPOSE: The purpose of this section is to introduce, identify, and promote New Alliance Ltd. commitment to the health & safety program. The program has been designed to assist all employees, visitors, subcontractors and their supervision to help in the promotion of health & safety within their scope of work.

STANDARD: The management team at New Alliance Ltd. is committed to the promotion of safe working practices. We strive to incorporate health and safety promotion into every part of our daily operations from daily employee meetings to management intervention when health and safety violations occur in the workplace. The following list details the formal safety promotion programs we practice:

Safety Information Board

A safety information board is located in the shop and serves to inform & encourage employees to work together to ensure there are no accidents. The board lists the days since the date of the last accident and also lists the days until the goal date of no accidents has been achieved. The following is list of the required documentation that shall be posted in addition any other promotional materials.

1. “1234” WSIB Poster,
2. Ontario’s Human/Employee Right’s Poster,
3. Ministry of Labour Prevention Poster (New)
4. Project Emergency Response Plan.
5. Emergency Contact poster for workplace, which shall include the route to the nearest hospital.
6. Regulation 1101 (First Aid) & name of qualified first aid attendant,
7. JH&SC or Worker Health & Safety Representative & minutes/inspections.
8. Name and contact number for the Supervisor in Charge.
9. New Alliance Ltd. OH&S Manual.
10. Nearest MOL office & phone number.
11. Latest OH&S Act,
12. Regulation for Construction Projects O. Reg. 213/91
13. Regulation for Confined Spaces O. Reg. 632/05
14. Orders provided by a Ministry of Labour officer.
15. MSDS
16. Project Traffic Control Plan
17. Site Specific SWP/Task Analysis
18. MOL Form 1000

SECTION 2 – STANDARDS & SAFE WORK PROCEDURE (SWP/TASK ANALYSIS)

SCOPE: Our practical and effective health & safety program includes our standards & safe work procedure (SWP/Task Analysis). Our standards shall provide a safe, healthy accident free work environment by addressing the standards for reasonable care considerations as listed below. These reasonable care considerations shall be used as a guideline when a standard or site specific SWP/Task Analysis is created for this manual.

PURPOSE: The program has been designed to assist all New Alliance Ltd. employees, visitors, subcontractors and their supervision to recognize, evaluate and control hazardous activities or conditions within their scope of work.

STANDARD: As an organization; we shall ensure to:

- Provide a safe accident free workplace & protect the public,
- Ensure our subcontractors are directly responsible for their employees and public safety.
- Analyze the gravity of potential harm and the likelihood of that harm,
- Evaluate all the reasonable alternatives available for the existing or potential circumstances,
- Assign employees that have the experience, knowledge and training for the job,
- Provide a health & safety standard and SWP to communicate the required safety precautions to those individuals involved in the circumstances,
- Monitor the effectiveness of the precautions and procedures in the circumstances,
- Resolve disputes/violations.

SAFE WORK PROCEDURE/TASK ANALYSIS: A SWP is also referred to using other terms; Standard Operating Procedure (SOP) and Safe Operating Procedure (SOP). A Safe Work Procedure is a working risk control document created under the supervision of management within the company that describes the safest and efficient way to perform a certain task. This document stays in the health & safety system for regular use as a template or guide when completing that particular task on site.

The document generally lists the associated hazards involved in performing a task, what risk score is associated with the hazards, what personal protective equipment is required, and the steps involved to complete the activity without Incident. All SWP/Task Analysis shall be found in the FORMS section of the manual; the document is split up into three columns to meet the above requirements: Task Description, Potential Hazard & Resolution.

Every employee and subcontractor shall be **educated / trained** on the **hazard identification and risk assessment** components contained within the SWP and the documentation requirements contained within the SWP.

Each person involved in that task on site must ensure all sections of the SWP are followed. A Safe Work Procedure (SWP/Task Analysis) is also required for machinery and equipment that is used to perform an activity within the workplace or project. **The SWP/Task Analysis & DHA shall be enforced to ensure that a combination of engineering, administrative & PPE controls are used & implemented.**

The **Daily Hazard Assessment** shall be performed **everyday** using the DHA Form. The risk assessment within the DHA shall be **communicated** using three categories; **IDLH** means a service, task, condition or procedure that is immediately dangerous to life & health; **LIKELY** means a service, task, condition or procedure that is not IDLH but an injury or property damage is probable if the associated hazards are not controlled; **NOT LIKELY** means not likely.

SECTION 3 - DEFINITIONS

SCOPE: Every employee, contractor/subcontractor and supplier with New Alliance Ltd. shall be familiar with the definitions below to assist in their understanding of this manual.

PURPOSE: The purpose of this standard is to define health and safety terms commonly used in the workplace and/or in health and safety legislation. These terms will be referred to throughout this standard.

STANDARD: Every employee, contractor/subcontractor and supplier should be familiar with the definitions below to assist in their understanding of this manual. In addition, please refer to the provincial/territorial and federal health & safety regulations that have jurisdiction over their work facility, contract job site, or profession. Every employee, contractor/subcontractor should be familiar with the definitions below to assist in their understanding of this manual.

Constructor – means 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.

Construction - includes erection, alteration, repair, dismantling, demolition, structural maintenance, painting, land clearing, earth moving, grading, excavating, trenching, digging, boring, drilling, blasting, or concreting, the installation of any machinery or plant, and any work or undertaking in connection with a project but does not include any work or undertaking underground in a mine; (“construction”)

Competent Person – means a person who,

- (a) is qualified because of knowledge, training and experience to organize the work and its performance;
- (b) is familiar with the Act and the regulations that apply to the work, and
- (c) has knowledge of any potential or actual danger to health or safety in the workplace;

Competent Worker - in relation to specific work, means a worker who,

- (a) is qualified because of knowledge, training and experience to perform the work,
- (b) is familiar with the *Occupational Health and Safety Act* and with the provisions of the regulations that apply to the work, and
- (c) has knowledge of all potential or actual danger to health or safety in the work;

Employer - means 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.

Hazard – refers to a condition or practice with the potential for accidental loss.

Industrial Establishment – refers to an office building, factory, arena, shop or office, and any land, buildings and structures appertaining there to;

JH&SC – refers to the company or site Joint Health & Safety Committee.

MSDS – refers to a Material Safety Data Sheet

MOL – refers to the Ministry of Labour who enforce provincial health & safety laws.

OH&SA – refers to the most recent version of the Occupational Health & Safety Act.

Owner - includes a trustee, receiver, mortgagee in possession, tenant, lessee, or occupier of any lands or premises used or to be used as a workplace, and a person who acts for or on behalf of an owner as an agent or delegate.

PPE – refers to Personal Protective Equipment.

Project - means 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, water main, 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 or undertaking, or any lands or appurtenances used in connection with construction;

Supervisor – refers to any person who has charge of a workplace or authority over a worker.

SWP – is an acronym that refers to a safe work procedure.

WHMIS – acronym that refers to the Workplace Hazardous Material Information System.

WSIB – refers to the Workplace Safety & Insurance Board in Ontario

Worker - means a person who performs work or supplies services for monetary compensation but does not include an inmate of a correctional institution or like institution or facility who participates inside the institution or facility in a work project or rehabilitation program.

Workplace Harassment means: engaging in any course of vexatious comment or conduct against another worker in a workplace – a comment or conduct that is known or ought to be reasonable to be known to be unwelcome.

Workplace Violence means:

1. The exercise of physical force by a person against a worker, in a workplace, that causes or could cause physical injury to the worker.
2. An attempt to exercise physical force against a worker, in a workplace, that could cause physical injury to the worker.
3. A statement or behaviour that it is reasonable for a worker to interpret as a threat to exercise physical force against the worker, in a workplace, that could cause physical injury to the worker.

SECTION 4 – RESPONSIBILITIES & RIGHTS

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity while under the guidance of New Alliance Ltd.

PURPOSE: The purpose of this section is to introduce, identify, and explain every person's responsibility within our health & safety program. Please be advised responsibilities of the various workplace parties are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: The Executive team shall ensure the following:

1. Provide full support to the Management and all activities hereunder;
2. Assign responsibility to establish and provide incentives for SH&E performance;
3. Review reports from operations and others, annually assess the overall program;
4. Instruct periodically, that changes be made in the overall program design, objectives, implementation methods, planning and control of operations and expected levels of performance.

Management shall provide support and guidance to the operations by ensuring that personnel are aware of and understand the company's standards and procedures, as well as relevant federal, provincial and local legislation and applicable regulations.

In addition the position shall ensure to:

1. Monitor operations for compliance with the company's SH&E standards and procedures, relevant federal, provincial and local legislation and applicable regulations;
2. Prepare and submit to the Executive, accident frequency and other reports that objectively measure individual and overall safety performance;
3. Suggest and implement improvements to safety program and procedures;
4. Liaise with the Provincial Offences Officers MOL, MOE & the Workplace Safety & Insurance Board;
5. Establish safety and first aid training programs and coordinate scheduling; and
6. Review all Accident Investigation Reports, Ministry of Labour Reports, Joint Health & Safety Committee recommendations and follow-up in conjunction with staff.

Constructors (sometimes referred to as the General Contractor) are responsible for the protection of every worker's health and safety on a construction project. They are also responsible to ensure that all other employers and subcontractors comply with OH&S legislation and that workers are qualified for the work being performed. It is the constructors' responsibility to ensure that all required documentation is available at the workplace. Constructor's responsibilities include those of an employer.

In order to accomplish this we shall:

- Analyze the gravity of potential harm and the likelihood of that harm,
- Evaluate all reasonable alternatives available for the existing or potential circumstances,
- Assign employees that have the experience, knowledge and training for the job,
- Provide safety standard and procedures to communicate the required safety precautions to those individuals involved in the circumstances,
- Monitor the effectiveness of the precautions and procedures in the circumstances,
- Resolve disputes/violations.

In addition to the above, as per the OH&S Act, section 23 when our organization has taken on the responsibility of a constructor we shall ensure the following:

1. The measures and procedures prescribed by the OH&S Act and the regulations are carried out on the project;
2. That every employer and every worker performing work on the project complies with the Act and the regulations; and
3. The health and safety of workers on the project is protected.
4. Where so prescribed, as a constructor, we shall, before commencing any work on a project, give to a Director (MOL) a notice in writing of the project containing such information as may be prescribed.

In addition to the above, as per the OH&S Act, as an employer we shall ensure the requirements of section 25 & 26 are complied with. **Employers** must also ensure that the health and safety of our employees, agents, subcontractors and their employees is protected at all times. We have the responsibility to implement and maintain a safe and healthy work program. In order to accomplish this we shall:

- Analyze the gravity of potential harm and the likelihood of that harm,
- Evaluate all reasonable alternatives available for the existing or potential circumstances,
- Assign employees that have the experience, knowledge and training for the job,
- Provide safety standard and procedures to communicate the required safety precautions to those individuals involved in the circumstances,
- Monitor the effectiveness of the precautions and procedures in the circumstances,
- Resolve disputes/violations.

As **Constructor** or as an **Employer**, the following procedures are part of the aforementioned process:

1. Provide information, instruction and supervision to a worker to protect their health & safety,
2. Appoint competent supervisors to supervise the work,
3. Provide the prescribed equipment, materials and protective devices (PPE),
4. Explain the proper use and limitations of PPE,
5. Advise workers of actual and potential safety hazards associated with their work,
6. Provide training in health and safety topics,
7. Update, circulate, and post this health and safety standard at work locations,
8. Discipline any worker that violates our health and safety policies or OH&S laws,
9. Post the OH&SA and Regulations for your reference,
10. Have a safety representative or a JH&SC in place as required,
11. Develop a program to assist in implementing our company standards,
12. Develop a WSIB Return to Work Standard,
13. Monitor all accident and Incident reports and corrective action taken,
14. Encourage the reporting of unsafe acts and/or conditions,
15. Establish a schedule for health and safety meetings and toolbox talks,
16. Take every reasonable precaution to protect the workers and the public from injury and/or illness.

Supervisors shall, as per the OH&S Act, section 27, supervise the work in progress and ensure compliance with all OH&S laws and our company safety, health & environmental standards. In addition, our Supervisors will:

1. Supervise your work personally, or
2. In their absence, appoint a competent person to do so,
3. Ensure all workers comply with the OH&SA and Regulations,
4. Advise workers of actual and potential safety hazards associated with your work,
5. Provide and/or arrange for training in required health and safety topics,
6. Circulate, post and explain this health and safety standard to their workers,
7. Discipline any worker that violates our health and safety policies or OH&S laws,
8. Have a copy of the OH&SA and Regulations available for reference,
9. Work with the safety representative, or a JH&SC as required,
10. Implement the program to ensure our company standards are known & followed,
11. Monitor and implement our WSIB Return to Work standard,
12. Perform routine workplace safety inspections,
13. Investigate all accident/Incident reports and institute required corrective action,
14. Encourage the immediate reporting of unsafe acts and/or conditions,
15. Ensure that corrective measures or disciplinary actions are done in a timely manner,
16. Conduct health and safety meetings and toolbox talks,
17. Recognize the efforts of workers demonstrating positive health and safety performance,
18. Ensure that all required task specific SWP are in place,
19. Ensure that PPE is available, worn and used as required,
20. Ensure that safe and healthy conditions are met in the workplace,
21. Take every reasonable precaution to protect workers and the public from injury and/or illness.

Workers and Contract Employers/Workers, as per the OH&S Act, section 28, every worker is expected to know and understand the basic principles of this standard and OH&S law. You have the right to work in a healthy and safe environment and are expected to comply with the following requirements at all times:

1. Fully read and agree to comply with all OH&S laws and our company safety standard,
2. Use and wear the prescribed equipment, materials and protective devices supplied,
3. Know and understand the limitations of PPE,
4. Be aware of actual or potential safety and health hazards associated with your work,
5. Participate in training related to required health and safety related topics,
6. Refer to our health and safety standard as required,
7. Be aware of your responsibilities under the OH&SA,
8. Support your safety representative or JH&SC as required,
9. Know the location of first aid kits and fire extinguishers,
10. Comply and participate with the WSIB Early & safe Return to Work legislation,
11. Report any accident or Incident to your supervisor immediately,
12. Report any unsafe or unhealthy acts and/or conditions to your supervisor,
13. Report any contravention of the OH&S Act, regulations or company standards to your supervisor,
14. Participate in health and safety meetings and toolbox talks,
15. Never engage in any prank, contest, feat of strength, unnecessary running or rough and boisterous conduct; always work in a manner that is safe and does not endanger you, the public or other workers.

16. Never remove or make ineffective any protective device without providing an adequate temporary protective device and when the need for removing or making ineffective the protective device has ceased, the protective device shall be replaced immediately.
17. Never use or operate any equipment, machine, device or thing or work in a manner that may endanger himself, herself or any other worker.
18. Never report for work in an unfit condition.

Employee Rights

Every employee must protect his or her health and safety by working in compliance with the law and following safe work practices and procedures established by the company. To balance the employer's general right to direct the work force and control the production process in the workplace, legislation provides four basic rights to all employees:

The Right to Participate

Employees have the right to be part of the process of identifying and resolving workplace health and safety concerns. This right is expressed through employee membership on joint health and safety committees, or through employee health and safety representatives.

The Right to Know

Employees have the right to know about any potential hazards to which they may be exposed. This means the right to be trained and to have information on machinery, equipment, working conditions, processes and hazardous substances. The parts of the Act that implement the Workplace Hazardous Materials Information System (WHMIS) play an important role in giving employees the right to know.

The Right to Refuse Work

Employees have the right to refuse work that they believe is dangerous to either their own health and safety or that of another employee. The Act describes the exact process for refusing dangerous work and the responsibilities of the employer in responding to such a refusal.

The Right to Stop Work

A "certified" member of a joint health and safety committee is a member who has received special training in occupational health and safety and has been certified by the Workplace Safety and Insurance Board (WSIB). He or she plays an important role on the health and safety committee and in the workplace, with specific authority and responsibilities. In certain circumstances, members of a joint health and safety committee who are "certified" have the right to stop work that is dangerous to any employee.

Visitors are expected to conduct themselves in an orderly manner. Visitors have the right to a healthy and safe environment throughout the duration of their stay, and are expected to comply with the following requirements at all times:

1. Sign in and sign out each time you visit our company or site.
2. Report all accidents immediately to an employee of New Alliance Ltd.
3. Use and wear the prescribed protective devices supplied.
4. Remain with your assigned company escort at all times, permission is required to enter any area.
5. Conduct your visit safely and do not endanger yourself, the public or any workers.

SECTION 5 – NEW / SHORT SERVICE EMPLOYEE

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity while under the guidance of New Alliance Ltd.

PURPOSE: The purpose of this section is to introduce, identify, and explain every person's responsibility for the indoctrination of a new / short service employee or orientation of an existing employee to our health & safety program. Please be advised responsibilities of the various workplace parties are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: When a new / short service or contract employee arrives on the job-site, management (or designated person) shall provide a copy of and review this New Alliance Ltd. manual and the work related SWP applicable for the person. All employees shall be provided with a tour of the shop and or projects that includes a review of emergency exits, walkways, restricted areas, first aid room locations and authorized meeting areas for evacuation purposes. A copy of any documentation related to the site-specific conditions or procedures shall be provided and once again noted on the Acknowledgement Form. The Acknowledgement Form shall be completed with a copy forwarded to the office for the master file.

New or Short Service Employee

New Alliance Ltd. Management / Supervisor and Subcontractors shall ensure the following for a new or short service employee:

1. An employee is generally considered a short service employee or new employee if he/she has less than 6 months experience with New Alliance Ltd. or in his/her new position.
2. Management & subcontractors shall ensure that orientation of our standards, SWP, and the OH&S Act and applicable Regulations are provided, discussed and documented.
3. Management & subcontractors shall ensure that site-specific training/orientation is provided, as required to discuss the possible hazards of the job, equipment, tools or conditions. SWP shall be provided as they apply to the job task.
4. A copy of our standards shall be made available for the employees; supervisors and employees are responsible for being familiar and complying with our standards.
5. The employee will be required to sign a form indicating he has read and is familiar with the information contained.
6. The new employee shall be provided with a mentor in a buddy system for all tasks until the employee is capable of performing the regular duties based upon experience, knowledge and training.
7. No new or short service employee may work alone.
8. Prior to starting work, the Supervisor shall notify the client (project coordinator, contractor contact, and/or on-site supervisor) if a new or short service employee is present on work crews.
9. New or Short service employees shall be monitored for compliance with H&S & environmental policies and procedures. Once the employee has demonstrated competency and compliance with policies and procedures, the supervisor shall remove the hi-visibility identifier.

Change of Work Area

An employee who is successful on a new job posting and is required to change work areas shall be subject to indoctrination starting at #2 of the above section.

SECTION 6 – RETURN TO WORK (WSIB ADMINISTRATION)

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Workplace Safety & Insurance Act and applicable regulations for any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this section is to introduce, identify, and explain every employee's responsibility under the WSIA. This standard shall establish, maintain and evaluate a system for documenting and maintaining all WSIB claims in compliance with the Workplace Safety & Insurance Act 1997 and all relevant legislation.

STANDARD: Our organization has adopted the philosophy of returning an injured worker to meaningful and productive work (where possible) when an occupational injury occurs, in order to protect their earning ability and minimize the disruption to their personal lives.

A Return to Work (RTW) program has been developed which is committed to providing safe, sustainable and available work consistent with the functional capabilities of the injured worker.

Our goal, with the injured worker's cooperation, is to return the injured worker to their pre-accident job duties as soon as they are able. In the event intervention is required, the WSIB will be notified appropriately for assistance in the injured worker's early and safe Return to Work.

The WSIB requires the employer and worker contact each other as soon as possible after the injury and maintain and open line of communication throughout the recovery ensuring all communication is documented on file.

We will strive to support any injured worker in his/her rehabilitation efforts and provide the most appropriate modified work to assist in this process. A competent person or third party consultant with knowledge or experience in claims management shall be assigned to manage WSIB claim files and to maintain communication with the injured worker.

If an injured worker does not fulfill these obligations, the worker's WSIB benefits may be reduced or suspended. Similarly, an injured worker who does not co-operate with his/her Early & Safe Return to Work program will be disciplined according to relevant our standard.

The injured worker is responsible for returning the WSIB Functional Abilities Form to the employer within 24 hours if possible in order to establish his/her Early & Safe Return to Work program. The injured worker is encouraged to communicate any concerns or questions immediately to the employer in order to avoid miscommunication so that resolution can be achieved in a timely manner.

Full details on WSIB rights, responsibilities and entitlement to benefits for injured workers are available at the request of the injured worker.

In the event of a work related injury or illness, a modified work package including a WSIB Functional Abilities Form (FAF) will be provided to the injured worker immediately in accordance with our Return to Work Program.

In the event the FAF is not returned within 24 hours, standard restrictions/precautions outlined by the WSIB will be used in order to establish the Return to Work Program to avoid further delay.

When the FAF has been returned, the injured worker's functional abilities will be reviewed with the specific restrictions outlined by the health care practitioner. Modified work may be altered depending on restrictions provided.

Workers will be monitored on a consistent basis following their return to work to modified or pre-accident job duties to ensure there are no further complaints or problems related to the work related injury. A FAF will be given on a consistent basis, depending on the injury, until the injured worker is medically cleared by his/her treating health care practitioner to return to his/her pre-accident job duties.

In the event there is little or no progression in the injured worker's recovery, the WSIB will be contacted to intervene accordingly.

Similarly, in the event there is any difficulty with the Return to Work process, the WSIB will be contacted to intervene immediately through the use of mediation or other appropriate measures.

All communication with worker, health care practitioner, WSIB Claims Adjudicator, Nurse Case Manager and other relevant person(s) will be fully documented in the worker's claim file.

IMPORTANT NOTICE TO ALL EMPLOYEES

TO: ALL STAFF
FR: Hernan J. Ayala, General Manager
RE: ACCIDENT & INCIDENT REPORTING
DATE: January 30, 2015

Please be advised that in the event of a work related accident/illness, all workers are required to report the accident or illness **immediately** to their supervisor and/or the Management.

New Alliance Ltd. has a formal Return to Work Program, which has been developed in accordance with WSIB Legislation. This program provides early and safe return to work for anyone injured on the job.

Prior to seeking medical attention, you are required to pick up a modified duties offer, which includes a Functional Abilities Form. This form is to be completed by your health care practitioner and returned to head office within 24 hours.

Please note modified duties will be provided to accommodate your medical restrictions and capabilities in conjunction with medical rehabilitation.

We anticipate your full cooperation in this matter.

Regards,

Hernan J. Ayala,
General Manager
New Alliance Ltd.

Date Approved

By signing, I understand that all work related accidents/incident must be reported immediately. I also understand that modified work duties will be offered upon reporting a work related accident/Incident.

Employee Name (please print)

Employee Signature

DATE

SECTION 7 – HEALTH & SAFETY TRAINING / COMPETENCY

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish the training and education programs that you will have available to you and the associated requirements. The training shall introduce, identify, and explain every person's responsibility within our health & safety program and for a specific task. Please be advised responsibilities of the various workplace parties are contained in the Occupational Health and Safety Act located at every workplace or project vehicle.

STANDARD: Our standard is to provide ongoing training programs in health and safety for all workers in our company, including senior management and supervisors. In addition to your job specific work training you will also be required to show a basic knowledge of health and safety issues. Some workers have an extensive background and may have already received the required training while others need updating.

Management

Manager will coordinate and implement health and safety training programs on a corporate-wide basis in areas where training is not provided by departments and budget a reasonable amount of time per year for employee safety training.

Training

Please refer to the schedule of training below for the frequency and the optional or mandatory requirement. This list of training required is for any person under contract or employed by this organization. For questions or concerns please contact management for guidance.

Schedule of Training Requirements

Topic	Frequency	Optional or Mandatory
Site Orientation / SH&E Standards / SWP	Annually	M
New MOL Prevention Training	3 Years	M
WHMIS	Annually	M
First Aid	3 years	M
JH&SC Certification	Once	O
Personal Protective Equipment	3 Years	M
Fall Protection	3 Years	M
Confined Space Entry Awareness/Rescue	3 Years	M
Hoisting & Rigging	3 Years	M
Lock Out & Tag Out	3 Years	M
Overhead & Buried Utility	3 Years	M
TDG	3 Years	O
Traffic Control - OTM Book 7	3 Years	O
Reversing Vehicles & Equipment	3 Years	M
Excavation & Trenching	3 Years	M
Chainsaw	3 Years	O
Fire Extinguisher	3 Years	M
Supervisor – OH&S Law	3 Years	M
Supervisor Investigation / Inspection	3 Years	M
Site Specific Tool/Machine	3 Years	M

The frequency of the training is based upon reasonable standards of care with a reasonable schedule as per the OH&SA and applicable regulations. Please ensure to provide toolbox talks to supplement the training schedule. The training shall consist of a classroom style structure with a test for knowledge with a “hands-on” portion to ensure understanding.

The option or mandatory training of employees is based upon the task and the conditions involved or associated with the task. Please refer to the Mandatory or Optional Training as the following:

1. Mandatory training is required for every employee, contractor or subcontractor working on or for New Alliance Ltd. behalf.
2. Optional training is required for only the employee, contractor or subcontractor that may become exposed to a known hazard(s).

Contractors

All contractors will receive basic training of the Health and Safety manual and must be aware of any and all known emergency exits, walkways, restricted areas, first aid room locations and authorized meeting areas for evacuation purposes.

Management must ensure that subcontractors work in a safe manner. Any indication of unsafe practices must be investigated and corrected immediately. Subcontractors who repeatedly violate health and safety standards may be suspended or terminated from any future job assignments.

Employees may be required to repeat a training program if safety violations or accidents occur, depending on the health and safety investigation report and management recommendations. All training Certificates are available at the main office on file. All certificates are required to be made available by the employee at any time during working hours.

Job Competency

NAL believes that all occupational injury, illness and property damage is preventable and through proactive management of risk and at-risk behaviour, injury and loss can be eliminated from our organization.

The H&S program provides the employees, management and subcontractors with the tools and the resources necessary to effectively manage risk to themselves and others. It should not be considered inclusive. Legislative requirements exist in various jurisdictions that complement the content of this program, and must be adhered to.

This H&S program will be reviewed and updated on a regular basis by employees and management. All employees at all levels should familiarize themselves with the contents within this program.

If you have any questions or concerns regarding the content or intent of the Health and Safety Management System discuss them with your supervisor or manager.

NAL will maintain a list of job titles that will hold safety responsibilities. The job titles/descriptions will determine the minimum qualifications required to perform each role. This may be a combination of education and work experience. NAL Management will ensure that documentation is acquired from employees as proof that they are qualified to perform their job duties. Job specific training must be provided for new or transferred employees. All employees must be trained on the tasks they perform on a regular basis. A competent person (Supervisor, Lead Hand, etc) must verify that an employee is competent to perform their roles and responsibilities before being allowed to work independently.

SECTION 8 – NEW MOL PREVENTION AWARENESS TRAINING

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity while under the guidance of New Alliance Ltd.

PURPOSE: The purpose of this section is to introduce, identify, and explain every person's responsibility for the indoctrination of a new / short service employee or orientation of an existing employee to our health & safety program and the MOL's new prevention training. Please be advised responsibilities of the various workplace parties are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: When a new / short service or contract employee arrives on the job-site, management (or designated person) shall provide a copy of and review this New Alliance Ltd. manual and the new MOL protection training program. The Acknowledgement Form shall be completed with a copy forwarded to the office for the master file.

Requirements

New Alliance Ltd. Management / Supervisor and Subcontractors shall ensure the following for a new, short service or existing employee:

1. That every employee shall complete MOL basic occupational health and safety awareness training program as soon as practicable. A worker does not need to complete the training if: (a) the worker previously completed a basic occupational health and safety awareness training program and provides the proof of completion of the training; and (b) the Supervisor & the Regional H&S representative verifies that the previous training has been completed.
2. A basic occupational health and safety awareness training program for employees must include instruction on the following: (1) the duties and rights of workers under the Act; (2) the duties of employers and supervisors under the Act; (3) the roles of health and safety representatives and joint health and safety committees under the Act; (4) the roles of the Ministry, the Workplace Safety and Insurance Board and entities designated under section 22.5 of the Act with respect to occupational health and safety; (5) common workplace hazards; (6) the requirements set out in Regulation 860 (WHMIS) with respect to information and instruction on controlled products; and (7) Occupational illness, including latency.
3. Supervisors shall complete the MOL basic occupational health and safety awareness training program within one week of performing work as a supervisor. A supervisor does not need to complete the training if: (a) the supervisor previously completed a basic occupational health and safety awareness training program and provides proof of completion of the training; and (b) the Manager and the Regional Safety representative verifies that the previous training has been completed.
4. A basic occupational health and safety awareness training program for supervisors must include instruction on the following: (1) the duties and rights of workers under the Act; (2) the duties of employers and supervisors under the Act; (3) the roles of health and safety representatives and joint health and safety committees under the Act; (4) the roles of the Ministry, the Workplace Safety and Insurance Board and entities designated under section 22.5 of the Act with respect to occupational health and safety; (5) how to recognize, assess and control workplace hazards, and evaluate those controls; and (6) sources of information on occupational health and safety.

5. New Alliance Ltd. shall maintain: (a) a record of workers and supervisors that completed the basic occupational health and safety awareness training, and (b) a record of workers and supervisors that have been exempted from the training (if applicable).

SECTION 9 – FIRST AID & FIRE PROTECTION

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to explain the steps required to determine the appropriate response and actions required in the event of an emergency (i.e. First Aid & Fire) is encountered at the workplace. This standard shall introduce, identify, and explain every person's responsibility when first aid or fire protection measures are required. Please be advised responsibilities of the various workplace parties are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: Fires present very serious dangers to both workers and the workplace. Fires must be treated with great respect as they can quickly become out of control and spread rapidly. Fire extinguishing equipment must be readily available at all workplaces and every worker who may need to use this extinguishing equipment must be trained in its proper use and in the limitations of the equipment. Every crew has multiple Certified First Aiders that are readily available for support.

FIRST AID

First Aid kits will be provided as per the Workplace Safety & Insurance Board, Regulation 1101. First Aider shall keep a record of all circumstances respecting an accident as described by the injured worker, the date and time of its occurrence, the names of witnesses, the nature and exact location of the injuries to the worker and the date, time, and nature of each first aid treatment given.

1. Vehicles

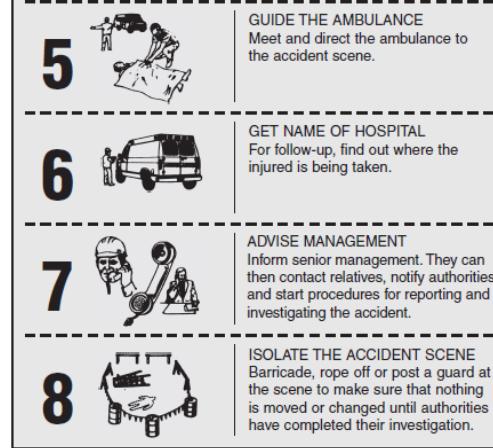
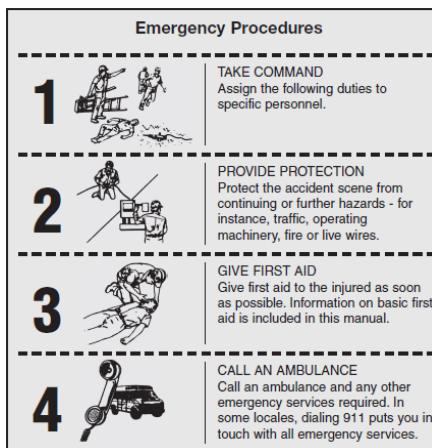
Company vehicles will carry a First Aid kit as specified in the Workplace Safety & Insurance Board, Regulation 1101 suitable for one (1) to five (5) employee(s).

2. Management

Manager is responsible to ensure that the site supervisors post the kits as required. In addition, shall be responsible for the replenishing/replacing first aid kits, and for inspecting the kits in their area or on their vehicles at least quarterly.

3. Additional Supplies

Any employee requiring First Aid supplies beyond the minimum Workplace Safety & Insurance Board requirements will be responsible for obtaining and maintaining such supplies under the guidance of management.



FIRE PROTECTION

The facility & equipment is supplied with fire extinguishers. You should familiarize yourself with the operation of all types of extinguishers used by the company. Directions for correct operating procedures are found on the extinguisher. If in doubt, ask.

A fire extinguisher is an important piece of equipment. Like other equipment, it must be maintained as per manufacturers' specifications if it is to give maximum performance when needed. It may be the one thing that stands between losing a life and saving it. Also, it may be the one thing that will prevent the loss of a valuable piece of equipment. Fire extinguishing equipment shall be of a suitable type and size to permit the evacuation of workers during a fire. Every fire extinguisher, (a) shall be a type whose contents are discharged under pressure; and (b) shall have an Underwriters' Laboratories of Canada 4A40BC rating.

There are five classes of fires and each fire extinguisher will be labelled as to what type of fire can be extinguished with that unit. Every employee is required to be familiar with the following classes of fires and the fire protection measures.

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

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

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

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

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

If you encounter a fire that you feel you can fight without endangering yourself, make sure you have the correct extinguisher for the type of fire. If you have not been trained in fighting fires, DO NOT attempt to fight the fire, sound the alarm, vacate the area and report to your designated gathering point. Please remember, once an emergency pull station has been activated the alarm can only be turned off by the fire department.

Remember when fighting a fire:

- 1. Call for help (911),**
- 2. Notify your supervisor,**
- 3. Always protect yourself and all other persons,**
- 4. Keep your exit behind you,**
- 5. If outdoors, stay up wind,**
- 6. If necessary, use sand or earth to smother the flames,**
- 7. Use the "PASS" system,**
- 8. Make sure that the fire is out before leaving it.**

P - PULL the pin on the extinguisher to unlock the operating lever,

A - AIM the nozzle at the base of the fire,

S - SQUEEZE the lever above the handle to discharge the extinguishing agent,

S - SWEEP the nozzle from side to side at the base of the fire.

If the fire is going out you may carefully approach the fire and continue to extinguish. Continue to watch the area after the fire is out for at least 30 minutes. If the fire becomes unmanageable at any time, vacate the area and call the fire department immediately. It is important that the emergency equipment used by our employees is in good working order. If you become aware of problems with

emergency equipment including damage, defect, or needed repair, notify your supervisor immediately. This will avoid further deterioration of equipment and will help in preventing injuries to our employees.

Fire Safety Inspections

Fire Captains shall follow up and ensure the following is completed on a monthly basis:

1. Inspect and test emergency lighting systems, battery units and lamps.
2. Inspect all portable fire extinguishers (vehicle operators inspect vehicle extinguishers) for:
 - a. Gauge needle within charged indicator.
 - b. Check the seal for leakage.
 - c. Take off bracket and turn upside down and up again.
 - d. Ensure pin and tamper seal is in place.
 - e. Ensure the fire extinguisher is not blocked
 - f. Ensure the fire extinguisher has no dents, rust or other visible damage.
 - g. After checking these things the attached tag shall be signed and dated.

Fire Captains

- Project Supervisor – _____
- Worker Health & Safety Representative - _____

Drills

The Health and Safety Representative and the Management shall conduct evacuation and rescue drills on a regular basis.

A bomb threat sweep shall be practiced on a regular basis.

When drills are held, the Health and Safety Representative shall note any deficiencies. These deficiencies shall be discussed at the next Health and Safety meeting and remedial action shall be developed.

SECTION 10 – ACCIDENT CATEGORIES

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to introduce, identify and explain the categories related to incident or accidents in the workplace. Please be advised responsibilities associated with these categories are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: The following categories of injuries are for your knowledge as each one has specific recording and reporting process as required.

1. **First Aid** refers to treatment for a minor injury that will not require the attention of a doctor or other qualified medical practitioner. Examples may be a minor cut or scrape.
2. **Medical Aid / Health Care** refers to an injury that will require a doctor's attention or the attention of another qualified medical practitioner. These injuries will not result in lost time from work but they must be reported to both the WSIB and the MOL within specified timeframes.
3. **Lost Time Injury** refers to an injury that will result in the injured worker missing one or more days of work, after the date of injury.
4. **Critical or Fatal Injuries** refers to extreme circumstances when a worker is killed or critically injured. A critical injury is any injury that:
 - a) places life in jeopardy,
 - b) produces unconsciousness,
 - c) results in a substantial loss of blood,
 - d) involves the fracture of a leg or arm but not a finger or a toe,
 - e) involves the amputation of a leg, arm hand or foot but not a finger or a toe,
 - f) consists of burns to a major portion of the body, or
 - g) causes loss of sight in an eye.
5. **Incident or Near Miss** refers to an unplanned or unwanted event which, under slightly different circumstances, could have resulted in a Critical or Fatal Injury, Medical Aid or damages through the means of a fire, explosion or failure of a material, equipment, tool or "thing". **All "near-misses" shall be reported to site supervisor.**
 - a) Near-miss stats shall be recorded to provide statistical information for leading trends.
 - b) The stats shall be posted on a monthly basis.
 - c) SWP, Policies & Toolbox talks shall be reviewed & provided for resolutions.
 - d) Supervisors & workers shall report a near-miss immediately after to the office.
6. **Property damage** refers to an accident where an unplanned or unwanted event resulted in the loss of more than \$500 or a production loss of more than one (1) day.
7. **Hazardous Spill** refers to the unwanted or uncontrolled release of a hazardous material or substance into the environment.

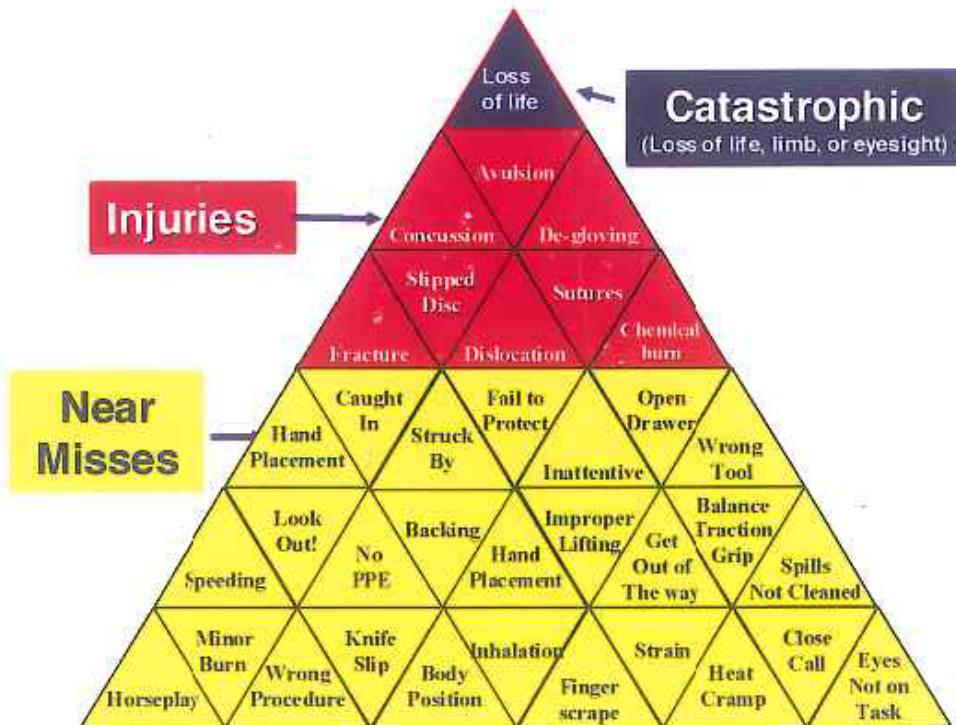
NEAR MISS REPORTING

1. Supervisors & workers shall report a Near-Miss immediately after to the office.
2. **All “near-misses” shall be reported to the site supervisor.**
3. Near-Miss stats shall be recorded to provide statistical information for leading trends.
4. The stats shall be posted on a monthly basis.
5. SWP, Policies & Toolbox talks shall be reviewed, edited & provided for resolutions.
6. When reporting provide:
 - I. Date & Time
 - II. NAL Supervisor?
 - III. Who was involved in the Near Miss?
 - IV. What exactly happened?
 - V. Where did the Near-Miss occur – Project?
 - VI. When did the Near-Miss occur?
 - VII. How did the Near-Miss occur?

What triggers a Near-Miss?

Any situation where a workers' eyes or mind were not on their task or where a worker put themselves into the line of fire of equipment or a vehicle or where someone could have slipped tripped or fallen due to the conditions. Please use the chart below as a reference to trigger a Near-Miss call?

Focus on little things



SECTION 11 – ACCIDENT REPORTING

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to introduce, identify and explain the accident reporting standards in the workplace. Please be advised responsibilities associated with these categories are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: The following categories of injuries are for your knowledge as each one has specific recording and reporting process as required. Any employee or person involved in an Incident or accident as defined by our standards, must report as follows:

1. **First Aid** cases must be immediately reported to your supervisor, or their designate, and they will record the required information in the first aid logbook.
2. **Medical Aid / Health Care** cases must be immediately reported to your supervisor, or their designate. Please ensure prompt medical attention and if required, transportation to a medical facility. If required, get permission from the MOL to initiate an investigation into the causes of the accident. The WSIB and the MOL must be notified within specified time frames.
3. **Lost Time Injury** cases are very serious, as the injured person will require time off work to recuperate. Immediately report the injury to your supervisor in order that they can arrange for prompt medical attention, transportation to a medical facility. If required, get permission from the MOL to initiate an investigation into the causes of the accident. The WSIB and the MOL must be notified within specified timeframes.
4. **Critical or Fatal Injuries** present extremely stressful conditions and must be handled by trained personnel. The WSIB and the MOL must be notified within specified timeframes. If you are first on the scene, the following crisis management steps must be followed:
 1. Call 911 or send someone to call **911** and report the accident,
 2. If qualified to do so, render first aid until help arrives,
 3. Send someone to notify the supervisor immediately, stop all work,
 4. Send someone to guide the ambulance to the scene,
 5. Supervisor to call Human Resources Manager to activate our crisis response,
 6. Stay with the injured person until the ambulance arrives,
 7. Turn the scene over to the supervisor once they have arrived,
 8. Restrict access to the accident scene, (other than Emergency personnel / MOL),
 9. Rope off the accident area for the accident investigation team,
 10. Notify the MOL, Worker Safety Representative, JH&SC and/or union (if any).

Please remember to immediately contact by telephone (1 – 877 – 202 – 0008), telegram or fax, the local office of the Ministry of Labour & within 48 hours notify, in writing, the Ministry of Labour, giving the circumstances of the event.

5. **Incident Reporting** requires that all workers report any Incident to their immediate supervisor. The supervisor shall investigate and resolve the condition as required and advise the worker of those steps. The worker may also advise his/her JH&SC or safety representative member.

Incident with Utility or Property Damage - The following shall take place upon the damage to or severance of a utility or any other property:

- i. Control the scene and prevent further damage to the utility.
 - ii. Notify the Management or supervisor immediately and he/she will notify the appropriate personnel.
 - iii. Take pictures, where appropriate.
 - iv. The supervisor, along with the worker who was involved, shall complete an Accident Investigation Report, attach any other pertinent reports, (i.e. locate sheets, etc.) and hand it in to the office at the end of the shift.
 - v. Notify the MOL in writing within 2 days of the occurrence. Refer to Section 53 of the Occupational Health and Safety Act.
6. **Hazard Reporting** requires that all workers report any hazardous situation, including an unsafe act or condition, to their immediate supervisor. The supervisor shall investigate and resolve the condition as required and advise the worker of those steps. The worker may also advise his/her JH&SC or safety representative member.

SECTION 12 – ACCIDENT INVESTIGATION

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to introduce, identify and explain the accident investigation standards in the workplace. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: The process of investigating any accident, illness reports, fires, explosions, or spills is for the sole purpose of establishing the **root causes** of the occurrence and then implementing corrective action to eliminate or reduce the risk of another like occurrence. It is our standard to investigate every personal injury accident that requires medical attention, any reported occupational illness, major equipment or machine damage, and any Incident with the potential for serious injury or property destruction, including near misses. One of the reasons why we investigate accidents is that reports may need to be sent to the WSIB, MOL, MOE or MOT reporting the circumstances surrounding the occurrence. It is impossible to complete the WSIB and MOL forms without a proper accident investigation into the facts of the case.

Every member of an investigation team shall be trained on fundamental investigation techniques that may be used during the process.

An effective Accident/Incident Investigation Program will methodically examine all undesired events that did or could have resulted in physical harm to people, damage to property, loss in process, or harm to the environment.

Our investigations will establish who was involved, what happened, when it happened, where it happened and (why it happened) causes. In most cases, your immediate supervisor is responsible for conducting the investigation and completing the required Incident report. If an injured worker does not report their accident, we will be unable to file the necessary reports on their behalf. This will also cause our company to request an independent investigation from the WSIB into the reasons why a report was not received.

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

Written statements and pictures of any accident scene will be required along with the site supervisor's findings. Through your cooperation, we will be able to process the required forms and documents on a priority basis. An action plan will be developed from the conclusions of the investigation.

The Management shall analyze all investigations annually, resulting in a plan to minimize the risk of future occurrences. An effective Accident/Incident Reporting and Investigation Program have a number of benefits:

1. Assurance that all accident/incidents will be reported and investigated (i.e. property damage, personal injury/occupational injuries, incidents, fires, explosions, chemical spills etc.).
2. Discovery of underlying or basic causes of accidents/incidents.
3. Reduction of recurrence of similar accidents/incidents.
4. Identification of program needs (i.e. – back care, specific machinery training).
5. Provision of information in case of litigation.
6. Minimization of compensation claims through contribution to overall program improvement.
7. Increase of production time and reduction of operating costs by control of accidental losses.

Executive Responsibility

Executive will become involved in accident investigations in the case of death, serious or critical injury or upon request from the Joint Health and Safety Committee, the Workplace Safety Insurance Board & the Ministry of Labour.

Management Responsibility

Management is responsible for adhering to the Accident/Incident Investigation Standard. The employee's supervisor is responsible for notifying management and cooperatively carrying out an investigation as soon as possible. The "supervisor in charge" of the scene shall work with management to ensure that the injured worker receives first aid treatment and is transported to a hospital or physician (as required) must refer to the WSIB Early & Safe Return to Work Standard.

1. **Have all witnesses provide a signed eyewitness statement.**
2. **Immediately complete the Accident Investigation Report. If an accident investigation is required, complete the report up to but not including the remedial action section and notify the investigation team.**
3. **Participate as a member of the investigation team, if one is required.**

In case of an Incident with at 'critical' injury severity, as per the OH&S Act – Ont. Reg. 714/82, Management shall be contacted immediately.

INVESTIGATION TEAM

The investigation shall be initiated the day of the accident/Incident.

- Management having determined that an accident/Incident investigation is required will immediately contact the investigation team to assist in the investigation of the accident and completion of the report.
- The investigation team will be composed of:
 1. Management,
 2. A member of the Executive or a designate,
 3. An employer and Worker Health & Safety Representative.

SECTION 13 – SUPERVISOR INVESTIGATION

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to introduce, identify and explain the responsibilities as they relate to accident investigation standards in the workplace. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: Our supervisors (or designate) shall investigate all accidents, illness reports, fires, explosions, or spills for the sole purpose of establishing the causes of the occurrence and then implementing corrective action to eliminate or reduce the risk of another like occurrence. Supervisors shall be trained on fundamental investigation techniques that may be used during the process. The steps involved in an investigation are as follows:

1. Ensure first aid or medical attention is provided immediately, as required.
2. Once the person has been safely transported from the site, begin your investigation by noting the time of day, weather conditions, accident location, person(s) involved, witnesses to the accident, machines or equipment involved, and what the worker(s) was doing at the time of the accident.
3. Establish the injured worker(s) name, address, telephone number, occupation, and number of months or years employed by our company for the report.
4. Describe, in writing, the accident scene (or photograph) in detail and proceed to ask questions of all those in the vicinity at the time, including witnesses, and those involved in the Incident. Eyewitness accounts should be recorded in writing and the witness should sign their statement once it is finished.
5. Ask questions - **what** happened, **what else** was going on at the time of the accident, **who** was involved, **when** did the accident happen, **where** did the accident happen?
6. Remember that the investigation is to establish facts and we do not draw any conclusions during the investigation. We are not investigating to establish blame of any individual or individuals. If people are interested in what is being recorded, show them.
7. Any witness statement should be signed by the person giving the statement and if they would like a copy of their statement, provide one.
8. In all cases of serious, critical or fatal injuries, the accident location must be roped off and all workers kept out of the area until the investigation is completed. In these cases the MOL and other emergency personnel will be on scene and the MOL will release the scene once they have finished their investigation. Follow the standards for Critical / Fatal injuries and the steps required.
9. Once your investigation is complete, file it with our main office immediately and keep a copy for your records. Any additional information required will be requested within 24 hours.
10. Each investigation will be reviewed at the next JH&SC meeting.
11. An Accident Report Form should be used for **all** accident investigations.

SECTION 14 - EMERGENCY PROCEDURES

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to introduce, identify and explain the emergency procedures required in the event of an accident in the workplace. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: The emergency procedures and response actions will provide order during a normally confusing emergency situation, including, but not limited to, fire, power failure, gas leak, chemical spill, crime prevention and workplace violence.

Management shall ensure that the emergency contact numbers and directions to the nearest hospital shall be posted in a conspicuous location. The employees trained in First Aid/CPR shall have their names posted alongside the emergency numbers and hospital routes. Prior to any employee and/or visitor entering the facility, the Manager or Supervisor shall train his/her workers in the site emergency procedures and review the locations of the workplace/project's evacuation routes and emergency alarms. Once the individuals are familiar with the routes of access/egress for the facility or project, the executive management team will designate a "Gathering Point".

During an evacuation alarm, this is the point where ALL our employees and/or visitors shall proceed to be head counted and receive any information or instructions regarding the emergency.

A competent worker, or workers, shall be trained in the location and shut down process of specific processes, equipment, hydro, gas, etc. These workers will be responsible for the shutdown of the aforementioned items in the event of an emergency procedure.

All employees and/or visitors sign an acknowledgement form for the emergency procedures. It is the employee's responsibility to review and become aware of the nearest emergency evacuation routes prior to starting work. To ensure the accurate disclosure of appropriate information, all encounters with, or inquiries by outside services shall be coordinated by the site supervisor under guidance of senior management. An outside service may represent the police, fire, ambulance, government inspectors/officials, and the media (newspapers, television). If required, to ensure accuracy of information a designated person, approved by the New Alliance Ltd. executive, shall communicate with the media.

When you hear the fire alarm sound:

1. Exit the building immediately and as safely as possible without running. Do not gather your personal belongings.
2. Exit the building through the closest exit. Any visitors in the building must exit through the nearest exit. If you are entertaining a visitor, you are responsible to ensure they evacuate with you.
3. Once you have exited the building, proceed to the Gathering Point: Shop = End of Driveway.
4. Once you have arrived at your authorized Gathering Point, wait for your manager or supervisor to do a roll call to ensure everyone has successfully evacuated the building:

Duties of Management/Supervisors during an Emergency Evacuation

1. Supervise the orderly evacuation of his/her area to the pre-designated assembly area outside.
2. Report to the Executive that the area is evacuated or not, and the disposition of any handicapped persons who may need assistance.
3. Once outside take attendance of all employees and guests.
4. Do not allow anyone to go back into the building under any circumstances until the Fire Department Contact has given permission to do so.

Additional Duties in the Event of Emergency

1. Take visitor log from reception.
2. Ensure the Fire Department has been contacted.
3. Once outside ensure the attendance has been taken of all employees and guests.
4. Meet arriving fire fighters.
5. Provide them with relevant information about the quantities and nature of materials stored or processed on site.
6. Provide other assistance as required including access keys and codes, etc.

Civil Disobedience, Robbery or Hostage Taking, Disgruntled Customers or Employees

1. The perimeter shall remain enclosed and the facility locked during down time.
2. Police assistance will be engaged when dealing with troubled customers/employees.

Bomb Threats

1. The threatened areas will be evacuated according to the escape routes indicated on floor plans in conspicuous locations throughout the workplace.
2. Upon evacuation, the Fire Captains will do head counts.
3. The method of communicating a bomb threat to other areas is by telephone.

Tornado

1. Imminent threat of tornado will be communicated directly to the supervisor and supervisors
2. All employees will immediately gather in the office and shop washrooms, respectively, where a head count will be taken.
3. Failing access to the washrooms, find an innermost wall to the building you are in, away from windows.

UTILITY (HYDRO & GAS)

1. Utility emergency shall include any Hydro or Gas Emergency.
2. Emergency(s) that include a Utility, the Emergency Evacuation Plan shall be executed.
3. Supervisor shall notify the Utility Company.
4. Supervisor or designate shall confirm activation of the Emergency Evacuation Plan.
5. Supervisor shall contact the employees.
6. All tasks shall be under the direction of the Utility Services.
7. Supervisor shall notify employees of the "all clear" when the Utility Company provides the "all clear".

SECTION 15 - THE MOL/MOE/MOT

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish guidelines when dealing with government agencies (Ministry of Labour – MOL / Ministry of Environment – MOE / Ministry of Transportation – MOT). Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project.

STANDARD: The MOL, MOT and the MOE are charged with the responsibility of enforcing the laws as they pertain to OH&S and the environment. We will always encourage a spirit of cooperation with all government agencies and officials at all times.

These officials have very broad powers when it comes to enforcing the laws. They have the right to inspect any workplace to examine the level of compliance, investigate accidents, attend to work refusals, write and issue orders to comply or issue stop work orders. It is an offence to impede or disrupt a Ministry official in their efforts to perform their duties. Any worker involved in this practice, or failing to cooperate with a ministry official, will be subject to disciplinary action up to and including discharge.

Any orders issued by a ministry official shall be posted in the workplace in such a manner that it will come to the attention of the workers. If we disagree with a decision by the ministry official, do not argue the point but rather raise your concerns with your immediate supervisor for their review. Violations of the laws and/or Regulations can result in fines to the worker, supervisor, and our company.

If an inspector has concerns, they are usually very helpful in pointing out these areas and will offer guidance as to corrective actions to be taken. We view this as a positive step and ask that you provide them with every courtesy at all times.

SECTION 16 - DISCIPLINARY ACTION PLAN

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to introduce, identify and explain the disciplinary action plan standards for the workplace and projects. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: In order to continue with our goal providing an accident free workplace through safety, quality and performance, it is imperative that all individuals employed by our firm **comply** with the standards & safe work procedures provided within this manual, those established by the Occupational Health and Safety Act and applicable Regulations and the standards set out & enforced by our customers.

The primary focus of disciplinary action is to establish that a violation of our program and/or a provincial regulation has occurred. Employees have an **obligation** to themselves, their families, and to New Alliance Ltd. to work **safely** at all times. Please be aware, **complying** with our program is required by law & a **condition of employment**. We cannot, and will not, tolerate violations of this nature as it serves to weaken and diminish our entire health & safety program.

Initial disciplinary action allows a person to understand and hopefully realize that health and safety is essential and is a vital part of our company's operations. Repeated violations indicate the person has little or no regard for our program and as such they will be dealt with in a swift and just manner. These actions also provide a clear commitment to the majority of our other employees who comply with our program each and every day.

All discipline shall be documented using the New Alliance Ltd. Disciplinary Action Form. This form shall be completed for all official disciplinary action provided by an executive or any other management member, herein referred to as a supervisor.

When a supervisor observes an employee in an unsafe condition and/or performing a procedure that is in noncompliance with the New Alliance Ltd. Occupational Health & Safety Manual the following process shall be completed:

1. The supervisor shall stand down the employee, have the employee wait in a safe location until the proper notification process is complete,
2. Notify management & executives, worker's H&S Representative or JH&SC Member,
3. Complete the Disciplinary Action Report Form, preferably, with the aforementioned present,
4. If there is a refusal to acknowledge the form, ensure the witness (H&S Rep.) signature is complete with mention in the Circumstances for Discipline.
5. If for any reason, the Worker Health & Safety Representative cannot be present during the completion of the form, a substitute worker representative shall take the position temporarily.
6. A copy placed in the employee file.
7. Supervisor shall document the event in his/her daily diary.
8. Provide a toolbox talk or retraining for the employee.

SECTION 17 – TYPES OF DISCIPLINE

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to introduce, identify and explain the standards for the types of discipline for the workplace and projects. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: Discipline is required as a corrective action; please use one of the following types.

ZERO TOLERANCE DISCIPLINE

The following circumstances shall be deemed Zero Tolerance infractions. These infractions shall result in the employee being terminated from the company.

- Any action that is a direct cause of an injury or is a blatant disregard for the health & safety of their self, public, or fellow employee,
- Theft of any company asset, equipment or properties,
- Fighting or horseplay during the hours of being employed or on any company property,
- The use or sale of illegal drugs or alcohol on the job,
- The participation in or providing information that leads to the submission of a false/fraudulent Workers Safety and Insurance Board Claim.

PROGRESSIVE DISCIPLINE

New Alliance Ltd. shall administer violations of major health and safety issues, which are immediately threatening to life or health, in a more stringent manner. The following SWP or job tasks are subject to Progressive Disciplinary Action: Fall Protection, Vehicles (Reversing), Lock-out & Tag, Utility Safety (Buried & Overhead), Confined Space and Insubordination.

The Progressive Disciplinary Action shall be administered as follows:

First Offence: **Written warning.**

Second Offence: Offence observed within 12 months of the First Offence shall result in a **seven day suspension** without pay.

Third Offence: Offence observed within 12 months of the Second Offence shall result in the **immediate dismissal**.

STANDARD DISCIPLINE

Disciplinary action will be administered in the following manner.

First Offence: **Verbal warning.**

Second Offence: Offence observed within 12 months of the First Offence shall result in a **written warning.**

Third Offence: Offence observed within 12 months of the Second Offence shall result in a **three day suspension** without pay.

Fourth Offence: Offence observed within 12 months of the Third Offence shall result in the **immediate dismissal**.

SECTION 18 - INSUBORDINATION

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish and communicate some guiding principles related to how New Alliance Ltd. interprets insubordination in the workplace and projects. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box at the workplace or project.

STANDARD:

1. At no time will insubordination be tolerated.
2. All employees are required to listen to and follow the safe instructions of their supervisors, managers, superintendents, and any other personnel that have authority over them.
3. This extends to Ministry of Labour, Ministry of the Environment, Ministry of Transportation, Police, Fire, Ambulance paramedics and clients.
4. An employee is to comply with the standards for refusing unsafe work if an employee believes their safety shall be in jeopardy as result of following instructions.
5. Any employee failing to abide by this standard will be subject to the disciplinary action as set out under Progressive Discipline.

SECTION 19 – WORKPLACE HARASSMENT & VIOLENCE

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of the New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate and promote some guiding principles for a safe working environment for our workplaces and projects that is free from violence, threats of violence, harassment, intimidation and other boisterous conduct. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project.

STANDARD: The New Alliance Ltd. will not tolerate acts of violence as defined above. Violations of this standard will lead to disciplinary action, which may include but is not limited to, dismissal, arrest, and/or prosecution. We reserve the right to respond to any actual or perceived acts of violence in a manner we see fit according to the particular facts and circumstances. Any person who makes substantial threats, exhibits threatening behaviour, or engages in violent acts on the New Alliance Ltd. property will be removed from the premises as quickly as safety permits, and will not be allowed back on the premises pending the outcome of an investigation. If employees engage in violence off the New Alliance Ltd. property but in connection to their employment, they will also not be allowed back on company property pending the outcome of an investigation. Visitation exceptions may be made in the sole discretion of the company to further the investigation or for other reasons deemed necessary.

Please be aware that the OH&SA clearly states that all workers must work in a manner that does not endanger themselves or other workers. No employee shall engage in any prank, contest, feat of strength, unnecessary running or rough and boisterous conduct.

Please be advised that “Boisterous Conduct” shall include any negative action or negative commentary that is unruly, disruptive, and disobedient by an employee about a person, place or thing associated with the organization, subcontractors or its clients.

Workplace Harassment

Workplace harassment is defined as the engaging in a course of vexatious comment or conduct against a worker in a workplace that is known or ought reasonably to be known to be unwelcome. The conduct or comments can occur over a day or over weeks, months or years. The period of time of harassment is irrelevant; harassment is harassment.

Workplace harassment can involve **unwelcome** words or actions that are known or should be known to be offensive, embarrassing, humiliating, or demeaning to a worker or group of workers. It can also include behaviour that intimidates, isolates or even discriminates against the targeted individual(s).

In addition to the definition of Workplace Harassment, Management shall include the following:

- a) Making remarks, jokes or innuendos that demean, ridicule, intimidate or offend;
- b) Displaying or circulating offensive pictures or materials in print or electronic form;
- c) Bullying;
- d) Repeated offensive or intimidating phone calls or e-mails; or
- e) Inappropriate sexual touching, advances, suggestions or requests.

Please be aware, any reasonable action or conduct by the company or a representative of the company that is part of his/her normal work function would not normally be considered workplace harassment. This is the case even if there are sometimes unpleasant consequences for an employee. Examples include changes in work assignments (Unless work is punishment – refer to Work Refusal), scheduling, job assignment and evaluation, workplace inspections, implementation of dress codes and disciplinary action.

Differences of opinion or minor disagreements between co-workers would not generally be considered to be workplace harassment.

In addition, any behaviour that would meet the definition of workplace violence would not be considered to be workplace harassment.

Workplace Violence

Workplace Violence means:

1. The exercise of physical force by a person against a worker, in a workplace, that causes or could cause physical injury to the worker.
2. An attempt to exercise physical force against a worker, in a workplace, that could cause physical injury to the worker.
3. A statement or behaviour that it is reasonable for a worker to interpret as a threat to exercise physical force against the worker, in a workplace, that could cause physical injury to the worker.

On an annual basis the company shall review this standard on workplace violence and assess how the workplace conditions and employees are exposed to the potential violence. A workplace Violence standard is required regardless of the size of the workplace or the number of workers.

If six (6) or more workers are regularly employed at a workplace, this standard shall be in writing and posted in a conspicuous place in the workplace or project. If fewer than six (6) workers are regularly employed at the workplace, this standard does not have to be written, but a Ministry of Labour may order the standard to be in writing.

This workplace violence standard shall be used as a tool to educate employees & document our commitment to providing a workplace free of violence; please refer below where the responsibilities for the company, management, employees, subcontractors, suppliers, and visitors are provided.

For all situations & conditions for Domestic Violence, please refer to the Workplace Violence standards for resolution. In addition to the above, the authorities (Police) shall be contacted during the resolution process for mediation & instruction.

Company/Management Responsibility

1. Executive members, managers, supervisors, foremen or lead-hands shall be included in these responsibilities and shall take every precaution reasonable in the circumstances to ensure compliance, as required.
2. Ensure the Workplace Harassment & Workplace Violence standards have been posted and readily available for every employee, subcontractor, supplier or visitor.
3. Ensure that every employee receives training/orientation with the site-specific measures and procedures to protect him/herself or another person at our workplace or projects.

4. Ensure that a Workplace Harassment & Violence Assessment is performed annually & reviewed monthly with the JH&SC site inspection process.
5. Ensure that all concerns discovered during an assessment or during a JH&SC monthly inspection are resolved with a site specific SWP and communicated through the means of a toolbox talk or training.
6. Ensure that all reports or acts of harassment or violence are investigated as per the Incident/accident investigation standards contained within this manual.
7. Cooperate with & report all acts of violence to the appropriate authorities. The authorities Include but are not limited to the Ministry of Labour & Police.
8. Management will cooperate to the fullest extent legally possible with law enforcement and other appropriate government agencies. In addition, this policy shall be interpreted and applied in accordance with all applicable local, provincial & federal laws.
9. Management shall ensure that every employee, subcontractor or visitor is provided with information, including personal information, related to a risk of workplace violence from a person with a history of violent behaviour. However, this responsibility is limited and applies only when the:
 - a) Worker can be expected to encounter the violent person in the course of his or her work;
 - b) And the Risk of workplace violence is likely to expose the worker to physical injury.
10. Management shall ensure that no more information is provided than is reasonably necessary for the protection of a worker from physical injury.
11. Management shall contact the legal council when a person's right to privacy and a worker's right to be informed of workplace violence risks should be balanced.
12. Management shall ensure to take reasonable precaution in the circumstances when an employee, subcontractor or visitor provides a temporary or permanent order of protection from a court, which lists the workplace or project property as protected areas.
13. Where there is a claim of harassment, and a resolution cannot be found, the company shall cooperate with the Ontario Human Rights Tribunal, grievance arbitration or civil litigation process.

Employee, Subcontractor, Supplier & Visitor Responsibility

1. Every employee, subcontractor, supplier & visitor is responsible for notifying an executive management member of any threats/acts of workplace violence, domestic violence or harassment at the workplace or affecting the workplace, which they have witnessed, received, or heard about from another person.
2. Even without an actual threat/act, report any behaviour at the workplace or affecting the workplace, which they regard as violent or as a safety concern. Every person is responsible for making this report regardless of the relationship between the initiator and the recipient of the violence.

3. Any employee, subcontractor, supplier or visitor who obtains a temporary or permanent order of protection from a court, which lists the workplace or project property as protected areas, must provide the company with a copy of the petition and court order.
4. In addition to #3, the company must be provided with the following information on the abuser: a photograph picture or physical description, description of automobile and license plate number, and any other relevant information needed for the security of the workplace and the employee(s).
5. For any situation where a person is in an emergency situation or in danger of bodily harm while on company property, immediately call the police - 911 and then a supervisor and wait for instructions from your supervisor in charge.
6. If an employee is off company property and you are witness to or have heard rumours about a person who may be in danger of bodily harm - please call the police at 911 and contact your supervisor within a reasonable time and inform him/her of the circumstances.
7. Where there is a claim of harassment and a resolution cannot be found, an employee may be required to participate in the Ontario Human Rights Tribunal, grievance arbitration or civil litigation process.

Notices – Ministry of Labour

When an Incident of workplace violence occurs, New Alliance Ltd. shall notify the police or 911, EMS for immediate assistance. In addition, as per the OH&SA, Regulation 834, management shall ensure that our responsibilities are performed for a fatality or a critical injury.

At a minimum, for a fatality or critical injury from workplace violence, management shall ensure to:

1. Initiate the Emergency Response Plan as per the standards contained with this manual.
2. Immediately notify, by direct means such as a telephone, a Ministry of Labour inspector, the workplace's JH&SC or health & safety representative; and
3. Within forty-eight hours notify, in writing, a director of the Ministry of Labour, providing a report of the circumstances of the occurrence containing such information and particulars as the regulations prescribe.

For a person that requires medical attention or is disabled from performing their usual work from an Incident of workplace violence, management shall ensure to:

1. Initiate the Emergency Response Plan as per the standards contained with this manual.
2. Within four days of the occurrence, prepare a report & give the prescribed information and particulars to the following:
 - a) The Joint Health & Safety Committee and/or the worker health and safety representative.
 - b) The MOL Director, if a MOL inspector requires notification of the Director.

For an Incident of Harassment in the workplace, management shall ensure to:

1. Perform an Incident investigation as per the standards contained with this manual.
2. Within a reasonable time frame provide a report to the Joint Health & Safety Committee and/or the worker health and safety representative.
3. If a resolution cannot be found, it is not the role of the Ministry of Labour inspectors to mediate specific allegations of workplace harassment – the Ontario Human Rights Tribunal, grievance arbitration or civil litigation should handle these.

Workplace & Project Assessments for Violence

1. An assessment of the potential for workplace violence is required for every workplace and project under the control of the company or where an employee is required or instructed to work.
2. When performing an assessment please refer to the lists below for all possible sources, conditions & types of work that must be taken into account.
3. The sources of violence include but are not limited to following:
 - a) Customers,
 - b) Clients,
 - c) Management,
 - d) Supervisors,
 - e) Workers,
 - f) Subcontractors' employees,
 - g) Strangers and/or the public,
 - h) Domestic and/or intimate partners, (family),
 - i) Animals and other wildlife?
4. These the work conditions that may Increase the likelihood of an Incident of violence include, but are not limited to the following:
 - a) Schools and other public facilities,
 - b) Correctional Institutions,
 - c) Working alone,
 - d) Location of workplace or project,
 - e) Remote locations within a workplace or project,
 - f) Accessibility of 911 or emergency services.
5. The types of work may Increase the likelihood of an Incident of violence include, but are not limited to the following:
 - a) Working with or transporting money, things of Increased value or information, etc.,
 - b) Working alone,
 - c) Increased incident of violence around the workplace or project,
 - d) Remote locations within a workplace or project,
 - e) No accessibility to 911 or emergency services by telephone or other means of direct contact.
6. Additional factors that have to be taken into consideration that may Increase the likelihood of an Incident of violence include, but are not limited to the following:
 - a) Was the history of violence associated with the workplace or work?
 - b) Was the history of violence directed at a particular worker or groups of workers?
 - c) How long ago did the Incident(s) of violence occur?
 - d) What measures & procedures are in place in the existing workplace or project?
 - e) What are the potential triggers available that expose a worker to workplace violence?

SECTION 20 - SUBSTANCE ABUSE

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish and communicate our standard for substance abuse in the workplace and projects. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: The protection of our workers and those working around us is of extreme importance. The use of illegal drugs, alcohol or misuse of prescription drugs seriously diminishes our ability to provide a safe and healthy working environment. Any person involved in such conduct jeopardizes not only themselves but also, those working around them. It is for this reason that our standard in this area is very specific and is based on a ZERO tolerance position. The use of illegal drugs, alcohol, or misuse of prescription drugs is forbidden and is grounds for Zero Tolerance Discipline.

We shall reserve the right to request a drug and/or alcohol blood level test in circumstances where there is clear evidence of impairment or if an accident has occurred where these substances could have been a contributing factor. Any worker who appears to be under the influence of these substances while being compensated for their services on the behalf of New Alliance Ltd. will be notified of our observations and (if required) be requested to submit to an approved testing facility for testing.

In addition to the above standards we will also provide assistance to any worker who feels that they may have a substance abuse problem. We will make every attempt to put you in contact with the appropriate treatment facilities and professionals to provide you with the assistance you require. All such requests will be held in strict confidence and we will work with you to assist in your recovery.

The OH&SA clearly states that all workers must work in a manner that does not endanger themselves or other workers. The use of the above substances will be viewed as a direct violation of this obligation.

Fit for Duty

Supervisors will ensure that all workers have the necessary education, experience, and training to perform their job tasks in order to prevent loss and risk.

Workers must arrive on site on time and in appropriate condition to do their job in a safe and effective manner. Supervisors will ensure that workers are educated on the company's policies and procedures. Workers must be physically capable of performing their job tasks.

Workers must notify their supervisor if they are taking prescription medication that may impact their ability to perform their job safely. Over the counter medications such as allergy or cold and flu medications may impair a worker's ability, and should also be reported.

If a worker is determined to be unfit for duty, supervisors must provide reasonable assistance to the worker. This may include, but is not limited to, transferring the worker to another role, providing a leave of absence, or disciplinary action.

SECTION 21 – GENERAL RULES AND PROCEDURES

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish and communicate some of the general rules and procedures in the workplace and projects. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: Employees are provided with rules and procedures relative to the area and type of work they are assigned. The supervisor is to ensure that employees have received and understand the rules and procedures.

General Rules & Procedures

All employees must conduct themselves in a safe and healthy manner. The following rules will serve as a guide to your conduct. ***FAILURE TO COMPLY WITH SAFETY RULES AND REGULATIONS WILL RESULT IN DISCIPLINARY ACTION.***

1. Learn your job. Work safely. If you do not know, ask.
2. Keep informed by updating and reading your health & safety standards manual and bulletin boards.
3. Making and receiving non-emergency personal cell phone calls while operating and working around equipment is distracting and will not be tolerated.
4. No employee shall tamper with or remove any safety-warning device.
5. Know the location of First Aid equipment.
6. Know the locations of fire-fighting equipment and know how to use it.
7. Report the use of any extinguisher to management.
8. A fire extinguisher or fire-fighting equipment must not be used for any purpose other.
9. No object will be placed where it is likely to endanger an employee.
10. Any liquid spilled on the floor of any work place must be immediately removed or covered with an absorbing agent until arrangements can be made for its removal.
11. Where icy conditions exist, pathways and travel ways must be kept sanded.
12. Operation of company vehicles or equipment shall be in compliance with the Highway Traffic Act and company standards.
13. Only authorized persons are permitted to make repairs to equipment. Report any defects to those authorized and qualified.
14. Only those persons specifically authorized to do so may operate power tools and machinery.
15. Baggy, loose fitting clothing or long hair (unless netted or tied) must not be worn while working around moving machinery.
16. All tools used during the work shift must be cleaned and returned to their proper place.

17. All equipment or machinery, which has been shut down and locked out for repairs, shall remain out of service until authorized by management.
18. Treat all electrical equipment as if it were energized.
19. A supervisor shall approve all welding, cutting or burning in the shop or a client's facility.
20. When permitted, only the flint-sparking device is permitted for lighting torches. Disposable lighters are not permitted on the person of anyone using welding, cutting or burning equipment.
21. No worker shall work alone unless the constructor or the client has a representative available.
22. Compressed gas cylinders must be carefully handled with no unnecessary jarring. Cylinders must be stored upright and secured. Protective caps must be in place while cylinders are in storage or during transit of cylinders.
23. Area around oxygen cylinders must be kept free of oil and grease.
24. Pneumatic line must not be used to clean clothing or to dry hands.
25. Do not stand under a suspended load or move a suspended load over anyone.
26. Use the correct tool for each job. Replace tools that are in poor condition (worn, broken, chipped).
27. All chain blocks, slings, ropes and chains used in moving heavy equipment must be thoroughly inspected before use. All lifting devices must be inspected annually.
28. Don't undertake any repairs to electrical equipment while it is energized.
29. Machines must be "shut down" when not in use and all safety guards must be in place before machines are started or used.
30. Do not operate equipment or machinery unless specifically authorized to do so.
31. Obey all posted signed warning of restricted areas such as "Authorized Personnel Only", "No Smoking" etc.

SECTION 22 - JOINT HEALTH & SAFETY COMMITTEE

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to provide a “terms of reference” for the JH&SC and to review the mandate of the committee for this organization. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: The Joint Health & Safety Committee is an essential part of our overall program. The committee concept allows for management and labour (or the workers) to work together in order to identify health and safety issues in our workplace and then improve conditions through their corrective action recommendations. Our company continues to support this concept and will support the committee members in their work.

When required, the committee for New Alliance Ltd. shall consist of one worker member and one management member as result of the number of individuals employed. Each of the members representing employers and members representing workers shall be certified members, as required.

When required, the committee shall meet at least once every 3 months to discuss and review the health and safety issues of concern. The meetings shall be co-chaired by management and labour and minutes of the proceedings shall be kept for review. The meetings shall have a standard format, which includes, but is not limited to, reviewing the minutes of the previous meeting, reviewing and discussing each agenda topic, and providing recommendations when necessary. All meetings will commence when a quorum is achieved, which consists of two members, one of which is a worker representative and one of which is a management representative. All recommendations for corrective action from the committee should be forwarded in writing to management for review and disposition. It is the company's intention to respond to all recommendations in an effort to expedite health and safety concerns on a priority basis.

Committee members representing workers shall be selected by the workers or by the trade union if represented by a union. The committee shall have an equal number of management and labour members at all times. If, for any reason, a member of the committee ceases to be a member of the JH&SC, they shall be replaced as soon as possible. In the event that an accident or Incident investigation is required, a member of the committee may be party to the investigation.

A JH&SC member representing workers shall inspect the physical condition of the workplace at least once a month, or if not practical to do so, shall inspect a part of the workplace each month so that during a 12 month period the entire workplace is inspected.

The JH&SC shall identify hazardous situations, make recommendations to the employer and the workers for the improvement of the health and safety of the workers, be consulted about and have a designated member representing workers be present during the conducting of any test for the purpose of health and safety and to obtain information from the employer regarding various health and safety issues. All members of the JH&SC shall receive training annually on safety – specific issues relevant to the company's operation.

SECTION 23 – WORKER HEALTH & SAFETY REPRESENTATIVE

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to provide a “terms of reference” for the Worker Health & Safety Representative and to review the mandate of the position within this organization. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: The Worker Health & Safety Representative is an essential member of our health & safety program. Management shall ensure that a proactive approach to health & safety is provided for the worker representative in order to help identify health and safety issues and improve conditions through their corrective action recommendations.

Management Responsibility

1. Manager shall ensure that the worker health and safety representative is selected, elected and approved by the employees he/she is representing.
2. Manager shall ensure that the representative is included in the process of the application of this manual.
3. The name and work location of the worker health and safety representative shall be posted.
4. The worker health and safety representative shall receive training in order to carry out his/her required duties.
5. Manager will respond to all recommendations provided in writing within 21 days with:
 - timetable for implementation if the employer agrees with the recommendation,
 - reasons for disagreement if the recommendation is not acceptable,
 - alternative resolution(s) with timetable for implementation if the recommendation is not acceptable.

Meetings and Minutes

1. Meetings of the health and safety representative and the employer will take place as deemed necessary by either or both.
2. Written minutes of the meeting are to be taken, outlining the following:
 - (a) date, time and location of the meeting held
 - (b) names of attendees and other persons present
 - (c) itemized record of all items discussed and the outcome
 - reports presented and by whom
 - problems identified
 - agreed upon recommendations
 - actions to be taken by individual members
 - discussion with respect to the above
 - (d) Minutes are to be signed by the employer and health and safety representative, with one copy:
 - posted in the workplace
 - maintained on file by both parties

General

1. Follow the guidelines outlined in the *Occupational Health and Safety Act*.
2. Develop, publish and post, at the beginning of each calendar year, a schedule for the monthly health and safety workplace inspections.
3. Workplace inspections will be conducted monthly and all substandard acts and working conditions will be documented and provided to management for a resolution.
4. Review all completed Employee Injury/Incident/Property Damage Reports, analyze information and make recommendations to management to reduce recurrences.
5. Participate with management in the investigation process for all fatalities, injuries and incident.
6. All written recommendations shall include but are not limited to:
 - a) the time, date, location, nature of concern with background information and justification,
 - b) recommended remedial action, suggested solutions and methods of implementation.
7. Encourage fellow employees to work safely and to report hazardous or unsafe conditions immediately to their supervisors.
8. Identify areas of health and safety training for all employees.
9. Be present for, or assist in work refusal investigations.
10. Be available to accompany a Ministry of Labour officer on his/her inspection tour of the workplace.

SECTION 24 - EMPLOYEE WORK REFUSAL

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate and review the principles of the right to refuse unsafe work. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box at the workplace or project vehicle.

STANDARD: A work refusal, for safety reasons, is viewed by our firm as a positive effort to bring to our attention an issue that could pose a serious safety threat. It allows us to collectively review the circumstances and take the appropriate action to resolve the problem.

If any worker has **reason to believe** that their safety is in jeopardy they should advise the site supervisor immediately of the concerns and refuse to work. If the site supervisor corrects the concerns the employee shall return to work. The site supervisor must notify management and the JH&SC or worker safety representative immediately of any work refusal and provide a description of the circumstances involved. An investigation into the refusal shall be conducted with the worker, Worker Health & Safety representative and management to establish the facts involved. If, after consulting with the above noted participants, the supervisor asks you to return to work and you feel that you have **reasonable grounds** to believe that your safety is still in jeopardy, you should again advise the site supervisor of your refusal to work.

At this point the company will make the necessary calls to the MOL. The worker who refused the work will be given alternative work until the MOL inspector arrives. No disciplinary action or other actions will be taken against any employee who has a legitimate concern over their health and safety and exercises their right to refuse.

Copies of all investigation notes and statements will be provided to the JH&SC for review and discussion. The company will also track all refusals in order to identify any trends or common issues, which need attention. Specific information on work refusals can be found in the OH&SA.

Work Stoppage

If a worker thinks a dangerous circumstance exists, they shall report it immediately to a supervisor or JHSC worker member.

Dangerous circumstances are:

1. The act or regulations are being contravened.
2. The contravention poses a danger or hazard to the worker.
3. The danger or hazard is such that any delay in controlling it may seriously endanger a worker.

All of the above shall apply to be considered dangerous circumstances. A Work Stoppage Report shall be completed.

SECTION 25 - HEALTH & SAFETY INSPECTIONS

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate and provide an outline of company health and safety inspection practices and conditions that will be reviewed on an ongoing basis. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicles.

STANDARD: Workplace safety inspections are conducted to establish what conditions and practices are acceptable and what conditions and practices need attention. The site supervisor (or competent designate) shall perform the inspections on a weekly basis. Either the Safety Representative, or the JH&SC, shall conduct an inspection on a monthly basis as required by the OH&SA. The inspections shall be in a checklist format and will include a classification system of hazards for loss potential. In addition to these inspections, a formalized Health & Safety audit shall be performed on a monthly basis of our workplace to ensure that all health and safety requirements are being observed. All inspection reports will be forwarded to the Executive and the office for review and ensure that all hazards have been acted upon and a plan has been developed to reduce future potential hazards.

The inspection process involves observation and education whereby we identify the issues and then educate our workers as to the required standards. In circumstances where workers violate known health and safety standards, we will have no other alternative but to discipline the worker(s) involved.

Safety inspections should review, as a minimum, the following issues:

1. Equipment condition, operator manuals, operator training and maintenance records,
2. PPE availability and proper use,
3. Administrative materials, (such as WHMIS, Form 82, a copy of OH&SA posted)
4. Are safe working procedures being followed?
5. Physical condition of the work areas, access and egress routes for clear pathways to and from work areas,
6. Hand tools, extension cords, and cord-connected tools condition,
7. General housekeeping and hygiene conditions,
8. Worker training records, notice boards, JH&SC minutes posted etc.
9. All site emergency plans.

SECTION 26 – TOOL BOX MEETINGS

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to review the basic principles of the Toolbox Meetings and the minimum requirements for a good communication program in the workplace. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicles.

STANDARD: The Toolbox Meeting is an important part of our organizations safety program. The toolbox meetings shall be used to promote safety, identify and/or control hazards, review rules and discuss work methods/procedures. Management shall arrange these meetings and attendance is mandatory for all site employees of the organization.

The site supervisor or designate must conduct regular toolbox meetings with assigned crews and record the minutes of the meetings on an Acknowledgement Form. All employees shall sign a roster to acknowledge the meeting. The minutes will be filed on site with a copy forwarded to the office.

The record should indicate the date and time of the meeting, all those in attendance, and the topics discussed and any plans for action agreed on. The topics should relate to the specifics of the work on site and any safety precautions that are required for the work. When providing a toolbox talk, please refer to the New Alliance Ltd. Safety, Health & Environmental Manual or materials from the Construction, Industrial & Electrical Safety Associations of Ontario as a guide on applicable rules or regulations.

SECTION 27 – PERSONAL HYGIENE

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate and review the basic principles of personal hygiene and the minimum requirements in the workplace. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: A fresh supply of clean potable drinking water must be available at a workplace with a sanitary means of drinking the water. A common drinking cup is NOT to be used at any time. Toilet and washroom facilities are to be kept clean and sanitary and we require all workers to ensure they respect the goal of keeping these facilities clean. A record of the cleaning and maintenance of these facilities should also be kept and be available. Separate toilet and wash-up facilities will be provided for male and female workers.

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

If at any time you get a foreign object or substance in your eye(s) seek first aid assistance immediately. For a splash in one or both of your eyes, flush the eye(s) with water for at least ten minutes prior to seeking further assistance. A portable eyewash station should be available if there are no permanent facilities on site.

As stated, we ask all employees to respect the facilities and keep them as clean as possible at all times. If any toilet and/or wash-up facility are found in an unclean or unhygienic manner, please report this to your immediate supervisor as soon as possible.

SHARPS RECOVERY AND WASTE DISPOSAL PROGRAM

The purpose is to prevent transmission of infectious diseases and to establish safe handling and disposal of all bio hazardous wastes. Management is to ensure that when handling any material that may pose a potential risk, a worker performs the following Handling Procedure:

1. Put on disposable gloves (latex, vinyl, etc.) that are free from defect or damage.
2. Using recovery equipment, pick up the waste and deposit it into a sharps container or plastic bag.
3. Remove gloves by pulling them off inside out and place the contaminated gloves into the sharps container or plastic bag.
4. Properly close the sharps container or bag.
5. Properly disinfect recovery equipment (use a 10:1 ratio of sodium hypochlorite and water).
6. Container shall be given to your supervisor at the end of your shift.
7. Supervisor shall dispose of the waste accordingly in a proper container - Biohazardous label on it.
8. Workers shall receive site-specific WHMIS training (Biohazardous Materials – Class D3).

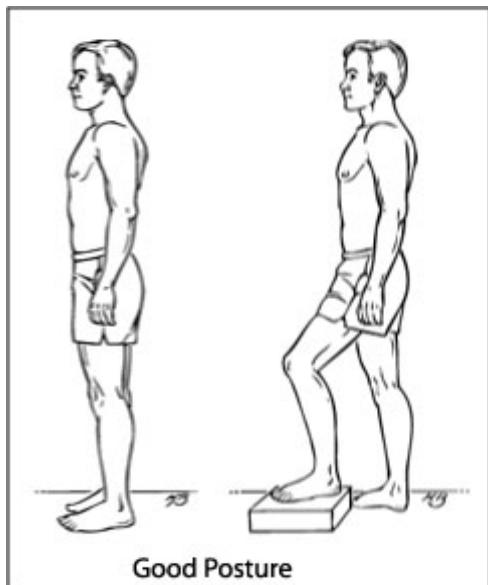
SECTION 28 – BACK INJURY PREVENTION & AWARENESS

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish and communicate some guiding principles for back prevention and awareness in order to avoid and prevent back injuries in the workplace.

STANDARD: Nearly 25% of the lost time injuries in construction are related to the back. More than half of these injuries result from lifting excessive weight or lifting incorrectly. In more than half of these injuries result from lifting excessive weight or lifting incorrectly. In order to reduce injury, this standard will serve as education on proper back care and awareness.

POSTURE: Correct posture is not an erect, military pose. It means maintaining the naturally occurring curves in the spine. Keeping your spine aligned in this manner reduces everyday stresses on your back and minimizes the effects of the normal aging process on the spine.



A healthy back has 3 natural front-to-back curves that give the spine an "S" shape. While there is much natural variation from person to person, too much curve ("swayback") or too little curve ("flat back") can result in problems. The right amount of curve is called the neutral position.

Proper posture includes standing and sitting in an upright position without slouching, rounding of the shoulders or accentuating the natural curves of the spine. Poor posture typically involves holding the head too far forward or allowing the belly to pull the back forward. If possible, get in the habit of holding in the belly to keep it from protruding and putting excess force on the spine. When standing, bend your knees slightly. Years of poor posture can lead to weakened spine and abdominal muscles that contribute to back pain and injury.

Keeping your spine aligned in this manner reduces everyday stresses on your back and minimizes the effects of the normal aging process on the spine.

When working in a crouched, bent, or stooping position for prolonged periods, take regular breaks by standing up and bending backwards three times.

When working overhead in an arched position for prolonged periods, take regular breaks by returning to stable footing and bending forward three times.

MATERIALS HANDLING:

Push rather than pull.

Pushing allows you to maintain the normal curves in your back.

Weight transfer

Pull the object toward you while transferring your weight to the lift side. Lift only to the level required. Shift your weight to your other leg while pushing object into position.

Carrying on Stairs

Use your stomach muscles to help support and protect your back. If possible, the tallest and/or strongest person should be at the bottom of the load.

Balance

Avoid one-handed carrying if possible. Try to distribute the weight evenly on each side. If you can't avoid one-handed carrying, such as with a single pail, hold the free arm either straight out or on your hip as a counterbalance.

Mechanical Help

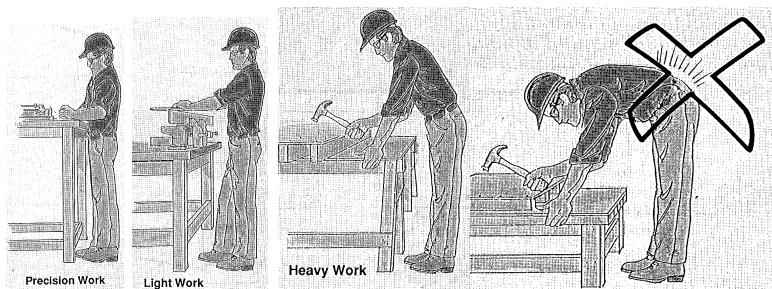
Use a cart or dolly for transporting tools and equipment wherever possible. Consider using pallets where surface conditions allow. Rolling frame scaffolds may be useful for moving heavy objects such as motors or drives where other devices such as forklifts are not available. Wheelbarrows with dual wheels are a great improvement over single wheels. Better balance and Increase flotation over soft ground make wheeling easier on the back. Lift tables with casters for heavy components can be helpful. These tables are light, carry loads of several hundred pounds, and have adjustable heights from one to several feet.

Lifting

Your back can manage most lifts – if you lift correctly. See the correct lifting techniques refer to the section of lifting.

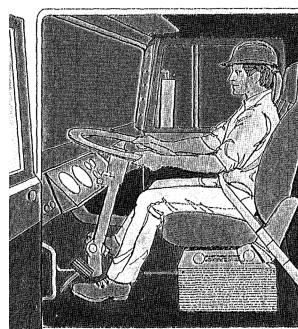
Benches

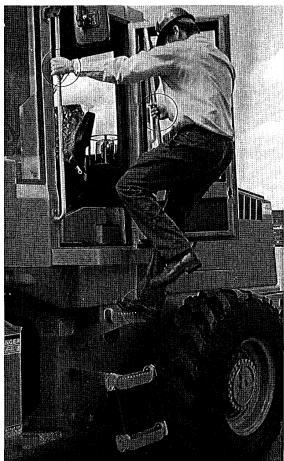
For bench work the right height is vital to reduce the risk of back injury and pain. Ideally the bench should keep work between waist and shoulder height.



EQUIPMENT

- People who operate equipment over any terrain or facility sites are prone to low back problems.
- Practice good sitting posture by maintaining the natural curve in your lower back. If necessary, use a roll or cushion between your back and the seat.
- Avoid sitting in one position for long periods. Change position by arching your back to reduce muscle tension.





3-Point Contact

- Operators and mechanics working on heavy equipment should dismount safely.
- Never jump down from equipment. This causes shock loads on the spine and can lead to injury.
- Always face the ladder or access equipment and use 3-point contact when climbing up or down. That means two hands and one foot or two feet and one hand must be on the equipment at all times.

PREVENTION:

Most work strengthens some muscles while others become shorter and weaker, creating a muscle imbalance. A regular exercise program can help to prevent this from happening.

Warm-up

This is a general exercise program only. Before starting any exercise program, consult your doctor. If you have any concerns or experience any pain while doing the exercises, stop and consult your doctor.

1. March in Place.

Start by standing in position and pump arms and legs in opposite direction making sure heels contact the ground.

2. Arm Circles

Start by standing with arms raised horizontally and slightly in front of shoulders, palms down and feet shoulder width apart. Rotate arms in forward circular motion for 15-30 seconds. Relax and repeat 3-5 times.

3. Knees to Chest

Start by supporting yourself securely with one hand. Pull your knee toward your chest and grasp around your knee with your free hand. Hold the stretch for 30 seconds. Lower your leg to the ground and repeat with the other leg. Repeat three times for each leg.

4. Hip Stretch

Start by standing with one foot in front of the other. Place hands above the knee of the front leg. Gently bend front knee, keeping back foot flat on the floor. Hold 20-30 seconds. Repeat with other leg three times for each leg.

5. Thigh Stretch

Start by supporting yourself with one hand on something secure. Bend your leg back and grasp your ankle with your free hand. Gently pull your ankle toward your body, keeping your trunk straight. Hold 20 to 30 seconds. Repeat 3 times each leg.

6. Calf Stretch

Start by standing slightly away from a solid support. Lean on the object with your outstretched hands. Bend the forward leg and place the other leg straight behind you. Slowly move your hips forward, keeping the heel of the back leg on the ground. Hold 30 seconds, relax and repeat with the other leg 3 times.

7. Hamstring Stretch

Start by placing the back of your heel on a platform at a comfortable height. Bend your supporting leg slightly. Looking straight ahead, slowly bend forward at the hips until you feel a good stretch at the back of the raised leg. Hold 30 seconds and repeat with other leg. Repeat 3 times for each leg.

Remember – practicing the principles of proper back care will help to prevent or minimize back problems. Follow these rules for good back health.

1. **WARM UP** – before you start work.
2. **TONE UP** – with a good exercise program.
3. **SIZE UP** – the load. Don't lift more than you can safely handle.
4. **WISE UP** – by using good lifting techniques and materials handling equipment.

SECTION 29 – MATERIAL MOVEMENT

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish and communicate some guiding principles for a proactive approach to the various ways to manually or mechanically moving, storing and packing materials.

STANDARD: All material movement activities must be performed in safe manner in order to reduce and prevent injury.

LIFTING: Improper lifting technique can lead to back, leg and arm pain. Poor technique can cause both acute injury, and serious chronic effects. Learning the right way to lift will help you avoid these problems.

1. Always size up the load to be handled

- Look at what you are about to lift and if necessary, move it from side to side, forward and backward to gauge the object's weight.
- Can you handle it safely by yourself or do you need help?
- Knowing what you're doing and where you're going will prevent you from making awkward movements while holding something heavy.
- Clear a path, and if lifting something with another person, make sure both of you agree on the plan.



2. Establish a firm footing to ensure the best possible balance and stable lifting base.

- Stand with your feet apart, at about the same width as your shoulders.
- Stand with one foot in front slightly in front of the other.



3. When preparing for the lift, remember to keep your back as straight and upright as possible.

- When preparing to lift anything, keep your back perpendicular to the ground, not horizontal.



4. Always bend at your knees, not at your waist.

- Slowly lower yourself using only your legs.
- Remember to keep your back as straight as possible all the way down.
- A solid base of support is important while lifting. Holding your feet too close together will be unstable, too far apart will hinder movement.
- Keep the feet about shoulder width apart and take short steps.



5. As you begin to lift, tighten your stomach muscles and lift with your legs, not your back.

- Let your leg muscles do all the work.
- Your leg muscles are much stronger than your weaker back muscles.
- You will be a stronger and more stable lifter if the object is held close to your body rather than at the end of your reach.
- Make sure you have a firm hold on the object you are lifting, and keep it balanced close to your body.
- Tightening your abdominal muscles will hold your back in a good lifting position and will help prevent excessive force on the spine.



6. Always keep your load as close as possible to your body.

- When you have to turn, turn with your feet first, and let your body follow.
- Never turn by twisting your body.
- If an object is too heavy, or awkward in shape, make sure you have someone around who can help you lift.
- Looking slightly upwards will help you maintain a better position of the spine.

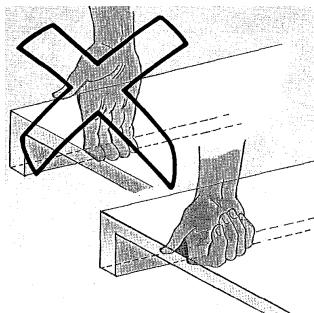

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Two-person lift

Lifters should be of similar height. Before starting they should decide on lifting strategy and who will take charge.

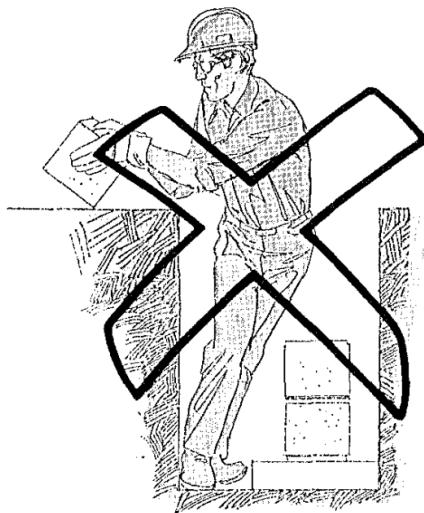
For a two-person lift of a long load, the lifter who takes charge must see that the load is carried on the same side, with a clear line of vision.

Begin by lifting load from ground to waist height. Then lift the load from waist to shoulder.



Lifting Grip

To ensure solid contact when lifting heavy objects, use your entire palm, not just your fingertips.

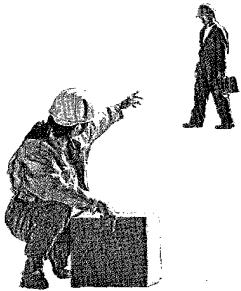


Twisting

Repeated twisting of the lower back during lifting or shovelling is a common mistake. It can contribute to lower back pain and disability. Instead lift your feet and turn your body as noted below.



Lift

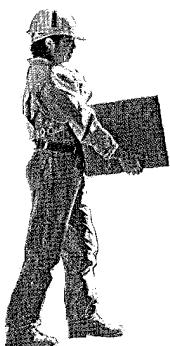


Size up the load and make sure your path is clear.

Get help with heavy lifts and use materials handling equipment when necessary.

Use a wide, balanced stance with one foot slightly ahead of the other. Get as close to the load as possible. Tighten your stomach muscles as the lift begins.

Carry

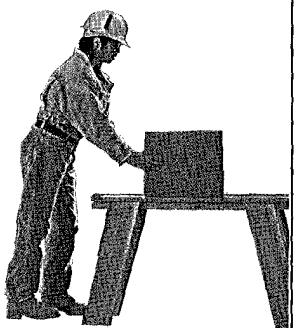


Keep your lower back in its normal arched position and use your legs to lift.

Maintain a good grip and keep the load close to your body.

Maintain a clear line of vision. Pick up your feet to turn. Do not twist.

Unload



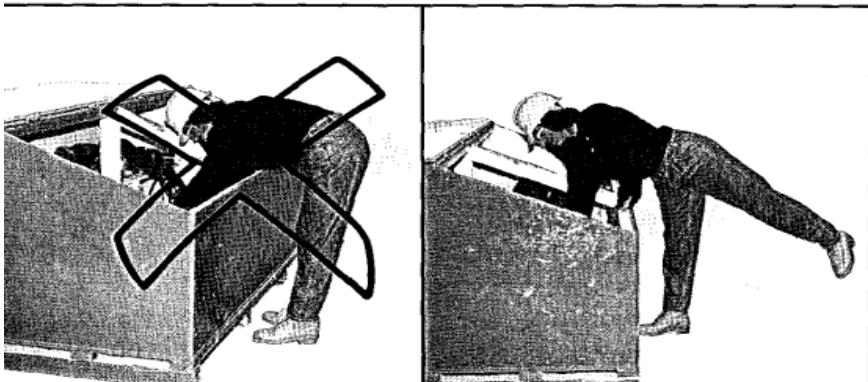
Lower the load, maintaining the natural curve of your back.

When lowering a load onto a deep shelf, put it on the edge of the shelf.

Push the load into place.

Lifting Over Barriers

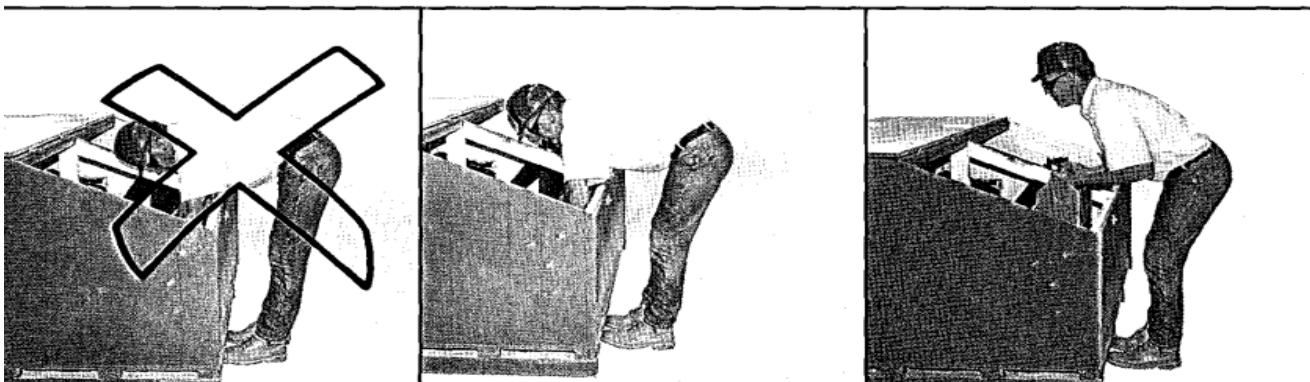
Many back injuries result from repeated use of poor lifting techniques. Often a simple change in how we use our body to perform routine tasks can prevent back injuries and make work easier at the same time.



Lifting with the back rounded and knees straight places great stress on the spine, making the lower back more susceptible to injuries.

Use the golfer's lift for lighter objects in containers or behind barriers. Place one hand on a support, swing one leg behind as you reach, then push up on your hand and straighten up.

Ergonomically designed gang boxes with doors that open in front like a cupboard can make the storage and removal of equipment easier. Heavy items should be shelved at waist height for safer handling.

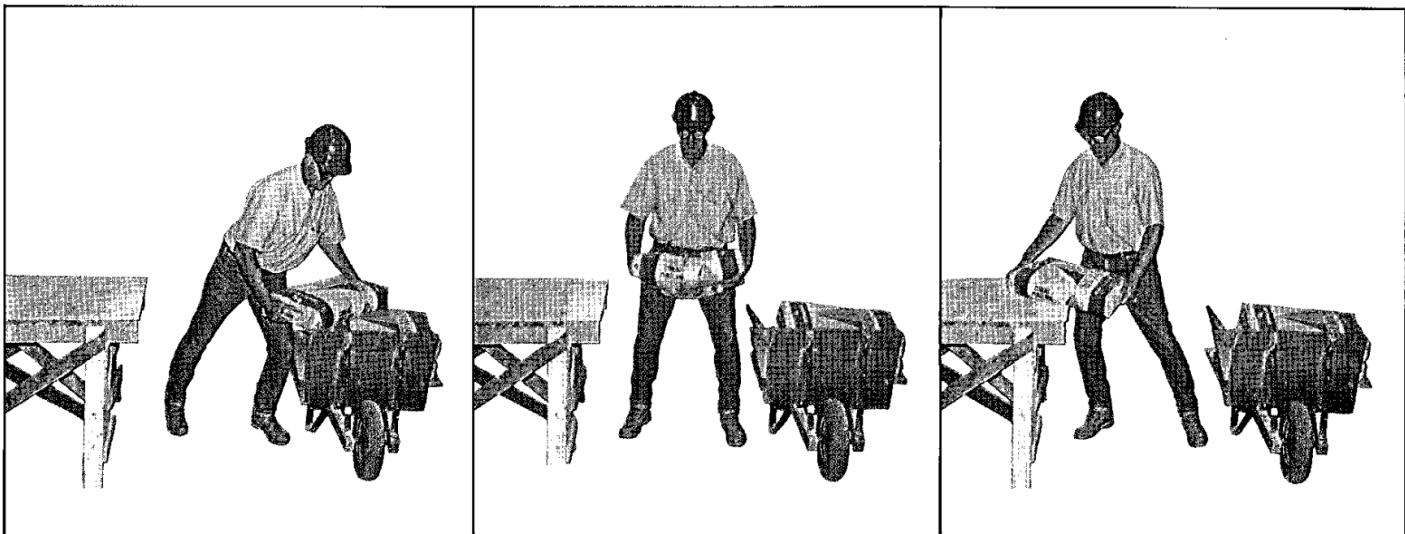


For two-handed lifts over a barrier, reduce stress on the spine by avoiding the back-rounding shown above.

When heavier objects require two hands for an over-barrier lift, move close to the object, then bend at the hips while keeping your back in the normal arched position.

Get a sure grip, then lift, allowing the muscles at the back of your legs to do the work. When lifting, keep your head up and lower back in its normal arch until you're standing upright again.

Transferring Weight



Pull the object towards you while transferring your weight to the lift side.

Lift only to the level required.

Shift your weight to the other leg while pushing the object into position. Do not twist.

Lifting Heavy Bags



Put one knee down against bag.

Pull bag up leg.

Rest bag on edge of knee.

Stand upright.

Pull bag to waist height.

MANUAL PUMP TRUCKS

Many back injuries are a result of lifting heavy or awkward loads. They can sometimes be prevented simply by using a pump truck. Refer to the following when loading a pump truck:

1. Become familiar with the pump truck prior to using for the first time, read the operator manual.
2. Ensure to perform a pre-trip inspection, look for signs of damage, cracks or unusual wear.

3. Never use the equipment if any damage, cracks or unusual wear is found.
4. Report any damage, crack or unusual wear immediately to your supervisor. Return the equipment to the Maintenance Dept. with a “Danger Tag” on the handle of the equipment.
5. Follow proper lifting techniques to place the load on the pump truck.
6. Place the heaviest objects on the bottom and do not overload the equipment.
7. Position the load so it rests on the axles so the weight will be carried by the two forks and not the handles.
8. Make sure the load is centred so will not slip, shift or fall. This may require securing it to the pump truck.
9. Move forward by pulling and not pushing the pump truck. If you're going down a slope, keep the load in front of you. If you're going up, keep it behind you.
10. Move slowly and cautiously.
11. Make sure you can see over and around the load. Use a signaller (guide) to help move the load if your visibility is reduced by the load.



Powered Hand Trucks

In addition to the standards listed above with the manual pump trucks, please refer to the following for every powered Hand Truck owned, leased or used by an employee or contractor within our facility.

1. Never operate a powered truck with wet or greasy hands.
2. Always keep a hand on the handle and face the direction of travel.
3. Stay alert for pedestrians and obstructions.
4. Stop at intersections to avoid collisions.
5. Never ride or permit others to ride on the truck.
6. Move chemicals only if they are in approved containers.

MATERIAL STORAGE SYSTEMS

Refer to the following standards for the requirements for any material storage system used by any employee or subcontractor within the company's facility.

1. The following shall be included in the definition of a “material storage system” within any New Alliance Ltd. facility: Racking, Shelving, Container or Storage System.
2. All material storage systems shall be engineered and capable of supporting all loads it may be subjected to.
3. All material storage system shall be erected and used as per the manufacturers' specifications and instructions.
4. All material storage systems shall be erected under the supervision of a competent person or a designate of the material storage system manufacturer.
5. All material storage systems shall be inspected as required by a competent person or a designate for damage, cracks or unusual wear or tear.

6. All inspections shall be documented and shall be forwarded to management to be kept on file.
7. Do not use a damaged, cracked or unusually worn material storage system.
8. Every employee or contractor shall visually check the material storage system prior to loading/unloading.
9. Stack all materials on a flat base.
10. Place heavier objects close to the floor, lighter/smaller objects higher.
11. No load shall be stored on any material storage system within **3 feet** of any fire prevention sprinkler, energized pipe, conduit or light.
12. Use material handling equipment to load or unload items above your head. Do not stand on a shelf, rack, box or a chair to manually move material.
13. Every skid or pallet shall be visually inspected for damage or unusual wear & tear. Do not use damaged skids or pallets.
14. Stack/store all empty skids or pallets in the designated area in the flat position, not upright.
15. Do not drop or walk on empty skids or pallets; it could weaken them.
16. Ensure pallets are not stored or stacked where they can become a slip, trip or fall hazard.
17. Do not store or stack a skid or pallet anywhere in an aisle.
18. Post a sign warning of all overhead hazards with the material storage.
19. No employee, contractor or visitor shall be within **10 feet** of any material being raised or lowered over their head, by any tool, machine, device or thing unless protected by a protection device engineered for the loads they may be subjected to.

TOOLS, MACHINES OR DEVICES: Please refer to the following standards for the requirements for any tool, machine or device used to prepare a material in the material movement process. All employees & subcontractors using any tool, machine or device to prepare or store a material to or from a material storage system area shall comply with the following:

1. All tools, machines or devices used in overhead work shall be secured in a manner to prevent free falling to the ground.
2. All tools, machines or devices shall be inspected, operated and maintained as per the manufacturers' specifications.
3. All tools, machines or devices shall not be used if damaged, cracked or unusually worn.
4. All tools, machines or devices shall be de-energized and locked-out prior to any maintenance.
5. When using a knife always ensure that the blade is positioned to cut away from your body.
6. Always wear heavy gloves and goggles when steel blade strapping is removed or installed.
7. Do not lift a box by the strap unless it is designed for that purpose.
8. When you remove the straps, use one hand to hold down the strapping and one to cut. Make sure that the sharp strapping end will go away from you when you cut. Once the straps are cut, place them immediately in a trash container.

SECTION 30 – FORKLIFT

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish and communicate some guiding principles for a proactive approach to the various ways to mechanically moving materials with a forklift.

STANDARD: All material movement activities must be performed in safe manner in order to reduce and prevent injury.

Only licensed employees are permitted to operate motorized equipment - forklift. Certificates shall be posted in visible areas of the warehouse and wallet size certificates for forklift certifications are required to be carried at all times in the workplace. Operating any motorized equipment without a license will result in immediate Progressive Disciplinary Action.

Circle Check

All lift trucks operating in Ontario must be safety certified. The circle check inspection is conducted before every work shift by lift truck operators or a designated person. It is the ultimate responsibility of the supervisor to ensure employees complete their circle check. The circle check is designed to identify an unsafe lift truck and to spot small problems before they become hazards. A mechanically unsafe lift truck must be tagged unsafe and locked out.

Inspection Points

Do not use a forklift if any of the following conditions exist:

1. The mast has broken or cracked weld-points.
2. The roller tracks are not greased or the chains are not free to travel.
3. Forks are unequally spaced or cracks exist along the blade or at the heels.
4. Hydraulic fluid levels are low.
5. Hydraulic line and fitting have excessive wear or are crimped.
6. Fluid is leaking from the lift or the tilt cylinders.
7. The hardware on the cylinders is loose.
8. Tires are excessively worn, split or have missing tire material.
9. Air filled tires are not filled to the operating pressure indicated on the tire.
10. Batteries have cracks or holes, uncapped cells, frayed cables, broken cable insulation, loose connections or clogged vent caps.
11. Check that the harness and lanyard are in good condition for any machine that lifts off the ground.

Forklift Employee Safety

1. Only the lift truck operator is allowed on the lift truck. Other employees shall not be permitted to ride on the side or back, stand on a pallet being transported or to stand on the forks.
2. Operators shall use the operator restraint (seatbelt, harness, etc.) provided by the manufacturer at all times while operating the lift truck.
3. All personnel shall keep their arms, hands, legs or feet clear of areas between the uprights of the mast, outside the running lines of the lift truck, from moving parts and within the confines of the overhead guard supports or lift cage/ platform.
4. No person shall be allowed to stand or pass under the elevated portion of any lift truck, whether loaded or empty.
5. Lift trucks shall not be driven up to anyone standing in front of a bench or other fixed object.
6. No operator shall engage in any activity involving the use of hands other than those required to operate the vehicle. This includes, but is not limited to: eating, drinking, smoking, reading, etc.
7. No operator shall wear radio headsets, carry or listen to audio devices such as radios and/or MP3 audio devices, wear headsets or use cellular phones or portable radios except that equipment issued by the organization for safety or communication.

Forklift Traveling

Operators are responsible for the safe operation of the lift truck. Stunt driving and horseplay shall not be permitted. Operators will adhere to the following while traveling with a lift truck:

1. Ensure that there is always sufficient clearance under doorways and overhead installations such as lights, pipes, sprinkler systems, fire alarm systems, etc.
2. Operate the lift truck at a speed that will permit it to be brought to a stop in a safe manner.
3. Reduce speed and sound horn while negotiating turns. Start the turn by turning the steering wheel in a smooth, sweeping motion. Avoid sudden moves that can cause objects to fall off the load or make the truck tip over.
4. Avoid holes, bumps, wet spots, obstacles, quick starts and stops.
5. Always yield to pedestrians.
6. Do not pass pedestrians in congested areas.
7. Sound your horn when approaching pedestrians.
8. Do not pass trucks traveling in the same direction, from their blind spots or other dangerous locations.
9. Slow down and sound the horn at cross aisles and other locations where vision is obstructed.
10. Scan from side-to-side while looking in the direction of travel. Travel with the load trailing whenever the load obstructs the operator's view.

11. Ascend and descend grades slowly. Use the following tilt rules when ascending or descending grades in excess of 10 percent: loaded trucks shall be driven with the load upgrade. When empty, grades should be taken with the load engaging means (forks) downgrade. On all grades the load and load engaging means shall be kept straight or slightly tilted back and raised only as far as necessary to clear the floor.
12. Never turn on an incline greater than 10 percent.
13. Cross-dock boards and bridge plates slowly and never exceed their rated capacity.
14. Avoid running over loose objects on the roadway surface. Stop and pick the objects up.
15. Never travel side by side and always keep three truck lengths apart when following other lift trucks.
16. Keep the load low while traveling.
17. Do not leave the controls with a load in the raised position.
18. Always turn off the machine prior to leaving the controls
19. Beware of rear end swing steering. Always maintain the appropriate distance to clear objects.
20. Always stay well clear from the edges of loading docks, ramps and other elevated surfaces or drop-offs.

Forklift Loading

1. All loads shall be on firm level ground
2. Only loads within the rated capacity of the truck shall be lifted. Load capacity shall be adjusted for long or high (multi-tiered) loads.
3. Only stable and safely arranged loads shall be lifted. The lift truck operator shall take steps to stabilize unstable loads through the use of shrink-wrapping, banding or other means. Extreme caution shall be exercised when handling off-centre loads that cannot be centered.
4. The forks shall be placed under the load as far as possible; the mast shall be maintained straight up or tilted slightly backward to stabilize the load.
5. Extreme care shall be used when tilting the load forward or backward, particularly when high tiering.
6. Tilting the mast forward with the load-engaging means elevated is prohibited except to pick up a load.
7. An elevated load shall not be tilted forward except when the load is in a deposit position over a rack or stack.
8. When stacking or tiering, only enough backward tilt to stabilize the load shall be used.
9. Never attempt to carry a load on just one fork as with a sling or other carrying device.

SECTION 31 – PERSONAL PROTECTIVE EQUIPMENT

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: Is to ensure that all visitors, contractors & employees accessing any New Alliance Ltd. property shall comply with the Safety, Health & Environmental Standard and Program contained within this manual and the applicable Regulations for Construction & Industrial Establishments as they apply to the use of personal protective equipment.

STANDARD: The following standard shall apply if it is **not** reasonable in the circumstances to use an alternative engineering control measure to eliminate every potential hazard. All visitors, contractors & employees shall wear such protective clothing and use such personal protective equipment or devices as is necessary to protect against hazards to which they may be exposed. All visitors, contractors & employees are required to wear protective clothing or use personal protective equipment or devices and shall be adequately instructed and trained in the care and use of the clothing, equipment or device before wearing or using it. The five alternative engineering control measures that shall be taken into consideration are as follows: Substitution, Alternative Work Methods, Isolation, Enclosure and Ventilation.

Substitution: Use this control measure to replace a hazardous material with a material that is less hazardous. For example, substitute a highly flammable material with a material with a higher flammable range to reduce the potential of an ignition.

Alternative Work Methods: Use this control measure to perform or arrange the job tasks in a different manner to reduce or remove a hazard. For example, dry cutting vs. wet cutting reduces the dust.

Isolation: This control measure isolates a person from the hazard. For example, the operator of a crusher can be isolated from the dust by a filtered, air-conditioned cab.

Enclosure: This control measure shall be used to enclose a product or procedure that is hazardous beyond a reasonable working environment. For example, the working condition for asbestos removal requires an enclosure.

Ventilation: This control measure is required to dilute the contaminant in the air by using general ventilation. Local ventilation improves the air because it removes the contaminant at the source, whereas general ventilation may employ fans to move large volume of air and increase the air exchange rate. For toxic materials general ventilation is not recommended. For example, a fume hood can be erected on a shop bench to capture dust and fumes from metals.

Management Responsibilities - New Alliance Ltd. shall ensure that:

1. Daily Hazard Assessment (DHA) is performed to identify potential hazards & provide resolutions.
2. Personal Protective Equipment (PPE) is readily available for the requirements of the DHA.
3. The proper PPE is available to employees based on the tasks being completed.
4. This standard is consistently and properly enforced and that all PPE is used in the required areas, or while performing tasks as required.

5. All PPE is adequately suited to the task being performed or the work conditions.
6. Ensure defective equipment is replaced as required.
7. All employees have been trained in the care and use of required PPE.
8. All contractors are aware of the standard and comply as required.

Employee Responsibility – Employees of New Alliance Ltd. shall:

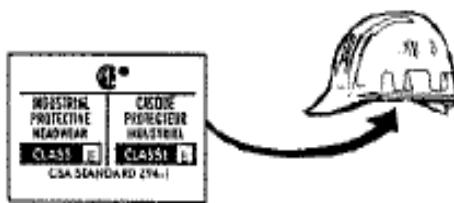
1. Complete any required safety training relating to care and use of PPE.
2. Use PPE required for the task, area or conditions. Comply with Constructor or Client PPE Postings.
3. Inspect, use and maintain PPE in an adequate condition as per the manufacturers' specifications.
4. Participate & identify opportunities to enhance the health & safety.

GENERAL: The following Personal Protective Equipment standard shall be followed by all visitors, subcontractors & employees on any New Alliance Ltd. property.

Head Protection

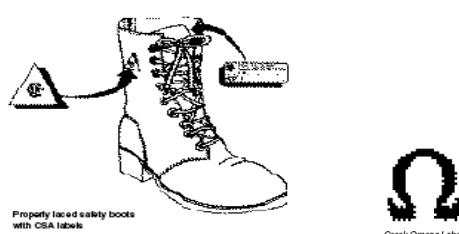
1. All employees working on construction projects shall require the proper use of a CSA/ANSI approved Class E Head Protection with a minimum 4 point ratchet suspension. For the location of the CSA identification sticker, please refer to Figure 1.
2. Head protection is required immediately after exiting a licensed vehicle while under the construction or mining regulations.
3. The shell and suspension must be inspected regularly for conditions that could weaken the head protection; conditions such as paint, holes, cracks or other defects. The suspension system must fit securely inside of the shell and must also be free from defects.
4. All head protection shall be used and worn in accordance with the manufacturer's recommendations.

Figure 1



CSA label, stamped into the shell, indicating Class E hard hat

Figure 2



Greek Omega Label

Foot Protection

1. All construction projects and industrial workplaces shall require the proper use of a CSA approved Grade 1 Foot Protection with dielectric protection. For the location of the CSA identification sticker, please refer to Figure 2.
2. The Grade 1 Foot protection with dielectric protection can be identified by a green triangular patch imprinted with the CSA logo & white label with a Greek letter Omega in orange on the outside of the footwear.

3. The foot protection must be fully laced, be in good condition and worn in accordance with the manufacturer's recommendations. If there are tears in the outer shell of the boot or shoe, they should be replaced.

Skin Protection

1. Under normal operating conditions, long pants, with a 4-inch short sleeve shirt is required. If exposed to an airborne hazardous condition, welding, FR coveralls or long sleeved shirts are required.
2. The Act and Regulations require protection where there is a risk of injury from contact between a worker's skin and; A noxious gas, liquid, fume or dust; An object that may puncture, cut or abrade the skin; A hot object, hot liquid or molten metal; Radiant heat. All workers on-site shall wear long pants and short sleeve shirts as a minimum standard. Clothes are your first line of defence against hazards on the job. Dress suitably for work; do not use synthetic clothing as it can ignite or melt when hit with sparks or hot equipment.
3. May include protective clothing such as special heat resistant aprons or coveralls, masks, gloves or lotions. Protective clothing, masks, and gloves may be used to protect against chemicals or airborne contaminants in the form of gas, vapours, liquids, dusts, or hot molten substrates. Lotions, like sunscreens, may be used to protect against radiant heat. (Excessive exposure to sunlight as an example)
4. Work gloves suitable for the task are to be worn when handling hot, sharp, rough or splintered material. Chemical resistant gloves must be worn when working with chemicals or solvents.

Eye & Face Protection

1. May consist of glasses, goggles, or a full-face shield depending on the circumstances. It must be used whenever there is a risk of injury to the eyes or face. The glasses, goggles, or face shield should fit properly, be in good condition, and be used in accordance with the manufacturer's recommendations.
2. CSA approved, if exposed to an airborne hazardous condition. Eye protection must be worn where there is a hazard to a worker while chipping, sawing, grinding, cutting, welding, exposure to heavy dust, acids and other toxic liquids.
3. Face shields must be worn where full-face protection is required in exposures similar to those listed above. Welding helmets are to be worn by workers doing welding.
4. Where an owner, general contractor or industrial establishment required the mandatory use of eye protection on their premises, then all our employees, subcontractors shall comply. CSA approved safety glasses. Use the appropriate protection for the task at hand. (Ex. welding)

Care

1. Eye protectors in construction are subjected to many damage-causing hazards.
2. Lenses should be inspected regularly for pitting and scratches that can impair visibility.
3. Scratched or pitted lenses and loose frames or temples should be replaced or repaired as soon as possible with components from the original manufacturer.

4. Lenses should be cleaned with clear water to remove abrasive dust—cleaning dry lenses can scratch the surface.
5. Anti-fog solutions can be used on glass or plastic lenses.
6. Frames should be handled with care and checked daily for cracks and scratches.
7. Eye protectors should never be thrown into toolboxes where they can become scratched or damaged.
8. Cases should be provided and used to protect spectacle lenses when not being worn.

Contact Lenses

In any industry, contact lenses are not a substitute for protective eyewear. Dust and dirt can get behind the contact lenses causing sudden discomfort and impairment of vision.

Contact lenses are also difficult to keep clean when they have to be removed or inserted since there are seldom-suitable washing-up facilities on a jobsite. It is recommended that contact lenses not be worn on construction sites. However, in cases where contact lenses must be worn to correct certain eye defects, workers should obtain from their ophthalmologist or optometrist written permission indicating the necessity of wearing contact lenses in order to function safely at work. In these cases eye protection, preferably cover goggles, must be worn with the contact lenses.

Refer to the chart below for the eye protection required. The shaded areas are recommended eye protection. Class 1 and Class 2 protection shall be used in conjunction with the recommendations for Class 3, 4, 5, and 6 protection. The possibility of multiple and simultaneous exposure to a variety of hazards shall be considered in assessing the required protection. Thorough consideration should be given to the severity of all the hazards when selecting the appropriate eye protection.

Hazards and Recommended Protectors

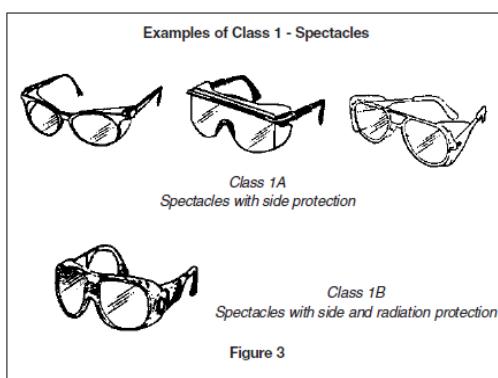
Hazard groups	Nature of hazard	Hazardous activities involving but not limited to	Spectacles Class 1		Goggles Class 2			Welding helmet Class 3	Welding hand shield Class 4	Face shields Class 6			Non-rigid hoods Class 5			
			A	B	A	B	C			A	B	C	A	B	C	D
A	Flying objects	Chipping, scaling, stonework, drilling; grinding, buffing, polishing, etc.; hammer mills, crushing; heavy sawing, planing; wire and strip handling; hammering, unpacking, nailing; punch press, lathework, etc.														
B	Flying particles, dust, wind, etc.	Woodworking, sanding; light metal working and machining; exposure to dust and wind; resistance welding (no radiation exposure); sand, cement, aggregate handling; painting; concrete work, plastering; material batching and mixing														
C	Heat, sparks, and splash from molten materials	Babbiting, casting, pouring molten metal; brazing, soldering; spot welding, stud welding; hot dipping operations														
D	Acid splash; chemical burns	Acid and alkali handling; degreasing, pickling and plating operations; glass breakage; chemical spray; liquid bitumen handling														
E	Abrasive blasting materials	Sand blasting; shot blasting; shotcreting														
F	Glare, stray light (where reduction of visible radiation is required)	Reflection, bright sun and lights; reflected welding flash; photographic copying														
G	Injurious optical radiation (where moderate reduction of optical radiation is required)	Torch cutting, welding, brazing, furnace work; metal pouring, spot welding, photographic copying														
H	Injurious optical radiation (where large reduction of optical radiation is required)	Electric arc welding; heavy gas cutting; plasma spraying and cutting; inert gas shielded arc welding; atomic hydrogen welding														

Classes of Eye Protectors

Before outlining the type(s) of eye protectors recommended for a particular work hazard, it is necessary to explain the various types of eye protectors available. Eye protectors are designed to provide protection against three types of hazards — impact, splash, and radiation (visible and invisible light rays) — and, for purposes of this manual, are grouped into seven classifications based on the CSA Standard Z94.3-99, *Industrial Eye and Face Protectors*. The seven basic classes of eye protectors are: spectacles, goggles, welding helmets, welding hand shields, hoods, face shields, and respirator facepieces.

Class 1 – Spectacles (Figure 3)

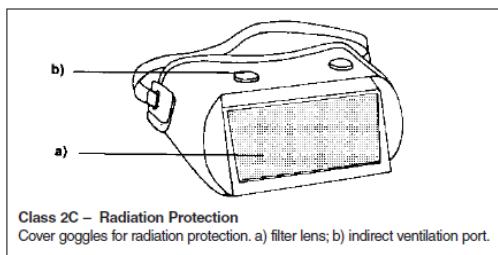
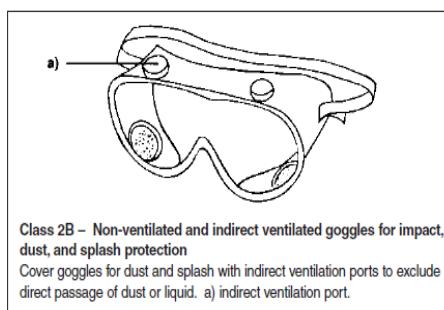
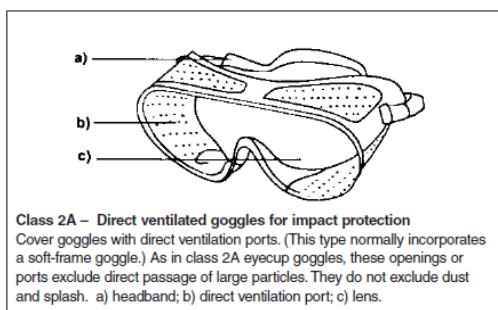
CSA Standard Z94.3-99 requires that Class 1 spectacles incorporate side protection. Most side shields are permanently attached to the eyewear, but some may be detachable.



Class 2 – Goggles

There are two types of goggles — eyecup and cover. Both must meet the CSA Z94.3-99 Standard.

Cover goggles are designed to be worn over spectacles. They have adjustable or elasticized headbands and are equipped with direct or indirect ventilation ports to allow passage of air and prevent fogging.

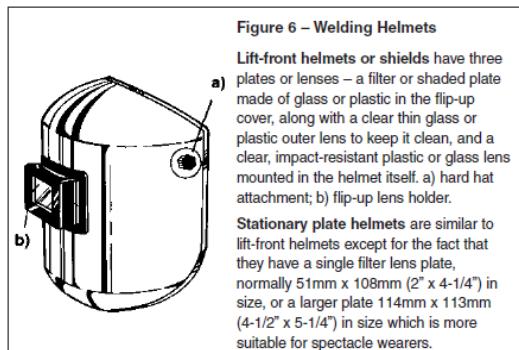


Class 3 –Welding Helmets (Figure 6)

This class provides radiation and impact protection for face and eyes. There are two types of welding helmets available — the stationary plate helmet and the lift-front or flip-up plate helmet. There are also special models incorporating earmuff sound arrestors and air purification systems. Special magnifying lens plates manufactured to fixed powers are available for workers requiring corrective lenses.

The filter or shaded plate is the radiation barrier. Arc welding produces both visible light intensity and invisible ultraviolet and infra-red radiation. These ultraviolet rays are the same type of invisible rays that cause skin burning and eye damage from overexposure to the sun. However, ultraviolet rays from arc welding are considerably more severe because of the closeness of the eyes to the arc and lack of atmospheric protection. In arc welding, therefore, it is necessary to use a filter plate of the proper lens shade number to act as a barrier to these dangerous light rays and to reduce them to the required safe degree of intensity.

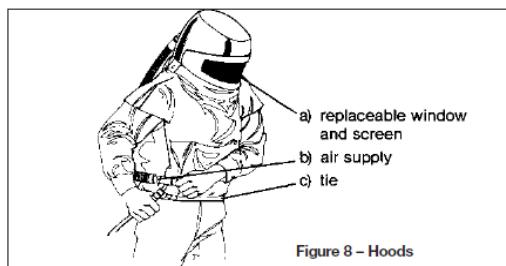
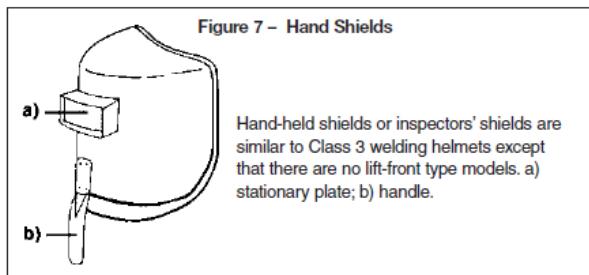
In addition to common green filters, many special filters are also available. Some improve visibility by reducing yellow or red flare; others make the colour judgment of temperature easier. A special gold coating on the filter lens provides additional protection by reflecting radiation.



Class 4 –Welding Hand Shields (Figure 7)

Welding hand shields are designed to give radiation and impact protection for the face and eyes.

NOTE: With welding helmets and hand shields, the user is continually lifting and lowering the visor. To protect the eyes when the visor is lifted, Class 1 spectacles should be worn underneath.



Class 5 – Hoods (Figure 8)

Non-rigid helmets or hoods come with impact-resistant windows usually made of plastic. An air-supply system may also be incorporated. Hoods may be made of non-rigid material for use in confined spaces and of collapsible construction for convenience in carrying and storing.

Hood types Include:

5A with impact-resistant window, 5B for dust, splash, abrasive materials protection, 5C with radiation protection, 5D for high-heat applications.

Class 6 – Face Shields (Figure 9)

Face shields are just what the name implies—a device that includes a transparent window or visor to shield the face and eyes from impact, splash, heat, or glare. With face shields, as with welding helmets and hand shields, the user is continually lifting and lowering the visor.

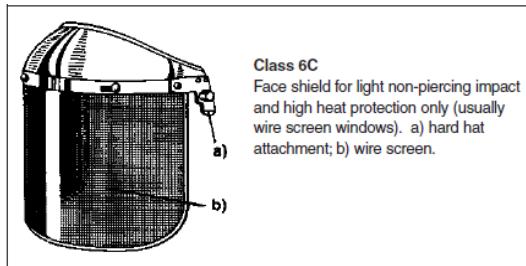
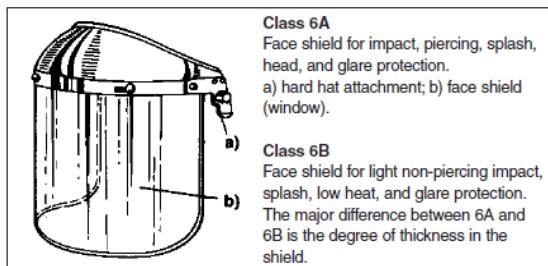
To protect the eyes when the visor is lifted, Class 1 spectacles should be worn underneath. Face shields may also be equipped with an adjustable spark deflector or brow guard that fits on the worker's hard hat. Shaded windows are also available to provide various degrees of glare reduction; however, they do not meet the requirements of CSA Standard Z94.3-99 *Industrial Eye and Face Protectors* for ultraviolet and total heat protection and should not be used in situations where any hazard is present from ultraviolet or infra-red radiation.

Class 6 includes:

6A for impact and splash protection

6B for radiation protection

6C for high-heat applications.



Class 7 – Respirator Facepieces (Figure 10)

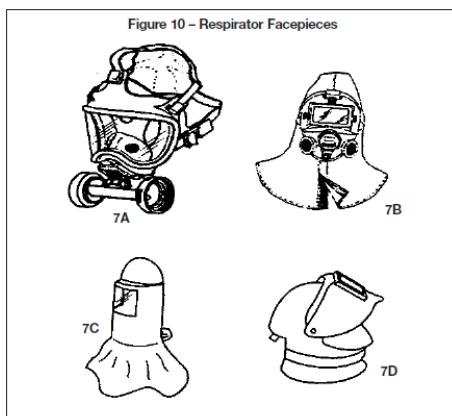
This class includes

7A for impact and splash protection

7B for radiation protection

7C with loose-fitting hoods or helmets

7D with loose-fitting hoods or helmets for radiation protection.



Hearing Protection

1. Hearing protection shall be provided & used where posted & when a worker may be exposed to 85dbA.
2. A supervisor shall use a noise meter to measure noise levels.
3. Hearing protection is available in three general types: Disposable earplugs (used only once); Permanent plugs must be fitted to provide a good seal (can be washed/reused); Earmuffs generally provide more protection than earplugs.
4. Unless protected by a sound barrier, hearing protection is required when within 25 feet of any of the following, when operational:
 - a. Electric/pneumatic/gas powered tools,
 - b. Any equipment/operation/location with a noise level of 85 dbA or more.

Fit, Care, and Use

Workers should be instructed in the proper fitting of a HPD (Hearing Protection Device) as recommended by the manufacturer. Training should include reading the manufacturers instructions and a demonstration. Workers should then practice using the HPD under close supervision. Checks are needed to ensure the best possible protection. Many of these checks relate to fit.

Earmuffs

1. Earmuffs should conform to the latest issue of CSA Standard Z94.2.
2. The cup part of the earmuff should fit snugly over the entire ear and be held firmly in place by a tension band.
3. The cup and band should not be so tight as to cause discomfort.
4. Cup, cushion, and band should be checked for possible defects such as cracks, holes, or leaking seals before each use of the HPD.
5. Because band tension can be reduced over a period of time, the band may require repair or replacement.
6. Defective or damaged parts should be repaired or replaced as needed. Tension band, cushions, and cups are readily replaceable.

Earplugs

1. Earplugs should conform to the latest issue of CSA Standard Z94.2.
2. For maximum attenuation the method of insertion illustrated in Figure 26 should be used. Because the ear canal is slightly S-shaped, the ear must be pulled back to straighten the canal for the plug to fit properly.
3. Earplugs must be fitted snugly in the ear canal. This will cause some discomfort initially. However, in time (usually a period of two weeks) the discomfort vanishes. Should there be severe discomfort initially or mild discomfort for more than a few weeks, seek professional advice. In most instances it will only be a matter of re-sizing, although some ear canals cannot be fitted with plugs because of obstructions, unique shapes, or deformities. In fact, the shape of one ear canal may be entirely different from the other.
4. Reusable earplugs should be washed with warm soapy water daily to prevent the remote possibility of infection or other discomfort. When not in use, they should be kept in a clean container.
5. Earplugs with torn or otherwise damaged flanges should be replaced.

TYPES of HEARING PROTECTION

	FOAM EARPLUGS	PREMOLDED EARPLUGS	EARMUFFS	FORMABLE EARPLUGS	CUSTOM-MOLDED EARPLUGS	SEMI-INSERT EARPLUGS
						
STYLE and COMFORT	Consist of compressible plastic foam. Come in many shapes. Often described as "disposable plugs." Elasticity lets them adapt easily to changes in ear canal.	Usually made of plastic or silicone rubber attached to a flexible stem for handling and insertion. Come in many shapes and sizes to suit different ear canals.	Consist of two insulated plastic cups attached to metal or plastic band. Cups equipped with soft cushions for seal and comfort. Head band tension ensures good seal.	Made from pliable material such as cotton/wax mixture, silicone putty, and mineral wool.	Custom made to fit a particular ear by taking an impression of the ear, making a mould, and casting a plug.	Commonly known as banded earplugs or canal caps. They consist of small caps or pods that are held in place over the ear canal by spring-loaded bands.
INTENDED USE	Most brands can be reused a few times before being discarded.	To be used more than once.	To be used regularly. Can be worn with or without plugs. Easily attached to hard hats.	<ul style="list-style-type: none"> • Single-use for mineral wool products. • Multi-use for cotton/wax products. • Semi-permanent for silicone putty products. 	Permanent use	To be used more than once.
HYGIENE PRACTICES	Clean hands required each time fresh plugs inserted.	Plugs should be cleaned regularly with warm soapy water, preferably after each removal from ear.	General maintenance required. Head band must be maintained. Cushions must be replaced when soiled or brittle.	Clean hands required for shaping and insertion.	Wash with hot water and soap, preferably after removal.	Wash with hot water and soap, preferably after removal.
ADVANTAGES	Low risk of irritation. One size fits most workers.	Reusable.	Less likely to cause irritation. When attached to hard hat, always available for use.	Relatively cheap	Good fit only if a proper impression of the ear is taken.	Good for when frequent removal is required.
DISADVANTAGES	Use requires clean hands. Large supply required for frequent removals and usage.	Plugs must be kept clean to prevent irritation. May produce some discomfort with pressure. Though reusable, plugs degrade over time. Inspect and replace as necessary.	Bands may wear out and tension decrease. Eyewear and hair may interfere with fit and reduce protection.	Not recommended for the noise levels found on construction projects.	If the wearer's weight changes drastically, new plugs should be made. Plugs can be lost, shrink, harden, or crack over time, and must be replaced.	Proper seal is necessary for good attenuation.

RESPIRATORY PROTECTION

Work areas must be ventilated to reduce hazards from dust, fumes, gases, vapours or liquids. When ventilation is not practical, workers must be provided with respirators appropriate to the hazards and be trained on the selection, use and maintenance the respirators properly.

Respirators are the least preferred method of protection from respiratory hazards because they do not deal with the hazard at the source. They can be unreliable if not properly fitted and maintained and they may be uncomfortable to wear.

Respiratory Hazards

Gases — consist of individual molecules of substances, and at room temperature and pressure, they are always in the gaseous state. Common toxic gases found in construction are carbon monoxide from engine exhaust and hydrogen sulphide produced by decaying matter found in sewers and other places.

Vapours — are similar to gases except that they are formed by the evaporation of liquids (e.g., water vapour). Common vapours found in construction are produced by solvents such as xylene, toluene, and mineral spirits used in paints, coatings, and degreasers.

Fumes — are quite different from gases or vapours, although the terms are often used interchangeably. Technically, fumes consist of small particles formed by the condensation of materials, which have been subjected to high temperatures. Welding fume is the most common type of fume in construction. Other examples include pitch fume from coal tar used in built-up roofing and fume from diesel engines.

Mists — are small droplets of liquid suspended in air. The spraying of paint, form oils, and other materials generates mists of varying composition.

Dusts — are particles, which are usually many times larger than fume particles. Dusts are generated by crushing, grinding, sanding, or cutting and by work such as demolition. Two kinds of hazardous dust common in construction are fibrous dust from insulation materials (such as asbestos, mineral wool, and glass fibre) and non-fibrous silica dust from sandblasting, concrete cutting, or rock drilling.

Health Effects

Respiratory hazards can be divided into the following classes based on the type of effects they cause.

Irritants are materials that irritate the eyes, nose, throat, or lungs. This group includes fibreglass dust, hydrogen chloride gas, ozone, and many solvent vapours. With some materials (e.g., cadmium fume produced by welding or oxyacetylene cutting of metals coated with cadmium) the irritation leads to a pneumonia-like condition called pulmonary edema. **This effect may not be apparent until several hours after exposure has stopped.**

Asphyxiants are substances, which result in inadequate oxygen in the body. They can be classified as either **simple asphyxiants** or **chemical asphyxiants**.

Simple asphyxiants are other gases or vapours, which cause oxygen to be displaced, creating an **oxygen-deficient atmosphere**. Oxygen content of 18% may lead to some fatigue during exertion. Oxygen concentrations lower than 15% can cause loss of consciousness and may be fatal. For example, nitrogen used to purge tanks can displace oxygen, resulting in unconsciousness and even

death for those who enter. Oxygen may also be consumed by chemical or biological activity such as rusting or bacteria digesting sewage.

Chemical asphyxiants interfere with the body's ability to transport or use oxygen. Two examples are carbon monoxide and hydrogen sulphide.

Central nervous system depressants interfere with nerve function and cause symptoms such as headache, drowsiness, nausea, and fatigue. Most solvents are central nervous system depressants.

Fibrotic materials cause "fibrosis" or scarring of lung tissue in the air sacs. Common fibrotic materials found in construction include asbestos and silica.

Carcinogens cause or promote cancer in specific body organs. Asbestos is the most common carcinogen in construction.

Nuisance dusts do not cause significant effects unless exposure is of high concentration and/or long duration. Excessive exposure to these substances can be adverse in itself or can aggravate existing conditions such as emphysema, asthma, or bronchitis. Examples include plaster dust, cellulose from some insulation, and limestone dust.

Respiratory Protective Equipment

A wide variety of equipment can be used to protect workers from respiratory hazards. Devices range from simple, inexpensive dust masks to sophisticated self-contained breathing apparatus. Generally, the equipment can be divided into two distinct classes — air-purifying respirators and supplied-air respirators.

Air-Purifying Respirators

As their name indicates, these devices purify the air drawn through them. There are two main types of air-purifying respirators:

1. **Non-powered:** Air is drawn through the air-purifying filter by the wearer breathing in and creating a negative pressure in the facepiece. Non-powered respirators depend entirely on the wearer breathing in (inhaling) and breathing out (exhaling) to deliver an adequate supply of purified breathing air.
2. **Powered:** These respirators have a blower that blows purified air into the facepiece.

Particulate Filter

This type removes solid particles such as dusts, fumes, or mists and operates like the air filter in a car engine. The devices may be filtering facepiece respirators or respirators with replaceable filters. Different grades of filters are available, depending on the size of particles to be removed.

When particulate filters fill up with dust or fume, they become harder to breathe through but are more efficient, since air is being filtered through the layer of trapped particles as well as the filter itself.

While particulate filters can provide good protection against particles such as dusts, mists, or fumes, they cannot filter out gases or vapours because of the very small size of gas and vapour molecules.

Particulate filters for non-powered air-purifying respirators are divided into three levels of filter efficiency: 95%, 99%, and 99.97%. These numbers refer to the percentage of particles the filter can remove, based on the particle size most difficult to trap. Filters rated to these efficiencies outperform

the dust/mist and dust/fume/mist filters of the past. For workers removing asbestos insulation or lead paint, for instance, the 99.97% efficiency cartridge would be the best choice. This is known as the 100 efficiency class, previously identified as the HEPA filter.

Oil has been found to ruin the filtering ability of some filter material. Oil coats the filter fibres, preventing the electrostatic charge on the fibres from attracting and removing particulates. Therefore, to ensure that a suitable filter is being used, particulate filters have an N, R, or P designation:

N – Not resistant to oil

R – Resistant to oil

P – oil-Proof.

The N series of filters is suitable for airborne particles such as wood dust, when there are no oil-based particles also in the air. For example, an N series filter would be recommended during the removal of old lead paint. However, when spraying form oil or putting down hot asphalt—operations that involve airborne oil particles—the correct filter would have an R or P designation.

The R series—resistant to oil—should only be used for a single shift when solvent or oil mist is present in the air. This filter resists oil but may lose its filtering ability when in contact with oil over a long time.

When using P series filters, check the manufacturer's instructions to determine how long the filter can be used when airborne oil particles are present. P series filters were originally thought to be oil-proof but tests show there may be some loss of filtering ability with long-term oil exposure.

Gas/Vapour Cartridge Filter

This type uses substances, which absorb or neutralize gases and vapours. Unlike particulate filters, gas/vapour cartridge filters become less efficient the longer they are used. They act like sponges and, when full, allow gas or vapour to pass through without being absorbed. This is called “breakthrough.”

Common gas/vapour cartridge filters include the following:

1. Organic Vapour Cartridges: usually contain activated charcoal to remove vapours such as toluene, xylene, and mineral spirits found in paints, adhesives, and cleaners.
2. Acid Gas Cartridges: contain materials, which absorb acids and may be used for protection against limited concentrations of hydrogen chloride, sulphur dioxide, and chlorine.
3. Ammonia Cartridges: contain an absorbent designed specifically to remove only ammonia gases.

Combination Particulate/Gas/Vapour Cartridge with Filter

This type removes particulate matter, vapours, and gases from the air. It is used where more than one type of hazard is present or may develop.

Supplied-Air Respirators

Supplied-air respirators provide clean breathing air from an uncontaminated source, usually a special compressor located in a clean environment, or from cylinders containing compressed breathing air. The quality of the air supplied should meet the requirements of CSA Standard Z180.1, *Compressed Breathing Air and Systems*.

Types of Supplied-Air Respirators

The three basic types of supplied-air respirators are airline unit, ambient air blower, and self-contained breathing apparatus (SCBA).

1. **Airline unit** depends on a hose connecting the respirator to cylinders of compressed breathing air.
2. **Ambient air blower** draws air through an inlet hose (positioned where the air is clean) and pumps the air under fairly low pressure to the worker's hood, helmet, or facepiece.
3. **Self-contained breathing apparatus** (SCBA) uses a cylinder of air carried by the wearer. SCBAs are awkward, heavy, and require frequent cylinder changes.

Fit Testing and Seal Checks

Once a respirator has been selected, the next critical step is ensuring that it fits properly. One size does not fit all. With every respirator except hoods or helmets, a tight seal is required between facepiece and face. With negative-pressure respirators (e.g., non-powered air-purifying respirators and demand supplied-air respirators) gaps in the seal will permit contaminated air to enter the breathing zone. With positive-pressure respirators (e.g., powered air-purifying respirators and pressure-demand supplied-air respirators) a lot of air will be wasted through outward leakage and the degree of protection provided to the wearer could be reduced. Also, "Venturi effects" may allow air to escape in one area and draw contaminated air into the facepiece around the escaping air. For these and other reasons, the fit of respirators must be carefully tested. Generally there are two types of fit testing — qualitative and quantitative.

Qualitative Fit Tests

- 1) **Irritant Smoke Test** — The wearer puts on the respirator with "high efficiency or fume filters" in place. A cloud of irritant smoke is created around the wearer. If leakage is detected the respirator should be adjusted. **Caution:** Most of the smoke clouds used in this test are very irritating to the eyes, nose, and throat. Workers are advised to keep their eyes closed during the test and to back out of the smoke as soon as they notice any leakage or irritation.
- 2) **Iso Amyl Acetate (Banana Oil) Test** — The wearer puts on the respirator with "organic vapour" cartridge filters in place. A cotton swab dipped in Iso amyl acetate solution is passed along the outline of the facepiece (Iso amyl acetate smells like very ripe bananas). If the wearer smells the solution, the respirator should be adjusted.
- 3) **Saccharin Test** — This test is similar to the Iso amyl acetate test except that it uses saccharin as the test material and a dust/mist or high efficiency respirator. If the sweet taste or smell of saccharin is detected, the fit must be adjusted.
- 4) **Bitrex Solution Aerosol Test** — In this test the wearer puts on the respirator with any particulate filter. A hood or test enclosure is put over the wearer's head and shoulders. Bitrex is then sprayed into the hood or enclosure. Bitrex is a very bitter solution and can easily be detected if it leaks through the face seal. If the wearer cannot taste the Bitrex, then the respirator fits properly.

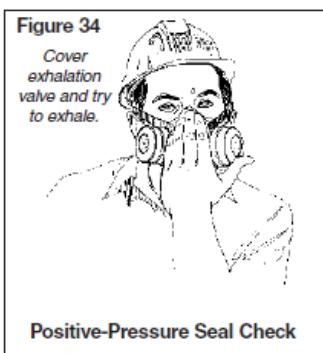
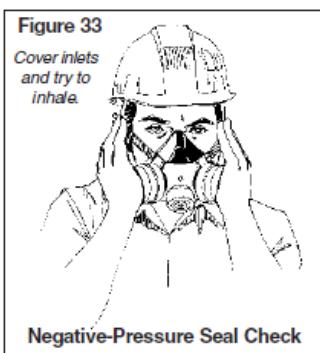
Quantitative Fit Tests

In these tests the wearer puts on a special respirator which has a probe mounted inside the facepiece. The wearer then goes into a test chamber or booth, which contains a known concentration of a specific

gas, vapour, or aerosol. The amount of leakage is determined by sampling the air inside the facepiece through the probe. This method is not well suited for use on most construction projects.

User Seal Checks Every time you put a respirator on, check the seal using the negative-pressure and positive-pressure method.

1. **Negative Pressure Test** — The wearer puts on the respirator and adjusts it so that it feels relatively comfortable. Then the air inlets are blocked off with the hands or a plastic cover, and the wearer inhales gently. If the respirator is properly fitted, it should collapse slightly and not permit any air into the facepiece. If leakage is detected, the mask should be readjusted and the test repeated until the fit is satisfactory.
2. **Positive Pressure Test** — The wearer puts on the respirator and adjusts it so that it feels relatively comfortable. Then the exhaust port of the respirator is covered and the wearer tries to exhale gently. The facepiece should puff away from the wearer, but no leakage should occur.



Respirator Maintenance

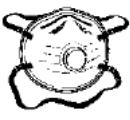
Respirators require maintenance: the following instructions cover the major points.

1. Filters should be changed as follows:
 - a) Dust/mist/fume filters shall be changed when there is resistance to normal breathing.
 - b) Chemical cartridge respirators shall be changed when the gas/vapour can be tasted or smelled.
 - c) Filters shall be changed as per the manufacturer intervals or when damaged in any way.
2. Inhalation and exhalation valves should be checked before the respirator is used.
3. Damaged facepiece, straps, filters, valves, or other parts should be replaced with "original equipment" parts.
4. Facepieces shall be washed with mild soapy water as required to keep them clean and wearable.
5. Respirators should be assigned to the exclusive use of individual workers.
6. Where a respirator must be assigned to more than one worker, it should be disinfected after each use (check with the manufacturer regarding acceptable sanitizers/disinfectants).
7. Check supply hoses, valves, and regulators on supplied-air respirators as per the manufacturer.
8. SCBA units and high-pressure cylinders of compressed breathing air should be used and maintained in accordance with current Canadian Standards Association Z180.1 *Compressed Breathing Air and Systems*, and Z94.4 *Selection, Care and Use of Respirators*.
9. Compressors and filtration systems used with supplied-air respirators must be maintained in accordance with the manufacturers' recommendations.
10. Consult manufacturer for information on respirator cartridge change-out.

RESPIRATOR SELECTION GUIDE

N = Not resistant to oil R = Oil-resistant P = Oil-proof OV = Organic vapour cartridge indicates suitable protection. If oil mist is present, use R or P filters.

* Assigned protection factor: The protection factor assigned by NIOSH, the US National Institute for Occupational Safety and Health. Higher numbers mean greater protection. You may use a respirator with a greater protection factor than the one recommended for your task. Never use a respirator with a smaller protection factor. If unsure about the respirator required for a task, contact your supervisor.

Air purifying										Supplied air	
Half facepiece										Full facepiece	
Filtering facepiece		Elastomeric facepiece									
											
										Hood or Helmet NIOSH type CE pressure demand Half-facepiece pressure demand	SCBA or SCBA + airline, full facepiece and positive pressure

Filter efficiency and type	95	100	95	100	Organic vapour	95+ organic vapour	100+ organic vapour	95	100	100+ organic vapour	HEPA
Assigned Protection Factor* (NIOSH 1987)	10	10	10	10	10	10	10	10	50	50	1000

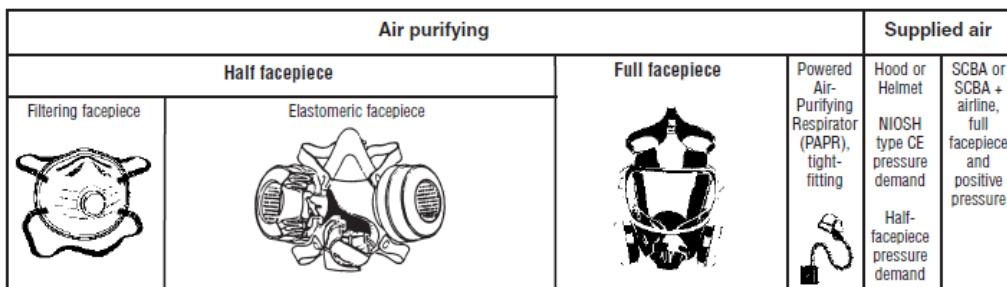
Silica												
Breaking concrete outdoors	✓ N, R, or P		✓ N, R, or P									
Crushing rock and gravel			✓ N, R, or P	✓ N, R, or P								
Blasting rock			✓ N, R, or P	✓ N, R, or P								
Abrasive blasting—either ≥ 1% silica in the abrasive blasting media or ≥ 1% silica in the target material being blasted												✓
Drywall sanding		For short-term applications, a filtering facepiece respirator may be appropriate	✓ N, R, or P	✓ N, R, or P								
Machine mixing concrete or mortar			✓ N, R, or P	✓ N, R, or P								
Drilling holes in concreta or rock that is not part of a tunnelling operation or road construction			✓ N, R, or P	✓ N, R, or P								
Milling of asphalt from concrete highway pavement			✓ N, R, or P	✓ N, R, or P								
Charging mixers and hoppers with silica sand (sand consisting of at least 95% silica) or silica flour (finely ground sand consisting of at least 95% silica)			✓ N, R, or P	✓ N, R, or P								
Any other operation at a project that requires the handling of silica-containing material in a way that a worker may be exposed to airborne silica			✓ N, R, or P	✓ N, R, or P								

Air purifying												Supplied air	
Half facepiece												Full facepiece	
Filtering facepiece		Elastomeric facepiece											
												Powered Air-Purifying Respirator (PAPR), tight-fitting	Hood or Helmet NIOSH type CE pressure demand

Filter efficiency and type	95	100	95	100	Organic vapour	95+ organic vapour	100+ organic vapour	95	100	100+ organic vapour	HEPA		
Assigned Protection Factor* (NIOSH 1987)	10	10	10	10	10	10	10	10	50	50	50	1000	10,000

Silica cont'd

Entry—for less than 15 minutes—into a dry mortar-removal or abrasive-blasting area for inspection or sampling where airborne dust is visible	For short-term applications, a filtering facepiece respirator may be appropriate	✓ N, R, or P	✓ N, R, or P										
Entry into an area where abrasive blasting is being carried out for more than 15 minutes	For short-term applications or applications involving tools or equipment with adequate controls (local exhaust ventilation or water), a half-facepiece respirator may be appropriate							✓ N, R, or P			✓		
Dry method dust clean-up from abrasive blasting operations							✓ N, R, or P			✓			
Removal of silica-containing refractory materials with a jackhammer							✓ N, R, or P			✓			
Drilling holes in concrete or rock as part of a tunnelling operation or road construction							✓ N, R, or P			✓			
Using a power tool to cut, grind, or polish concrete, masonry, terrazzo, or refractory materials							✓ N, R, or P			✓			
Using a power tool to remove silica-containing materials							✓ N, R, or P			✓			
Using a power tool indoors to chip or break and remove concrete, masonry, stone, terrazzo, or refractory materials							✓ N, R, or P			✓			
Tunnelling (operation of tunnel boring machine, tunnel drilling, tunnel mesh insulation)							✓ N, R, or P			✓			
Tuckpointing and surface grinding							✓ N, R, or P			✓			
Dry-mortar removal with an electric or pneumatic cutting device							✓ N, R, or P			✓			
Using compressed air outdoors to remove silica dust							✓ N, R, or P			✓			



Filter efficiency and type	95	100	95	100	Organic vapour	95+ organic vapour	100+ organic vapour	95	100	100+ organic vapour	HEPA	
Assigned Protection Factor* (NIOSH 1987)	10	10	10	10	10	10	10	10	50	50	1000	10,000

Synthetic Vitreous Fibres (Man-made mineral fibres)												
Installation, removal, or blowing cellulose, fiberglass, mineral wool, or calcium silicate	✓ N, R, or P											
Installation of refractory ceramic fibres (silica may be present)				✓ N, R, or P								
Removal of refractory ceramic fibres (silica may be present)									✓ N, R, or P		✓	

Other dust and fibre exposure												
Removal of roofing material (built-up roofing, no asbestos)	✓ R or P		✓ R or P					✓ R or P				
Dry method dust clean-up from abrasive blasting operations		For short-term applications or applications involving tools or equipment with adequate controls (local exhaust ventilation or water) a half-facepiece respirator may be appropriate.										
Wood dust, including pressure-treated wood dust	✓ N, R, or P		✓ N, R, or P									
Vinyl or laminate floor sanding	✓ N, R, or P		✓ N, R, or P									

Welding and flame-cutting												
Any welding in confined spaces when the atmosphere is not monitored												✓
Aluminum**	✓ N, R, or P		✓ N, R, or P									
Mild steel	✓ N, R, or P		✓ N, R, or P									
Stainless steel	✓ N, R, or P		✓ N, R, or P									
Galvanized or plated metals	✓ N, R, or P		✓ N, R, or P									
Lead-painted steel: flame cutting or welding, short-term, not repeated, material stripped before work			✓ N, R, or P	✓ N, R, or P								
Welding or high-temperature cutting of lead-containing coatings or materials indoors or in a confined space								✓ N, R, or P		✓	✓	

HAND / SKIN PROTECTION

In construction and industrial applications, exposed hands and skin are susceptible to physical, chemical, and radiation hazards. Personal hand/skin protection is often the only practical means of preventing injury from

1. Physical hazards—sharp or jagged edges on materials and tools; heat; vibration
2. Corrosive or toxic chemicals
3. Ultraviolet radiation.

HAZARDS - Manual work exposes our hands to many different hazards, from cuts to chemicals, from pinching to crushing, and from blisters to burns.

CONTROLS - Leather gloves provide good protection against sharp edges, splinters, and heat. Cotton or other materials don't stand up well. You should wear them only for light-duty jobs.

Wearing anti-vibration gloves when using power tools and equipment can help prevent hand-arm vibration syndrome (HAVS).

HAVS causes the following changes in fingers and hands:

1. Circulation problems such as whitening or bluish discoloration, especially after exposure to cold.
2. Sensory problems such as numbness and tingling.
3. Musculoskeletal problems such as difficulty with fine motor movements—for instance, picking up small objects.

Our hands also need protection against chemicals. Check the label to see whether a product must be handled with gloves and what types of gloves are required.

If that information isn't on the label, check the material safety data sheet (MSDS). MSDSs must be available on site for any controlled products that are being used.

Using the right gloves for the job is important. For instance, rubber gloves are no good with solvents and degreasers. The gloves will dissolve on contact.

Appendix A - Hand Protection Requirements

GLOVES ARE REQUIRED AT ALL TIMES WHEN WORK IS BEING PERFORMED AS FOLLOWS
Note: in areas where multiple risks may be present, the user is to use their best judgement in proceeding, or consult with a JHSC member.

TASK	HAND PROTECTION
Welding	CSA Approved - Leather welding gloves.
General purpose glove for office staff performing dry tasks in the process area and maintenance shop	CSA Approved general purpose <i>gloves</i> to keep hands clean, improve grip, and provide good cut protection and scrape protection. Forcefield glove.
Handling Chemicals or cleaning products Waste water treatment sampling.	CSA Approved - Chemical-resistant gloves (e.g., nitrile, neoprene, rubber, polyvinyl) to protect hands against hazardous chemicals (when the hazard is chemical, be sure to consult the MSDS for recommendations about glove selection).
Handling/working around sharp edges or highly abrasive objects. Working with utility knife.	CSA Approved - Gloves to protect against rough surfaces, sharp edges, and objects that can cut or puncture skin. Glove to offer good dexterity. Forcefield glove. CPPT cut level 2.
High temperature exposure where steam or liquids greater than >80C. This includes LPL/RPL car/truck wash and hot water washing (steam/water mixing stations)	CSA Approved - Water resistant. High temperature resistance. Fireball glove. Gauntlet or cuffed style. Alternatively use the blue glove over the cut resistant glove
Using sledgehammers and impact tools.	CSA Approved - Impact glove with knuckle and back of hand protection. Medium dexterity. Monkey Business glove.
Excessive grease areas, general cleaning	CSA Approved - General purpose <i>gloves</i> to keep hands clean, improve grip, and provide some protection from cuts, scrapes and hot and cold. Leather disposable glove.
Vibrating Tools, speed wrenches	CSA Approved - Shock-absorbing / Anti Vibration gloves to protect against repetitive motion stress and vibration; Monkey grip.
Servicing process equipment, Washing, Changing filters, strainers.	CSA Approved - Water resistant ,mild chemical resistance, medium temperature protection. Showa blue glove, CPPT cut level 2.

SECTION 32 – WHMIS & CHEMICAL SAFETY

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: Is to ensure that all visitors, contractors & employees accessing any New Alliance Ltd. property shall comply with the Safety, Health & Environmental Standard and Program contained within this manual and the applicable regulations for Construction & Industrial workplaces as they apply to the basic principles of hazardous materials and the principles of Workplace Hazardous Materials Information System in the workplace.

STANDARD: WHMIS - stands for Workplace Hazardous Materials Information System. It is a Canada-wide system used to provide information about all controlled products used by workers on the job. There are three essential elements to WHMIS: Labels, Material Safety Data Sheets (MSDS) and Education/training. WHMIS describes the danger of materials you may use on the job and tells how to protect yourself from their hazards. You should know if material has hazardous labels and safety data sheets. Employees will be trained in WHMIS practice and procedures, and will be responsible for ensuring safe handling and storage of all materials. WHMIS will be reviewed annually and an assessment (inventory) of the workplace for hazardous materials **shall be completed and documented on an annual basis**.

Labels – Supervisor and employees shall ensure that every controlled product not in a container, and every container of a controlled product, received at a workplace from a supplier are labeled with a supplier label. If a label applied to a controlled product or a container of a controlled product becomes illegible or is removed, an employer shall replace the label with either a supplier label or a workplace label.

If a controlled product is received in a container from a supplier and is transferred to another container, the Supervisor and employee shall ensure that the other container has a workplace label.

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

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

Material Safety Data Sheets:

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

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

Symbols:



Class A - Compressed Gases



Class B - Flammable and Combustible



Class C - Oxidizing Materials



Class D1 - Materials Causing Immediate & Serious Toxic Effects



Class D2 - Materials Causing Other Toxic Effects



Class D3 - Bio-hazardous Infectious Materials



Class E - Corrosive Materials



Class F - Dangerous Reactive Material

CHEMICAL SAFETY - General

1. Supervisor shall use the Daily Hazard Assessment to ensure no worker is exposed to a hazardous biological or chemical agent because of the storage, handling, processing, or use of such agent in the workplace. The measures to be taken shall include the provision and use of, (a) engineering controls; (b) work practices; (c) hygiene facilities and practices; and (d) personal protective equipment.
2. A worker who may be exposed to a biological, chemical, or physical agent that may endanger the worker's safety or health shall be trained in WHMIS, Confined Space & Blood Borne Pathogens (a) to use the precautions and procedures to be followed in the handling, use, and storage of the agent; (b) in the proper use and care of required personal protective equipment; and (c) in the proper use of emergency measures and procedures. Training may be performed in-house or by a 3rd Party.
3. Appropriate protective wearing apparel must be worn when mixing, spraying or handling chemicals: Safety Boots, Coveralls, Rubber Gloves, Eye shields/goggles, and a Respirator, if required.
4. Always use the most effective but least toxic chemical.
5. When applying chemicals, they must be treated with the care and caution appropriate to the particular chemical being used.
6. Ensure that a qualified supervisor instructs all personnel in chemical use (i.e. licensed operator).
7. Always ensure that application is done at the minimum effective rate and only on target areas.
8. Allow for minimum wind drift and never spray during high winds.
9. Ensure that application equipment is inspected and properly calibrated before use.
10. Always inspect containers for leaks before handling them.
11. Rinse out empty containers and dispose of the rinsing agent and containers safely.
12. Inspect vehicles for contamination after unloading. Decontaminate immediately if required.
13. Store chemicals in proper designated areas. Only qualified employees are to enter designated storage areas.
14. No food, drink or tobacco, etc. anywhere in or near the warehouse or where chemicals are stored.
15. Never rub your eyes or touch your mouth while working with chemicals.
16. Always wash your hands thoroughly and shower at the end of each shift.
17. Discard contaminated clothing or faulty gloves in a safe place.

18. Proper identification placards are to be mounted on vehicles and storage areas.
19. If a leak occurs, keep people and animals away from the contaminated area. Decontaminate the area and report the spill (at once) to senior management, the local Provincial Ministry of the Environment, the Federal Ministry of the Environment and your supervisor.
20. When a victim becomes intoxicated due to direct contact, remove the victim to a safe uncontaminated location and remove contaminated clothing. Call 911 if breathing is weak or has ceased - give artificial respiration. When seeking medical aid, bring along label or container.

CHEMICAL EXPOSURE ON THE EYES

1. General

Accidental exposure of the eye(s) to toxic chemical substances in solid, liquid or gaseous form has varying results ranging from minor irritation to chemical burns with corneal scarring and possible (total) loss of vision. Adverse systemic reactions may also occur if the toxic chemical substance is absorbed into the body through the eye tissue.

2. Corrosive Chemicals

Corrosive chemicals are those, which have the ability to strongly irritate, damage, burn or destroy living tissue in a short period of time. These substances can be categorized into two groups ~ alkalis and acids.

- **Alkalis** – are generally considered to be the most dangerous of corrosive chemicals. Some of the more common alkalis involved in chemical injuries to the eyes in health care facilities include: ammonium hydroxide, sodium hydroxide, potassium hydroxide and calcium hydroxide.
- **Acids** – some of the more common acids involved in chemical injuries to the eyes include: hydrochloric acid, sulfuric acid and chromic acid.

3. First Aid Practices for Chemical Exposure to the Eye

When a chemical comes in contact with an employee's eye, proper first aid is extremely important. Even before medical attention is sought, the action taken by the victim or a co-worker immediately after the Incident is critical. Accepted first aid procedures include immediate, prolonged and thorough flushing of the eyes with potable (clean) water under low pressure. The importance of proper flushing of the eyes cannot be overemphasized! To be effective, flushing of the eyes must be:

- **Immediate** – The initial 10 to 15 seconds after the eye is exposed to a hazardous chemical substance (especially a corrosive substance) is critical. Delay of even a few seconds may be sufficient to cause serious or permanent damage. It is important that the distance between a hazardous work area and an eye wash station be no more than 7.6 meters (25 ft.) or 10 to 15 seconds travelling time.
- **Prolonged/Thorough** – Flushing of the eyes should entail a continuous, unlimited supply of water to the affected eye(s) for at least 15 to 20 minutes or longer.
- **Completed Using a Potable Water Supply Under Low Pressure** – A clean water supply is necessary to reduce the possibility of infection on the injured eye. The pressure of the water flushing the eyes should be regulated so that it is enough to hold the eyelids open, but not so great as to cause mechanical damage to the eyes.

4. Types of Eye Wash Systems

If a hazard cannot be eliminated, the cardinal rule when selecting safety equipment is to provide optimal employee protection. Protective eye equipment includes goggles, face shields, safety glasses etc., which provide the first line of protection to the employee. An eye wash system may be required after an Incident has occurred in order to minimize the possibility of serious damage. Many different types of eye wash systems are available and must be carefully evaluated to ensure that the needs of the facility are met and accepted first aid practices are followed.

5. Location and Placement of Eye Wash Stations

Since the initial 10 to 15 seconds after the eye has been exposed to a corrosive substance is critical, the distance of any eye wash system from any hazardous work area should be no more than 7.6 meters (25 ft.). Other considerations should include:

Chemical substances in the immediate work area – all chemicals in each work area must be properly identified in order to evaluate the hazards to the employees

Existing traffic patterns in the immediate area – the eye wash system must be conspicuous, well marked, and preferable in normal traffic patterns and not separated from the hazardous work area.

Number of employees in the area working with the hazardous substances – if several employees are working with hazardous substances at any given time, changes in the work scheduling may be necessary or more than one eye wash station may be required in order to protect all workers.

Ergonomic consideration – an eye wash system should be at a usable height for all employees ~ controls should also be accessible by all employees regardless of their height and reach.

6. Routine Inspection and Maintenance Program

One employee in the work area should have the responsibility for inspecting the operation of the eye wash system on a weekly basis. A record book should be kept to record the date and signature of the person performing this inspection. Also, individual employees should be encouraged to check the functioning of the eye wash system on a regular basis for their own protection. As long as the eye wash system is not rendered inoperable due to freezing temperatures, there is no indication that cold temperatures either cause harm to the eyeball or discourage irrigation. For comfort, water temperature limits should be no greater than 35 to 40 degrees Celsius.

7. Training of Staff

All employees require instruction on the proper use and handling of the eye wash system prior to the existence of any emergency. It should never be taken for granted that employees already know the proper procedures. Instructions should be written and available to all employees as well as being posted beside the eye wash system. An actual drill should be considered as part of the instructional process. Particular emphasis should be placed on the difficulties of handling a victim who is uncooperative due to intense pain or shock.

Material Safety Data Sheets (MSDS)

Although some products used at the shop or on the construction projects are regulated under WHMIS and other products are considered Consumer Commodity Products, generally both categories require MSDS on site for employees and customers. All MSDS are available in the shop located on the Safety Information Board and electronic copies are stored in the central database. MSDS are required to be updated every three years by the manufacturer.

SECTION 33 – TRANSPORTATION of DANGEROUS GOODS

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate and review the basic principles of the transportation of dangerous goods in the workplace. Please be advised; responsibilities associated with this standard is contained in the Transportation of Dangerous Goods Act and the Occupational Health and Safety Act located at every safety board/box in the workplace or project.

STANDARD: The following information shall be used as a reference along with the TDG Clear Language Training.

Classes of Dangerous Goods:

Class 1	Explosives	Class 6	Poisonous and infectious substances
Class 2	Gases	Class 7	Radioactive materials
Class 3	Flammable liquids	Class 8	Corrosive substances
Class 4	Flammable solids	Class 9	Miscellaneous dangerous goods
Class 5	Oxidizing substances and organic peroxides		

The general requirements are for transport of goods that are in total mass greater than 500kg. Less than 500 kg is considered Low Threat Consignment and does not require the following applications.

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

Gasoline and Other Highly Flammable Liquids:

1. Shall not be carried in the passenger compartment of a vehicle.

2. Shall be carried and stored in approved containers, with properly fitted caps, and shall be prevented from over turning.
3. Shall only be used with adequate ventilation.
4. Shall be provided with a fire extinguisher in transporting vehicle.
5. Shall not be used as a cleaner.
6. Gasoline engines shall be shut off and allowed to cool before refuelling.

Compressed Gases:

1. Care shall be exercised in handling all compressed gas cylinders. They shall not be dropped, jarred, or exposed to temperature extremes.
2. Cylinders shall have the valve cap or valve protection device in place at all times except when in actual use.
3. Cylinders shall not be rolled and shall not be lifted by the valve or valve cap; a suitable cradle or other device shall be used.
4. Compressed gas cylinders whether full or empty, shall be stored or transported in an upright position and chained or otherwise secured so they cannot fall or be upset.
5. Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease) a minimum distance of 6M or by a 1.5M high non-combustible barrier.
6. Cylinders shall not be placed where they might become part of an electrical circuit.
7. Hydrogen and fuel-gas cylinders shall not be stored inside any operating building. Separate storage buildings or sheltered storage areas shall be used.
8. Employees shall never force connections that do not fit nor shall they tamper with the safety relief devices of cylinder valves.
9. Cylinders shall be protected from sparks, flames, and contact with energized electrical equipment.

Oxygen and Acetylene:

1. Leather gauntlet gloves and workers using an oxyacetylene cutting torch shall wear goggles with the proper shade of lenses.
2. Oxygen and acetylene shall be stored and transported in a secured upright position.
3. Cylinders shall be stored in a well-ventilated area with an overhead cover to protect from the weather.
4. Protecting caps shall be in place when cylinders are moved or are not in use.
5. Cylinders shall be racked when being hoisted.

6. Leaking gas cylinder shall be shut off, placed outdoors, and reported to the supervisor.
7. Keep away from heat over 54 C or 130 F.
8. Empty cylinders shall be stored apart from full ones.
9. Check joints with soapy water or commercial leak detector when connecting regulators to cylinders.
10. Oil, grease, or similar materials shall not be allowed to come in contact with any valve, fitting, regulator, or gauge on oxygen cylinders.

Propane:

1. Propane is heavier than air (Specific Gravity Greater than 1.00) and will settle in low areas such as trenches, manholes, and sumps. The bottles shall be checked for leaks and low-lying areas shall be analyzed for build up of gas.
2. Cylinders shall be kept upright unless designed for horizontal use.
3. Cylinders shall be stored in a well-ventilated area away from heat.
4. Only approved hoses and fittings shall be used.
5. Always use soapy water or commercial leak detector when checking for leaks in propane systems.

Hydrogen:

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

Chlorine:

1. Chlorine containers shall be stored and properly secured in a cool place and protected against moisture.
2. Every precaution shall be taken to prevent accidental discharge of the gas.
3. Protective equipment shall be readily available for use in an emergency.
4. Chlorine cylinders shall never be used or stored near flammable materials.
5. Should a chlorine leak develop, the cylinder shall be placed so that only "gas" escapes. (An ammonia swab may be used to detect leaks.)
6. Water shall not be sprayed or poured on chlorine leaks.

Nitrogen:

1. While nitrogen is not toxic or flammable, it could be hazardous if large quantities were present in confined spaces (this is true of most gases). Some large transformers are shipped from the manufacturer charged with nitrogen.
2. Personnel entering a confined space would be faced with an atmosphere lacking in oxygen unless fully ventilated as per the CONFINED SPACE standard of this manual.

SECTION 34 – HYDROGEN SULPHIDE GAS

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under contract or the guidance of New Alliance Ltd. This Standard has been prepared to raise the awareness of employers and workers in the construction industry of the hazards posed by hydrogen sulphide gas in construction and the measures and procedures that should be taken to control those hazards

PURPOSE: The purpose of this standard is to establish, communicate & review our standards for preventing an unwanted exposure to a known hazardous substance – Hydrogen Sulphide Gas.

STANDARD: This standard is for the prevention of an employee to an exposure to Hydrogen Sulphide (H₂S) in accordance with the OHSA and any applicable regulations. New Alliance Ltd. has implemented this standard to ensure that no employee is exposed to Hydrogen Sulphide (H₂S) at levels in excess of the PEL (permissible exposure limit of 10 PPM). Management is responsible for ensuring the engineering controls and proper safe work practices are complied with at all times. Management will provide training to address characteristics and health effects of H₂S.

Hydrogen Sulphide Properties:

1. Extremely toxic. 100 ppm is the IDLH (Immediately Dangerous to Life or Health concentration)
2. Colourless
3. Solubility in water at 68 °F is 0.4% by weight.
4. Flammable Gas
5. Incompatible and reacts with strong oxidizers, strong nitric acid, and metals.
6. UEL (upper explosive [flammable] limit in air) is 44.0% by volume (at room temperature).
7. LEL (lower explosive [flammable] limit in air) is 4.0% by volume (at room temperature).
8. Contact and exposure occurs through inhalation, skin and/or eye contact.
9. Target organs are the eyes, respiratory system, and central nervous system.
10. Health affects and symptoms Include: Irritation of the eyes and respiratory system; apnea, coma, convulsions; conjunctivitis and eye pain

Potential employee exposure to Hydrogen Sulphide

Work involving sewer systems has significant potential for exposure to hydrogen sulphide. It should always be assumed that it is likely to be present and measures should be implemented to protect personnel. Potential employee exposure to hydrogen sulphide includes but is not limited to the following:

1. Sanitary Sewer Operations including Manhole and Horizontal Entry
2. Tanks (tanks at producing, pipeline, and refining operations).
3. Excavations

H₂S Characteristics

Hydrogen sulphide is a powerful and deadly gas, which is colorless and smells like rotten eggs at low concentrations and has a sweet smell at high concentrations. But workers should not rely on the smell as a warning as the gas quickly paralyzes the olfactory nerves, which allow you to smell. The result could be instant death. Long exposure to low concentrations will also deaden the sense of smell. H₂S is explosive - it will ignite and explode when subjected to a spark or ordinary flame - in any concentration from 4% to 44% of the air. It is also soluble in water and oil, so it may flow for a

considerable distance from its origin before escaping above ground or in an entirely unexpected place. Because the vapour (gas) is heavier than air, it may be located in lower elevations on the work site, such as excavations, ditches, creek beds, sumps, inverts, etc. If the H₂S gas is burned, toxic products such as sulphur dioxide will be formed.

Sources of H₂S

H₂S is formed by the decomposition of organic materials, so it is found in natural gas and oil, recycled drilling mud, water from sour crude wells, in mines, wells, fertilizers, sewers, and cesspools. Hydrogen sulphide is found in large amounts in natural gas and petroleum. Any worker involved in extracting gas and petroleum from the ground or in storing, transporting, or processing gas is at risk from exposure to H₂S. Hydrogen sulphide exists in solution in crude oil, and workers are exposed when the gas begins to "pass off" as it reaches the surface or comes into contact with air. This can occur at any point, including all stages of the refining operation, and it is accelerated by heat or hot weather. Fundamentally, employers and employees must be alert to the fact that working with a "closed system" does not always ensure safety. Operations involving the opening of valves or pumps on otherwise closed systems or working on such equipment that is not isolated or locked out are particular sources of danger. When a normally closed system opens, the potential exists for releasing hazardous chemicals into the workers' breathing zones in unknown concentrations.

10 ppm	Beginning eye irritation
50-100 ppm	Slight conjunctivitis and respiratory tract irritation after 1 hour exposure
100 ppm	Coughing, eye irritation, loss of sense of smell after 2-15 minutes. Altered respiration, pain in the eyes and drowsiness after 15-30 minutes followed by throat irritation after 1 hour. Several hours' exposure results in gradual increase in severity of these symptoms and death may occur within the next 48 hours.
200-300 ppm	Marked conjunctivitis and respiratory tract irritation after 1 hour of exposure
500-700 ppm	Loss of consciousness and possibly death in 30 minutes to 1 hour
700-1000 ppm	Rapid unconsciousness, cessation of respiration, and death.
1000-2000 ppm	Unconsciousness at once, with early cessation of respiration and death in a few minutes. Death may occur even if individual is removed to fresh air at once

Use and operation of H₂S monitoring systems & detection methods used on site

Employees working at jobsites where there is a potential for exposure to hazardous atmospheres, will be supplied with monitoring equipment. The monitors supplied will be capable of sensing a minimum of 10 ppm of H₂S in the atmosphere; and will activate audible and visual alarms when the concentration of H₂S in the atmosphere reaches 10 ppm. 10 ppm is the acceptable ceiling concentration for H₂S exposure in 1926-55 Appendixes A. Monitors will be calibrated and maintained per the manufacturers' specifications and instructions.

Proper use and maintenance of PPE

Please refer to the standard on PPE - respiratory protection. Employees working in areas where the possibility of exposure to toxic gases exists will be provided NIOSH approved respiratory equipment, and trained in their use and maintenance according to the company Respiratory Protection Program. Demonstrated proficiency in using PPE is required by the program.

2. Locations and use of safety equipment

All employees of New Alliance Ltd. must be notified of the location of safety equipment on each jobsite prior to commencement of work. Only personnel trained in the proper use of any required safety equipment will be allowed on the job-site.

3. Recognition and response to H2S warnings at the workplace

New Alliance Ltd. employees at will be required to respond immediately to audio or visual warnings issued either by personal monitoring equipment or established workplace general warning signals. Workplace site-specific contingency plans of the owner will be reviewed with personnel and provisions of the plan followed. Evacuation plans must be established for each work-site prior to commencement of work. Superintendent, or the foreman in charge of the job-site, will be responsible for supervision of evacuation procedures, checking for proper use of respiratory protection, ensuring all employees are cleared of the hazard area, notification of the facility management, and assembly and head-count of evacuated personnel at designated safe areas.

H2S Exposure

In the event an employee is exposed to H2S, the employee will immediately be evacuated to a safe area and Supervisor will take appropriate action.

4. Confined space and enclosed facility entry procedures.

See standard on Confined Spaces. These procedures will be enforced in all confined work situations.

SECTION 35 – UTILITY SAFETY

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to provide a standard that can be used to review the basic principles of working in proximity to a buried or overhead utility hazard in the workplace or project. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box at the workplace or project vehicle.

STANDARD: This standard shall be used to assess all possible hazards to which workers may be working in proximity to a buried or overhead utility hazard in the workplace or project and to outline the acceptable safe work practices that shall be implemented.

1. All New Alliance Ltd. employees and subcontractors shall have electrical awareness training prior to performing any work that is **near** the **allowable acceptable limits**.
2. All New Alliance Ltd. employees and subcontractors performing any work that is on or within the allowable acceptable limits, (see Table 1) of any live exposed part of an installation, equipment, or conductors, shall follow our **Live Electrical Permit**. A subcontractor shall have the option of using his or her own permit or be required to use our Live Electrical Permit.
3. If the requirements of the Live Electrical Permit cannot be complied with, the operating procedures shall not continue until all the unwanted hazards are controlled with the site specific Lockout and Tag procedures.
4. Any work, equipment, vehicle, crane or lifting device that is operating **near** an energized overhead utility, shall follow the **Working in Proximity to Overhead Utilities**.
5. No employee shall work near, open or close any live component, valve, circuit unless he/she is trained, thoroughly competent and has full knowledge concerning the outcome and has the ability to communicate “ample warnings” to others who may be endangered.
6. No person shall use his or her bare body part to determine a utility.
7. Electrical equipment and lines shall always be considered as “live”. Always test, isolate, and ground prior to your work.
8. Never wear jewellery or other metal objects while working on energized systems.
9. The casing and frame of portable electric generators shall be effectively grounded.
10. Extension cords shall be examined for condition before using. Damaged cords shall be removed from service and returned to the supervisor.
11. Extension cords shall be placed in such a manner as to prevent tripping hazards.
12. Extension cords shall not be used if the grounding pin is missing.
13. Only approved extension cords shall be used.
14. E&USA Electrical Utility Safety Rule102: Workers conducting work on or in proximity to exposed apparatus of an electrical distribution or transmission system shall have a copy of the Electrical Utility Safety Rules, and become thoroughly familiar with and observe all current rules applicable to their particular duties and to the duties of any employee they supervise.

15. E&USA Electrical Utility Safety Rule 106 - Authorization for Work: Only authorized workers or workers under the direction of an authorized worker may perform work on or in proximity to exposed energized apparatus.
16. E&USA Electrical Utility Safety Rule 113: When workers are required to perform work on exposed energized apparatus or where workers are exposed to the hazard of an arc flash, all practical measures shall be taken to protect workers against the effects of electric arc flash. Refer to Rule 113 for proper personal protective equipment, such as; clothing and eye protection.
17. An Authorized Worker, according to the Electrical Utility Safety Rules, is a worker who has been given formal permission by the owner and employer and is competent to perform work in proximity to energized apparatus.
18. No object shall be brought closer than the distance specified in Column 2 of the following Table to an exposed, energized overhead electric supply line of the voltage specified in Column 1:

TABLE 1

Column 1	Column 2
Nominal Voltage Rating	Minimum Distance
750 to 150,000 volts	3 Metres
150,001 to 250,000 volts	4.5 Metres
Over 250,000 volts	6 Metres

WORKING IN PROXIMITY TO OVERHEAD UTILITIES

1. Any work, equipment, vehicle, crane or lifting device that is operating near an energized overhead utility, shall follow these **Working in Proximity to Overhead Utilities**.
2. Any work that is being performed on or within the allowable limits, (see Table 1) of any live exposed part of an installation, equipment, or conductors, shall follow the **Live Electrical Permit**.
3. If the requirements of the Live Electrical Permit cannot be complied with, the operating procedures shall not continue until all the unwanted hazards are controlled with site specific Lockout and Tag procedures.
4. As the constructor/employer, New Alliance Ltd. shall ensure that no part of a vehicle, equipment or a load encroaches on the minimum distance permitted by Table 1.
5. The following measures shall be in place to ensure compliance prior to any work beginning:
 - I. Use and place adequate warning devices/signs to identify all potential overhead hazards. Use either the red "Danger Due To..." or the green Electrical Safety Authority "Danger Overhead Power lines". The signs shall be positioned in a way to identify the potential hazards; the device/sign shall be visible to the operator from all directions.
 - II. Please use an Acknowledgement Form or the space provided below to document the site-specific overhead utility hazards. The Project Management personnel shall be responsible to ensure that this document is discussed in a meeting/toolbox talk format with all workers, subcontractors gaining access to the project. Please remember to use an Acknowledgement Form shall be used to acknowledge the hazard & location of the overhead hazards.
 - III. A competent worker, designated as a signaller, shall be stationed so that he/she is in full view of the operator, the overhead utility hazard and the vehicle, equipment or load. The signaller shall warn the operator each time any part of the vehicle, equipment or its load may approach the minimum limits of distance.

LOCATES

Locates are designed and provided to ensure that all buried services are located before any work commences and to prevent any unwanted contact with existing utilities.

As per subsection 228(1), Regulation for Construction Projects 213/91, before an excavation (excavation means the hole that is left in the ground, as a result of removing material) is begun, gas, electrical, and other services in and near the area to be excavated shall be accurately located and marked.

Please refer to and review prior performing any locates:

1. Under no circumstances shall any work proceed without locates in hand, on site.
2. If the existing documented locates are inaccurate, do not begin work and call the locate company (one call service) to notify them of the problem.
3. If excavating on private land, locates shall be done before any work begins. We must arrange them ourselves.
4. When performing an operation that involves excavating in or around known communication lines or Utility lines. Please refer to the following reasonable steps that are required:
 - a) Manually dig test holes to expose and confirm the location of the lines.
 - b) Using mechanical equipment, a parallel excavation shall be performed at least 1 metre outside of the known location of the lines found in the existing test hole.
 - c) If mechanical equipment used for excavating is needed within the 1 metre area, additional test holes are required to expose the lines along the width of the excavation and then mechanical equipment can only be used within 1 foot of the known location of the lines.
 - d) A supervisor shall ensure that every reasonable precaution is taken in the circumstance for the protection of the communication and/or utility lines.
5. During periods of snow in the winter, ask the locator to mark with flags.
6. If locates are out dated, older than 30 days or required markings are no longer visible, the worksite shall be re-located.
7. When crossing a utility, it will be exposed.
8. Refer to the TSSA and Electrical Safety Authority Guideline for excavation in the vicinity of utility lines.

If an unwanted contact occurs with a communication, gas or utility line occurs:

1. Initiate the Emergency Response Plan
2. The supervisor and the office shall be notified immediately.
3. The utility company shall be notified.
4. A thorough investigation shall be done with all interested parties involved.
5. Recommendations will be made and followed up from each investigation.
6. A toolbox talk shall be done with all crews reviewing the findings.
7. The MOL must be contacted if the Incident occurs on a project site, as per Section 53 of the OH&SA and Section 11 of the Regulation for Construction Projects.

SECTION 36 - CONFINED SPACE

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any confined space activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to review the basic principles of working in a confined space and the general rules that must be followed prior to entry into a confined space. Please be advised responsibilities associated with this standard are contained in O. Reg. 632/05 Confined Spaces and the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: This standard shall be used to assess all possible hazards to which workers may be exposed while working within the aforementioned confined space and to outline the acceptable safe work practices that shall be implemented in order to complete the task.

Definition:

Confined Space - that is a fully or partially enclosed space, that is not designed, constructed or intended for human occupancy, and in which atmospheric hazards may occur because of its construction, location, contents or because of work that is done in it, shall be defined as a confined space and shall be identified as such. Examples of permit required confined spaces are: manholes, sewers, excavation pits, and wet wells.

Attendant - an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

Authorized Entrant - an employee who is authorized by the employer to enter a permit space.

Hazardous Atmosphere - an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from one or more of the following:

1. Flammable gas, vapours, or mists in excess of 10% of its Lower Explosive Limit (LEL).
2. Airborne combustible dust at a concentration that meets or exceeds its LEL.
3. Atmospheric oxygen concentration below 19.5% or above 23.5%.
4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit (PEL) is exceeded as per the AGCIH.
5. Any other atmospheric condition that is Immediately Dangerous to Life and Health (IDLH). This includes inert atmospheres or exposure to extremely dangerous chemicals, i.e., Cadmium vapour, Hydrogen Fluoride, etc.

Ventilation - is by means of gasoline, electric or other forced-air driven mechanical device(s) and located to fully ventilate the confined space.

Confined Space Rules

One hundred percent compliance is required by every employee, subcontractor, supplier and visitor on any New Alliance Ltd. property, workplace or project. The rules for any confined space entry:

1. **Mechanical ventilation** operating **100%** of the duration of entry.
2. All entrants must be connected to a **Lifeline/Retrieval System**.

3. Continuous **Air Monitoring** with an approved, functioning, calibrated gas meter.
4. **Harness** connected to a lifeline shall be worn by ALL Entrants or Full Entry Rescue available.
5. All Confined Spaces' **Entry Permit Required & Posted at Access.**

General Requirements

Employees are exposed to a variety of confined spaces and permit required confined spaces in the course of performing offered services. Because of these many types of spaces encountered, New Alliance Ltd. has adopted the program detailed below to ensure all personnel are protected and compliance is maintained. Examples of the types of confined spaces that may be encountered are:

- Manholes / Sewer Lines (sanitary or storm).
- Wastewater Sumps or similar spaces.
- Underground Storage Compartments/Vaults.
- Trenched Access to Underground Pipes (Trench boxes and shoring) 4 feet or greater in depth.
- Access Pits and Shafts 4 feet or greater than in depth.

The Daily Hazard Assessment (DHA) will identify the expected permit required confined spaces on the work site to which employees may be expected to enter. This will serve as an inventory of permit required confined spaces. The DHA will specify the control measures to be used to protect personnel during entry. For most permit required confined spaces, this Confined Space Entry procedure is the control measure to specify. For other potential permit required confined spaces, additional control measures may have to be specified. Some types of excavations are an example where this may be required. These control measures will be developed in consultation with the Safety Manager.

Prohibit smoking within a 35-foot radius of any manhole or confined space entry portal where flammables, e.g. styrene, may be present.

The scope of a project may change during execution. If so, additional confined spaces may become involved and must be evaluated as to whether they are permit required and control measures specified.

ASSESSMENT

An assessment report shall be completed in writing by a competent worker prior to commencing any confined space work, as detailed in the Ontario Regulation for Confined Spaces O. Reg. 632/05. Never enter a potential confined space area until an assessment has been completed, air quality tests taken, the results made available, and the proper site-specific procedure is put in place. All required permits must be obtained prior to entering the confined space.

When the assessment findings demonstrate a potential unsafe environment, written procedures shall be implemented to correct the hazardous situation within the confined space. The confined space shall be re-tested by a competent person after each hazard has been eliminated, them continuously monitored.

All documentation required for this procedure (assessments, plans, reports, records of training) will stay at the site of the confined space until the work in the area is completed and will be available for anyone who wants to review the documentation until the second anniversary of the last entry into the confined space to which the records relates and/or the date of a new record of the same kind relating to the same confined space is established.

SAFE WORK PROCEDURE: Prior to entering a potential area that **may** be identified as a confined space, the site supervisor or designate shall ensure following:

1. Every worker who enters a confined space or who performs related work shall be given adequate training for safe work practices for working in confined spaces and for performing related work, including training in the recognition of hazards associated with confined spaces.
2. A toolbox talk shall be held with all employees involved to discuss the safe work procedure, emergency response plan, the confined space, fall protection, traffic protection and the “by-pass” measures.
3. Perform all Lockout/Tag-out procedures for unwanted sources of energy; ensure to include the “by-pass” system to ensure no flooding during operations.
4. All equipment used: Air Quality Monitors, PPE, Primary & Secondary lifelines, Tri-pod or Davit Arm, harnesses, radios/telephones, SCBA, First Aid & Burn kits, fire extinguisher, mechanical ventilation units and generators for the “by-pass” systems shall have a documented inspection by a competent person prior to use.
5. All actual/potential confined spaces shall be assessed for all possible hazards. An air quality test must be taken to ensure levels of Oxygen, CO, H₂S and LEL are within legal limits.
6. Before a worker enters a confined space, the Supervisor & Worker shall ensure that an adequate number of persons trained are available for immediate implementation of the on-site rescue procedures. The Supervisor & Worker shall ensure that the rescue equipment is, (a) readily available to effect a rescue in the confined space; (b) appropriate for entry into the confined space; and (c) inspected as often as is necessary to ensure it is in good working order, by a person with adequate knowledge, training, and experience who is appointed by the Supervisor.
7. No worker shall enter a confined space if the atmospheric or physical hazards are not controlled.
8. The confined space & fall protection hazard shall be identified with “Danger Due To....” signs and barrier control placed at the access openings.
9. The confined space shall be purged and ventilated to provide an atmosphere that is safe for any worker prior to their entering the space. Mechanical ventilation must be set in place and the space must be continuously monitored and ventilated.
10. The atmosphere inside of the confined space shall be monitored at all times using the testing equipment appropriate for the risks involved. Monitoring of oxygen content is required at all times to assist in the detection of “Oxygen Deficient” or “Oxygen Enriched” environments, Carbon Monoxide (CO), Hydrogen Sulphide (H₂S) and Lower Explosive Limits (LEL).
11. The attendant(s) monitoring or stationed outside of the confined space shall be trained in First Aid and CPR, equipped with an emergency alarm, two-way radio or telephone to maintain communication in the event of an emergency. Attendant can be part of the non-entry rescue team.
12. The attendant(s) monitoring or stationed outside of the confined space shall use a guardrail system to protect employees from the fall hazards associated with the confined space opening.
13. If required, the worker in the confined space shall have a communication device that allows him/her to easily speak with the attendant or others outside the confined space.

14. If applicable and reasonable, every person entering a confined space shall wear a CSA approved harness attached to the retractable lifeline and secondary rescue line. The retractable lifeline & secondary rescue line shall be engineered, maintained and installed in a position outside of the confined space and capable of supporting any load it may be subjected to in the event of an emergency. **Full entry rescue team is required when a worker cannot be attached to lifeline.**
15. Proper and due consideration shall be given to all tools and equipment that shall be used in a confined space. Tools or equipment that emit toxic or gas vapours, sparks etc. shall not be used in the confined space unless a full entry, work and rescue plan is in place and all workers are aware and trained in these plans. Where atmospheric conditions are of concern, the appropriate PPE shall be reviewed, selected, inspected, and used in accordance with all manufacturers' recommended operating protocols.
16. A register of all workers entering the confined space shall be established including all emergency information for the worker(s). Workers are required to sign in & "line out" using the confined space permit.
17. Supervisor & worker shall ensure that explosive and combustible substances within a confined space are controlled through ventilation, purging, rendering the atmosphere inert, or other adequate means, in accordance with the relevant plan.
18. Supervisor & worker shall ensure that no worker enters or remains in a confined space that contains or is likely to contain an airborne combustible dust or mist whose atmospheric concentration may create a hazard of explosion.
19. Supervisor & worker shall ensure that no worker enters or remains in a confined space that contains or is likely to contain an explosive or flammable gas or vapour, unless one of the following applies: 1. The worker is performing only inspection work that does not produce a source of ignition. In the case of an explosive or flammable gas or vapour, the atmospheric concentration is less than 25 per cent of its lower explosive limit, as determined by a combustible gas instrument. 2. The worker is performing only cold work. In the case of an explosive or flammable gas or vapour, the atmospheric concentration is less than 10 per cent of its lower explosive limit, as determined by a combustible gas instrument. 3. If the worker is performing hot work, the atmospheric concentration is less than 5 per cent of its lower explosive limit, as determined by a combustible gas instrument.

HORIZONTAL PIPE ENTRY

General Requirements

Entry into any sized pipe is only permitted with approval of the Supervisor on a case-by-case basis. Larger diameter pipes permit more upright positions with personnel being able to walk or crawl for entry or exit. Entrants may be hundreds of feet from the entry point(s). Special considerations for site-specific planning may include:

- Engineered Double pipe plugs with personnel monitoring the plugs.
- Minimizing head of liquid upstream of the plugs.
- Damming with diversion of water.
- Special sleds for movement of personnel.
- 4:1 Rope Rescue Retrieval and Belaying System Kit.
- Multiple man way openings into the pipe with multiple attendants required.

The following items may be used only if Double-plugging the pipe is not possible and only after the proper training has been conducted and documented.

- Catch nets at downstream end of pipe to catch personnel that could be washed away in case of flooding.

Minimum Requirements for Entry into Horizontal Piping (Opened Ended Culvert Work Subject to Evaluation)

- If plugging of sewer is required, the line will be double plugged and braced if bypass is used. All types of plugs must be inflated to manufacturer's specifications and monitored accordingly. Liquid head should be kept to a minimum on upstream side of plugs (check every two hours). Tethered entrants should enter from downstream entrance of pipe.
- Two attendants are required, one in the hole and one on top of ground.
- Adequate forced air ventilation will be in use 100% of the time during man entry. Determination should be made whether airflow should be positive or negative pressure or both.
- When line air is used the 5 or 10-minute escape pack will be worn by each entrant.
- The entrant performing the work must wear an approved continuous air monitor.
- If by-pass piping is installed and the by-pass system is shut down for a work shift or longer, the bypass will be restarted and allowed to operate until sufficient flow has passed through it to completely purge it once. Following that purge, the sewer system where personnel will be entering and working will be tested for toxics, oxygen and flammable gases and the confined space entry permit prepared and issued. No one will be approved for entry into the sewer system until the bypass purge, the atmospheric testing and the confined space entry permit have been satisfactorily completed.
- Audio and visual communication will be maintained at all times between the entrant and the attendant.
- If the employee must go beyond the attendant's sight then a TV camera shall be in view of the entrant or winched in front of the entrant for constant visual contact. Hand signals must be established prior to entry.
- Entrant will be in full body harness at all times. Harness will be attached to lifeline and Pipeline Retrieval and Belaying System.
- Emergency communication equipment must be provided (telephone, radio).
- Attendant (s) must never leave his/her post without a replacement present.
- Attendant and entrant must be aware of site-specific requirements prior to pipe entry. **Note: The Daily Hazard Assessment and entry permit must be signed prior to entry.**

CONFINED SPACE - EMERGENCY RESPONSE PLAN

Management shall ensure that all workers, sub-contractors and/or visitors sign a document to acknowledge the Emergency Response Plan. In the event of an emergency, the attendant shall perform the following crisis management steps:

Conscious Worker

- Activate the emergency audio alarm (Air horn),
- Use the radio or telephone to notify the supervisor/constructor immediately,
- If required, send someone to guide the Emergency Services to the scene,
- Communicate with the worker; calm the person,
- **Do not enter the confined space,**
- Help the worker to climb out safely. Provide first aid until help arrives.
- Use the previously installed "*Rescue System*" to raise the worker out of the confined space, if required, call 911 or provide first aid until help arrives.
- If it is unsafe for you to easily rescue the worker, call 911, and wait until help arrives at safe distance away from the hazards,
- Never risk your safety to rescue a worker, wait for the Emergency Services,
- Stay with the injured person until the supervisor arrives or the Emergency Services arrives,
- Turn the scene over to the supervisor once they have arrived,
- Restrict access to the accident scene, (other than Emergency personnel / MOL),
- Rope off the accident area for the accident investigation team,
- Notify the Worker Health & Safety Representative or JH&SC and union (if any),

Unconscious Worker

- Activate the emergency audio alarm (Air horn),
- Use the radio or telephone to notify the supervisor/constructor immediately, call 911
- Send someone to guide the Emergency Services to the scene,
- **Do not enter the confined space,**
- Briefly try to communicate with the worker; if he/she becomes conscious, keep the worker calm and follow the procedures for a conscious worker.
- If you **cannot** confirm communication with the worker and it is safe for you to easily rescue the worker, use the previously installed "*Rescue System*" to raise the worker out of the confined space, provide first aid until help arrives.
- If it is unsafe for you to easily rescue the worker, call 911, and wait until help arrives at safe distance away from the hazards,
- Never risk your safety to rescue a worker, wait for the Fire Department.
- Send someone to guide the Emergency Services to the scene,
- Stay with the injured person until the supervisor arrives or the Emergency Services arrives,
- Turn the scene over to the supervisor once they have arrived,
- Restrict access to the accident scene, (other than Emergency personnel / MOL),
- Rope off the accident area for the accident investigation team,
- Notify the Worker Health & Safety Representative or JH&SC and union (if any),

ENTRY PERMIT - A separate permit is required for every potential confined space.

Constructor:	Workplace/Project Address:
Employer:	Employer Supervisor:
Date:	Duration of Work: (Full or Half Day)
Permit Required: (Circle one) YES or NO	Permit Number: (If required)
Start Time:	Finish Time:
Location of Confined Space:	Dimensions of Confined Space:
Description of Work:	
List Workers Involved:	Location During Work Process:
1.	
2.	
3.	
4.	

List Monitoring and Emergency Response Equipment

Air Quality Monitor:	Multiple air quality monitors
Fall Protection & Rescue Equipment:	Harness, 4:1 Rope Rescue System, Rescue Basket, SCBA, Davit or Tri-pod System, SCBA – 30 minutes minimum, Self Rescue Respiratory Protection.
Fire Protection:	Fire Extinguisher,
First Aid Equipment:	Standard First Aid kit, Burn kit, Blankets,
Personal Protective Equipment:	Standard PPE, Nomex or FR clothes for welding operations,
Ventilation	Mechanical Fresh Air Equipment minimum 1200 CFM,
Dewatering	If required - Minimum 2" water pump plus back up system.
Communication Equipment	Air horn, Radio, Telephone,

ASSESSMENT: The following is an assessment of the various potential work areas that may become a confined space on this project. The actual and/or potential hazards listed below have been identified with resolution:

1. Pneumatic –
2. Hot or Cold –
3. Mechanical or Moving Parts –
4. Electrical –
5. Gravitational (Fall) –
6. Chemical –
7. Hazardous Air Quality –
8. Water –
9. Access/egress –
10. Pedestrian/Public Traffic –
11. Other –

Air Quality Test Results:

Document all hourly readings on the next page for the following acceptable ranges:

1. Carbon Monoxide (CO) with an acceptable range of 0 - 25ppm.
2. Hydrogen Sulphide (H₂S) with an acceptable range of 0 - 10ppm.
3. Oxygen (O₂) with an acceptable range of 19.5 % - 23%.
4. Lower Explosive Limit (LEL) with an acceptable range of 0 - 10%.

The above assessment was performed by _____ . I acknowledge that I am a professional engineer or a qualified person who has, to the best of my knowledge, identified all actual/potential hazards that may be encountered while working in or around the confined space identified.

Signature

Date

Checklist:

- | | |
|--|--|
| <input type="checkbox"/> Air quality test results within limits. | <input type="checkbox"/> Communication equipment in place. |
| <input type="checkbox"/> Rescue plan in place. | <input type="checkbox"/> Safe work procedure followed. |
| <input type="checkbox"/> Rescue equipment in place. | <input type="checkbox"/> Correct tools for the job. |
| <input type="checkbox"/> Trained in first aid, C.P.R. | <input type="checkbox"/> Site superintendent is aware. |

Confirmation:

Employee 1: _____

Employee 2: _____

Attendant 1: _____

Attendant 2: _____

Supervisor: _____

Supervisor: _____



AIR QUALITY MEASUREMENTS

Date/Time:	Project/Location:
Supervisor:	Attendant:
Readings Taken By:(Print)	Signature:

AIR QUALITY MONITORS

CONFIRMATION OF ACCESS AND EGRESS (IN OR OUT)

SECTION 37 – LOCK OUT & TAG

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the OHSA and applicable regulations during any lockout & tag activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to provide a standard that can be used to review the basic principles of removing an unwanted energy in the workplace. Please be advised responsibilities associated with this standard are contained in the OHSA located at every safety board/box in the workplace or project vehicle.

STANDARD: This standard shall be used to assess all possible hazards to which workers may be exposed to an unwanted energy source and to outline the acceptable safe work practices that shall be implemented. Lockout / tagging procedures are an important requirement during any activity when a piece of equipment or system represents a potential hazard to life or property.

1. The most stringent of instructions, rules, or regulations shall apply with respect to all lockout & tag procedures. The manufacturer's specifications shall be complied with at all times.
2. Every employee and/or subcontractor shall be trained in LOTO. No work shall be performed if a person involved is not trained. Contact a supervisor immediately for direction.
3. Employees shall follow written job procedures for lockout / tagging as directed by the Supervisor or as outlined by the site-specific lockout & tag procedure.
4. Only the person who placed a lock and tag on a system may remove it. No one else has the authority to remove safety locks.
5. When multiple locks & tags are required, a multiple lock clamp should be used to ensure that the system is not re-energized until all locks are removed.
6. All locks & tags must be placed at the primary source of the energy whenever possible. If this is not always possible, the locks should be placed as close to the primary unwanted energy source as possible. The primary energy source must also be tagged and monitored to prevent re-energizing the system prematurely.
7. No employee shall perform work or maintenance on any equipment, tool or thing or component of, if it is live, or if it is in operation. LOTO is required for all service & maintenance of equipment, tools or things.
8. No person shall use any part of his or her body to determine if unwanted energy exists.
9. All vehicles, materials, components, devices, installations, equipment and any attached lines or hoses shall always be considered as "live". Always test, isolate, ground, de-energize, isolate or relieve any unwanted energy prior to work.
10. Lockout & tagging shall be performed to create a zero state of energy for all forms of potential hazardous energy (i.e. Electrical, Mechanical, Potential, Hydraulic, Pneumatic, Thermal, Gravitational and Chemical).
11. Please use the lockout & tag information that is listed on the following pages as provided by the Infrastructure Health & Safety Association of Ontario as a guide to perform **ANY and ALL** maintenance or repairs on any vehicles, materials, components, devices, installations, equipment and any attached lines or hoses.

WHAT IS LOCKOUT AND TAGGING?

Lockout and tag ensures that hazardous energy sources are under the control of each worker. Fatal accidents can occur when people assume that machinery is turned off or made harmless - *but it isn't*.

Lockout is a procedure that prevents the release of hazardous energy. It often involves workers using a padlock to keep a switch in the "off" position, or to isolate the energy of moving parts. This prevents electric shock, sudden movement of components, chemical combustion, falling counterweights, and other actions that can endanger lives. Lockout is a physical way to ensure that the energy source is de-energized, deactivated, or otherwise inoperable.

Tagging tells others that the device is locked out, who has locked it out, and why. Tagged devices and systems must not be re-energized without the authority of those named on the tag.

FORMS OF ENERGY

When most people think of uncontrolled hazardous energy, they think of electricity. But construction crews doing work in industrial or office settings often have to lock out and tag a variety of energy sources. Here are the main types.

1. **Electrical** — electrical panels, generators, lighting systems, etc.
2. **Mechanical** (the energy of moving parts) — flywheels, blades, fans, conveyor belts, etc.
3. **Potential** (stored energy that can be released during work) — suspended loads, compressed air, electrical capacitors, accumulated bulk goods, coiled springs, chemical reactions, changing states (solid—liquid—gas), etc.
4. **Hydraulic** — presses, rams, cylinders, cranes, forklifts, etc.
5. **Pneumatic** — lines, compression tanks, tools, etc.
6. **Thermal** — steam, hot water, fire, etc.
7. **Chemical** — flammable materials, corrosive substances, vapours, etc.

Some equipment may involve more than one type of energy, and pose unexpected hazards. For example, a machine may have an electrically operated component with a hydraulic or pneumatic primary power source, or it may become activated on a timed schedule. With some equipment, gravity and momentum can present unexpected hazards.

You must recognize and control conditions such as these. Switches, power sources, controls, interlocks, pneumatics, hydraulics, computer-controlled sources, gravity-operated sources — all of these must be locked out and appropriately tagged by each worker involved.

PROCEDURE

Many plants or industrial establishments will have specific procedures for lockout and tagging. This makes sense because the in-plant workforce will have proven its procedures through use on the particular system or machine in question.

Follow these procedures, but also verify that all energy sources have been isolated because construction work may differ from routine plant maintenance. Plant personnel may shut down machines, equipment, or processes. In other cases, plant representatives may issue permits:

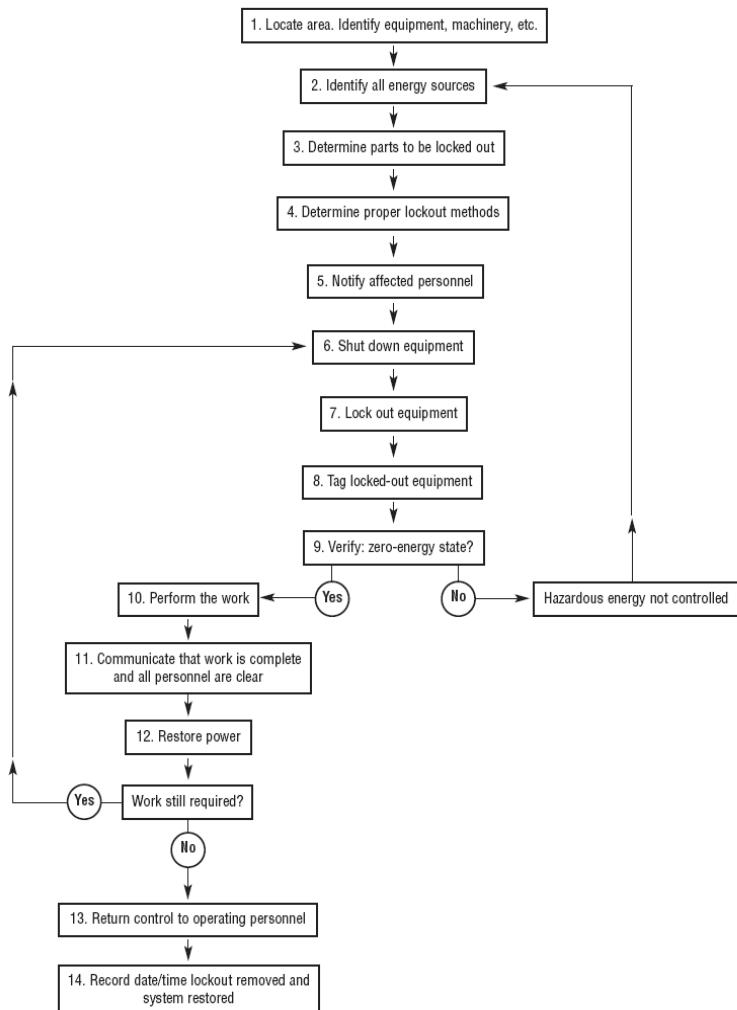
1. A work permit to allow work on their equipment and,
2. A lockout permit to ensure that all lockout procedures are followed before work begins.

A written safe work procedure for lockout and tagging is essential. Once implemented and followed, a good procedure ensures that no form of energy can harm anyone during a lockout.

A written procedure helps to ensure that lockout and tagging have been thoroughly and effectively carried out before work begins. It should include

1. Training requirements for workers and supervisors,
2. Quality, type, and colour of locks, scissors, chains, blanks, blinds, and other lockout devices,
3. Method of identifying lock owners
4. Control of keys for locks
5. Colour, shape, size, and material for tags
6. Method of securing tags and information to be included
7. Communication & authorization procedure to shut down and start up machinery and equipment,
8. Record-keeping requirements,
9. Itemized steps to meet lockout objectives.

PLANNING STEPS:



EXPLANATION OF STEPS

STEP 1: LOCATE WORK AREA AND IDENTIFY EQUIPMENT, MACHINERY, OR OTHER SYSTEM COMPONENTS TO BE WORKED ON

Identify the area with references such as floor, room name, elevation, or column number. Identify the equipment that is the subject of the work.

STEP 2: IDENTIFY ALL ENERGY SOURCES

Identify all energy sources affecting the equipment or machinery. Identify the various energy forms to be locked out such as electrical, momentum, pneumatic, hydraulic, steam, and gravity.

STEP 3: IDENTIFY THE PARTS TO BE LOCKED OUT OR ISOLATED

Identify systems that affect, or are affected by, the work being performed. These may include primary, secondary, backup, or emergency systems and interlocked remote equipment. Review the current system drawings for remote energy sources and, where required, identify and confirm with the client or owner the existence and location of any switches, power sources, controls, interlocks, or other devices necessary to isolate the system. Remember that equipment may also be affected by time restrictions for completing the work & time - activated devices.

STEP 4: DETERMINE LOCKOUT METHODS

Confirm that the lockout of all energy sources is possible. Some equipment may have to be kept operational to maintain service to other equipment that cannot be shut down. Take appropriate steps to provide protection for workers while working near operating equipment. Equipment that can be locked out should be locked out by the methods most appropriate to the hazards.

STEP 5: NOTIFY ALL PERSONNEL AFFECTED

Shutting down equipment may affect operations in other locations, incoming shifts, or other trades who may be planning to operate the locked-out system. Before proceeding with the lockout, inform all personnel who will be affected. At construction sites with a large workforce or at relatively large factories, you may need to have special communication methods and permits or approvals.

STEP 6: SHUT DOWN EQUIPMENT AND MACHINERY

Qualified personnel must shut down the equipment, machinery, or other system components, placing them in a zero-energy state. Trace all systems to locate and lock out energy sources. The main source may be electrical, for instance, but pneumatic and other forms of energy may also be present. Always look for other possible energy sources.

All equipment capable of being energized or activated electrically, pneumatically, or hydraulically must be de-energized or de-activated by physically disconnecting or otherwise making the apparatus inoperable.

Always ensure that the client and operators are aware of the plan to shut down and lock out equipment, machinery, or other system components. In some cases, operations personnel or equipment operators may be required to shut down components because of their special qualifications or knowledge of the system. In determining what needs to be shut down and locked out, consider the different energy sources that may be found in the system.

STEP 7: INSTALL LOCKOUT DEVICES

After the circuit has been de-energized and locked out by the person in charge, each worker involved in the lockout must be protected by placing his or her personal lock on the isolating

device. Remember—even though the disconnect is already locked out, you are not protected until you attach your own personal safety lock. Each worker must retain his or her key while the lock is in place. Only the worker in charge of the lock should have a key.

Please Remember . . . Merely removing a fuse doesn't constitute lockout. The fuse could be easily replaced. The fuse should be removed and the box locked out. The lockout devices attached to one system should not prevent access to the controls and energy-isolating devices of another system.

Locks

Locks should be high-quality pin-type, key-operated, and numbered to identify users.

Multiple locks and lockout bars

When several workers or trades are working on a machine, you can add additional locks by using a lockout bar. You can add any number of locks by inserting another lockout bar into the last hole of the previous bar.

Other lockout devices

Scissors — have holes for locks and should be made of hardened steel.

Chains—should be high quality and snug fitting.

Blocks or cribbing—prevent or restrict movement of parts.

Blanks or blinds—are solid metal plates inserted at flanged connections to prevent the flow of liquids or gases.

Pins and clamps—should be of high-quality materials and designed to fit the system.



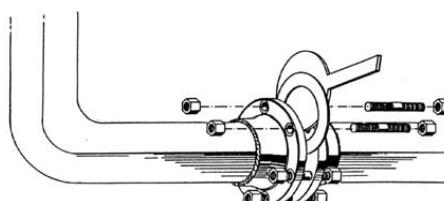
Lock



Multiple/Scissor Clamp



Valve Chaining



Pipe Blanking

STEP 8: TAGGING

Requires each worker involved in a lockout operation to attach a durable tag to his or her personal lock. The tag must identify the worker's name, the worker's employer, the date and time of lockout, the work area involved, and the reason for the lockout. A tag in itself offers no guarantee that a machine or system is locked out. It simply provides information.



Signs must be placed on the system indicating that it must not be energized or operated and that guards, locks, temporary ground cables, chains, tags, and other safeguards must not be

tampered with or removed until the work is complete, and each worker has removed his or her personal lock.

A record must be kept of all equipment locked out or otherwise rendered inoperable so that all of these devices can be reactivated once the work is complete.

STEP 9: VERIFY ZERO-ENERGY STATE

After any power or product remaining in the equipment has been discharged or disconnected by qualified personnel, verify that all personnel are clear of the equipment. Then try, with extreme caution, to start the equipment manually. Look for any movement or functions. If none are observed, confirm that all energy sources are at a zero-energy state. Test the system to ensure that all electrical components are de-energized and de-activated, including interlocking and dependent systems that could feed into the system, either mechanically or electrically.

STEP 10: PERFORM THE TASK

Carry out and complete the work assignment.

STEP 11: COMMUNICATE WORK IS COMPLETE AND THAT ALL PERSONNEL ARE CLEAR

1. Ensure that personnel are clear of the locked-out equipment, machinery, or system.
2. Remove only **your** tags and locks.
3. To remove another worker's lock:
 - i) Supervisor & H&S Rep. shall notify the owner of the lock – request permission & remove if successful – document time, date and conversation. Signatures required.
 - ii) If unsuccessful, Supervisor & H&S Rep. shall inform NAL Management & Constructor of situation and confirm lock removal - document time, date and conversation. Signatures required.
 - iii) Constructor, NAL Supervisor & H&S rep. confirm safe to remove the lock - document time, date and conversation. Signatures required - remove the lock.
 - iv) Maintain documentation for duration of project or at least one year.
4. Tell personnel that were originally informed of the lockout that the equipment, machinery, or system is no longer locked out.
5. Once maintenance activities are complete, a supervisor must ensure that personnel are out of harm's way, slip, trip, and fall hazards have been cleared from the area, and guards have been replaced. Each worker who affixed a lock to an energy control point must remove his/her own lock(s). Equipment start-up may occur after all of the above are complete.

STEP 12: RESTORE POWER

Return systems to operational status and the switches to power ON. Have qualified personnel restart machinery or equipment.

STEP 13: RETURN CONTROL TO OPERATING PERSONNEL

When all work is completed, the person in charge of the lockout operation should formally return control of the equipment or system to plant personnel.

STEP 14: RECORD DATE/TIME LOCKOUT REMOVED AND SYSTEM RESTORED

This last step is important. It saves valuable information that may be lost if not recorded. Staff involved in the shutdown may not remain at the same jobsite. Owners or operators may require this information to help plan future shutdowns.

SECTION 38 – FALL PROTECTION

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to provide a standard that can be used to review the basic principles of fall protection and the measures or safe work procedures required in the workplace or project. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: This standard shall be used to assess all possible hazards to which workers may be exposed to a fall hazard and the safe work procedures required as protective measures.

The following systems create the Fall Protection procedures:

1. Guardrail System
2. Protective Cover System
3. Travel Restraint System
4. Fall Restrictive System
5. Fall Arrest System

Fall Protection shall be applied where a worker is exposed to any of the following hazards:

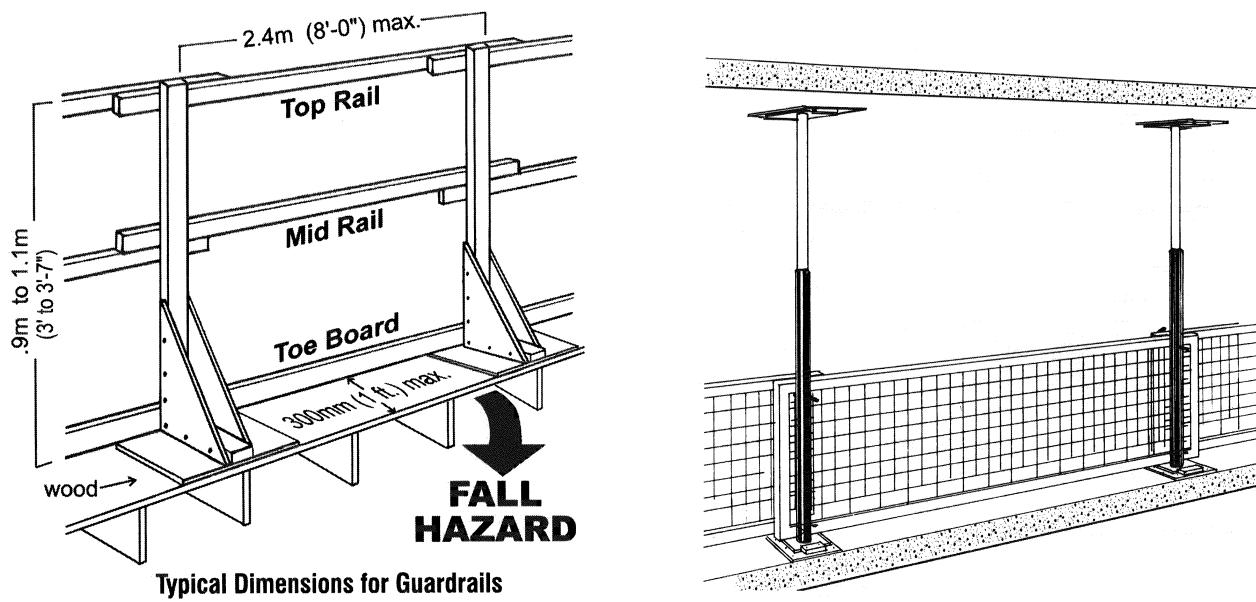
1. Falling more than 3 metres. (10 feet)
2. Falling more than 1.2 metres (4 feet), if the work area is used as path for a wheelbarrow or similar equipment.
3. Falling into operating machinery.
4. Falling into water or another liquid.
5. Falling into or onto a hazardous substance or object.
6. Falling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

A Guardrail System shall be used if a worker has access to the perimeter of an open side of any of the following work surfaces and is exposed to a fall of 2.4 meters (8 feet) or more:

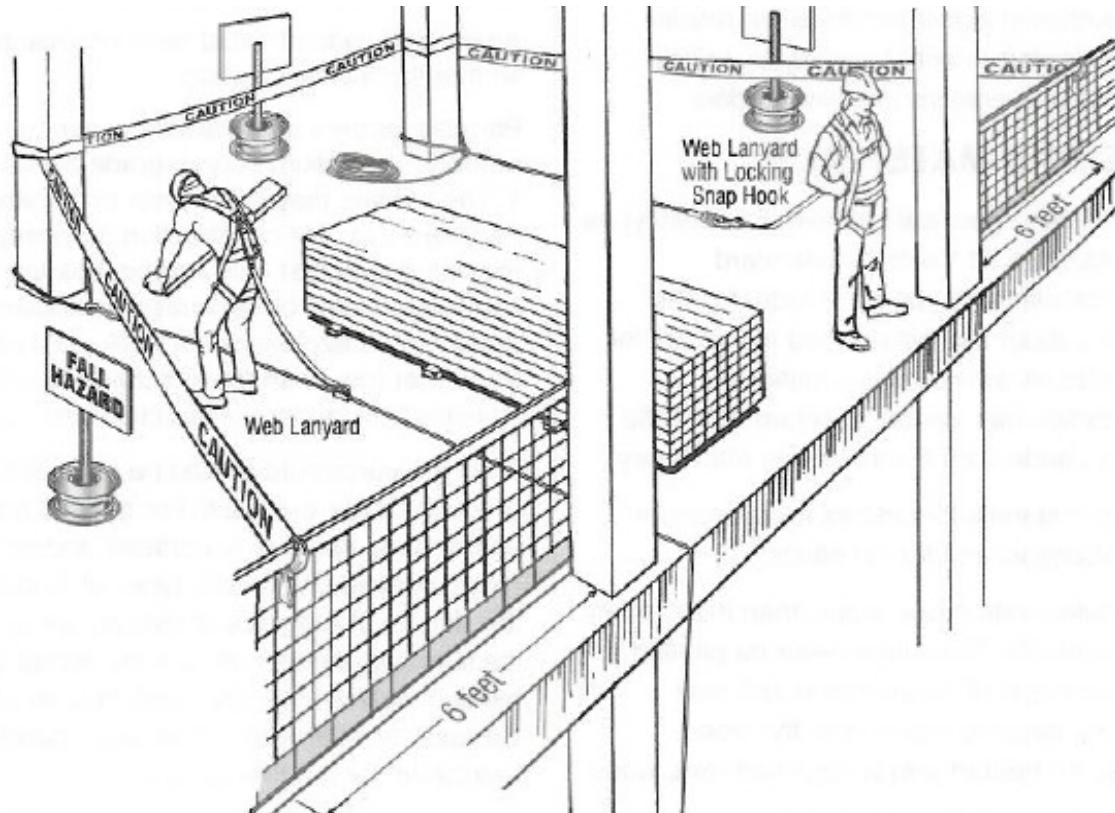
1. A floor, including the floor of a mezzanine or balcony.
2. The surface of a bridge.
3. A roof while formwork is in place.
4. A scaffold platform or other work platform, runway or ramp.

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

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

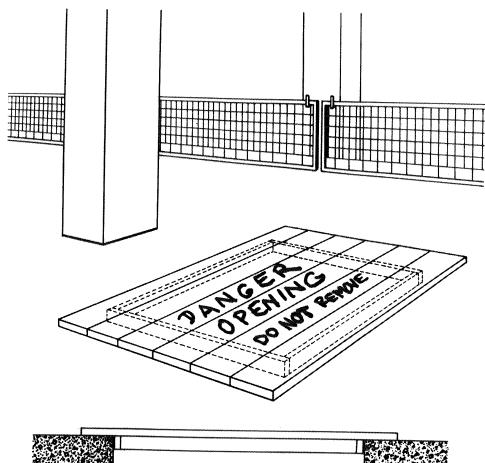
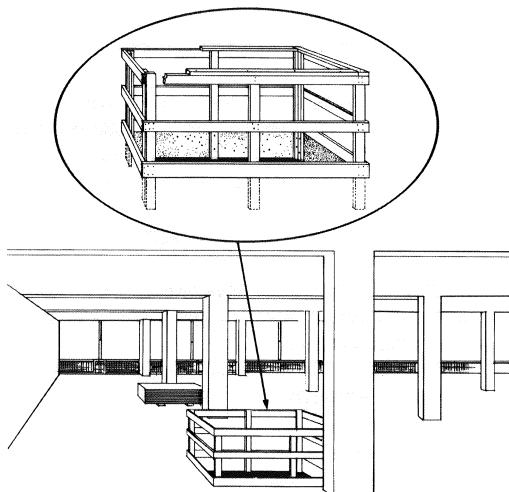


GUARDRAIL REMOVAL



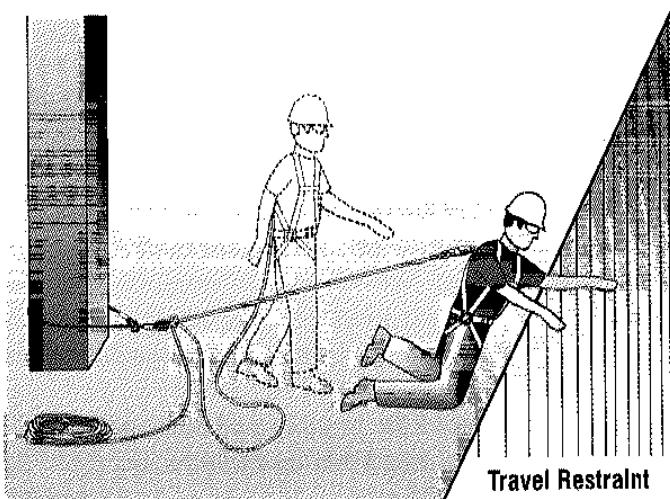
A **Protective Cover** shall be used to prevent a worker from falling through an opening on a work surface. The employee shall completely cover the opening with an identified cover that is securely fastened. The cover shall be made from a material that is adequate to support all loads to which the cover may be subjected. The cover must be capable of supporting a live load of at least 2.4

Kilopascals (50 psf) without exceeding the allowable unit stresses for the material used. A protective covering may be removed temporarily to perform work in or around the opening if a worker is adequately protected and signs are posted. If it is not possible to install a guardrail system as previously defined, a worker shall be adequately protected by a travel restraint system, a fall restricting system, fall arrest system, or a safety net.


Pallet-Style Cover

Protection for Floor Openings

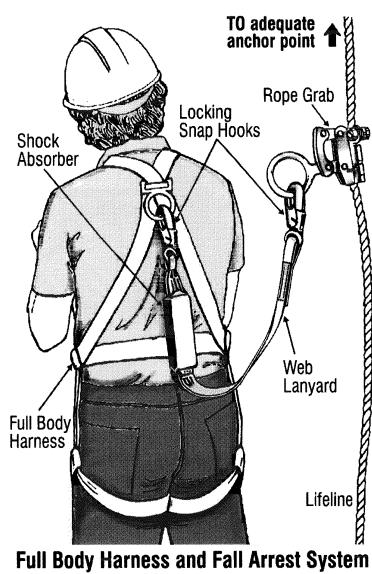
The **Travel Restraint System** shall consist of a full body harness with adequate attachment points or a safety belt. The full body harness or safety belt shall be attached by a lifeline or lanyard to a fixed or temporary support. A competent worker before each use shall inspect the system. All defective components shall be removed and tagged as "out of service".

Where work must be done within 2 metres (6 feet) of an open, unprotected edge, a fall protection system must be provided. A travel-restraint system can afford the protection required. The system lets a worker travel just far enough to reach the edge but not far enough to fall over.


Travel Restraint

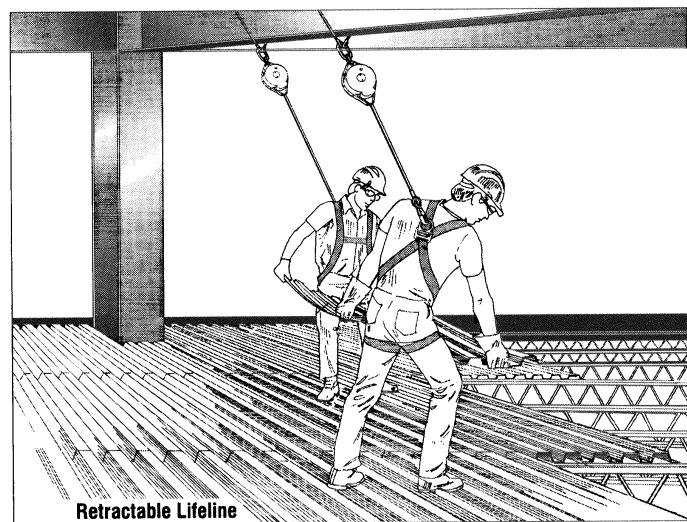
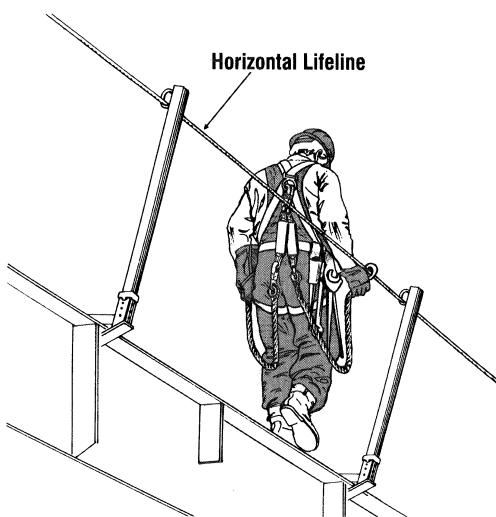
The Fall Restrictive System shall consist of an assembly of components that is designed and arranged in accordance with the manufacturer's instructions so that a worker's free fall distance does not exceed 0.6 metres (2 feet) and is attached to an independent fixed support. A competent worker before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

The **Fall Arrest System** shall consist of a full body harness with adequate attachment points and a lanyard equipped with a shock absorber or similar device. The system shall be attached by a lifeline or by the lanyard to an independent fixed support or temporary support. The system shall be arranged so that a worker cannot hit the ground or an object on a level below the work. A **shock absorber** shall not be used if it allows the worker to hit the ground or an object or a level below the work. The system shall not subject a worker who falls to a peak fall arrest force greater than 8 kilonewtons (1,800 lbs. force). Before each use, a competent worker shall inspect the system. All defective components shall be removed and tagged as "out of service".



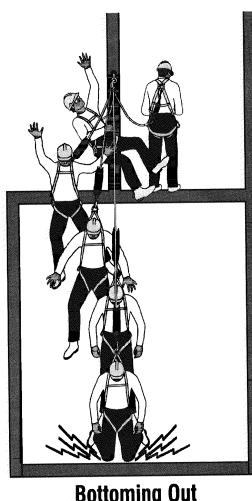
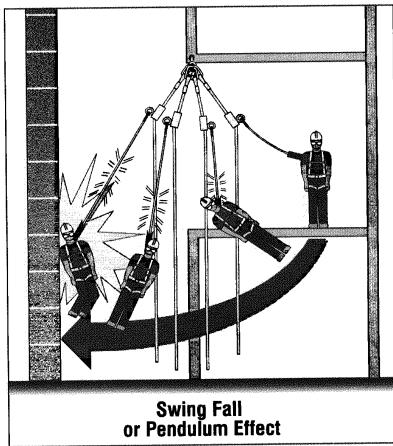
All the above systems shall be designed by a professional engineer in accordance with good manufacturing practices, and shall meet the National Standards of Canada. All workers shall be trained in fall prevention systems before engaging in any work that requires their use.

A **Fixed Support** is a permanent anchor system that is installed according to the Building Code. A **Temporary Fixed Support** used in a fall arrest system that is capable of supporting a static force of at least 8 kilonewtons (1,800 lbs. force) without exceeding the allowable unit stress for each material used. If a shock absorber is used in the fall arrest system, the temporary fixed support shall be capable of supporting a static force of at least 6 kilonewtons (1,350 lbs. force) without exceeding the allowable unit stress for each material used. A temporary fixed support used in a fall restricting system must be capable of supporting a static force of at least 6 kilonewtons (1,350 lbs. force) without exceeding the allowable unit stress for each material used. A temporary fixed support used in a travel restraint system that is capable of supporting a static force of at least 2 kilonewtons (450 lbs. force) without exceeding the allowable unit stress for each material used.



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

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



All workers who may use a fall protection system shall be adequately trained in its use and given adequate oral & written instructions by a competent person. A written copy of the training & instruction record for fall protection shall be kept on site and a copy forwarded to senior management.

Before any use of a fall arrest system or a safety net by a worker at a project, the worker's supervisor shall develop written procedures for rescuing the worker after his or her fall has been arrested.

SECTION 39 – FALL PROTECTION EMERGENCY RESCUE PLAN

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to provide information as a reference prior to performing activities associated with an emergency related to a fall.

STANDARD: The fall protection emergency rescue plan procedures and response actions will provide order during a normally confusing emergency situation. The supervisor shall have all workers, subcontractors and/or visitors sign the acknowledgement form for the rescue plan. If a Fall Arrest System arrests a worker and you are first on the scene, the following crisis management steps must be followed:

CONSCIOUS WORKER

- Send someone to notify management/constructor immediately,
- Communicate with the worker; calm the person
- Worker shall climb the existing site-specific rescue device, such as a ladder.
- If qualified to do so, render first aid until help arrives
- If it is unsafe for the worker to use the ladder to self rescue; the chain fall system shall be used.
- If required call 911
- Send someone to guide the Emergency Services to the scene,
- Stay with the injured person until the supervisor arrives or the Emergency Services arrives,
- Turn the scene over to the supervisor once they have arrived,
- Control the scene; restrict access to the accident scene, (other than Emergency personnel / MOL),
- Notify the Safety Representative or JH&SC and union (if any),

UNCONSCIOUS WORKER

- Call 911 immediately,
- Send someone to notify the management/constructor immediately,
- Try to communicate with the worker; if they become conscious, keep the worker calm and follow the procedures for a conscious worker.
- Use the site-specific rescue/retrieval system to raise the worker to safety.
- If qualified to do so, render first aid until help arrives,
- If it is unsafe for you to easily rescue an arrested worker wait for the Emergency services to arrive,
- Never risk your safety to rescue a worker, wait for the Fire Department.
- Send someone to guide the Emergency Services to the scene,
- Stay with the injured person until the supervisor arrives or the Emergency Services arrives,
- Turn the scene over to the supervisor once they have arrived,
- Control the scene; restrict access to the accident scene, (other than Emergency personnel / MOL),
- Notify the Safety Representative or JH&SC and union (if any).

SECTION 40 - PREVENTATIVE DROWNING PROCEDURES

PURPOSE: The purpose of this standard is to provide information as a reference prior to performing activities associated with an emergency related to a person drowning. This document is to be used to assess all possible hazards to which workers may be exposed while working near or over water and to outline the acceptable safe work practices that shall be implemented in order to complete any task.

SCOPE: Using **reasonable care considerations**, this procedure applies to all employed by or in contract with our organization. With respect to **working near or over water**, NAL shall ensure that no worker, supervisor, subcontractor, supplier or visitor is exposed to the danger of drowning unless the following procedure is established & confirmed.

STANDARD: The emergency rescue plan procedures and response actions will provide order during a normally confusing emergency situation. The supervisor shall have all workers, sub-contractors and/or visitors sign the acknowledgement form for the preventative drowning procedures & rescue plan.

SITE SPECIFIC INFORMATION			
Constructor:		Supervisor:	
Employer:		Supervisor:	
Project Address:		Date:	
Rescue Team:		Emergency #:	
Rescue Team:		Emergency #:	

PROCEDURE: Prior to any worker, supervisor, subcontractor, supplier or visitor accessing a work area near or over top of water, the following must be addressed and confirmed.

1. Rescue Team shall perform an assessment for conditions & procedures. Create site specific SWP.
2. A toolbox talk shall be held with all workers, supervisors, subcontractors, supplier and visitors involved to discuss/review the identified water hazards, the site specific safe work procedure, the site specific emergency response plans and the requirements for fall protection/rescue.
3. Identify the drowning hazards & fall protection hazards with “Danger Due To....” signs and/or red “keep out/danger” tape placed at least two metres away from the openings to the water.
4. Post this Emergency Response Plan. This plan shall include the names of the **two or more trained workers (Water Rescue Team)** that shall be available for a rescue operation with the location or position of the site-specific rescue equipment.
5. Document the training for the rescue workers detailing their roles and procedures in the Emergency Response Plan. The emergency response workers shall be trained in First Aid and CPR, equipped with an emergency alarm and a two-way radio or telephone to maintain communication in the event of an emergency.
6. All equipment that may be used in this emergency response plan (PPE, lifelines, harnesses, alarms, radios/telephones, first aid kits, life rings, PFD, rescue equipment) shall be inspected by a competent person. The designated competent person shall post and keep readily available a document detailing the time and date of the inspection of the equipment.
7. For the purposes of this SWP, New Alliance Ltd. believes that “being exposed to the danger of drowning” shall be when any individual is working over water or within two metres of a water hazard with no approved protection.

8. If any worker, supervisor, subcontractor or visitor is exposed to the danger of drowning, a life jacket shall be used and the required fall protection procedures followed. A "life jacket" is a personal flotation device that provides sufficient buoyancy to keep the worker's head above water, with their face up and without effort by the worker.
9. The workers, supervisor, subcontractors and visitors that are required to work within two metres of the water hazard shall wear an approved five-point harness attached to the provided Fall Protection System (Travel Restraint system or Fall Arrest). All systems shall be manually operated, engineered, positioned and installed as per the engineered drawings to an engineered anchor point that will be capable of supporting all loads that it may be subjected to.

EMERGENCY RESPONSE TEAM

Title / Responsibility	Print Name:	Signature:	Company:
Team Leader – Supervisor			
Water Rescue / First Aid			
Water Rescue / First Aid			
Rescue Support #1			
Rescue Support #2			
Rescue Support #3			
EMS Guide #1 – Access Point			
EMS Guide #2 – Scene			

EMERGENCY RESPONSE EQUIPMENT & LOCATION:

Equipment:	Location:

Competent Person Inspecting Equipment:	Signature:
Date & Time:	Title/Position:

EMERGENCY RESPONSE PLAN - Water Rescue

The supervisor shall have all workers, sub-contractors, suppliers and/or visitors sign the attached acknowledgement form for the Emergency Response Plan.

In the event of an emergency, please follow these procedures:

- Immediately, ensure one or more ring buoys are thrown to the victim,
- Activate the emergency audio alarm (Air horn),
- Initiate Water Rescue Team,
- If possible, Communicate with the victim; calm the person,
- Use the radio or telephone to notify the Supervisor / Management immediately,
- Supervisor or designated person shall call 911,
- EMS Guide #1 – Flag down & guide the Emergency Services to EMS Guide #1,
- EMS Guide #2 – Guide the Emergency Services to scene,
- Rescue Support #1 – starts the “Warm Up Truck” and turns heater on full & waits for directions at the scene gathering point.
- If accessible and safe to do so, Water Rescue Team shall drive the rescue boat to the victim(s) to allow him/her to climb in safely. If required, use the boat hook to assist. Once the victim(s) is safely inside the boat, immediately provide first aid and return to the designated gathering point.
- Rescue Support Team shall be waiting on shore to transfer victim to the waiting “Warm Up Truck”,
- Designated driver drives to the waiting 911 services or designated safety trailer,
- If the victim cannot be assisted into the rescue boat due to injury or loss of consciousness, stay with the injured person; use the rescue basket to transport the injured person to the designated gathering point, wait for 911 services,
- If the injured worker is not breathing, start artificial respiration immediately.
- If it is unsafe for you to easily rescue the worker, call 911, and wait until help arrives at safe distance away from the hazards,
- Avoid hypothermia by taking the following steps:
 - a) Move victim into the waiting “Warm Up Truck”;
 - b) Remove wet clothing. Dress victim in warm clothes and wrap in blankets;
 - c) Give hot non-alcoholic drinks;
 - d) Give sweets. (Quick Heat Foods).
 - e) Designated driver drives to the waiting 911 services or designated safety trailer,
- Never risk your safety to rescue a worker, wait for the 911 Emergency Services,
- Send someone to call our main office to activate our emergency response plan,
- Stay with the injured person until the supervisor arrives or the Emergency Services arrives,
- Turn the scene over to the supervisor once they have arrived,
- Restrict access to the accident scene, (other than Emergency personnel / MOL),
- Rope off the accident area for the accident investigation team,
- Notify the Safety Representative or JH&SC and union (if any),

Hypothermia: (Reference – First Aid Manual)

The human body senses and compensates for temperature changes. When the body can no longer compensate for these changes, other procedures must be instigated - such as protective clothing, altered work procedures, artificial heat or wind barriers, etc.

Hypothermia results when the body continues to lose heat and the core body temperature drops. Involuntary shivers begin. This is the body's way of attempting to produce more heat and it is usually the first warning sign of hypothermia.

Many cases of exposure have occurred in temperatures well above freezing. How cold the body gets depends on many factors, not just air temperature.

Heat loss from convection (wind-chill) is probably the greatest and most deceptive factor in loss of body heat. When the air is still and the temperature is minus 1°C, the body will feel cool. Given the same temperature and a wind of 40 km/hr it will feel bitterly cold. In essence, the wind blows away the thin layer of air that acts as an insulator between the skin and the outside air.

If the body has gotten wet either through rain or submersion in water, the likelihood of hypothermia is greatly increased.

The wind chill index is probably the best known and most used of cold-stress indexes. Everyone facing exposure to low temperature and high wind should consult the wind chill index.

The dead air space between the warm body and clothing and the outside air is essential. Many layers of relatively light clothing with an outer shell of wind-proof material maintain body temperatures much better than a single heavy outer garment worn over ordinary indoor clothing. Make sure clothing allows some venting of perspiration. Wet skin will freeze more rapidly than dry skin.

Because metal will conduct heat away from the body quite rapidly, be very careful of skin contact with metal objects.

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

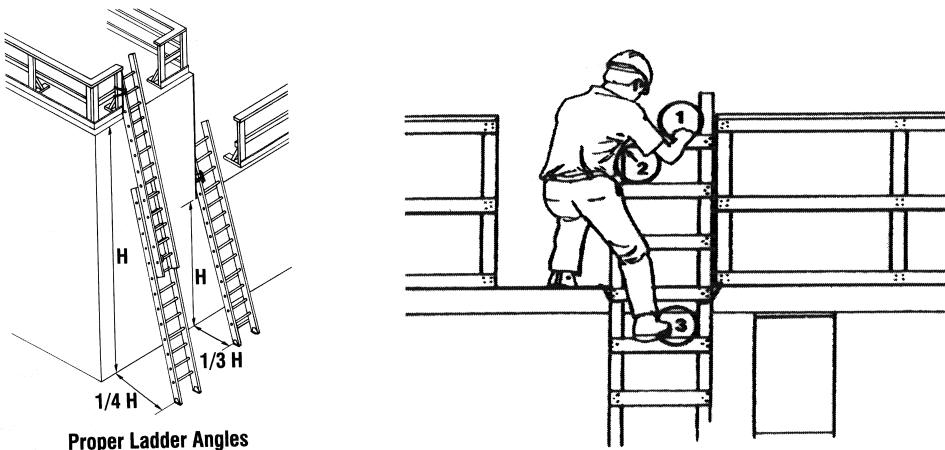
SECTION 41 – LADDERS

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to provide information as a reference prior to using a ladder to perform activities while under direction of New Alliance Ltd. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: The following safe work procedures shall apply if it is **not** reasonable in the circumstances to use a proper work platform or an elevating work platform.

1. Access ladders shall be used in accordance with the manufacturers' recommendations for safe use and load limitations. **Maintain 3-points of contact at all times.**
2. Ladders used as a regular or temporary means of access shall be clear of debris, equipment and other obstructions, both at the top and bottom of the ladder. If you are using an extension ladder, or any ladder higher than 8 feet, have someone hold the ladder in place until you have secured or tied off the ladder for use.
3. Portable ladders shall be **secured in place at an incline of 3:1 or 4:1.**
4. Stepladder use requires that the legs be fully extended and the spreader bar locked into place. Never stand on the top step of the stepladder or the pail shelf. As noted above, ensure that the ladder is on a firm and level footing and that the base of the ladder is free from all obstructions.
5. **Do not use defective ladders.** Inspect your ladder each day prior to use to ensure that it is in good condition. Look for cracks in the rungs or side rails and check to make sure that none of the components are loose or damaged. Any defective ladders should be tagged and removed from the project immediately.
6. The maximum length for ladders is the following: 16 feet for trestle ladders or for each of the base and extension sections of an extension ladder, 20 feet for a step ladder, 30 feet for a single ladder or an individual section of a ladder, 50 feet for a 2 section extension ladder and 60 feet for an extension ladder with more than 2 sections.
7. No regular or temporary access ladders shall be set up beyond a landing that is greater than 30 feet (9 metres), whichever is the lesser.

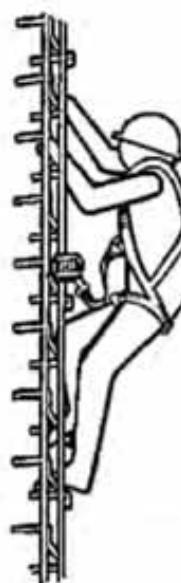


Fall Protection SWP:

1. Ladders are for short duration work only; a maximum 15 minute time period. Alternative options are required for work that exceeds 15 minutes.
2. If work is on or above the 9th step of a ladder, fall protection is required and is to be secured to an approved anchor point at or above the worker's head.
3. If work is on or above the 9th step of a stepladder, use a retractable lanyard that is secured to an approved anchor point at or above the worker's head.
4. 3-points of contact shall be maintained at all times while on a ladder.
5. Access ladders for scaffolds must be secured.



Ladder Cage



Fall Arrest System

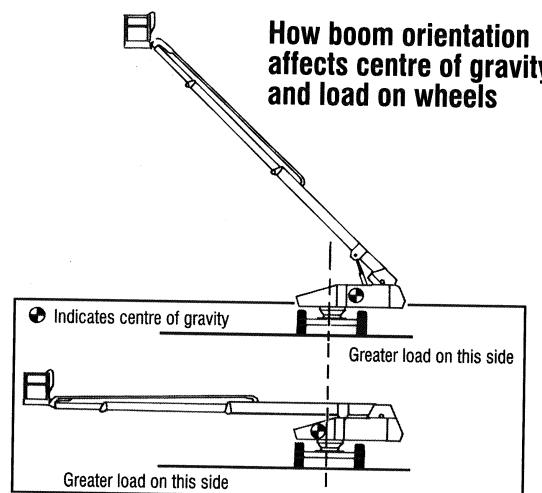
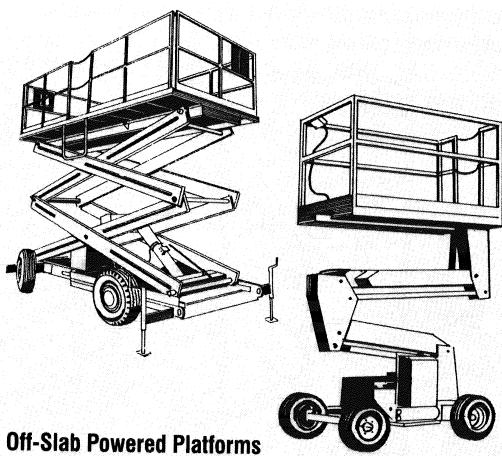
SECTION 42 – ELEVATING WORK PLATFORMS

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to provide information & guidance on the basic principles of operating an elevating work platform.

STANDARD: Elevating Work Platforms (EWP) are motorized vehicles and must be used in accordance with all operating instructions provided by the manufacturer in their operating manual. No worker shall operate an EWP unless they have received training in the safe operation of the equipment, understand the limitations of the equipment, and have read the operating manual. An EWP must meet the applicable National Standards of Canada standards and support a minimum 300-pound rated working load.

1. A worker who has been fully trained and is competent to operate the EWP shall inspect the EWP each day before use. This worker must have received written and oral instructions on the machine's use, be familiar with the manufacturers' instructions, understand the load limits for the machine, understand by demonstration the correct use of all controls and understand the surface limitations for operating the EWP.
2. EWP shall at all times be equipped with a full guardrail system. In addition, the EWP must have at the controls of the device, a rated working load, all limited working conditions Including the proper use of outriggers, stabilizers and extendable axles, the specifics on firm level working surfaces required for all use, any warnings from the manufacturer on use.
3. The direction of movement for each operating control, the name and number of the National Standards of Canada standard to which it was designed and the name and address of the owner.
4. The EWP must be maintained by the owner to ensure that the safety factors are maintained to the original design. The owner must keep records of all inspections, tests, repairs, modifications and maintenance for as long as the machine is in use and this must include the signature of the person involved in any of the above noted tests etc.



5. An EWP shall never be loaded in excess of its rated working capacity and be used on a firm level surface in accordance with all of the manufacturers written instructions. It should not be loaded or used in a manner that will affect its stability or endanger a worker and shall never be moved unless all workers on it are protected against falling by a safety belt or harness attached to the platform. Reference to the regulations for additional information is encouraged.
6. Prior to using an Elevating Work Platforms (EWP), make sure you are comfortable with all required operating requirements as set forth in the manufacturers operating instructions. If it has been more than 30 days since you last used a EWP, it is suggested that you spend a few minutes reviewing the EWP manual prior to use. If you are not qualified to operate the EWP do not use it.
7. Review the work area and all intended paths of travel to ensure there are no obstructions or floor / ground conditions, which could affect the stability of the machine. Make sure that the guardrail system is intact and that all operating instructions and warning signs at the controls are legible. If equipped with outriggers, stabilizers, warning alarms and/or a flashing light make sure that these components are operational prior to use. You will need to have a safety belt and lanyard (as a minimum) if you intend on moving the machine from one location to another or when elevating the machine. Once you are on the EWP make sure the chain or restraining device at the open end is secured in place.
8. Always drive the EWP slowly and pay strict attention to the path of travel. If workers are in the area, move the machine only when they are clear. Once you have arrived at your next work location, elevate the platform to the work area. Never stand on the mid-rail or top-rail of the guardrail system as this presents a serious fall hazard. If you cannot reach the area to complete your work, you will require a written SWP to identify the steps to be taken prior to continuing. If you will be performing any open flame operations such as welding or soldering, you must have a fire extinguisher on the EWP and a fire watch below.
9. When your work is complete and you will be moving to another location, it is recommended that you lower the machine to its lowest point and then drive the machine to its new location. This will ensure that the centre of gravity is at its lowest point and provide maximum protection against rollover. When lowering the EWP, make sure that there are no workers below the EWP. If the EWP hydraulics fail at any time or the elevating device becomes stuck in an elevated position, call for assistance, stay in the machine, and do not attempt to climb down the machine. If this happens, the machine must not be used until it has been repaired and re-certified for use.
10. A worker shall not use a defective or damaged temporary work platform or EWP.
11. A worker shall tag a defective or damaged EWP "out of service".

SECTION 43 – SCAFFOLDS

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to provide information & guidance on the basic principles of scaffold use and the minimum requirements for set-up and safe use in the workplace.

STANDARD: **Scaffold** use indicates that you will be working at an elevated height and requires that you take all required precautions to avoid accidents.

1. Every scaffold must be designed, constructed and configured to support or resist 2 times the maximum load or force which it is likely to be subjected, without exceeding the allowable unit stresses for the materials the scaffold system is made of and 4 times the maximum load or force to which it is likely to be subjected without overturning.
2. No scaffold should ever be loaded in excess of its maximum load capacity.
3. Every scaffold system shall be used in accordance with the manufacturer's specifications and have all required components in place and secured. This includes all horizontal and diagonal bracing, horizontal members secured with no splices between the points of support, footing or sills or supports capable of supporting 2 times the maximum load that the scaffold will be subjected to without settlement or deformation that will affect the scaffold's stability. In addition, all fittings and gear including base plates or wheels as per the manufacturers' instructions, connecting devices between the frames that provide positive engagement in tension and compression, all safety catches, clips and/or pins as required and be secured at vertical intervals not exceeding 3 times the least lateral dimension measured at the base.
4. Scaffolds mounted on castors or wheels shall have working brakes for each wheel and the brakes shall be applied and locked when a worker is on the scaffold.
5. Scaffold systems should be inspected on a daily basis by a competent worker with a record of the inspection maintained for reference and records.
6. A competent worker must supervise the erection, alteration and dismantling of any scaffold system.
7. A scaffold or other work platform shall be at least 18 inches wide, be fully planked if it is a scaffold system and the working platform shall be 8 feet above ground level.
8. A guardrail system must be in place, have a separate means of access and egress (a secured ladder), not have any unguarded openings and shall have each component of the platform secured against slipping from its supports.
9. Wooden planks used for platforms shall be Number 1 Grade Spruce, 2 inches thick by 10 inches wide, arranged so that their span is not greater than 7 feet, arranged so that the overhang is not less than 6 inches and not more than 12 inches and have cleats or other mechanism employed to secure the planks from slipping.
10. Prior to assembling and erecting the scaffold, review the work area to assess the ground conditions and determine what additional requirements might need to be met. After the location has been determined, ensure that the ground conditions are as level and firm as possible prior to erecting the

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

11. Fully plank the mainframe of the first level prior to erecting additional sections. Make sure that the bottom level is square and level and that there are no bent frames in use.
12. If you are erecting more than two sections (lifts) of scaffold, fall arrest must be worn once you are at the second platform level. The erection or dismantling of 2 or more lifts of scaffold should always require 2 workers.
13. A secured ladder must be used to gain access to all levels.
14. Erect each section of scaffold, make sure that you secure, level and square each section.
15. Tie-in the scaffold to the project or building when the scaffold height is 3 times the least lateral dimension measured at the base of the scaffold. This will provide additional structural support for the scaffold system.
16. Make sure that the platforms are secured with cleats or by using another process to secure the planks.
17. If you are using prefabricated platform sections, check the hooks to ensure that they are not cracked, bent or deformed in any way prior to use. If they are, do not use them and return them to our shop for repair or replacement. The platforms should always be installed in accordance with the engineering design and/or manufacturers' instructions.
18. When using a wheel mounted, rolling or a Baker scaffold system, ensure that the conditions include a firm, level ground/floor surface. Ensure that the wheels have working brakes and that the brakes are applied and locked when a worker is using the scaffold. Do not "SURF" or move the scaffold while standing on it unless, a method of fall protection is in place for the conditions.
19. The Supervisor or the designated competent person shall use a "out of service" tag on the scaffold if the scaffold or any part of the scaffold or component of the scaffold is defective, damaged or otherwise in a condition not as per the manufacturers' specifications.
20. The Supervisor or designate shall attach the tag on the scaffold at the access point. The tag shall only be removed by the Supervisor or designate after the scaffold has been inspected and approved by the Supervisor or designate that it is safe to use as per the manufacturers' specifications.
21. A worker shall report / inform the supervisor if they discover that a part of the scaffold or component of the scaffold is defective, damaged or otherwise in a condition not as per the manufacturers' specifications.
22. A worker shall not use any scaffold that includes a part or component that is defective, damaged or otherwise in a condition not as per the manufacturers' specifications.
23. A Supervisor or designate shall ensure that no worker uses any scaffold that includes a part or component that is defective, damaged or otherwise in a condition not as per the manufacturers' specifications.

SECTION 44 – FRAME SHORING TOWERS

SCOPE: The following information shall be used when erecting or dismantling any frame shoring towers. As with scaffold use, working at an elevated height and requires that you take all required precautions to avoid any accidents.

PURPOSE: The purpose of this policy is to review the basic principles of Frame Shoring Towers use and the minimum requirements for set-up and safe use on the project.

STANDARD:

Typical shoring tower frames are approximately 6 feet high. A shoring tower consists of two end frames and two crossbraces. The crossbrace length for these towers is usually 10 feet. Once constructed, a single tier of the shoring tower would be 4 feet wide by 10 feet long by 6 feet high. Frames 4 feet high and 8 feet high are also used for shoring applications.

Screwjacks at the base can be used for leveling the frames and may be extended up to 2 feet. The screwjack is 32 inches long and telescopes inside the frame leg.

Shoring tower frames are placed one on top of another, usually in a single tower configuration. Depending on the height of the floor to be formed, the shoring tower may be as high as 5 lifts. Bridgework requires larger, heavier-duty frames and may require towers exceeding 50 feet in height.

At each corner of the top of the tower are U-heads with screwjacks, aluminum stringers, and aluminum joists. Plywood is nailed onto the aluminum joists.

To comply with fall protection requirements in the construction regulation (O. Reg. 213/91), the following guidelines have been developed by the industry and approved by the Ministry of Labour. The guidelines should be viewed as only one solution to fall protection for scaffold erectors.

By following the guidelines, a worker is protected if a fall should occur. The shoring tower is not subjected to additional external loads. The three components of the fall arrest system -- two adjustable horizontal lifelines, two 3½-4 foot non-shock-absorbing lanyards, and the worker's approved safety harness (capable of attaching two lanyards) -- are readily adapted to use on the tower. The industry believes this to be the safest method of erecting this type of scaffolding.

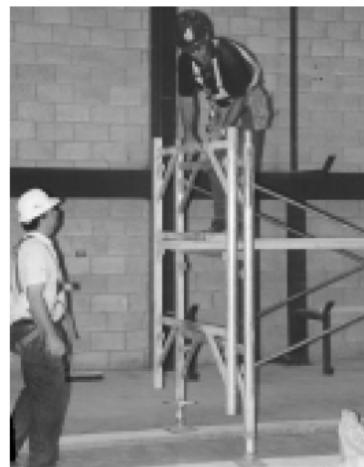
Shoring towers are designed for supporting concrete and are not intended for use as access. The only time a worker is required to work off these towers is during erection and dismantling.

Erecting Procedure:



Two workers erect the base lift, one at each frame. Each worker is equipped with two lanyards attached to an approved safety harness. The screwjacks, frames, and crossbraces are installed from the support surface (ground).

The planks required for installation of the second lift are placed on level 2. Planks must be cleated or otherwise secured against slipping.



Wherever feasible, ladders shall be employed for access and egress as the construction of the shoring tower progresses. If it is not feasible to use a ladder, Worker A climbs one of the frames onto the planks placed at level 2.

Worker B, at the support surface, passes the frames and crossbraces for the second lift to Worker A, at level 2.

Worker A sets the frames in place at each end of the tower. Note that one end frame has one end of the horizontal lifeline already attached to the top rung, as close to the middle of the rung as possible.



Before setting the second frame in position, the horizontal lifeline is attached to its top rung. Once the second frame is in place, Worker A installs the crossbraces.

The horizontal lifeline system must meet the minimum requirements of the construction regulation (O. Reg. 213/91) and must be designed in accordance with good engineering practice.



Once all the connections are made to the second lift, Worker A tightens the adjustment on the horizontal lifeline and attaches the lanyard.

From this point, the worker is tied off at all times.

Worker B passes additional plank(s) to Worker A, who places plank(s) at level 5.

Worker A, standing on a single plank, moves the remaining plank from level 2 to level 5. The one plank is left at level 2, and moved to lie directly beneath the two planks at level 5.



Regardless of the height of the individual frames used in the tower, the planks are always moved to one level below the top of the highest frame until the required height of frames has been reached.



Worker A climbs from level 2 to level 5.





At level 5, Worker B again passes frames and crossbraces from the support surface to Worker A. Worker A moves along the planks at level 5 while tied to the horizontal lifeline at level 6.

Note that one end of a second horizontal lifeline is already attached to the top rung of the next frame to be placed.



Worker A attaches the other end of the second horizontal lifeline to the top rung of the second end frame prior to setting it on the coupling pins.





While Worker A is still connected to the lower horizontal lifeline, the crossbraces are installed on the third tier.

Once both crossbraces are installed, the third tier is completed. The worker tightens the adjustment on the upper horizontal lifeline and connects the second lanyard to the upper line.

When one lanyard is connected to the upper horizontal lifeline, the other lanyard is disconnected from the lower horizontal lifeline. The lower line is removed to be used again later, on the next lift.



Worker A now sets planks at level 7 because this is the required height of the tower. If the tower were to be higher, the planks would be set at level 8. The worker climbs onto the planks to prepare for installing the deck.

For higher towers, the same procedure is followed until the required frame height has been reached.

Installing the deck:

As soon as the top tier is braced, and the horizontal lifeline is tightened between the topmost rungs, Worker A connects one lanyard to the upper line. The other lanyard is disconnected from the lower horizontal lifeline. The lower horizontal lifeline may be left in place for descent.

Worker B passes a plank to Worker A, who places it on the third rung from the top. Worker A, standing on a single plank, moves the remaining plank from his level to the working level.

Worker A climbs the frames while attached to the horizontal lifeline. Now it is possible to move along the top of the tower to install the deck components.

The process is repeated until all the towers for the formwork have been erected.



With one lanyard attached to the upper horizontal lifeline, Worker 1 climbs down the frames to the next lower plank. Standing on that plank, the worker connects the second horizontal lifeline to the rung of the frame one level higher than the plank level. The worker climbs up once more, disconnects the second lanyard, and loosens and removes the top horizontal lifeline for further use while descending the tower. This procedure continues until the worker reaches the support level.

Dismantling:

The dismantling of shoring towers is no different than most types of scaffolds. Generally, the dismantling procedure is the exact reverse of the Erection procedure; the last piece installed is the first to be removed/dismantled.

SECTIONS 45 – CHAIN SAWS

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish and communicate information prior to using a chain saw to perform activities while under direction of New Alliance Ltd. Please be advised; responsibilities associated with this standard is contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project.

STANDARD: The following safe work procedures shall apply in the circumstances where a chain saw is to be used as a tool.

1. Prior to its use, a competent person shall properly train any person using a chain saw.
2. The manufacturer and Occupational Health & Safety Legislation set out the proper personal protective equipment that is required and it shall be worn as per the manufacturer's instructions.
3. Fuelling of the chain saw shall be done in a well-ventilated area with the chain saw turned off.
4. An approved safety container shall be used to contain the fuel used, along with a proper spout or funnel for the filling process.
5. Smoking is prohibited while the tank is being filled.
6. Only employees who are competent with the use of a chain saw will be permitted to use it.
7. Chain Saws shall be firmly held when being started and should not be started until you are in the immediate work area.
8. The Chain saw shall be up to speed before starting to cut.
9. Persons not involved with the use of the saw shall remain at least 1.8 M (6') from the operator except when working aloft from an aerial device.
10. The operator shall use appropriate protective equipment to protect head, eyes, feet, hands, legs, and hearing.
11. The correct methods of starting, holding, carrying, storing, and operating the chain saw, as directed by the manufacturer, shall be used.
12. Ensure that the chain brake is functioning properly and adequately stops the chain.
13. The chain shall be sharp, have the correct tension, and be adequately lubricated.
14. When carrying / transporting a chain saw, the bar guard shall be in place, the chain bar shall be toward the back and the motor shall be shut off.
15. The chain saw shall not be used for cutting above shoulder height.

SECTIONS 46 – HOUSE KEEPING

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to review the basic principles of good housekeeping in the workplace or on a project. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

STANDARD: The following standards for house keeping shall be complied with at all times.

1. Work locations, vehicles, buildings, and workstations shall be kept clean and orderly at all times.
2. Floors and platforms shall be kept free of dangerous projections or obstructions, and shall be maintained reasonably free from oil, grease, or water. Where the type of operation produces slippery conditions, the area shall be cleaned immediately, or mats, grates, cleats, or other methods shall be used to reduce the hazard from slipping.
3. Materials and supplies shall be stored in an orderly manner to prevent their falling or tipping and to eliminate the hazards of tripping and stumbling.
4. Emergency exits, stairways, aisles, permanent roadways, walkways, and material storage areas shall be identified and kept clear at all times.
5. Materials and supplies shall not be stored in walkways, access doors and fire exits or block access to fire equipment.
6. No clothing shall be allowed to hang in the space back of switchboards. No matches shall be left in clothes placed in lockers. Rubbish and unused clothing shall not be allowed to accumulate in lockers or in common areas.
7. Waste material and debris shall be removed from work and access areas on a regular basis or at least once a day. Waste material and debris shall not be thrown from one level to another, but be carried down, lowered in containers or deposited in a disposal chute.
8. Issues related to contamination of the floor, air or environment shall be immediately reported to your supervisor and dealt with under the appropriate regulatory disposal methods.

Flammable & Hazardous Materials

1. Combustible materials such as oil soaked rags and waste shall be kept in approved metal containers.
2. Flammable liquids such as gasoline, benzene, naphtha, and paint thinner, etc., shall not be used for cleaning purposes.
3. All solvents shall be kept in U.L / CSA approved and properly labelled containers. Gasoline, Benzene, Naphtha, paint thinner and other solvents of this class shall be handled and dispensed only from approved, properly labelled containers.
4. In any building, except one provided for their storage, flammable liquids such as gasoline, benzene, naphtha, lacquer thinner, etc. shall be limited to five gallons in UL / CSA approved properly labelled containers.

5. When pouring or pumping gasoline or other flammable liquids from one container to another, metallic contact shall be maintained between the pouring and receiving containers and all grounding requirements observed.
6. Strict adherence shall be paid to "No Smoking" and "Stop Your Motor" signs at fuel dispensing locations.

SECTION 47 – HAND TOOLS

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate & review our standards for using hand tools in and about our workplace or projects.

STANDARD: Injuries with hand tools are not often serious but they do involve lost time. Common causes include using the wrong tool, using the right tool improperly, haste, and lack of training or experience.

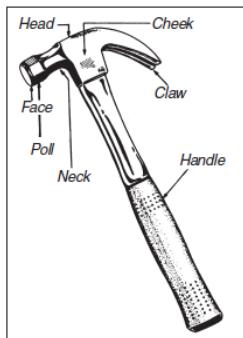
GENERAL

1. Use tools for their intended purpose. Don't use pliers as wrenches. Don't use wrenches as hammers.
2. Wherever possible, don't expose tools to extremes of heat and cold. Metal will lose its temper and get brittle.
3. Don't extend the handles of tools with sleeves or cheater bars for more leverage and power.
4. Don't confuse cushion grips with insulated handles. Cushion grips are for comfort only. Insulated handles are for electrical shock protection.
5. Don't hammer on the handles of wrenches or pliers to gain more force. The tool could bend, break, or fly off and hit you or someone else.

Claw Hammers

These are available in many shapes, weights, and sizes for various purposes. Handles can be wood or steel (solid or tubular). Metal handles are usually covered with shock absorbing material.

Start with a good quality hammer of medium weight (16 ounces) with a grip suited to the size of your hand. Rest your arm occasionally to avoid tendonitis. Avoid overexertion in pulling out nails. Use a crow bar or nail puller when necessary. When nailing, start with one "soft" hit, that is, with fingers holding the nail. Then let go and drive the nail in the rest of the way. Strike with the hammer face at right angles to the nail head. Glancing blows can lead to flying nails. Clean the face on sandpaper to remove glue and gum. Don't use nail hammers on concrete, steel chisels, hardened steel-cut nails, or masonry nails. Discard any hammer with a dented, chipped, or mushroomed striking face or with claws broken, deformed, or nicked inside the nail slot.



Utility Knives

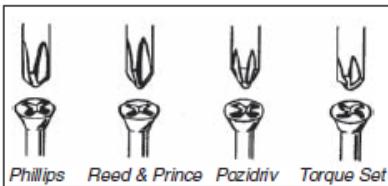
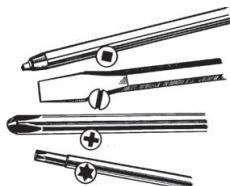
Utility knives cause more cuts than any other sharp-edged cutting tool in construction. Use knives with retractable blades only. Always cut away from your body, especially away from your free hand. When you're done with the knife, retract the blade at once. A blade left exposed is dangerous, particularly in a toolbox.

Screwdrivers

More than any other tool, the screwdriver is used for jobs it was never meant to do. Screwdrivers are not intended for prying, scraping, chiselling, scoring, or punching holes. The most common abuse of the screwdriver is using one that doesn't fit or match the fastener. That means using a screwdriver too big or too small for the screw or not matched to the screw head.

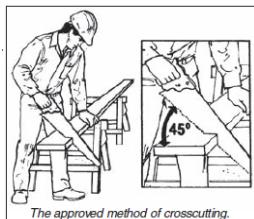
The results are cuts and punctures from slipping screwdrivers, eye injuries from flying fragments of pried or struck screwdrivers, and damaged work. Always make a pilot hole before driving a screw. Start with one or two "soft" turns, that is, with the fingers of your free hand on the screw. Engage one or two threads, make sure the screw is going in straight, then take your fingers away. You can put your fingers on the shank to help guide and hold the screwdriver. But the main action is on the handle, which should be large enough to allow enough grip and torque to drive the screw. Power drivers present obvious advantages when screws must be frequently or repeatedly driven.

Note: All cross-point screws are not designed to be driven by a Phillips screwdriver. Phillips screws and drivers are only one type among several cross-point systems. They are **not** interchangeable.

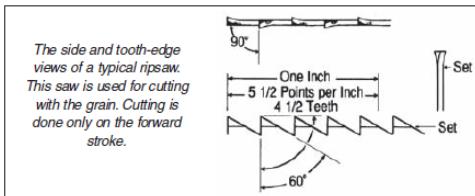
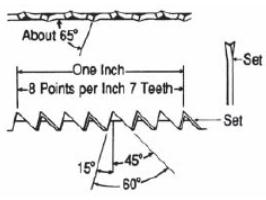


Hand Saws

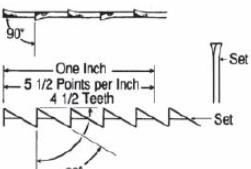
Select the right saw for the job. A 9-point is not meant for crosscutting hardwood. It can jump up and severely cut the worker's hand or thumb. For this kind of work the right choice is an 11-point (+). When starting a cut, keep your thumb up high to guide the saw and avoid injury. For cutting softwood, select a 9-point (-). The teeth will remove sawdust easily and keep the saw from binding and bucking. Ripping requires a ripsaw. Check the illustrations for the differences in teeth and action between rip and crosscut saws.



The side and tooth-edge views of a typical crosscut saw. This saw is used for cutting across the grain and has a different cutting action than that of the ripsaw. The crosscut saw cuts on both the forward and backward strokes.



The side and tooth-edge views of a typical ripsaw. This saw is used for cutting with the grain. Cutting is done only on the forward stroke.



SECTION 48 – HAND TOOLS - POWERED

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate & review our standards for using powered hand tools in and about our workplace or projects.

STANDARD:

1. Make sure that electric tools are properly grounded or double insulated.
2. Never remove or tamper with safety devices.
3. Study the manufacturer's instructions before operating any new or unfamiliar electric tool.
4. Regulations require that ground fault circuit interrupters (GFCI) be used with any portable electric tool operated outdoors or in wet locations.
5. Before making adjustments or changing attachments, always disconnect the tool from the power source.
6. When operating electric tools, always wear eye protection.
7. When operating tools in confined spaces or for prolonged periods, wear hearing protection.
8. Make sure that the tool is held firmly and the material properly secured before turning on the tool.

HAZARDS

1. Lack of grounding or double insulation.
2. Broken or disarmed safety devices such as retractable guards.
3. Unfamiliarity with the tool.
4. Failure to hold tool securely.
5. Failure to secure work.
6. Injuries to hands and eyes.
7. Faulty tool cords and extension cords.
8. Failure to use ground fault circuit interrupters (GFCI) with tools operated outdoors or in wet or damp locations indoors.

CONTROL MEASURES

Grounding

1. Make sure the tool is grounded and the cord polarized or double-insulated.
2. "Grounded" means an approved three-wire cord with a three-prong plug.
3. You can identify two-pronged polarized tools because one prong is larger than the other.
4. Never cut off or bend back the ground pin on a three-prong plug—or use a two-prong cheater or adapter—to make the plug fit in a two-pole outlet.
5. Double-insulated tools are labelled as such. The label will feature a D, a D inside a square, a double square, and so on.
6. Make sure the casing of a double-insulated tool is not cracked, split, or broken.

Cords

1. Inspect tool cords and extension cords daily for damage.
2. Keep cords clear of the tool during use.
3. All cords shall be equipped with a dead-front plug. (Dead-front plugs are sealed).

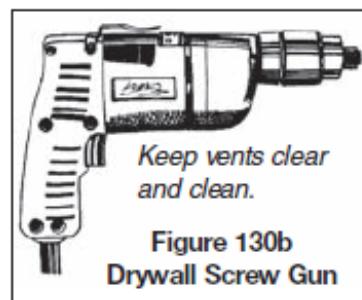
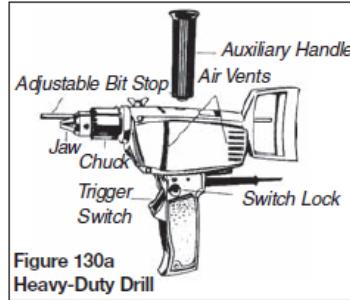
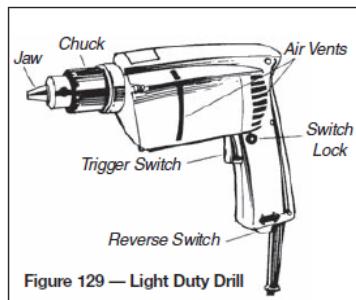
4. Inspect tool cords and extension cords for kinks, cuts, cracked or broken insulation, and makeshift repairs.
5. Don't use the cord to lift, lower, or carry an electric tool. Don't disconnect the tool by yanking or jerking on the cord. You'll damage the cord, loosen connections, and run the risk of shocks and short circuits.
6. Protect cords from traffic. Run them through conduit or between planks along either side. If necessary, run cords overhead above work or travel areas.
7. If any cord feels more than warm to the touch, check the circuit for overloading.
8. Report any shocks from tools or cords to your supervisor. Tag the tool and don't use it.
9. Type A GFCI shall be used for all outdoors or wet locations. A GFCI detects any current leaking to ground from a tool or cord and quickly shuts down the power.

DRILLS

Types

With suitable attachments, the drill can be used for disk sanding, sawing holes, driving screws, and grinding. However, when such applications are repeatedly or continuously required, tools specifically designed for the work should be used. Trim carpenters will generally select a 1/4 or 3/8 inch trigger-controlled variable speed drill (Figure 129). Simply by increasing pressure on the trigger, the operator can change drill speed from 0 to 2,000 rpm. Carpenters working in heavy structural construction such as bridges, trusses, and waterfront piers will usually select the slower but more powerful one- or two-speed reversible 1/2 or 3/4 inch drill (Figure 130a).

Size of the drill is determined by the maximum opening of the chuck. For instance, a 3/8 inch drill will take only bits or attachments with a shank up to 3/8 inch wide. For drywall screws, a drywall screw gun (Figure 130b) should be used. The driving bit should be replaced when worn. Select a gun that can hang from your tool belt so it does not have to be continuously hand-held.



Follow manufacturer's instructions when selecting and using a bit or attachment, especially with drills or work unfamiliar to you.

Working with Small Pieces

Drilling into small pieces of material may look harmless, but if the pieces are not clamped down and supported, they can spin with the bit before the hole is completed. If a small piece starts to twist or spin with the drill, the operator can be injured. Small work pieces should be properly secured and supported. Never try to drill with one hand and hold a small piece of material with the other.

Drilling from Ladders

1. Standing on a ladder to drill holes in walls and ceilings (Figure 135) can be hazardous. The top and bottom of the ladder must be secured to prevent the ladder from slipping or sliding when the operator puts pressure on the drill.
2. Drilling from a ladder, never reach out to either side. Overreaching can cause the ladder or tip.
3. Never stand on the top step or paint shelf of a stepladder. Stand at least two steps down from the top. When working from an extension ladder, stand no higher than the fourth rung from the top.
4. When drilling from a ladder, never support yourself by holding onto a pipe or any other grounded object. Electric current can travel from the hand holding the drill through your heart to the hand holding the pipe. A minor shock can make you lose your balance. A major shock can badly burn or even kill you.

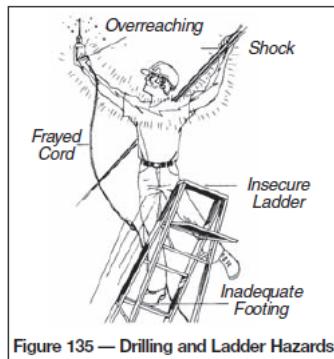
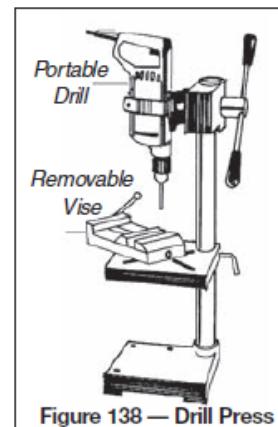
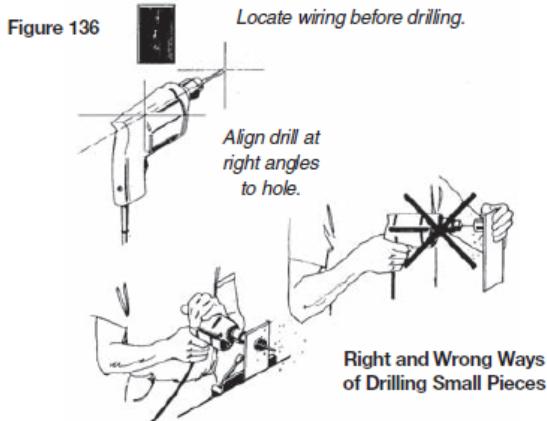


Figure 135 — Drilling and Ladder Hazards

Operation

1. Always plug in the drill with the switch **OFF**.
2. Before starting to drill, turn on the tool for a moment to make sure that the shank of the bit or attachment is centred and running true.
3. Punch a layout hole or drill a pilot hole in the material so that the bit won't slip or slide when you start drilling. A pilot hole is particularly important for drilling into hard material such as concrete or metal.
4. With the drill **OFF**, put the point of the bit in the pilot hole or punched layout hole.
5. Hold the drill firmly in one hand or, if necessary, in both hands at the correct drilling angle.
6. Turn on the switch and feed the drill into the material with the pressure and control required by the size of the drill and the type of material.
7. Don't try to enlarge a hole by reaming it out with the sides of the bit. Switch to a larger bit.
8. While drilling deep holes, especially with a twist bit, withdraw the drill several times with the motor running to clear the cuttings.
9. Never support material on your knee while drilling.
10. Material should be firmly supported on a bench or other work surface for drilling.
11. Unplug the drill and remove the bit as soon as you have finished that phase of your work.
12. When drilling into floors, ceilings, and walls, beware of plumbing and especially of wiring.
13. Large rotary and hammer drills can generate extreme torque and must be handled with caution.
14. Remember that the longer you work, the heavier the drill feels, particularly when working overhead.
15. Take a breather now and then to relax your arms and shoulders.



Other Materials

1. The main hazard in drilling materials other than wood is leaning too heavily on the tool. This can not only overload and burn out the motor but also cause injury if you are thrown off balance by the drill suddenly twisting or stopping.
2. Always use a drill powerful enough for the job and a bit or attachment suited to the size of the drill and the nature of the work. As at other times, punching a layout hole or drilling a pilot hole can make the job safer and more efficient.
3. A drill press stand (Figure 138) is ideal for drilling holes in metal accurately and safely. Small pieces can be clamped in a vice and bolted to the table. This prevents the work piece from spinning when the drill penetrates the metal.
4. A drill press can also be used for cutting large holes in wood with a hole saw or speed bit. The stability of the press and the operator's control over cutting speed eliminate sudden torque.

Basic Saw Safety

1. Wear protective clothing and equipment. Protective hearing & eyewear are required at all times.
2. Ensure proper ventilation; wear a dust mask for protection against dust. Over time, exposure to dust from particleboard and other materials may cause respiratory problems.
3. Use a ground fault circuit interrupter with all powered tools operated outdoors or in wet locations.
4. Never wear loose clothing, neck chains, scarves, or anything else that can get caught in the saw.
5. Leave safety devices in place and intact on the saw. Never remove, modify, or defeat guards.
6. Keep your free hand away from blade
7. Always change and adjust blades with the power OFF.
8. Disconnect electric saws from the power source before making changes or adjustments.

Blades

1. Blades should be sharpened or changed frequently to prolong saw life, increase production, and reduce operator fatigue. The teeth on a dull or abused blade will turn blue from overheating. Cutting will create a burning smell. Such blades should be discarded or reconditioned.
2. Before changing or adjusting blades, disconnect the saw from the power source.
3. Take care to choose the right blade for the job. Blades are available in a variety of styles and tooth sizes. Combination blades (rip and crosscut) are the most widely used. Ensure that arbor diameter and blade diameter are right for the saw.

4. Not all lumber is not new; make sure it is clean and free of nails, concrete, and other foreign objects. This precaution not only prolongs blade life but may also prevent serious injury.
5. Take special care to ensure that blades are installed in the proper rotational direction. Remember that electrical circular handsaws cut with an upward motion. The teeth visible between the upper and lower guard should be pointing toward the front of the saw. Most models have a directional arrow on both blade and guard to serve as a guide.

Blade Guards

1. Never operate an electric saw with the lower guard tied or wedged open. The saw may kick back and cut you, or another worker may pick up the saw and – not knowing that the guard is pinned back – get hurt.
2. Accidents have also occurred when the operator forgot that the blade was exposed and put the saw on the floor. If the blade is still in motion it will cut anything in its path.
3. Ensure that the lower guard returns to its proper position after a cut.
4. Never operate a saw with a defective guard-retracting lever.
5. On most saws the lower guard is spring-loaded and correct tension in the spring will automatically close the guard. However, a spring weakened by use and wear can allow the guard to remain open after cutting. This creates a potential for injury if the operator inadvertently rests a still turning blade against his leg after finishing a cut.
6. Always maintain complete control of the saw until the blade stops turning.

Changing, Adjusting, and Setting Blades: when changing blades, take the following precautions.

1. Disconnect the saw from the power source.
2. Place the saw blade on a piece of scrap lumber and press down until the teeth dig into the wood. This prevents the blade from turning when the locking nut is loosened or tightened. Some machines are provided with a mechanical locking device.
3. Make sure that keys and adjusting wrenches are removed before operating the saw. Proper adjustment of cutting depth keeps blade friction to a minimum, removes sawdust from the cut, and results in cool cutting.
4. The blade should project the depth of one full tooth below the material to be cut.
5. When using carbide-tipped blades or mitre blades let only half a tooth project below the material.
6. If the blade is to run freely in the kerf (saw cut), teeth must be set properly, that is, bent alternately.
7. The setting of teeth differs from one type of blade to another. Finer toothed blades require less set than rougher-toothed blades. Generally, teeth should be alternately bent 1/2 times the thickness of the blade.
8. Sharp blades with properly set teeth will reduce the chance of wood binding. They will also prevent the saw from overheating and kicking back.

Cutting

1. Place the material to be cut on a rigid support such as a bench or two or more sawhorses.
2. Make sure that the blade will clear the supporting surface and the power cord.
3. The wide part of the saw shoe should rest on the supported side of the cut if possible.
4. Plywood is one of the most difficult materials to cut with any type of saw.
5. The overall size of the sheet and the internal stresses released by cutting are the main causes of difficulty.
6. Large sheets should be supported in at least three places, with one support next to the cut.

7. Short pieces of material should not be held by hand. Use some form of clamping to hold the material down when cutting it.
8. **NEVER** use your foot or leg to support the material being cut.
9. The material to be cut should be placed with its good side down, if possible. Because the blade cuts upward into the material, any splintering will be on the side, which is uppermost.
10. Use just enough force to let the blade cut without labouring. Hardness and toughness can vary in the same piece of material, and a knotted or wet section can put a heavier load on the saw. When this happens, reduce pressure to keep the speed of the blade constant. Forcing the saw beyond its capacity will result in rough and inaccurate cuts. It will also overheat the motor and the saw blade.
11. Take the saw to the material. Never place the saw in a fixed, upside-down position and feed material into it. Use a table saw instead.
12. If the cut gets off line, don't force the saw back onto line. Withdraw the blade and either start over on the same line or begin on a new line.
13. If cutting right-handed, keep the cord on that side of your body. Stand to one side of the cutting line. **Never reach under the material being cut.**
14. Always keep your free hand on the long side of the lumber and clear of the saw. Maintain a firm, well-balanced stance, particularly when working on uneven footing.
15. Plywood, wet lumber, and lumber with a twisted grain tend to tighten around a blade and may cause kickback.
16. Kickback occurs when an electric saw stalls suddenly and jerks back toward the operator. The momentarily exposed blade may cause severe injury.

Pocket Cutting

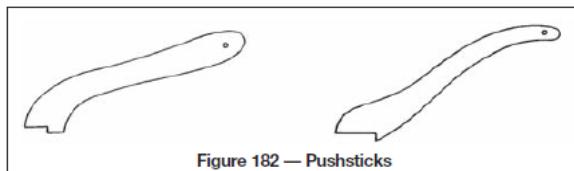
1. Tilt saw forward.
2. Rest front of shoe on wood.
3. Retract lower guard.
4. Lower saw until front teeth almost touch wood.
5. Release guard to rest on wood.
6. Switch on the saw.
7. Keep the saw tilted forward and push it down and forward with even pressure, gradually lowering it until shoe rests flat on wood.
8. Follow these steps with extreme care.

TABLE SAWS

Types

1. The table saw most often used in construction is the 10-Inch belt-driven tilting arbor saw. The dimension refers to the diameter of the saw blade recommended by the manufacturer.
2. Some saws are direct-drive with the blade mounted right on the motor arbor, some are belt-driven.
3. Both types are equipped with a fixed tabletop and an arbor that can be raised, lowered, or tilted to one side for cutting at different depths and angles.
4. Basket guards may be fastened to the splitter or hinged to either side of the saw on an L-shaped or S-shaped arm.
5. Basket guards protect the operator from sawdust, splinters, and accidental contact with the blade.

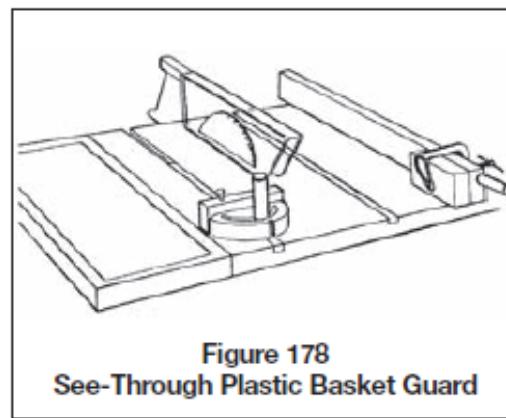
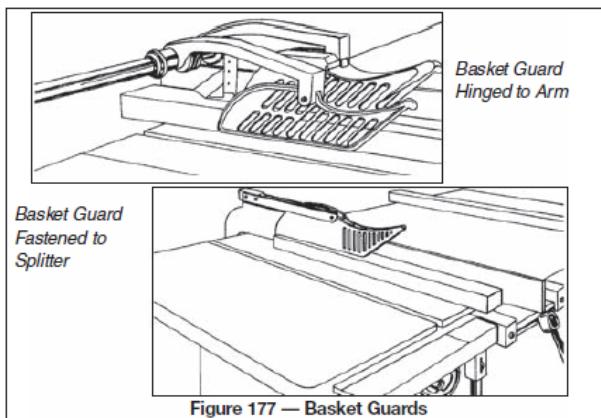
6. Ensure that the basket guard is in place for normal operations such as straight and bevel ripping and mitre cutting.



Kickback

Kickback occurs when stock binds against the saw blade. The blade can fire the wood back at the operator with tremendous force, causing major injuries to abdomen, legs, and hands.

1. Never stand directly behind the blade when cutting. Stand to one side. See that other workers stand clear as well.
2. Make sure the rip fence is aligned for slightly more clearance behind the blade than in front. This will help prevent binding.
3. Use a sharp blade with teeth properly set for the wood being cut. A dull or badly gummed blade will cause friction, overheating, and binding.
4. Install a splitter to keep the kerf (cut) open behind the blade. Also effective are anti-kickback fingers attached to the splitter.



Operation

1. Keep the floor around the saw clear of scrap and sawdust to prevent slipping and tripping.
2. Always stop the machine before making adjustments. Before making major adjustments, always disconnect the main power supply.
3. Select a sharp blade suitable for the job.
4. Use the safety devices such as pushsticks and feather boards.
5. Make sure nobody stands in line with a revolving blade.
6. Don't let anyone or anything distract you when you are operating the saw.
7. Whenever possible, keep your fingers folded in a fist rather than extended as you feed work into the saw.
8. Never reach around, over, or behind a running blade to control the stock.
9. Follow the manufacturer's recommendations in matching the motor size to the saw. Underpowered saws can be unsafe.

10. Table saws should be properly grounded. Check the power supply for ground and always use a ground fault circuit interrupter. This is mandatory for saws used outdoors or in wet locations.
11. Table saws should be equipped with an on-off switch so power can be shut off quickly in an emergency.
12. A magnetic starter switch is preferable to a mechanical toggle because it prevents the saw from starting up again unexpectedly after an interruption in power.
13. When purchasing a new table saw, try to get one equipped with an electric brake. The brake stops blade rotation within seconds of the operator turning off the saw. The reduced risk of injury is worth the extra cost.
14. Extension cords should be of sufficient wire gauge for the voltage and amperage required by the saw and for the length of the run.

SECTION 49 – HAND TOOLS – PNEUMATIC (AIR)

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate & review our standards for using powered hand tools in and about our workplace or projects.

STANDARD: Many different types of tools are powered by compressed air. They are fast, powerful, and ideal for repetitive tasks such as the nailing of large areas of roof decking or chipping and breaking concrete. A compressor, powered by a combustion or electric motor, supplies the air for the tools.

1. Air-powered tools include: jack hammers, chipping hammers, drills, grinders, sanders, staplers, framing nailers, wrenches, brad nailers, winches, air nozzles, saws, buffers, impact tools and sprayers.
2. **Run combustion engines outside or in a well-ventilated area to prevent the build-up of carbon monoxide gas.** Always keep a fire extinguisher near flammable liquids.
3. When moving compressors to another location, ask for help or use mechanical devices to prevent back injuries.
4. Occasionally workers suffer eye injuries when compressed air is used to blow out formwork. Wear safety goggles and respiratory protection.
5. Always secure hose connections with wire or safety clips to prevent the hose from whipping except when automatic cut-off couplers are used.
6. Make sure hoses are clear of traffic and pose no tripping hazards.
7. Replace worn-out absorption pads and springs. Too much vibration of the tool can damage nerves in fingers, hands, and other body parts. This is called “white finger disease” or Raynaud’s Syndrome.
8. Some tools have a high decibel rating – for instance, jack hammers and impact drills. To prevent hearing loss, always wear hearing protection.
9. Never tamper with safety devices.
10. Keep hands away from discharge area – on nailers in particular.
11. Match the speed rating of saw blades, grinding wheels, cut-off wheels, etc. to tool speed. Too fast or too slow a rotation can damage the wheels, release fragments, and injure workers.
12. Never use air to blow dust or dirt out of work clothes. Compressed air can enter the skin and bloodstream with deadly results.
13. Turn off the pressure to hoses when the system is not in use.
14. Turn off the air pressure when changing pneumatic tools or attachments.
15. Never “kink” a hose to stop airflow.
16. Most air-powered tools need very little maintenance. At the end of the shift, put a teaspoon of oil in the air inlet and run the tool for a second or two to protect against rust.
17. Dust, moist air, and corrosive fumes can damage the equipment. An inline regulator filter and lubricator will extend tool life.
18. Before start-up, check the couplings and fittings, blow out the hose to remove moisture and dirt, and clean the nipple before connecting the tool.
19. Set the air pressure according to the manufacturer's specifications and open gradually.
20. **REMEMBER COMPRESSED AIR IS DANGEROUS.**

PNEUMATIC TOOL HAZARDS

1. **Air embolism** This is the most serious hazard, since it can lead to death. If compressed air from a hose or nozzle enters even a tiny cut on the skin, it can form a bubble in the bloodstream – with possibly fatal results.
2. **Physical damage** Compressed air directed at the body can easily cause injuries – including damage to eyes and eardrums.
3. **Flying particles** Compressed air at only 40 pounds per square inch can accelerate debris to well over 70 miles per hour when it is used to blow off dust, metal shavings, or wood chips. These particles then carry enough force to penetrate the skin.

WARNING: Make sure that air pressure is set at a suitable level for the tool or equipment being used. Before changing or adjusting pneumatic tools, turn off the air pressure.

SECTION 50 – TRAFFIC PROTECTION PLAN

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate & review our standards for using our traffic protection plan on our projects.

STANDARD: In order to maintain a safe and comfortable working environment for its employees and for the traveling public in and around its construction projects, New Alliance Ltd. shall undertake all traffic control operations in conformance with this traffic protection plan. This plan has been prepared in accordance with the following:

- Ontario Traffic Manual (OTM), Book 7, as amended
- Occupational Health and Safety Act, RSO, 1990, Chapter 0.1, as amended
- Regulation for Construction Projects, O. Reg. 213/91

New Alliance Ltd. shall abide by the proposed traffic control measures that are contained in this document, as well as any provisions that are noted in the contract documents. Management shall be responsible for the installation, operation and removal of the traffic control measures. The following, is a list of measures that may be utilized during traffic control operations:

Warning signs	TC-54 barrels
Flashing lights	Arrow boards
Traffic Signals (As required by the contract)	Temporary Concrete Barrier
Buffer vehicles (where required)	Traffic Control Persons
Crash vehicles	

All traffic control will be in accordance with typical layouts described in the Ontario Traffic Manual, Book 7 and modified in the field as required. Copies of appropriate typical layouts are included in Appendix A. OTM, Book 7 should be consulted in case the Appendix does not contain a typical layout that may be required during construction. These typical layouts will be modified when deemed necessary as the layouts only provide the minimum requirements.

Traffic Control Task	Typical Layout
Work Zone Advisory Signing	TL-1 & TL2
Partial Road Shift	TL-10
Roadway Edge Work	TL-14
Narrow Lanes	TL-17
Lane Closed (TCP's Short Duration)	TL-20A
Left Lane Closed	TL-26
Approaching an Intersection	TL-65

All workers, subcontractors and visitors including traffic control personnel, shall be required to wear appropriate CSA approved personal protective equipment as per the OH&SA and Regulation for Construction Projects, including but not limited to a: hardhat, safety vest, safety boots and safety glasses as required. Reflective arm and leg bands shall be worn during low visibility & night work

operations. All safety equipment must meet CSA requirements. When required, all onsite vehicles will be equipped with a 360-degree rotating flashing light.

Closures will be planned in advance and supervisors will ensure all workers are familiar with the written procedure prior to carrying out the closure. Closure notifications will be completed and distributed to the appropriate offices and agencies. The notifications will be faxed as cancelled if the closure in question is deemed unnecessary.

The set-up of the closure will start upstream of the work area and proceed downstream. Removal of closure will commence downstream of work area and proceed upstream. Workers will face traffic at all times while erecting or removing lane closures, however will always be protected by a crash truck where required and have a pre planned escape route.

Traffic Planning Log Sheets and Lane Closure Checklists will be available on site and are also available in Appendix A. All site employees will be required to review and understand the New Alliance Ltd. Traffic Protection Plan and sign an Acknowledgement Form that is part of this document. When reversing equipment is required, a signal person(s) will be utilized to assist the operator with this task. Traffic Control Persons (TCP) shall assist in the control of the pedestrian traffic. All TCP will be trained as per the Act & applicable Regulations; this training shall include New Alliance Ltd. Safety, Health & Environmental standards. The site supervisor shall provide daily written/oral instructions regarding the traffic control measures. All operators will be instructed as to the proper hand signals. All TCP shall be trained to minimum standard which is the "Guidelines for Training Traffic Control Persons" manual published by Infrastructure Health & Safety Association of Ontario. This training includes a written test.

Traffic Control Person shall be trained in the following:

Location/position	How to signal	Recognize blind spots
Communications	Problem situation	Escape routes

All traffic control signs and equipment will be kept clean and maintained in good working condition.

Traffic control equipment and signing on this contract will be reviewed during the execution of the project. A Diary of Signs will be maintained, containing a listing and description of all existing and temporary signs, traffic accident information and time of inspection. Any changes or modifications to this Traffic Protection Plan will be forwarded to the Contract Administrator.

Pedestrian Traffic

New Alliance Ltd. will coordinate pedestrian traffic along the length of the project and provide signage and barriers where required to protect the safety the public.

Emergency and Incident Management Traffic Control Plan

New Alliance Ltd. will accommodate all emergency vehicles and roadway authorities should their presence be necessary within the temporary work zone. Should the existing work zone conflict with a nearby Incident, New Alliance Ltd. will take necessary means to continue safe movements of vehicular traffic and insure site safety.

New Alliance Ltd.

Traffic Control and Typical Layouts

SECTION 51 – VEHICLES & DRIVER SAFETY

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to review the basic principles of road safety while operating a vehicle at work and promote accident prevention through the safe operation of well-maintained vehicles by authorized, competent, responsible individuals. It should be noted that the company insures their vehicles for physical damage and all “at fault” claims are a direct expense to the company either through increased premiums or deductibles.

DEFINITIONS:

1. **Designated Employee:** An employee who has acknowledged an assigned company vehicle.
2. **Assigned Vehicle:** The actual vehicle, or temporarily substituted vehicle, that has been allocated to the Designated Employee.
3. **“At Fault”:** An accident that is ruled “at fault”, or partially “at fault” after investigation by the Insurer of New Alliance Ltd.
4. **Driver:** The driver is defined as the actual person, behind the wheel, controlling the Assigned Vehicle at the time of an accident. In the event that there is no police report or independent witnesses available, the Designated Employee will make a sworn statement attesting to the actual drivers name and identity.
5. **Minor conviction:** Any conviction under any Act governing highway traffic involving breech of speed limits and moving traffic offences other than described as Major or Serious.
6. **Major conviction:** Any conviction under any Act governing highway traffic, of an offence substantially the same committed inside or outside of Canada, involving:
 - a) Failing to report an accident or to give your name and license number in the event of an accident to police or other persons entitled to such information.
 - b) Improper passing of school buses; improper passing of schools or playgrounds.
 - c) Any offence substantially the same committed outside of Canada.
7. **Serious conviction:** Any conviction under the Criminal Code of Canada, or under any other Act, of an offence substantially the same committed inside or outside of Canada, involving:
 - a) Criminal negligence committed in the operation of a motor vehicle.
 - b) Manslaughter committed in the operation of a motor vehicle.
 - c) Failing to stop at the scene of an accident.
 - d) Impaired driving; failure or refusal to submit to a breathalyser test; failing a breathalyser test.
 - e) Driving while license is under suspension.
 - f) Dangerous driving.
 - g) Any driving offence under any Act governing Highway Traffic involving driving without due care and attention or racing.

STANDARD: Any employee operating a vehicle for New Alliance Ltd. shall:

1. Provide a copy of their license and insurance to the office.
2. Operate the vehicle safely, abiding by all traffic rules and regulations set out by the Ministry of Transportation and the Highway Traffic Act.

3. All drivers and passengers shall wear their seat belts while the vehicle is moving.
4. When the vehicle is a company vehicle, the vehicle must be checked daily and have the appropriate maintenance logs onboard.
5. If the vehicle is a personal vehicle the proper maintenance and visual checks should be done to ensure the vehicle's safety and roadworthiness.
6. The vehicle's operating manual must be with the vehicle at all times.
7. Vehicles are not to be parked in an unsecured or unsafe manner (i.e. Keys in Ignition, Engine Running while unattended, etc.).
8. Vehicles with Company Markings are not to be parked in a parking lot operated primarily to serve liquor (Bar, Tavern, and Adult Entertainment) unless authorized by management.
9. Supervisors are to ensure that employees driving Company Vehicles are in possession of a Valid Driver's License to operate the vehicle and the office has a valid Abstract on file.
10. Personal use of an Assigned Vehicle is a privilege not a right. A Manager must approve trips that are extended. Consumables will be the responsibility of the Employee.
11. Be friendly and courteous with everyone you meet on or off duty.
12. NAL shall take every precaution reasonable in the circumstances to ensure that no driver shall drive if the driver is not capable or his / her faculties are impaired to the point where it is unsafe for the driver to drive.

Personal use of the Assigned Vehicle is a privilege and any abuse may result in the removal of this privilege. Only the Designated Employee shall operate the vehicles. With the permission of the Designated Employee and the Manager of the Designated Employee may another person, who holds an in-force, valid Ontario Driver's License, operate the Assigned Vehicle for personal use. Company vehicles are not to be used to teach learners or unqualified persons how to drive or for hauling personal materials/equipment. The Designated Employee will be responsible for a deductible for all personal use drivers and New Alliance Ltd. shall have the right to withhold said deductible from the Designated Employee's wages.

<u>Driver</u>	<u>Personal Use Deductible</u>
Direct employee of Company	\$500
Immediate family member of Designated Employee with G license	\$500
Immediate family member of Designated Employee with G2 license	\$1,000
Immediate family member of Designated Employee with G1 license	\$1,500
All other drivers	\$2,000

Illegal Uses

The Designated Employee will be held responsible for the entire cost of the Assigned Vehicle and subject to dismissal:

1. If unable to maintain proper control of the Assigned Vehicle due to driving under the influence of intoxicating substances.
2. If convicted of one of the following offences under the Criminal Code of Canada relating to the operation, care or control of the Assigned Vehicle, or committed by means of a vehicle, or any similar offence under any law in Canada or the United States:
 - a) causing death by criminal negligence,

- b) causing bodily harm by criminal negligence,
 - c) dangerous operation of motor vehicles,
 - d) failure to stop at the scene of an accident (if involved),
 - e) operation of motor vehicle when impaired or with more than 50 mg of alcohol in the blood,
 - f) refusal to comply with a demand for a breath sample from an Offences Officer,
 - g) causing bodily harm during operation of vehicle while impaired/over 50 mg of alcohol in the blood,
 - h) operating a motor vehicle while disqualified from doing so,
3. If the Designated Employee uses or permits the vehicle to be used in a race or speed test or for illegal activity.
 4. If the Designated Employee drives the automobile while not authorized to do so by law.
 5. If a person who lives in the Designated Employee's household steals the Assigned Vehicle.

Emergency & Accident Reporting

In the event of an accident, the Designated Employee will use and follow the enclosed Accident Report Form. The Designated Employee is responsible for reporting all incident, accidents, convictions or license suspensions. Convictions and suspensions derived from the use of vehicles other than Company vehicles will also be taken into account.

Maintenance

The Fleet presents the Company's most visible face to the general public. It is the responsibility of the Designated Employee to maintain the appearance of the Assigned Vehicle including exterior and interior cleanliness.

DAILY VEHICLE CIRCLE CHECK

The New Alliance Ltd. vehicle circle check should include:

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

Fines, Convictions and Suspensions

It is the responsibility of the Designated Employee to notify the Company of any convictions or suspensions. All drivers will have their license checked for status and convictions on an annual basis. Rotating spot checks will also be made throughout the year. Any fines as a result of moving or parking violations are the sole responsibility of the Designated Employee. Convictions and suspensions derived from the use of vehicles other than Company vehicles will also be taken into account.

SECTION 52 - EQUIPMENT

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to review the basic principles for use of licenced & unlicenced vehicles in the workplace. The implementation of this standard shall ensure that the company owned equipment is safely utilized to its potential. Please be advised that rental equipment shall be used only when all options have been reviewed.

STANDARD: The use of all licenced & unlicenced vehicles shall be operated in accordance with the manufacturers' instructions and in accordance with the Occupational Health & Safety Act/Regulations. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project vehicle.

All licenced & unlicenced vehicles shall be inspected and/or maintained as per the manufacturer's specifications and the documentation shall be forwarded to the office to be kept on file. Supervisor is responsible to ensure that the vehicles are routinely inspected, serviced, and maintained with the proper documentation filed with the office. Only employees with a valid licence that is in good standing shall be able to use any the vehicle/equipment when required. Employees shall perform a visual inspection of their vehicle prior to the beginning of every shift and a circular check prior to every use. A personal log detailing the inspection shall be kept on file. Any vehicle condition, that may pose a hazard to a driver, shall be immediately reported to the supervisor for repairs.

Please contact the management immediately when equipment is no longer required on your jobsite or if it may not be required as long as anticipated. NAL shall ensure that no person shall drive a commercial vehicle on a highway when a major defect is present on the vehicle. All drivers/operators shall ensure that the following is complied with:

1. All operating manuals and logbooks shall be available at the project.
2. The safety design capacity of any mobile equipment shall not be exceeded, nor shall the equipment be modified in any manner that alters the original factor of safety and capacity.
3. Mobile equipment shall be fitted with suitable alarm and motion sensing devices, including backup alarms and/or a flashing light where and when required.
4. Where there is a potential risk of contact by any mobile equipment with a structure or an individual, a competent signaller shall be assigned to control the movement.
5. Under no circumstances shall any mobile crane or crane load come within a distance as provide in the Utility Safety Standard for any energized overhead power line, or other critical structure. A competent signaller shall direct the operation if any part of the mobile equipment travels close to the limits of approach.
6. When mobile equipment is traveling onto a public thoroughfare or roadway, a competent traffic control person/signaller shall ensure traffic has stopped prior to access or egress.
7. Vehicles shall escort mobile equipment traveling on a public thoroughfare or roadway with signs warning of slow moving equipment. Other escorts may also be required.

8. Natural and synthetic fibre rope made of material such as manila, nylon, polyester, or polypropylene shall not be used as slings on mobile equipment.
9. Only trained, qualified, and authorized personnel shall operate mobile equipment. Contractor personnel shall not operate Owner equipment unless specific authorization is approved and given.
10. Never leave the controls of a machine unattended while the machine is running.
11. Operators should familiarize themselves with the operating criteria on a regular basis and prior to use if it has been more than 30 days since the operator's previous use.
12. Vehicles must always be parked in a manner that does not endanger other traffic or workers.
13. Vehicles should always be driven or moved at a rate of speed required to complete the move safely and efficiently and in forward motion only.
14. Equipment should always have the forks or buckets lowered to the ground when not operating.

Pre Trip Inspections

1. As per Schedule 1 (of NSC Daily Vehicle Trip Inspection) a Pre-trip inspection report is to be completed daily, every 24 hours for all equipment, trucks, tractors & trailers over 4500kg RGVW.
2. Pre trip inspections to be completed fully and any defects to be clearly documented. When no defects are detected during an inspection, the person conducting the inspection shall record that fact on the inspection report(s). When defects are detected, a person conducting an inspection shall record on the inspection report any defects detected during the inspection and shall report such defects to the motor carrier or a person appointed by the motor carrier prior to the next required inspection.
3. Pre trips to be handed in daily with time sheets. Field pre trips to be forwarded to fuel truck driver or faxed to shop if defects have been noted. Most recent pre trip books to be kept in vehicle at all times. When pre trip book is full forward complete booklet to the office. Pre-trip booklets are available at the shop or office.

Pickup Trucks & Light Company Vehicles

These vehicles are assigned to company employees as required. At no time may these vehicles be reassigned without the authorization of the equipment manager. Requests for company vehicles should be directed to your supervisor for approval. Only after approval from your manager will vehicles be assigned.

To reduce the risk of employee injury or property damage, it is a requirement that the use of all licenced vehicles be operated in accordance with the manufacturer's instructions and in accordance with the Occupational Health & Safety Act/Regulations and all provincially and federally regulated transportation laws.

All vehicles shall be inspected and/or maintained as per the manufacturer's specifications and the documentation shall be forwarded to the office to be kept on file. Management and supervisors are responsible to ensure that the licenced vehicles are routinely inspected, serviced, and maintained with the proper documentation filed with the office. Only an approved licenced mechanic shall inspect, service and maintain the vehicles. The office shall maintain a copy of the operator's driver's licence.

Employees shall be able to provide proof of a valid drivers' licence when required. Employees shall perform a visual inspection of their company vehicle prior to the beginning of every shift and a circular

check prior to every use. A personal log detailing the inspection shall be kept on file. Any vehicle condition, that may pose a hazard to a driver, shall be immediately reported to the supervisor for repairs.

1. Access to a project site shall be in accordance with the local transportation regulations. All traffic control signallers shall be obeyed.
2. Employees shall not use or operate any owner, contractor or subcontractor licenced vehicles and/or mobile equipment without the authorization of a supervisor.
3. Employees shall park in designated areas. Parked vehicles shall not block roadways or service driveways, doorways, loading bays, dumpsters and/or fire hydrants or hoses or emergency access routes.
4. Fuel tanks on vehicles shall not be filled while the engine is running. The driver shall stay with the vehicle and smoking is prohibited during refuelling.
5. Material that overhangs the sides or ends of a truck shall be red flagged.
6. Trucks hauling waste materials shall be equipped with an adequate rear closure and/or covering to prevent material from dropping or blowing onto the roadway.
7. A vehicle is prohibited from transporting more passengers than its designed allows.
8. When a vehicle moves, all materials being transported shall be secured as per the manufacturer's instruction.
9. Winch trucks shall not have a load suspended from the hook while traveling. The load shall be secured on the bed of the truck. The hook of a winch truck must be secured while traveling.
10. Unless impossible, vehicles shall move in a forward direction at all times on a project.
11. It is the responsibility of the truck driver to ensure the load on the truck is safe and legal to haul before you leave the construction site or quarry.
12. When a tarp is required, it must be on before going on the road. Tailgates and ledges on the truck must be free of all debris to prevent it from falling off while on route.
13. All operators, drivers and their helpers are responsible for the cleaning of their equipment, inside and out. This includes cabs, windshields and windows. Only approved materials may be used for cleaning. Under no circumstances is gasoline to be used for cleaning purposes
14. Where applicable, you must clean all equipment and vehicles after use

Loading Materials & Equipment

1. The load operator is also responsible for the loading of the trucks.
2. The Ministry of Transportation can charge the truck driver and load operator for over loaded trucks.
3. Do not overload your equipment. The manufacturers have established the capacity for your equipment. Observe these ratings and avoid unnecessary breakdowns and tire wear.
4. Place loads evenly in the body of the vehicle. Loads placed "off centre" put an undue strain on axles, tires and frames.
5. Loose material (garbage, sand stone, etc.) shall be covered while in transit
6. Tie down or otherwise secure loads that might shift and cause damage. After unloading, you must ensure that tie downs and coverings are properly stored and secured

Seat Belts

It is the standard, that all employees shall wear seat belts and shoulder harnesses while operating company vehicles. Specifically, seat belts and shoulder harnesses must be used and properly adjusted whenever a company vehicle is operated outside the confines of the works yard. The operator of the company vehicle must ensure that all passengers wear seat belts. Equipment operators must use seat belts when operating equipment that are equipped with them.

Equipment Maintenance

Repair requests are to be forwarded to the shop immediately. After the repair request has been received, the supervisor/manager will review and contact the supervisor responsible for follow-up / repair scheduling. For any services, repairs or have defects noted on pre trips, contact management immediately. Please be advised that any damage to equipment must be reported to your supervisor immediately.

1. Breakdowns & Emergencies please contact your supervisor immediately or the shop for field service.
2. Inflation of tires is required to ensure their maximum life; Check your tires daily for pressure, cuts, bruises, stones, etc. Report a flat tire immediately to your supervisor.
3. Keep coolant at a proper level. The radiator must be checked at least once each shift.
4. Do not remove radiator pressure cap when engine is hot – severe scalding or burns may result.
5. For engines equipped with a coolant recovery system, the coolant level should be checked by observing the liquid level in the coolant recovery tank. The radiator cap NEED NOT normally be removed. The coolant level in the recovery tank should be at the level recommended by the equipment manufacturer. In some cases, the level is indicated on the coolant recovery tank.
6. Periodically, the radiator cap should be removed to observe the coolant level in the radiator.
7. Coolant levels in cross flow radiators with coolant recovery tanks should be maintained to the top of the filler neck.
8. Check the exhaust system. Leaking exhaust gases may result in carbon monoxide poisoning.
9. Keep tools and other equipment in the compartment or box supplied for this purpose. The compartment and tools must be kept clean.
10. Check equipment frequently for loose nuts, leaking brake lines and bare or faulty wiring.
11. Keep your equipment well lubricated. Consult your supervisor as to the type and make of lubricant to use, and the correct lubricating procedure.
12. Frequently, you will find that the engines of company equipment are fitted with governors, which have either been built into the engines or attached to them as accessories. In every case, these governors have been set by the manufacturer or at a service centre. Governors may be installed in equipment to govern the speed of the engine and so avoid damage to the engine caused by excessive speed. Any interference with these governors may result in unsafe operation or damage to the equipment – or both. You are NOT authorized to alter governor settings.
13. When any company vehicle is left unattended or parked, ensure that the keys are removed from the ignition switch and the parking brake applied. If a vehicle has a standard transmission, leave it parked in low gear or reverse, as specified in the vehicle's operator manual. All doors and compartments are to be locked. This rule also applies when a vehicle is parked outside of any company building. Diesel vehicles equipped with manual shutdown devices shall be left in the shutdown position when parked.

Equipment Maintenance – Shop

1. When you use company tools or materials, they must be returned clean and in good working order immediately after use.
2. You must list in detail problems or defects found in your equipment on the circle check form and give to your shop supervisor when you bring the equipment in to the shop for repairs.
3. Overhead doors must always be raised to their full extent and secured before vehicles are moved into or out of a shop.

Daily Inspection

1. Turn ignition key to the “on” position and check that all warning lights, buzzers, etc. are operating.
2. Start engine; check all gauges and warning devices.
3. Listen for unusual sounds in the engine. Shut down engine if there are unusual noises in the engine or gauges and warning devices indicate some component malfunction.
4. Make sure the parking brake is applied and is capable of holding the vehicle from movement. Putting the vehicle in low gear, drive-in automatics and attempt to drive the vehicle forward can do this.
5. Check the operation of window regulators, windshield wipers and all cab glass for cracks and cleanliness.
6. Check the horn, heater and defroster and their controls.
7. Check the operation of the clutch, brake and accelerator pedals. On vehicles equipped with air brakes, check for normal build up of the air pressure system.
8. Check rear view mirrors for breakage and adjustment.
9. Check emergency equipment, First Aid Kit, fire extinguisher and reflectors.
10. Check seat and shoulder belts.
11. Check for vehicle permit, insurance card and accident reporting package.
12. Check door closing and locks.
13. Turn on all lights.

Operation and Safe Driving

Safe operation and careful driving habits go hand in hand. Develop these good habits. Observe all safe driving regulations. The Highway Traffic Act sets out the regulations relative to parking on a highway and what to do in case of breakdown. It reads as follows:

The company standard for a disabled vehicle, whether during daylight or darkness, a flare or reflector will be placed close to the vehicle on the traffic side as a warning. Other flares, reflectors or signs will then be placed forward and rearward of the vehicle as a warning to oncoming traffic. Additional flares, reflectors or signs shall be placed in front of or behind a disabled vehicle if visibility is less than 150 meters (500 feet) example, hills and curves. Caution should be used in locating flares and reflectors where fuel or flammable material has leaked.

1. If you carry a load that projects 1.5 metres (5 feet) or more beyond the end of your vehicle, including the tailgate, attach a red flag by day and a red light by night to the extreme rear of the load
2. Whenever possible, park your equipment so that you do not have to back it up. If you must back up, do so with care. If you are alone and must back up, go to the rear of the vehicle and make certain that all is clear before moving. If you have a helper, he must be outside of the vehicle and visible to you at all times. If you lose sight of your helper while backing up the vehicle ~ STOP IMMEDIATELY.
3. Use the parking or hand brake when parking. If on a grade, and there is a curb, turn the front wheels so that the downhill part of the tire is against the curb or use a chock block at the rear wheels (better still, use both). Leave the vehicle in the lowest gear while parked. Automatics should be shifted into "Park".
4. Always be certain that the windshield and windows on your equipment are clean and free from frost, snow, ice or dirt. In bad weather, stop often to clean them.
5. When approaching hydro or telephone wires, make certain there is ample clearance for your equipment before proceeding under them.
6. Do not disengage clutch or shift to neutral and allow equipment to coast downhill.
7. Be on guard against falling asleep at the wheel. If you're sleepy, stop; get out of the cab & walk around.
8. Wet and icy roads are a real hazard. Reduce speed and drive with care.
9. If for any reason other than normal traffic delays you are required to stop, do not stop on the travelled portion of the road or pavement. Even if you stop only for a minute, pull onto the shoulder.
10. Be certain that your fire extinguisher is fully charged. If partly empty, have it refilled or the cartridge replaced at the first opportunity.
11. Do not park trucks in the left lane unless equipment is protected by signs or warning barriers.
12. When operating slow moving equipment, do not hold up traffic unnecessarily. If practical, pull off the road periodically and stop when safe to allow traffic to pass.
13. Employees shall not ride on the fenders, bumpers, steps or running boards of any vehicle.
14. The amber flashing light on trucks may be used as a warning device on a slow moving or parked vehicle while performing maintenance work.

Fueling Safety

1. Turn the engine off when refueling,
2. No employee shall smoke within 25 feet of the fuel tanks whether fueling vehicles or not,
3. Automatic nozzles must not be left attended,
4. Fuel tanks on all winter maintenance equipment would be filled at the end of each shift – within 5cm (2") of the top of the tank. Doing so will cut down condensation in the fuel tank and reduce spillage caused by expansion of the fuel.

SAFE TRANSPORT OF EQUIPMENT

Please refer to the following to review the basic principles of safely transporting equipment. This standard applies to all managers, supervisors, employees, and subcontractors in our employ or under contract with our firm. The transporting of all equipment shall be coordinated by the Manager or designate with all applicable documentation.

GENERAL: New Alliance Ltd. drivers shall be responsible for the vehicle and load at all times during the loading & loading procedures. Take your time to do it right. New Alliance Ltd. trailers have different designs with different intentions and different rated capacity. Do not overload, an overload weakens the trailer and reduces the vehicle's ability to break and accelerate.

DRIVER/OPERATOR RESPONSIBILITIES

Prior to loading of any equipment a Vehicle Pre-trip Inspection shall be performed as required with an additional inspection performed on the trailer and surrounding conditions:

1. Chock the wheels - all motor vehicles/trailers shall be equipped with wheel chocks that comply with Society of Automotive Engineers Standard SAE J348 JUN90 "Wheel Chocks". The wheel chocks shall be used to block movement whenever the vehicle/trailer is left unattended on a slope or is being maintained or repaired.
2. Check lights.
3. No soft or damaged tires - whenever work is to be performed on an energized rubber tire with a multi-piece wheel, a device shall be used to prevent injury to a worker. This device is not required when topping off the air pressure in a tire.
4. Prior to loading/unloading, ensure that the trailer is on firm, level ground. Recent rain, snow or thaw may have changed the current conditions.
5. Watch for overhead electrical wires or other obstructions. Ensure a copy of the Utility policy for the site/workplace is available.
6. Exam the trailer bed to make sure there is no mud, snow, ice, tools or other loose equipment.
7. Check for damages in the bed, holes covered by dirt.
8. Water makes for a slippery surface causing machines to slide off.
9. Check attachment points – ensure that they are capable of withstanding all loads they are subjected to.
10. Check stake pockets to ensure it has been designed for the load it will be subjected to.
11. Use the manufacture's D-ring is first priority.
12. All vehicles/trailers shall be de-energized prior to being maintained or repaired. Lockout & tagging shall be utilized to de-energize all forms of potential hazardous energy. (i.e. Electrical, Mechanical, Potential, Hydraulic, Pneumatic, Thermal & Chemical) Refer to the Safety, Health & Environmental policy on Lockout & Tagging.
13. Where a mobile fuelling supply tank is used the tank shall be clearly labelled with "No Smoking" & "Flammable" signs.
14. Any spillage of oil or fuel shall be taken up at once, deposited in a fireproof receptacle and removed from the site/workplace without delay.

BREAKING SYSTEMS

1. All brakes on motor vehicles operating on ramps shall consist of a service braking system, an emergency stopping system and a parking brake system.
2. Each motor vehicle braking system shall be capable of being tested independently and readily applied by a worker seated in the driver's seat.
3. A service braking system may consist of a hydraulic pump motor drive system.
4. The capacity of the retarders shall not be considered in determining the capacity of the braking system.
5. The service braking system and the emergency stopping system shall be capable of safely stopping a vehicle while freewheeling under its maximum authorized load and maximum authorized speed while proceeding on maximum grade in its area of operation.
6. The parking brake system shall be capable of holding the vehicle stationary under conditions of its maximum authorized load when on the maximum grade in its area of operation.
7. Where components that apply the service brakes and the emergency brakes are common, the components shall be arranged so that a failure in a common component does not reduce the capability of one of the systems to stop the vehicle safely.
8. A Manager or designate shall designate, in writing, a competent worker who is capable of providing proof for the tests on each motor vehicle. The records of these tests shall be signed by the competent worker, forwarded to the office for filing, and be made available when requested.
9. Before a breaking system can be put into service, tests shall be conducted on a newly acquired vehicle for the proper operation of the,
 1. Service brakes
 2. Emergency brakes
 3. Parking brakes
 4. Steering
 5. Warning devices
 6. Lighting

EVALUATE THE LOAD: When evaluating a potential load for transport please ensure to review the following information:

1. Inspect equipment/machine you're loading refer to the operator manual for all of the specifications on weight, attachment points, load positions and any other special transporting directions made by the manufacturer.
2. Perform a circle check of machine looking for flat tires, damage, loose tools or debris or material that have the potential of becoming airborne during transportation.
3. Secure everything to the attachment points that are provided.
4. Use a signal person to ensure the safe positioning of a load.
5. Improper positioning may cause an unstable load and create an unsafe driving condition.
6. Too much weight on the trailer tongue can take weight off the front wheels of the towing vehicle and make steering unresponsive.
7. Too much weight on the rear of the trailer may result in a loss of traction and breaking ability of the towing vehicle
8. Overweight on axle may result in MTO fines and penalties at scales.

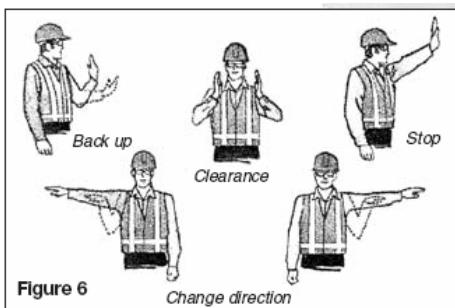
9. Only a qualified operator shall load and unload all equipment.
10. No operator shall load or unload equipment they are not familiar with the loading techniques.
11. Ensure the ground is level and capable of supporting the loads it will be subjected to.
12. Approach from access point in slow controlled manner.
13. Have all attachments as low to the ground as reasonable.
14. Wear seat belt at all times; if the machine is tipping for any reason remain with the machine, do not attempt to jump clear of machine.
15. Be aware of all weather and ground condition that may impose a hazard, especially snow and ice.
16. Use alignment points on the trailer to maintain a straight load (boards on bed).

SIGNAL PERSON

On every project it is almost impossible to avoid having equipment or vehicles perform operations in reverse. To help with the visibility when reversing, every operator/driver shall have a signaller when the need occurs. You must have a signaller form the following situations or conditions:

1. When a vehicle or equipment operator's view of the intended path of travel is obstructed.
2. When a person could be endangered by the operation of the vehicle, equipment or its load.
3. When any part of a vehicle, equipment or load may encroach upon the minimum distance allowed for overhead utility lines.

Please remember that a signaller must be a competent person who is familiar with the hazards associated with reversing and shall not perform any other jobs when acting as a signaller.



In addition to the above, a signaller who is helping in the safe transporting of equipment process shall be familiar and capable of performing the following:

1. Must be aware of all hazards and be familiar with all the agreed upon hand signals.
2. Be aware of all balance points for the machine; especially track machine.
3. After machine is in position lower all attachment and remove the key.
4. Confirm that all hydraulic levers are in a neutral position to confirm there is no stored energy.
5. Set the parking brake and keep the transmission engaged unless stated in Operator's Manual.
6. Use 3-point dismount.
7. Add all vandal protection plates; place all locking pin in articulating machines.
8. Place the mechanical lock in place for articulating machine.
9. Install all locks and vandalism barriers/protection plates.

10. Install the lock pin for rubber tire backhoe.
11. Remove all slow moving vehicle signs prior to transport.
12. All winching operation requires two workers.
13. Inspect the cable and hooks to confirm safety catch in place.
14. Stand clear during operation.

SECURE LOAD:

Loads transported by a vehicle shall be contained, immobilized, or secured so that it cannot cause any damage to the vehicle, the load or the environment. In addition to the above, an operator responsible for the safe transporting of equipment process shall be familiar with, capable of performing and ensuring the following:

1. Use manufacturers' operating manual to locate the recommended tie down points.
2. Use chain slings, binders & hooks that are capable of withstanding the load it may be subjected to.
3. Inspect chains, slings, binders and hooks prior to every use removing any and all that are damaged. Inspect for nicks, cuts, gauges, cracks and wear points.
4. Grade 8, 80, 800 is the minimum standard to use for tie down chain.
5. Use cushioning devices to reduce wear points on attachment equipment.
6. Do not place chains across hydraulic lines, cylinders or other locations on equipment that may be damaged.
7. Place chain in an x pattern with chains pulling to the front and rear of the trailer at the same time pulling from opposite sides to the center of the flatbed.
8. Secure points shall include the front and rear and attachments to equal 6 in total.
9. Measure the height and width of load to confirm 8'6" width 13'6" height.
10. Final inspection to confirm running light and flags are located in their proper position.
11. Clear deck of insecure materials/debris.
12. When loading/unloading on public road, ensure that the proper traffic control measures as required are available as per OTM Book 7.

REDUCED LOAD SEASON

Reduced load season is from March 1 to April 30 in Southern Ontario, and March 1 to May 31 in Northern Ontario. Please make sure all site supervisors/foreman are aware of this issue. There are many restrictions within the Municipalities and Regions as well as MTO highways. Please check with the Manager or designate on any upcoming moves well in advance, it may require extra time to coordinate these moves. Be aware that some roads into job sites may be subject to reduced load restrictions, where you may be required to find an alternate route, carry reduced loads, or get permission from the Region and or Municipality to haul.

HOURS of SERVICE (Restrictions on Drivers)

The purpose of this policy is to provide direction to drivers of commercial vehicles on meeting Hours of Service record keeping requirements under Ontario Regulation 555/06. To comply with the driving hour restrictions and other requirements under the regulations, all CMV drivers shall comply with this policy to ensure that drivers keep track of the Off, Driving and Other duty hours.

1. All commercial vehicle drivers, other than float drivers, must comply with the restrictions on permitted driving hours under Ontario Regulation 555/06. These restrictions are summarized as follows:

- a. Drivers must be "off-duty" a minimum of 10 hours in a day (24 hr. cycle)
- b. Drivers must not drive more than 13 hours in a day (24 hr. cycle)
- c. Drivers must not drive after being "on-duty" for 14 hours in a day (24 hr. cycle)
2. Drivers must fully and accurately complete an Hours of Service Time Record (Logbooks) for each 24 hr., 7 day week period during which they provide commercial vehicle driver duties for NAL.
3. Drivers' records must be recorded on the New Alliance Ltd. Hours of Service Log/Record Book.
4. Drivers must keep a copy of their current Hours of Service Book with them at all times while operating a commercial vehicle and must make the Book available to NAL or to the Ministry of Transportation other designated enforcement authorities for inspection on request.
5. NAL shall ensure that every driver to fill out and every driver shall fill out a daily log each day to confirm a driver's **on-duty time** and **off-duty time** for that day.
6. A driver is not require to complete a HOS record if:
 - (a) the driver operates or is instructed by the motor carrier to operate a commercial vehicle within a radius of 160 km of the home terminal;
 - (b) the driver returns to the home terminal each day to begin a minimum of 8 consecutive hours of off-duty time;
 - (c) the motor carrier maintains accurate and legible records showing, for each day, the driver's duty status and elected cycle, the hour at which each duty status begins and ends and the total number of hours spent in each status and keeps those records for a minimum period of 6 months after the day on which they were recorded; and
 - (d) the driver is not driving under a permit issued under the Regulations.
7. New Alliance Ltd. will maintain a record of each driver's Hours of Service, and will review the Record to confirm that drivers are meeting the requirements under the Regulation.
8. Ensure that you have a current Hours of Service Record Book with you at all times while on duty and *in particular* while you are operating a commercial vehicle. Keep a separate Hours of Service Record Book for each month. Replacement books can be obtained from your Supervisor/Site Administrator.
9. For each duty period (24 hr. cycle/ Sunday to Sunday) fully and accurately record your off-duty and on-duty periods, being sure to record the time of each "change of duty" period.
10. Each day (end of 24 hr. cycle) deliver the Original (white copy of the previous day's Hours of Service Record to your Supervisor/Site Administrator. The Driver's (yellow) copy of your record should be left in the Record Book so that it is available for inspection (see Item 3).
11. Additional instructions on how to complete the Hours of Service Time Record form can be found in your Driver's Reference Binder located in each truck/vehicle or from your Supervisor/Site Administrator.
12. If you have questions about the requirements under this Policy or Regulation 555/06, or about how to complete your Hours of Service Record, contact your Supervisor/Site Administrator immediately.
13. As a driver of a commercial vehicle covered under this Policy/Procedure, you are responsible for complying with these and other applicable requirements under the Highway Traffic Act (Ontario). Failure to comply with these requirements may result in disciplinary action.

SECTIONS 53 – OFFICE SAFETY

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to review the basic principles of general office safety in the workplace.

STANDARD: This standard applies to all managers, supervisors, employees, and subcontractors in our employ or under contract with our firm. You are required to work in a safe manner everyday including the office environment. The following issues are for your review.

1. Workers shall report all injuries, regardless of severity, to the supervisor in charge.
2. Workers shall walk cautiously up and down stairs; the handrail shall be used whenever possible.
3. Caution shall be exercised when walking around blind corners.
4. Running is not permitted at any time.
5. Walkways shall be kept clear of materials, furniture and debris to ensure the escape route is clear.
6. Ensure that you have a full knowledge of exits & escape routes.

Lifting and Carrying

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

Doors

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

Ladders and Step Stools

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

Sharp Instruments

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

Filing Cabinets

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

Fire Protection

1. No worker shall hinder access to fire extinguishers or exits.
2. Each worker shall note the location of fire extinguishers, exits, and fire alarms, and shall be knowledgeable in the use of each.
3. It is the responsibility of each supervisor to ensure that all workers are knowledgeable in fire protection and evacuation procedures.
4. Workers discovering fires shall sound the alarm:
 - a. Provided that the fire is of a small nature, a trained worker will attempt to extinguish it.
 - b. If there is any danger from this procedure, all workers shall evacuate the building immediately.
5. All workers shall exercise good housekeeping habits, not allowing waste, paper, rags, or other combustible material to accumulate.
6. There will be "No Smoking" inside buildings where Municipal By-Laws apply.

Office Equipment

1. Unsafe electrical cords, faulty electrical or other equipment, or any other hazardous conditions shall be reported to your immediate supervisor.
2. Workers shall not attempt to clean, oil or adjust any machine that is running.
3. If a running machine is not equipped with a starting switch that can be locked in the "off" position, it shall be disconnected from its power source.
4. Chemicals used in office copiers or other equipment shall be stored in proper containers, in proper storage areas and handled with due care.
5. Appropriate personal protective equipment (goggles, aprons, gloves) shall be worn when handling chemicals necessary for office functions.
6. Loose fitting clothing, dangling bracelets, rings and ties may cause serious injury to workers operating or working around power driven machines (paper shredders, copiers, etc.) and shall not be worn.

Ergonomic Considerations for a Computer Workstation

To set up a computer workstation, it is helpful to understand the concept of neutral body positioning. This is a comfortable working posture in which your joints are naturally aligned. Working with the body in a neutral position reduces stress and strain on the muscles, tendons, and skeletal system and reduces your risk of developing a musculoskeletal disorder (MSD). The following are important considerations when attempting to maintain neutral body postures while working:

1. **Hands, wrists, and forearms** are straight, in-line and roughly parallel to the floor.
2. **Head** is level or bent slightly forward, forward facing, balanced, in-line with the **torso**.
3. **Shoulders** are relaxed and **upper arms** hang normally at the side of the body.
4. **Elbows** stay in close to the body and are bent between 90 and 120 degrees.
5. **Feet** are fully supported by the floor or a footrest may be used if the desk height is not adjustable.



6. **Back** fully supported with appropriate lumbar support when sitting vertical or leaning back slightly.
7. **Thighs** and **hips** are supported by a well-padded seat and generally parallel to the floor.
8. **Knees** are about the same height as the hips with the **feet** slightly forward.
9. You should change your working position frequently throughout the day in the following ways:
 - a) Make small adjustments to your chair or backrest.
 - b) Stretch your fingers, hands, arms, and torso.
 - c) Stand up and walk around for a few minutes periodically.

SECTION 54 - ENVIRONMENTAL PROTECTION

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate and review the basic principles of our standards to protect the environment.

STANDARD: Fundamental to the success of New Alliance Ltd. has been a steadfast commitment to create a company that is diverse and innovative. While developing new processes or continually examining our existing operations, we hope to improve both our environmental and financial outcomes. This commitment will ensure that the company will continue to grow and improve in all areas of performance.

We appreciate that inherent to our business operations are environmental challenges. Therefore, we must all work to minimize undesirable impacts on our environment and to remain compliant with all applicable laws. Employees shall be provided with training to ensure familiarity with procedures to effectively deal with operating conditions that may have an impact on the environment. We believe that the most effective means to ensure our continued success is to support and maintain environmental integrity.

We also believe in being accountable and honest with the community in which we operate. It is our intention to foster a sentiment of shared responsibility for the natural environment that we all appreciate. Our environmental standard shall be available to any interested stakeholder, upon request. As well, we will systematically document, review and update our objectives and procedures to continuously improve our environmental performance. It is in this interest for sustainable growth, that we shall strive to achieve a reduction in resource consumption while remaining economically prosperous.

Our primary goal in environmental protection is as follows:

1. Minimize environmental risks to workers and the general public at all times,
2. Know and protect against the environmental issues present,
3. Form a partnership with our workers, community for environmental protection,
4. Ensure that we comply with all applicable environmental protection legislation,
5. Where environmental impacts are unknown – stop work,
6. Liaise and communicate with the appropriate authorities for environmental protection,
7. Ensure that literature and training is provided for specific concerns,
8. Remember to Reduce, Reuse and Recycle whenever possible,
9. Please reference our Environmental Protection Quality Management Process.

The Environmental Protection Quality Management Process

1. Review the contract specifications to identify contractual items and environmental issues. Identify and review any other legislation and regulations that are applicable.

2. Prepare the "Environmental Control Plan" by listing all the environmental considerations, items, sensitive areas, and issues that are specific to this project, including the environmental contractual items. This list needs to include specific items that are to be protected, as well as incidents that may occur and must be prevented from happening. Plan the specific actions to be taken, and control measures to be constructed to provide the environmental protection required. This plan must include the minimum specifications that the required actions and control measures.
3. Document the existing conditions. Take digital photographs of the entire site to establish the baseline environmental conditions for the workplace or project.
4. Prepare a checklist to be used for monitoring the state of and recording the efficiency of the environmental control measures. This list must include the items to be monitored, type of documentation (report or photograph), frequency of monitoring, the individual(s) responsible for monitoring and recording, and the distribution of the reports.
5. Prepare an environmental diary to record the inspections of environmental control measures. Management is responsible for receiving field reports, and updating this diary. The reports are provided daily as required as per contract.
6. Prepare a system to daily monitor and record weather forecast and to record the actual daily weather events. The Project Administrator is responsible for keeping and updating these records. The reports are provided daily to the Project Manager/Superintendent.

Part 1 EROSION AND SEDIMENT CONTROL PLAN

New Alliance Ltd. is committed to ensure that the construction activities required to perform the work in this contract have a minimum adverse impact on the surrounding environment. This commitment includes all facets of our operations, which includes our subcontractors and suppliers.

The following is a list of proposed activities and planned measures to mitigate erosion and control deleterious materials from entering the watercourse.

1.0 Topsoil Stockpiles & Berm Material

Encircling the toe – of – the slope with silt fence installed as per OPSD 219.110 will contain sediment run – off from on – site topsoil and surplus excavated material.

2.0 Sediment Control Fence

Sediment control fences will be used to control sediment runoff. Sediment control fences will be installed as per Contract documents and OPSD drawings prior to the work commencing on site. The site superintendent is to ensure the sediment control fence maintains its function and will inspect the fence periodically. A standard 200mm supply of silt fence will remain on – site, as a contingency to contain breaches. If significant volumes of silt (approx. half the height) have accumulated against fence it will be removed and disposed of as per contract specifications.

3.0 Flow Checks

Flow checks will be installed as per the Contract Drawings. Straw bales, as specified will be used as filters along the drainage outlets and across ditches. The bales will be installed as per OPS Standards. All flow checks will be monitored throughout the construction period and cleaned as necessary.

4.0 Water supply and protection measures

When work is required in the watercourse or on watercourse banks, operation of equipment at such times shall:

1. Be kept to the minimum necessary to perform the specified work.
2. Comply with operational constraints that may be specified elsewhere in the contract.
3. Otherwise proceed in a continuous fashion so as to minimize the duration of such work.

5.0 Dust Control

Dust control using water, calcium chlorides flakes or liquid will be employed on an as required basis in construction areas and on haul roads. Particular attention to dust control will be made in those areas where dust may impact on agricultural lands, residential use or in cases where visibility is impaired.

6.0 Special Substances

All necessary precautions to prevent and minimize the spillage, misplacement or loss of fuels and other hazardous materials will be taken. All Acts and Regulation pertaining to special substances will be followed. Only trained personnel in accordance with government laws and regulations will handle the delivery, storage, use and disposal of these hazardous materials. The following precautions will be taken:

1. Equipment used will be mechanically sound with no oil or gas leaks.
2. Storage of petroleum products is not allowed within watershed boundaries, unless a secondary holding tank is in place to catch any leaked product, as described herein.
3. Waste oils and lubricants will be retained in closed containers, and disposed of in an environmentally acceptable manner.
4. **Any material contaminated by the accidental spilling of fuel, anti-freeze, oil or grease that any cause contamination to streams or rivers shall be removed from the area and transported to an area where it can be disposed of in an approved manner.**
5. Fire extinguishers will be located near the fuel storage areas.
6. Fuel storage tanks of any size will be located in excess of 15 meters from a drilled well or 30 meters from a dug well, watercourse or water body.
7. In those areas where this set back cannot be met, yet work conditions necessitate the location of a tank or equipment closer than 30 meters, a berm lined with plastic will be constructed around the tank or equipment. The berm shall be large enough to contain 110% of the volume of fuel.
8. Smoking is prohibited within 10 meters of any fuel storage tank or area.
9. Spill clean up materials will be stocked and accessible at locations near the areas of tank usage.
10. New Alliance Ltd. procedures for the storage of fuels and chemicals on construction sites are given in the following sections.

6.1 Storage Tanks: 5,000 Litres or less

A storage tank requires a dike if the potential for a spill may cause one of the following circumstances:

1. A hazard to public health and safety,
2. Contamination of any fresh water source or waterway,
3. Interference with the rights of another person, or
4. The entry of the spilled fuel into a sewer system or underground stream or drainage system.

All storage tanks shall be protected with a barrier that is capable of withstanding any impact load that would result in damage to the tank. This can be accomplished by a primary snow fence to alert equipment operators and a secondary impact barrier such as a New Jersey or Triton.

6.2 Storage Tanks: Greater than 5,000 Litres

All permanent tanks (for semi-permanent or mobile tanks see below) shall have a dike or equivalent. If a dike is required, the following shall occur:

1. The volume of the dike will be capable of containing 110% of the product being stored.
2. Inspected on a regular basis to ensure that neither surface water nor product has accumulated.
3. Accumulated water/product that would reduce the fluid volume capacity of the containment area will be removed.
4. The dike should be provided with an outlet that will permit the draining of water and/or product. A bottom draw outlet is recommended. Accumulated water with no sheen can be drained directly to the ground. If sheen is present, apply absorbent pads to the surface of the water until no sheen is present. The water shall then be drained to the ground.
5. The drainage outlet will remain closed and locked unless being used for a supervised draining operation. Open and closed operations will be clearly marked.

6.3 Equipment Fuelling

The following procedures will apply to the fuelling of heavy construction equipment and the refuelling of storage tanks.

1. Fueling or servicing of mobile equipment will not be allowed within 30 m of watercourse except within a specifically designated refueling site where conditions will allow for containment of accidentally spilled fuel.
2. No equipment fuelling will occur in sensitive areas.
3. Fuelling and lubrication of equipment will occur using a manually controlled nozzle.
4. When refuelling equipment, operators will:
 - a) Use leak free containers and reinforced rip and puncture proof hoses and nozzles,
 - b) Be in attendance for the duration of operation; and
 - c) Seal all storage container outlets except the outlet currently in use,
 - d) Regular inspections will be made of hydraulic and fuel systems on machinery. Leaks will be repaired immediately.

6.4 Equipment Maintenance

Regular servicing and maintenance of equipment will not be allowed within 30 m of a watercourse except within a specifically designated area where conditions will allow for the containment of effluents from the maintenance.

6.5 Chemical Storage

If drums are stored outside, they will be stored on their sides, on level ground, prevented from rolling. The drums should be stacked no higher than three levels. Drums can also be stored upright, provided they are not susceptible to tipping and are not stacked. All storage areas will be marked or fenced with temporary fence to avoid vehicular impact. Storage of products in the floodplain or sensitive areas is prohibited. Drum storage in trailers will be upright and stacked a maximum of 2 drums high. A skid or planks will separate the lift. Day-use drum quantities will be stored upright or on the side as required. Drip pans, with absorbent pads will be used beneath taps. All stained soil resulting from our use of chemicals or fuels will be cleaned up and disposed of prior to leaving the work area.

Part 2 ENVIRONMENTAL PREPAREDNESS & SPILLS RESPONSE PLAN

1.0 INTRODUCTION

1.1 Project EPRP – Spills Objectives

The main objectives of the Project EPRP – Spills are to achieve compliance with all requirements pertinent to the project work site, and to provide the most effective response to a spill within the shortest possible time. To meet these objectives, the plan includes procedures for spill prevention, spill preparedness, spill response and spill reporting.

The emphasis on site shall be on containment of any potential spill. Controls shall also be provided, where appropriate, to prevent erosion and sediment releases to a water body or watercourse.

1.2 Spill Definition

For this Project EPRP-Spills, spills of vehicle and equipment operating fluids and spills of other pollutants, which are not fully contained, that is, where the spilled substance flows to the surrounding natural environment, constitute spills to the natural environment.

Overflows and other spills onto intact surfaces of concrete floors and decks, asphalt pavement and similarly impervious materials, where the spill can be fully contained and completely cleaned up, are not regarded as spills to the natural environment. Spills into water, including site runoff are regarded as spills to the natural environment.

1.3 Spill Classification

For consistency in evaluating and reporting spills, all spills shall be classified as follows:

- a) No Effect Where the spilled substance has no resulting identifiable effect on the natural environment.
- b) Minor Effect Where there is potential harm to the natural environment or to other users of water, but no harm is observed or identified.
- c) Harmful Effect Where there is identifiable harm to the natural environment or an effect on other users of water.

1.4 Spill Reporting

Environment Spill Reporting

1-800-268-6060

1.5 Spillable Substances on Site:

The following is a list of spillable substances, which are on site together with the maximum anticipated volumes of each substance:

1. Cement (in concrete)	Various quantities	2. Engine Oil	100L
3. Diesel Fuel	1000L	4. Engine Coolant	50L
5. Gasoline	200L	6. Hydraulic Oil	100L

2.0 SPILL PREVENTION

1. There will be routine inspection and maintenance of spill prevention measures.
2. Spill prevention measures are summarized below.

2.1 Erosion and Sedimentation Control

1. Silt fences and straw bale flow checks in drainage areas on land, as per specifications.
2. Settling bases (sediment trap), as per specifications.
3. Silt curtains for in-water sediment control, as per specifications.

2.2 Liquid Storage

1. Bulk storage located more than 30 m from river;
2. Impermeable liner under gravel bed used for bulk liquid storage area;
3. Secure containment for fuels and other chemical products on site;
4. Absorbent materials on hand at all storage locations.

2.3 Refuelling and Equipment Operation

1. Mobile highway vehicles refuelled off site;
2. No refuelling of equipment within 30 m of river;
3. Equipment kept clean and serviced to prevent leaks of operating fluids;
4. No equipment washing near open water or watercourses.

2.4 Truck Washing - Waste water and washing from concrete truck mixers directed to excess concrete disposal basin area.

3.0 SPILL PREPAREDNESS

3.1 Emergency Response Coordinator

1. A representative shall designate the Emergency Response Coordinator (ERC) for the site.
2. The ERC shall be a full-time member of the site work force and shall have full authority to direct responses to a spill. The ERC shall designate selected members of the workforce (min. 2 persons) to form a Spill Response Team (SRT) under his direction.
3. The ERC shall be responsible for posting this listing on site and for keeping the list up to date.
4. The ERC shall be aware of all potential spill hazard substances on site and of methods to handle and contain them.
5. The ERC shall be aware of all potential spill hazard substances on site and of methods to handle and contain them.
6. The ERC shall maintain records of all potentially spillable substances on site and of the volumes involved. Material Safety Data Sheets (MSDS) for all substances shall be kept in a location readily accessible to the SRT.
7. The ERC shall be responsible for SRT training and shall provide training at the start of the project. The ERC shall also be responsible for conducting review exercises to ensure that the SRT is maintained in a state of readiness and that the necessary procedures for spill response are in place and that required equipment and materials are available.

3.2 Spill Response Team

1. The Spill Response Team (SRT) shall be appointed by the ERC.
2. The names and telephone numbers of the SRT members shall be posted at the site.
3. SRT Training and review exercises shall be regularly conducted to ensure that the team is maintained in a state of readiness.

3.3 Spill Response Equipment and Supplies

The spill response kit requires the 360 Litres of Overpack. The Contents shall include:

100 pads, 41 x 51 cm	Goggles
12 SOC's 7.6 x 122 cm	Nitrile Gloves
8 SOC's 46 x 46 cm	10 disposal bags
10 sorbent wipes (UXT514)	Emergency Response Handbook

3.4 Spill Handling Procedures

Information on handling spills is provided on MSDS. Procedures for handling potentially spill able substances on site shall be developed and reviewed by the ERC and made a part of SRT training.

4.0 SPILL RESPONSE

Response to a spill, including the containment and clean up of the spill, shall be given priority and take precedence over other work activities on site. Responsibility for all spills within the assigned project work area rests with New Alliance Ltd.

4.1 Initial Response

All members of the site workforce shall be made aware and kept aware of the initial responses required by the EPRP-Spills. The initial response by persons working in the immediate area of the spill or those who discover the spill shall include the following:

1. Evacuate persons in danger from the immediate work area,
2. Make an initial assessment of the spill and of the hazards involved,
3. Stop the spill, if the spill can be readily and safely stopped,
4. Remove or disable potential sources of ignition (for fuel/oil spills),
5. Inform immediate work area supervisor, if available,
6. Inform ERC or a member of the SRT.

Take initial containment actions, as appropriate

1. Minimize/control hazards to persons, Cover/fill drains and drainage paths,
2. Construct dykes, Deploy booms and absorbents.

The immediate work area supervisor (or the person discovering the spill) will inform the ERC as a matter of urgency.

4.2 Main Response

The ERC shall take charge and direct the spill response.

The ERC shall:

1. Make a full assessment of the spill,
2. Activate spill containment and clean up measures, mobilizing work force as necessary,
3. Notify head office and Project Manager,
4. Make external notifications, as appropriate,
5. Commence documentation of the spill,
6. Call in external help for containment, clean up and disposal activities, if required.

4.3 Spill Assessment

Initial observation of a spill will automatically include a first assessment of the general nature of the spill. The following information shall be determined and recorded by the ERC during the assessment:

1. Location of spill
2. Substance spilled
3. Quantity spilled
4. Total quantity involved (potential for additional spillage)
5. Surface area affected
6. Hazard involved (consult MSDS)
7. Potential to stop the leak or contain the spill
8. Criteria for containing the spill
9. Equipment and/or materials required
10. Weather conditions anticipated while countermeasures are underway
11. Estimate of quantity recoverable

4.4 Containment and Clean up

Spill containment and clean up shall be the responsibility of the ERC.

All spills shall be cleaned up in an environmentally acceptable manner such that the spill site is restored to its pre-spill condition, where this can be reasonably expected.

The need for clean up or other remedial work in the case of sediment deposits on the bed of a river or other bodies of water resulting from sediment releases into water will be subject to a separate determination based on the potential effects of the deposit on fish habitat. Specific clean up or other remedial actions will be aimed at mitigating effects on fish habitat.

Empty disposal drums with full end sealable lids shall available and appropriately located on site for pre-disposal storage of spilled substances, contaminated absorbents, contaminated soils, etc.

In the case of small spills of a non-reportable nature, the spilled substance and any contaminated materials or soils shall be placed in a drum or other suitable container for subsequent disposal.

The following actions, as appropriate to a particular spill, are anticipated for containment and clean up of a spill:

1. Secure the total spill area
 - a) Stop construction activity in the area,
 - b) Prevent access by unauthorized persons,
 - c) Remove or disable potential sources of ignition (for fuel/oil spills).
2. Containment of the spill, as appropriate
 - a) Secure the source, Secure open drains,
 - b) Deploy absorbents, Deploy booms,
 - c) Fill drainage paths, Construct dykes.
3. Clean-up of the spill, as appropriate
 - a) Transfer spilled substance to tanks or drums,
 - b) Transfer contaminated soil/water to drums (small spill),
 - c) Transfer used absorbents to drums.

5.0 SPILL REPORTING The reporting of spills requires that a certain degree of judgment be exercised so as not to result in the reporting of insignificant or inconsequential events. Some spills may be regarded as non-reportable.

5.1 Non-Reportable Spills

The following are examples of non-reportable spills:

- a) Minor dripping of fuel, oil or other pollutants providing that contaminated soils and other materials are promptly removed and securely stored for disposal.
- b) Spills contained within a secondary containment structure or spills onto impervious surfaces (concrete, asphalt pavement etc.) which are totally contained and do not enter the groundwater, or spread to natural ground, providing that the spill is cleaned up.

- c) Spills of liquid from the fuel or other systems of vehicles, where the spills are not in excess of 100 L are exempt from reporting requirements providing that the spilled liquid does not enter and is not likely to enter any surface water, and that the spilled liquid and any contaminated soil is cleaned up immediately.

5.2 Reportable Spills

All spills to the natural environment other than non-reportable spills and all spills on or into water shall be reported. Reportable spills shall be reported immediately. That is, as soon as all immediate threats to health and safety have been removed and response to the spill has been initiated.

5.3 Documentation

Every reportable spill shall be documented. This report will include information on the type and volume of the substance spilled an estimate of the volume recovered, the cause of the spill and events leading to it. Details of the containment, clean up, disposal and restoration operations shall be provided. Photographs may be included as part of the report.

6.0 SITE RESTORATION

The spill site shall be restored to its pre-spill condition, where this can be reasonably expected.

SECTION 55 – SAFE PURCHASING

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate & review our safe purchasing standards. This standard can be used to promote the purchasing of goods and services that are safe for use and purchased from a manufacturer, supplier or retailer where the product itself and the delivery process/conditions do not involve the abuse or exploitation of any persons; have the least negative impact on the environment.

STANDARD: New Alliance Ltd. shall seek to purchase goods and services which are produced and delivered under conditions that do not involve the abuse or exploitation of any persons; have the least negative impact on the environment.

New Alliance Ltd. shall:

1. Whenever feasible purchase items that are locally produced or second-hand, and/or recycled.
2. Wherever feasible will purchase goods that are made in Canada or the USA.
3. Purchase items from responsible and ethical manufacturers who operate in accordance with established codes of corporate conduct regarding wages, workplace health and safety, forced labour, child labour, and freedom of association.
4. Implement the guidelines for ethical purchasing will be a shared responsibility between management and employees, and informed by a number of operating principles, which will be reviewed from time to time.
5. Communicate its commitment to the ethical purchasing policy to employees, members, volunteers, and working groups, as well as to all suppliers of goods and services.
6. Make appropriate human and financial resources available to meet its stated commitments, including training and guidelines for relevant personnel.
7. Adopt appropriate methods and systems for monitoring and verifying the achievement of the standards.

Employment is freely chosen: There is no forced, bonded or involuntary prison labour. Workers are not required to lodge 'deposits' or their identity papers with the employer and are free to leave their employer after reasonable notice.

Child Labour shall not be used: There shall be no new recruitment of child labour. Companies shall develop or participate in and contribute to policies and programmes, which provide for the transition of any child found to be performing child labour to enable her/him to attend and remain in quality education until no longer a child. Children and young people under 18 years of age shall not be employed at night or in hazardous conditions.

Living wages are paid: Wages and benefits paid for a standard working week meet, at a minimum, national legal standards or industry benchmarks, whichever is higher. In any event wages should always be high enough to meet basic needs and to provide some discretionary income. All workers

shall be provided with written and understandable information about their employment conditions in respect to wages before they enter employment, and about the particulars of their wages for the pay period concerned each time that they are paid. Deductions from wages as a disciplinary measure shall not be permitted nor shall any deductions from wages not provided for by national law be permitted without the express and informed permission of the worker concerned.

No discrimination is practised: There is no discrimination in hiring, compensation, access to training, promotion, termination or retirement based on race, caste, national origin, religion, age, disability, gender, marital status, sexual orientation, union membership or political affiliation.

No harsh or inhumane treatment is allowed: Physical abuse or discipline, the threat of physical abuse, sexual or other harassment and verbal abuse or other forms of intimidation shall be prohibited.

PRIOR TO PURCHASING: Prior to any purchasing decisions the following information needs to be obtained:

1. All hazards and risks associated with the use, transport and storage of the goods and services must be identified and protective measures taken as required by applicable regulations.
2. The protective measures are to be in place prior to accepting for storage or transport of the goods and services.
3. The relevant legislation, standards or codes of practice applicable to the goods and services shall be readily available as required (MSDS, Operating manuals, TDG, etc.).
4. Prior to admission to the workplace, all goods must be verified for compliance against the applicable regulations. Non-conformances must be addressed before admission of the goods to the workplace.

SECTION 56 – CELL PHONE USE

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate & review our basic principles of using a cell phone safely and to ensure compliance of the New Alliance Ltd. standards to follow. Please use this standard to provide guidelines on proper cell phone use and etiquette.

STANDARD: To assist you with your job, we may provide you with a cell phone. This cell phone is to be used for business purposes only and not for personal calls.

We expect you to use your cell phone responsibly. This includes not driving while on the phone, unless you have a hands free phone or a headset. If you receive a phone call while you are driving, either let it go to voice mail or refrain from answering it until you are safely pulled over. No call is important enough to comprise either your safety or the safety of others.

UNDER NO CIRCUMSTANCES WILL AN EMPLOYEE BE PERMITTED TO USE A CELL PHONE WHILE OPERATING ANY EQUIPMENT, MACHINERY OR EQUIPMENT WHETHER IN THE FIELD OR ON THE ROAD. PLEASE ENSURE THAT ALL CELL PHONES ARE TURNED OFF WHILE ENGAGED IN THE OPERATION OF ANY EQUIPMENT OR MACHINERY.

You are responsible for any tickets that you receive for traffic offences relating to your use of the cell phone while driving.

Please observe good cell phone etiquette:

1. If you are meeting with others, turn your cell phone off or set it to vibrate mode. If you take a call during a meeting you're sending a message to the others that you do not respect them or value their time or that they are not as important as the person who has called.
2. If there is a call you absolutely must take, advise the people you are meeting with in advance that you must take the call.
3. Set the phone to vibrate and when it rings excuse yourself from the room while you take the call. Keep the call as brief as possible.
4. Cellular transmissions can be intercepted by others and are not confidential. Accordingly, do not engage in confidential or sensitive discussions on a cell phone.
5. When talking on a cell phone, do not disrupt the others around you. Move to a secluded spot and speak in a normal voice. There is no need to shout into the cell phone.
6. Set your cell phone to a quiet, normal ring. Using songs to announce a call is unprofessional and annoying to others.
7. Above all, show consideration for others. Most people do not appreciate having someone's cell phone ring or enduring phone conversations unnecessarily.

When an employee's employment is complete or at any time that an employee is asked to return the cell phone, the employee will return the cell phone to the corporate office. Please be advised that a cell phone will not automatically be reissued to an employee upon a recall to work.

SECTION 57 – TOBACCO IN THE WORKPLACE

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate & review our standards for using tobacco in the workplace. In order to maintain a safe and comfortable working environment and to ensure compliance with applicable laws, tobacco use on any worksite or company vehicle is strictly regulated. Since we are subject to penalties for violations of applicable smoking laws, New Alliance Ltd. insists on strict adherence to this standard.

STANDARD:

1. For the purpose of this policy, "tobacco use" is defined as holding lighted tobacco, smoking tobacco, or chewing of tobacco products.
2. Tobacco use is prohibited throughout any company building and in any covered structure or vehicle.
3. Tobacco use is prohibited in Company vehicles and machinery.
4. Tobacco use is prohibited within 10 feet of any exit or access/egress route of a building, machine or an enclosure for equipment or structure.
5. Employees may use tobacco products outside company buildings in designated areas. Tobacco use is not permitted at the main office entrance.
6. Employees may attend the designated areas, before and after regular hours of work, and during approved break times only.
7. Employees are asked to use good judgment in maintaining the appearance and serviceability of Company buildings and job sites.
8. Each employee is responsible for adhering to the Company's standard on tobacco use. Non-compliance will subject the employee to normal disciplinary procedures.
9. Visitors on the premises are expected to follow all rules concerning tobacco use. Any employee who is hosting a visitor will inform the individual of these rules as necessary.
10. No smoking within a 35-foot radius of any manhole or confined space entry portal where flammables may be present (e.g. styrene).

SECTION 58 – DESIGNATED SUBSTANCE

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate & review our standards for preventing an unwanted exposure to a Designated Substance in the workplace.

STANDARD: A designated substance means a biological, chemical, or physical agent or combination thereof prescribed as a designated substance to which the exposure of a worker is prohibited, regulated, restricted, limited or controlled.

Due to the nature of the job there are times when workers may come in contact with a designated substance. It is important to communicate this with your supervisor immediately

Upon discovery of a Designated Substance in the workplace or project, Management shall ensure that a SWP is provided through a training program prior to further operations. The SWP shall include but is not limited to the following information:

1. Assessment of the Workplace
2. Inventory of Designated Substance
3. Material Safety Data Sheet (MSDS)
4. Labelling
5. Training
6. Handling
7. Receiving

The Assessment

The owner of the property shall compile a written assessment to determine if any of the following designated substances are on site:

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

The assessment shall indicate the exposure or likelihood of workers exposure through inhalation, injection, ingestion, absorption or any other contact with a designated substance.

Where inhalation exposure is likely, an air monitoring survey shall be conducted. The results shall be posted in a conspicuous location in the workplace and a copy given to the Health and Safety Representative.

Control Program

Where exposure to workers is confirmed, the manager and supervisor shall review the report along with the Worker health & Safety Representative.

In conjunction with the Health and Safety Representative a control program shall be devised and shall include the following elements:

1. Engineering controls, work practices and hygiene practices to control worker exposure,
2. Monitoring of concentrations and employee exposure,
3. Personal record keeping of exposure, and
4. Medical examinations

A copy of the control program shall be given to each employee who may come into contact with the designated substances.

As part of the control program, records for workers shall be kept on file and kept confidential.

Training

1. The manager shall ensure that workers are educated & competent with the SWP of the control program.
2. Workers and supervisor shall be trained on the health effects and dangers of the designated substances.
3. Where workers are required to use respiratory equipment they shall be trained in the proper care and use of the respiratory equipment. Workers must also be fit tested on the respirator in accordance with CSA standard for respirators.
4. All records of training shall be kept on file.

SECTION 59 – ASBESTOS OPERATIONS

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd. This Asbestos standard applies to the following:

1. Every project, workplace, building, machine, thing or location may contain asbestos or asbestos-containing material.
2. Every owner, employer, supplier, worker and person who may be exposed to asbestos or asbestos-containing material identified in #1.
3. Every task or procedure that may expose a person to asbestos or asbestos-containing material identified in #1 and #2.

PURPOSE: The purpose of this standard is to establish, communicate & review our standards for preventing an unwanted exposure to a known Designated Substance – Asbestos as it relates to the scope for a Type 1 or 2 Operation.

STANDARD: Management shall ensure that the supervisor in charge or a competent designate refers to the standard on Designated Substances, section 53, and become familiar with the standards required prior to performing any work in a building, work area, machine, project or thing that may contain a designated substance. Please remember, a designated substance means a biological, chemical, or physical agent or combination thereof prescribed as a designated substance to which the exposure of a worker is prohibited, regulated, restricted, limited or controlled.

Definitions

Asbestos - means any of the following fibrous materials – Actinolite, Amosite, Anthophyllite, Chrysotile, and Crocidolite.

Asbestos-containing material (ACM) - means material that contains 0.5 per cent or more asbestos by dry weight.

Friable material - means material that when dry, can be crumbled, pulverized or powdered by hand pressure, or is crumbled, pulverized or powdered.

HEPA filter - means a high efficiency particulate aerosol filter that is at least 99.97 % efficient in collecting a 0.3 micrometre aerosol.

Wetting Agent – Water alone is not sufficient to control dust and fibres. You must add a “wetting agent” to reduce the water’s surface tension. This increases the water’s ability to penetrate material and get into nooks and crannies. To make this “amended water,” you can use ordinary dishwashing detergent: 1 cup detergent for every 20 litres of water.

WHAT IS ASBESTOS?

Asbestos is a naturally occurring material once used widely in the construction industry. Its strength, ability to withstand high temperatures, and resistance to many chemicals made it useful in hundreds of applications, but asbestos can also kill. When inhaled, asbestos has been shown to cause the following diseases

1. Asbestosis - is a chronic inflammatory condition affecting the lungs caused by the inhalation and retention of asbestos fibres. It usually occurs after high intensity and/or long-term exposure to asbestos. People working in the mining, manufacturing, handling or removal of asbestos are at risk of developing asbestosis. Sufferers may experience severe dyspnea (shortness of breath) and are at an increased risk for certain malignancies, including lung cancer and mesothelioma.

2. Lung cancer - is a disease, which consists of uncontrolled cell growth in tissues of the lung.

3. Mesothelioma - cancer of the lining of the chest and/or abdomen.

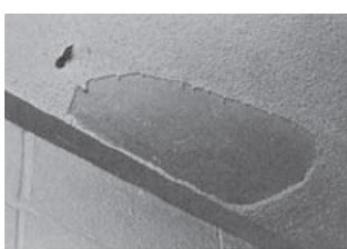
FRIABLE AND NON-FRIABLE

Two classes of asbestos products were widely used in the past. The first includes materials easily crumbled or loose in composition. These are referred to as “**friable**.” The second type includes materials much more durable because they are held together by a binder such as cement, vinyl, or asphalt. These products are termed “**non-friable**.” Friable material was widely used to fireproof steel structures. It can be found on beams, columns, trusses, hoists, and steel pan floors. Sprayed material was also used as a decorative finish and as acoustical insulation on ceilings. The material can be loose, fluffy, and lumpy in texture or, if more gypsum was used, it may be quite hard and durable. Please refer to the pictures directly below for examples of Friable & Non-friable ACM.

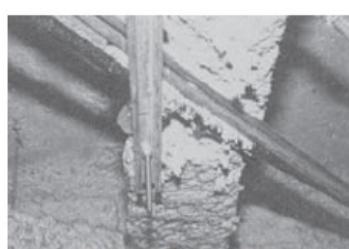
FRIABLE EXAMPLES



Approved Fireproofing



Acoustical Coating

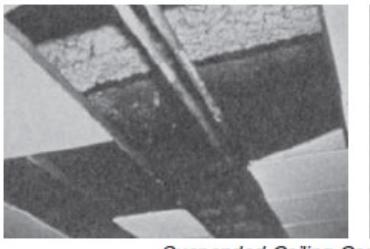


Sprayed Fireproofing

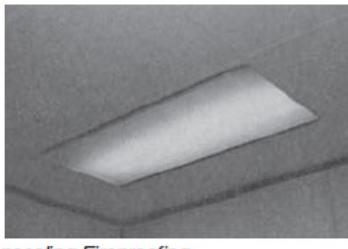


Air-Cell Pipe Insulation

NON-FRIABLE EXAMPLES



Suspended Ceiling Concealing Fireproofing



Vinyl Asbestos Floor Tile



Asbestos-Cement Siding

Instruction and training

The employer shall ensure that instruction and training in the following subjects are provided by a competent person to every worker working in a Type 1, Type 2 or Type 3 operation:

1. The hazards of asbestos exposure.
2. Personal hygiene and work practices.
3. The use, cleaning and disposal of respirators and protective clothing.

The joint health and safety committee or the health and safety representative for the workplace shall be advised of the time and place where the instruction and training are to be carried out.

The instruction and training related to respirators shall include instruction and training related to,

1. the limitations of the equipment;
2. inspection and maintenance of the equipment;
3. proper fitting of a respirator; and
4. respirator cleaning and disinfection.

Restrictions re sprayed material, insulation, sealants

No owner, constructor, employer, worker, supplier or person shall apply or install or cause to be applied or installed by spraying material containing 0.1 % or more asbestos by dry weight that can become friable. No owner, constructor, employer, worker, supplier or person shall apply or install or cause to be applied or installed as thermal insulation material containing 0.1 % or more asbestos by dry weight that can become friable. A liquid sealant shall not be applied to friable asbestos-containing material if,

1. the material has visibly deteriorated; or
2. the material's strength and its adhesion to the underlying materials and surfaces are insufficient to support its weight and the weight of the sealant.

Notification

1. An employer whose workers work in a building of which the employer is not the owner, shall advise the owner if the workers discover material that may be asbestos-containing material in the building.
2. As per the scope of this standard, if person may be exposed to asbestos or asbestos-containing material (ACM) the constructor and/or employer shall advise a worker and provide him or her with a notification as outline with the following:
 - a) The location of all ACM.
 - b) For each location, whether the material is friable or non-friable.
 - c) In the case of sprayed-on friable material, for each location,
 - i. if the material is known to be asbestos-containing material, the type of asbestos, if known, or
 - ii. in any other case, a statement that the material will be treated as though it contained a type of asbestos other than Chrysotile.

Asbestos Operation TYPES

Under Ontario law, asbestos operations are classified as Type 1, Type 2, or Type 3.

Type 1 – generally presents little hazard to workers or bystanders (for example, hand removal of vinyl asbestos tile).

Type 2 – may create exposure exceeding acceptable limits (for example, removing six square inches of asbestos fireproofing to attach a new pipe hanger).

Type 3 – major exposures, exceeding acceptable limits, involving frequent or prolonged exposure, and posing serious risks to both workers and to bystanders (for example, full-scale removal of sprayed asbestos fireproofing in an occupied building).

TYPE 1 OPERATION

Type 1 operations include the following:

1. Installing or removing less than 7.5 square metres of ceiling tile containing asbestos (81 square feet, or ten 4-foot x 2-foot ceiling tiles) without it being broken, cut, drilled, abraded, ground, sanded, or vibrated.
2. Installing or removing non-friable asbestos-containing material, other than ceiling tiles, without it being broken, cut, drilled, abraded, ground, sanded, or vibrated.
3. Breaking, cutting, drilling, abrading, grinding, sanding, or vibrating non-friable asbestos-containing material if you wet the material, and you use only non-powered hand-held tools.
4. Removing less than one square metre of drywall where asbestos joint-filling compound was used.

Type 1 Work Procedures

A. Notification of Type 1 Work

1. No notification is required.
2. The Ontario Ministry of Labour must be notified when the Type 1 work is covered by a "Notice of Project"

B. Equipment - the following equipment must be available:

1. Asbestos warning signs.
2. HEPA Vacuum.
3. Personal Protective Equipment:
 - i. Air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter
 - ii. Tyvek suit (or equivalent) with hood
 - iii. Eye protection
 - iv. Rubber gloves

C. Procedures

1. No eating, drinking, smoking or chewing in work area.
2. Respirator – worker will be issued with a respirator that is:
 - i. Air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter.
 - ii. The worker shall wear and use the respirator.
3. Protective clothing will consist of:
 - i. Tyvek suit with hood and elastic wrist and ankles.
 - ii. The worker will wear the protective clothing and ask for a replacement if it is torn.
 - iii. Work boots
4. Prevent unauthorized access to the area. Use Red “Danger Do not Enter” tape, lock door(s) and place asbestos warning placards at access points to the work area or at the entrance(s) to the room where the work is taking place.

5. Before beginning work, visible dust shall be removed with a damp cloth or a vacuum equipped with a HEPA filter from any surface in the work area, Including the thing to be worked on, if the dust on that surface is likely to be disturbed.
6. Only persons wearing protective clothing and equipment shall enter a work area where there is an asbestos dust hazard.
7. Cover work area and any other machine, tool, furniture and floor area with 4.0-mil poly sheeting if work will spread dust.
8. The material shall be wetted before and kept wet during the work to control the spread of dust or fibres, unless wetting would create a hazard or cause damage.
9. Ensure a "wetting agent" is added to water that is to be used to control the spread of dust and fibres.
10. During the operation and immediately upon completion of the operation,
 - i. dust and waste shall be cleaned up and removed using a vacuum equipped with a HEPA filter, or by damp mopping or wet sweeping, and placed in a container, and
 - ii. drop sheets shall be wetted and placed in a container as soon as practicable after the above has been complied with.
11. Containers for dust and waste shall be,
 - i. dust tight,
 - ii. suitable for the type of waste,
 - iii. impervious to asbestos,
 - iv. identified as asbestos waste,
 - v. cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before being removed from the work area
 - vi. remove from the workplace frequently and at regular intervals.
12. Drop sheets shall not be reused.
13. After the work is completed, polyethylene sheeting and similar materials used for barriers and enclosures shall not be reused, but shall be wetted and placed in a container as soon as practicable.
14. After the work is completed, barriers and portable enclosures that will be reused shall be cleaned, by using a vacuum equipped with a HEPA filter or by damp wiping, as soon as practicable.
15. Barriers and portable enclosures shall not be reused unless they are rigid and can be cleaned thoroughly.
16. Compressed air shall not be used to clean up and remove dust from any surface.
17. A worker who is provided with protective clothing shall, before leaving the work area,
 - i. decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing,
 - ii. if the protective clothing will not be reused, place it in a container.
18. Facilities for the washing of hands and face shall be made available to workers and shall be used by every worker when leaving the work area.

TYPE 2 OPERATIONS

Type 2 operations include the following:

1. Removing all or part of a false ceiling in buildings containing sprayed asbestos fireproofing if it is likely that asbestos dust is resting on top of the ceiling. This is likely when fireproofing is deteriorating or damaged.
2. Removing or disturbing less than 1 square metre of friable asbestos materials—for example, repairing an insulated pipe joint or removing some fireproofing to fasten a new pipe hanger.
3. Enclosing friable asbestos insulation to prevent further damage or deterioration.
4. Applying tape, sealant, or other covering (by means other than spraying) to pipe or boiler insulation.
5. Installing or removing more than 7.5 square metres of ceiling tile containing asbestos, without it being broken, cut, drilled, abraded, ground, sanded, or vibrated.
6. Breaking, cutting, drilling, abrading, grinding, sanding, or vibrating non-friable asbestos-containing material if the material is not wetted and the work is done only with non-powered hand-held tools.
7. Removing one square metre or more of drywall where the joint-filling compound contains asbestos. Please be aware, early drywall joint-filling compounds contained significant amounts of asbestos fibre. This particular use was specifically prohibited in 1980. Still, it may be found in buildings constructed several years afterwards.
8. Working on non-friable asbestos with power tools that are attached to dust-collecting devices equipped with HEPA filters. If you need to power-grind or machine the asbestos product and your tools are not equipped with HEPA-filtered dust collectors.
9. Using a “glove bag” to remove asbestos-containing materials from pipes, ducts, or similar structures.
10. Cleaning or removing filters used in air-handling equipment in a building with sprayed asbestos fireproofing.
11. An operation that is not Type 1 or Type 3.

Type 2 Work Procedures

Notification

Prior to the work, review the requirements for a Type 1 Operation in addition to the following notification requirements. Please ensure that all notifications and confirmations are provided and received in writing prior to any work begins from the following:

1. Occupants of the building via owner representative, please include the health & safety department.
2. Human Resources and/or the Health & Safety Department.

3. Human Resources and/or the Health & Safety Department will complete an Asbestos Work Report for submission to the chief physician of the Ministry of Labour's Occupational Health Medical Service copied to the worker.
4. The supervisor and/or the employees performing the operations shall inform the Human Resources and/or the Health & Safety Department of the following information:
 - a) Numbers of workers performing work
 - b) Number of hours doing work
 - c) Location

Equipment

The following equipment must be available:

1. A sprayer containing water and a wetting agent (Liquid Soap).
2. Asbestos warning placards.
3. Polyethylene sheeting (6 mil).
4. HEPA Vacuum.
5. Personal Protective Equipment:
 - a) Air purifying full-facepiece respirator with N-100, R-100 or P-100 particulate filter
 - b) Tyvek suit with hood
 - c) Rubber gloves
 - d) Eye protection
6. Facilities for the washing of hands and face.

Approvals

1. Obtain approval for removal from Facility or Plant Operations (Owner).
2. Obtain approval from Facility or Plant Operations (Owner) to block access/egress routes to rooms, corridors & existing emergency routes.

Removal Procedures

1. No eating, drinking, smoking or chewing in work area.
2. The work area is to be clearly marked with asbestos warning signs.
3. Any existing disturbed asbestos is to be cleaned up with a HEPA vacuum prior to starting the removal.
4. Areas shall be enclosed in polyethylene sheeting.
5. Shutdown and seal ventilation system if exhaust or supply diffusers are in enclosure.
6. Eating, drinking, chewing or smoking shall not be permitted in the work area.

7. Friable material containing asbestos that is to be removed must be wetted with water containing a wetting agent.
8. Compressed air shall not be used to clean up and remove asbestos dust from any surface.
9. Only persons wearing protective clothing and equipment shall enter a work area where there is an asbestos dust hazard.
10. Frequently during the removal work and immediately upon completion of the work, dust and waste containing asbestos shall be cleaned up and placed in an asbestos disposal bag.

Measures and procedures, Type 2 and Type 3 operations

1. The work area shall be identified by clearly visible signs warning of an asbestos dust hazard.
2. Signs required by paragraph 1 shall be posted in sufficient numbers to warn of the hazard and shall state in large clearly visible letters that there is an asbestos dust hazard, and access to the work area is restricted to persons wearing protective clothing and equipment.
3. A wetting agent shall be added to water that is to be used to control the spread of dust and fibres.
4. Eating, drinking, chewing or smoking shall not be permitted in the work area.
5. Containers for dust and waste shall be,
 - a) dust tight,
 - b) suitable for the type of waste,
 - c) impervious to asbestos,
 - d) identified as asbestos waste,
 - e) cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before being removed from the work area
 - f) remove from the workplace frequently and at regular intervals.
6. During the operation and immediately upon completion of the operation,
 - a) dust and waste shall be cleaned up and removed using a vacuum equipped with a HEPA filter, or by damp mopping or wet sweeping, and placed in a container, and
 - b) drop sheets shall be wetted and placed in a container as soon as practicable after the above has been complied with.
7. Drop sheets shall not be reused.
8. After the work is completed, polyethylene sheeting and similar materials used for barriers and enclosures shall not be reused, but shall be wetted and placed in a container as soon as practicable.
9. After the work is completed, barriers and portable enclosures that will be reused shall be cleaned, by using a vacuum equipped with a HEPA filter or by damp wiping, as soon as practicable.
10. Barriers and portable enclosures shall not be reused unless they are rigid and can be cleaned thoroughly.
11. The employer shall provide every worker who will enter the work area with a NIOSH approved respirator in accordance with Table 2 and the worker shall wear and use the respirator.

12. Protective clothing (Tyvek) shall be provided by the employer and worn by every worker who enters the work area, and the protective clothing,
 - a) shall be made of a material that does not readily retain nor permit penetration of asbestos fibres,
 - b) shall consist of head covering and full body covering that fits snugly at the ankles, wrists and neck,
 - c) in order to prevent asbestos fibres from reaching, the garments and skin under the protective clothing shall include suitable footwear, and shall be repaired or replaced if torn.
13. Compressed air shall not be used to clean up and remove dust from any surface.
14. Only persons wearing protective clothing and equipment shall enter a work area where there is an asbestos dust hazard.

Additional measures and procedures, Type 2 operations

1. If the operation is one mentioned in paragraph 1 of subsection 12 (3), the friable material that is likely to be disturbed shall be cleaned up and removed by using a vacuum equipped with a HEPA filter when access to the work area is obtained.
2. Before commencing work that is likely to disturb friable asbestos-containing material that is crumbled, pulverized or powdered and that is lying on any surface, the friable material shall be cleaned up and removed by damp wiping or by using a vacuum equipped with a HEPA filter.
3. Friable asbestos-containing material that is not crumbled, pulverized or powdered and that may be disturbed or removed during the work shall be thoroughly wetted before the work and kept wet during the work, unless wetting would create a hazard or cause damage.
4. The spread of dust from a work area shall be controlled by measures appropriate to the work to be done, including the use of drop sheets of polyethylene or other suitable material that is impervious to asbestos.
5. If the operation includes removing all or part of a false ceiling to obtain access to a work area, if asbestos-containing material is likely to be lying on the surface of the false ceiling or the removal or disturbance of one square metre or less of friable asbestos containing material during the repair, alteration, maintenance or demolition of all or part of machinery or equipment or a building, aircraft, locomotive, railway car, vehicle or ship and is carried on indoors, the spread of dust from the work area shall be prevented, if practicable, by,
 - a) using an enclosure of polyethylene or other suitable material that is impervious to asbestos (Including, if the enclosure is opaque, one or more transparent window areas to allow observation of the entire work area from outside the enclosure), if the work area is not enclosed by walls,
 - b) disabling the mechanical ventilation system serving the work area, and sealing the ventilation ducts to and from the work area.

6. Before leaving the work area, a worker shall, decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing, and if the protective clothing will not be reused, place it in a container.
7. Facilities for the washing of hands and face shall be made available to workers and shall be used by every worker when leaving the work area.

Glove Bag Operations

1. The work area shall be separated from the rest of the workplace by walls, barricades, fencing or other suitable means.
2. The spread of asbestos-containing material from the work area shall be prevented by disabling the mechanical ventilation system serving the work area and sealing all openings or voids, Including ventilation ducts to and from the working area.
3. Surfaces below the work area shall be covered with drop sheets of polyethylene or other suitable material that is impervious to asbestos.
4. The glove bag shall be made of material that is impervious to asbestos and sufficiently strong to support the weight of material the bag will hold.
5. The glove bag shall be equipped with,
 - a) sleeves and gloves that are permanently sealed to the body of the bag to allow the worker to access and deal with the insulation and maintain a sealed enclosure throughout the work period,
 - b) valves or openings to allow insertion of a vacuum hose and the nozzle of a water sprayer while maintaining the seal to the pipe, duct or similar structure,
 - c) a tool pouch with a drain,
 - d) a seamless bottom and a means of sealing off the lower portion of the bag, and
 - e) a high strength double throw zipper and removable straps, if the bag is to be moved during the removal operation.
6. A glove bag shall not be used to remove insulation from a pipe, duct or similar structure if it may not be possible to maintain a proper seal for any reason Including, without limitation to the condition of the insulation or the temperature of the pipe, duct or similar structure or the bag could become damaged for any reason Including, without limitation, the type of jacketing or the temperature of the pipe, duct or similar structure.
7. Immediately before the glove bag is attached, the insulation jacketing or coating shall be inspected for damage or defects, and if any damage or defect is present, it shall be repaired.
8. The glove bag shall be inspected for damage or defects immediately before it is attached to the pipe, duct or other similar structure and at regular intervals during its use.
9. If damage or defects are observed when the glove bag is inspected the glove bag shall not be used and shall be disposed of.

10. If damage or defects are observed when the glove bag is inspected or at any other time the use of the glove bag shall be discontinued and the inner surface of the glove bag and the contents, if any, shall be thoroughly wetted. The glove bag and the contents, if any, shall be removed and placed in a container and the work area shall be cleaned by vacuuming with a vacuum equipped with a HEPA filter before removal work is resumed.
11. When the removal work is completed,
 - a) the inner surface of the glove bag and the waste inside shall be thoroughly wetted and the air inside the bag shall be removed through an elasticized valve, by means of a vacuum equipped with a HEPA filter,
 - b) the pipe, duct or similar structure shall be wiped down and sealed with a suitable encapsulant,
 - c) the glove bag, with the waste inside, shall be placed in a container, and
 - d) the work area shall be cleaned by damp wiping or by cleaning with a vacuum equipped with a HEPA filter.

Remember to Decontaminate

1. Clean work area with HEPA vacuum.
2. Polyethylene enclosure is to be cleaned and wetted prior to disposal.
3. Clean Tyvek suit with HEPA vacuum or damp cloth and place in plastic bag with gloves for disposal.
4. Remove respirator and clean.
5. Wash hands.

SECTION 60 – SILICA

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under contract or the guidance of New Alliance Ltd. New Alliance Ltd. has a duty to protect their workers from silica exposure on construction projects. This Standard has been prepared to raise the awareness of employers and workers in the construction industry of the hazards posed by silica in construction and the measures and procedures that should be taken to control those hazards

PURPOSE: The purpose of this standard is to establish, communicate & review our standards for preventing an unwanted exposure to a known Designated Substance – Silica. For the purposes of this standard, silica refers to crystalline silica in a respirable¹ form.

STANDARD: Please refer to the standard on Designated Substances, section 58, and become familiar with the standards required prior to performing any work in a building, work area, machine, project or thing that may contain a designated substance. Please remember, a designated substance means a biological, chemical, or physical agent or combination thereof prescribed as a designated substance to which the exposure of a worker is prohibited, regulated, restricted, limited or controlled. **No worker shall be exposed to an airborne concentration that exceeds the OEL identified within standard.**

Definitions

Respirable means that size fraction of the airborne particulate deposited in the gas-exchange region of the respiratory tract and collected during air sampling with a particle size-selective device that meets the American Conference of Governmental Industrial Hygienists (ACGIH) particle size-selective criteria, and has the cut point of 4 microns at 50 per cent collective efficiency.

Silica in Construction

Silica (SiO₂) is a compound resulting from the combination of one atom of silicon with two atoms of oxygen. It is the second most common mineral in the earth's crust and is a major component of sand, rock and mineral ores. Silica exists in several forms, of which crystalline silica is of most concern. The best-known and most abundant type of crystalline silica is quartz. Other forms of crystalline silica include cristobalite, tridymite, and tripoli. In construction, worker exposure to silica is of particular concern because silica is the primary component of many construction materials. Some commonly used construction materials containing silica include:

1. Abrasives used for blasting
2. Brick, refractory brick
3. Concrete, concrete block, cement, mortar
4. Granite, sandstone, quartzite, slate
5. Gunite
6. Mineral deposits
7. Rock and stone
8. Sand, fill dirt, top soil
9. Asphalt containing rock or stone.

Many construction activities can generate airborne silica-containing dust. In construction, abrasive blasting generates the most dust. Exposure to silica from abrasive blasting can result if the abrasive contains silica and/or if the material being blasted contains silica. Other activities that generate airborne dust include:

1. Chipping, hammering, and drilling of rock.
2. Crushing, loading, hauling, and dumping of rock.
3. Sawing, hammering, drilling, grinding, and chipping of concrete or masonry structures.
4. Demolition of concrete and masonry structures.
5. Dry sweeping or pressurized air blowing of concrete, rock, or sand dust.
6. Sweeping, cleaning, and dismantling equipment.
7. Tunnelling, excavation, and earth moving of soils with high silica content.

LEGAL REQUIREMENTS

Occupational Health and Safety Act (OHSA)

The OHSA sets out, in very general terms, the duties of employers and others to protect workers from health and safety hazards on the job. These duties include, but are not limited to:

1. Taking all reasonable precautions to protect the health and safety of workers [clause 25(2)(h)],
2. Ensuring that equipment, materials and protective equipment are maintained in good condition [clause 25(1)(b)],
3. Providing information, instruction and supervision to protect worker health and safety [clause 25(2)(a)], and
4. Acquainting a worker or a person in authority over a worker with any hazard in the work and in the handling, storage, use, disposal and transport of any article, device, equipment or a biological, chemical or physical agent [clause 25(2)(d)].

In addition, section 30 of the OHSA deals with the presence of designated substances on construction projects. Since silica is a designated substance (R.R.O. 1990, Reg. 845), compliance with the OHSA and regulations will require some action to be taken where there is a silica hazard on a construction project. Section 30 of the OHSA requires the owner of a project to determine if silica is present on a project and, if it is, to so inform all potential contractors as part of the bidding process.

Workplace Hazardous Materials Information System (WHMIS) Regulation, R.R.O. 1990, Reg. 860
The WHMIS Regulation applies to all workplaces covered by the OHSA. Any employer or constructor who uses WHMIS controlled products is required to comply with the WHMIS Regulation regarding the requirements for labels, material safety data sheets, and worker education and training.

Regulation for Construction Projects, O. Reg. 213/91

The Regulation for Construction Projects, O. Reg. 213/91, applies to all construction projects. Although silica is not mentioned specifically, the following sections of the regulation would apply to situations where there is the potential for workers to be exposed to silica:

1. **Section 14** (5) A competent person shall perform tests and observations necessary for the detection of hazardous conditions on a project.
2. **Section 21** (1) A worker shall wear such protective clothing and use such personal protective equipment or devices as are necessary to protect the worker against the hazards to which the worker may be exposed. (2) A worker's employer shall require the worker to comply with subsection (1). (3) A worker required to wear personal protective clothing or use personal protective equipment or devices shall be adequately instructed and trained in the care and use of the clothing, equipment or device before wearing or using it.

3. **Section 30** Workers who handle or use...substances likely to endanger their health shall be provided with washing facilities with clean water, soap and individual towels.
4. **Section 46** (1) A project shall be adequately ventilated by natural or mechanical means, (a) if a worker may be injured by inhaling a noxious...dust or fume; (2) If it is not practicable to provide natural or mechanical ventilation in the circumstances described in clause (1)(a), respiratory protective equipment suitable for the hazard shall be provided and be used by the workers.
5. **Section 59** If the dissemination of dust is a hazard to a worker, the dust shall be adequately controlled or each worker who may be exposed to the hazard shall be provided with adequate personal protective equipment.

Regulation Respecting Silica, R.R.O. 1990, Reg. 845

The Ministry's designated substance regulation (DSR) for silica, Regulation 845, specifies occupational exposure limits (OELs) for silica and requires assessment and a control program to ensure compliance with these OELs. The OEL for respirable crystalline silica is 0.05 milligrams per cubic metre (mg/m³) of air by volume as an 8-hour daily or 40-hour weekly time weighted average for cristobalite and tridymite. In the case of quartz and tripoli, the OEL is 0.10 milligrams per cubic meter of air by volume.

Measures and procedures that ensure construction workers receive the same standard of protection as workers covered by Regulation 845 should therefore be implemented on construction projects where exposure to silica is a hazard. Such measures and procedures are deemed to be in compliance with section 25(2)(h) of the OHSA, as taking "every precaution reasonable in the circumstances for the protection of a worker".

HEALTH EFFECTS

The prolonged inhalation of respirable dust containing crystalline silica may result in silicosis, a disease characterized by progressive fibrosis of the lungs. A pneumoconiosis (lung disease caused by the inhalation of dust), silicosis is marked by shortness of breath and impaired lung function which may give rise to complications that can result in death. The development and the severity of silicosis depends on the airborne concentration of silica dust to which a worker is exposed and the duration of exposure.

The American Conference of Governmental Industrial Hygienists (ACGIH) has classified quartz as a suspected human carcinogen with an A2 classification. Crystalline silica may be harmful following high exposure levels received over a period, ranging from a few weeks to years or after long-term exposures to lower levels. There are three major types of silicosis: chronic, accelerated, and acute.

Chronic Silicosis

Chronic silicosis is most common. Symptoms may not appear for a long time, usually more than 10 years, and may progress and worsen over a period of many years. Chronic silicosis may be either a simple or a complicated type. The effects of silicosis can continue to develop even after the exposure ceases and they are irreversible. In addition, the progression of lung fibrosis can also lead to the development of lung cancer.

Simple Chronic Silicosis

Simple silicosis is almost entirely without symptoms. In the early stages of the disease the lung nodules are small (usually 1 to 3 mm) and discrete in the upper lung fields. As the disease progresses the

nodules increase in number and size and also occupy the lower field. Although simple silicosis may never grow more serious, long-term exposure to silica dust may lead to complicated silicosis.

Complicated Chronic Silicosis

Complicated chronic silicosis is also called progressive massive fibrosis (PMF). The first symptoms may be shortness of breath with exercise, wheezing or sputum that causes coughing. However, some people with the disease have no symptoms. Complicated silicosis can become worse when in combination with other lung diseases. Severe complicated silicosis can result in heart disease in addition to lung disease.

Accelerated Silicosis

Accelerated silicosis is almost the same as chronic silicosis. However, it develops more quickly and the lung scars show up sooner. Accelerated silicosis can develop when exposure to large amounts of silica dust occurs over a short time period. Nodules may appear on a chest x-ray five years after the first exposure to silica dust and the disease can quickly worsen.

Acute Silicosis

Acute silicosis is a lung disease that develops rapidly. As few as 8 to 18 months may elapse from the time of first exposure to the onset of symptoms, which include progressive shortness of breath, fever, cough and weight loss. There is a rapid progression of respiratory failure usually resulting in death within one or two years.

How Does Silica Enter the Body?

Occupational exposure to silica occurs through inhalation of small airborne particles of silica dust, mainly in the range of 5.0 µm to 0.5 µm, which are not expelled from the lung when inhaled. Instead, they remain in the lung and are deposited in lymph nodes, where over time, calcium can deposit in those nodes and settle along the rim of the lymph node. This condition is known as "egg-shell" calcification. In some cases, silica particles are carried into the lungs where a scar may form around the particles. Over time, the hardened scars gradually start to show up on the chest x-ray as fibrosis of the lung.

CONTROLLING THE SILICA HAZARD

In order for silica to be a hazard, silica-containing dust particles that are small enough to be inhaled (i.e., respirable) must get into the air. The strategy for controlling the silica hazard can therefore be broken down into three basic approaches:

1. Prevent silica dust from getting into the workplace air.
2. Remove silica dust present in the air.
3. If present, prevent workers from inhaling the dust.

To avoid the inhalation of silica, it is essential to have the following control methods in place:

1. Engineering controls
2. Work practices and hygiene practices
3. Respirators and personal protective equipment
4. Training.

However, even with appropriate measures to control silica, some workers may still be affected. For this reason, periodic medical examinations are important for determining if the control measures in place are effective and if workers are suffering from any of the effects of silica exposure. This is known as

medical surveillance (see Appendix 1), and can be considered to be a method of early detection and prevention of silicosis.

Engineering Controls

Engineering controls are methods of designing or modifying equipment, ventilation systems, and processes to minimize the amount of a substance that gets into the workplace air. They Include:

1. Substitution
2. Process control
3. Enclosure and/or isolation of the emission source
4. Ventilation.

Substitution - can eliminate silica from certain processes by replacing it with a less toxic material.

Some examples are:

1. Silica sand used in abrasive blasting may be replaced by metal shot and grit, alumina, garnet, cereal husks, sawdust, high pressure water, steel sand, silicon carbide or corundum (Note: When choosing non-silica containing abrasives, avoid choosing abrasives that may introduce new health hazards to the workplace. For example, abrasives containing walnut shells may cause allergic reactions in some workers.);
2. The replacement of sandstone grinding wheels with ones using an abrasive like aluminum oxide; and
3. The use of magnesite or aluminum oxide bricks in place of silica bricks in furnaces.

Process Control - when it is not possible to use a silica substitute, changing how a process is performed can lower silica exposures. For instance, wet methods reduce dust and should be used whenever practical, particularly in cutting, grinding, and drilling operations. Another example is the modification of an abrasive operation to produce a coarser dust that is less hazardous because it settles more readily and is less likely to be trapped in the lungs if inhaled.

Enclose and/or Isolation of the Emission Source - If a process cannot be modified to reduce exposure, it may have to be isolated or enclosed. Dusty operations can be isolated by carrying them out in areas that are physically separated from non-dusty areas and keeping workers not involved in the operation out of the area. Where isolation is not effective, the process can be completely sealed off from the rest of the workplace with an enclosure.

Ventilation - refers to engineering controls that rely on the removal of contaminated air from the workplace and the replacement of exhausted air with filtered air. The most effective use of ventilation to control a silica hazard is the removal of dust at its source (local exhaust ventilation). Often dust-generating tools are equipped with dust collection systems to prevent dust from spreading or becoming airborne. An essential component of these systems are the cleaning devices, such as filters, which will effectively remove the dust.

Work Practices and Hygiene Practices

Work practices and hygiene practices are on-the-job activities that reduce the exposure potential from contaminated surfaces and work areas. Silica can also accumulate on the hands, clothing and hair. From there it can be disturbed, re-suspended in air and inhaled. Workers should therefore be able to wash and shower at the end of each shift. There should be no smoking, eating, drinking or chewing in contaminated areas and lunches should be stored in an uncontaminated area. It is therefore important

to follow good work and hygiene practices whenever silica is present. Good housekeeping is important wherever silica dust is generated. Containers of silica containing waste should be kept tightly covered to prevent dust from becoming airborne.

Surfaces should be kept clean by washing down with water or vacuuming with a vacuum equipped with a high-efficiency particulate air (HEPA) filter. Cleaning with compressed air or dry sweeping should be avoided.

Personal Protective Equipment

Personal protective equipment includes protective clothing and respirators. The purpose of protective clothing is to prevent the contamination of regular clothing and the transportation of silica-containing materials from the workplace. Clothing that is contaminated with silica dust should not therefore be worn home without cleaning.

Sometimes engineering controls and work practices cannot lower the concentration of silica to non-hazardous levels and workers must wear respirators for protection. If respirators must be used, a respirator program should be implemented. It should include written procedures for the selection, use, care and maintenance of personal respiratory protection equipment. Workers should be instructed and trained on the care and use of personal protective equipment before using it. Some workers may have a medical condition that causes them to have difficulty breathing when wearing a respirator. Such workers should not be assigned to do work that requires a respirator if they have written medical proof of their condition.

Respirator Selection

Where respirators are provided, they should be appropriate in the circumstances for the type and the concentration of airborne silica. Respirators should be selected in accordance with the U.S. National Institute for Occupational Safety and Health (NIOSH) assigned protection factors (APF).

Use, Care, and Maintenance of Respirators

The following general use, care, and maintenance procedures should be followed whenever respirators are required:

1. Respirators should be used and maintained in accordance with the manufacturer's specifications.
2. Proper seal of respirators should be checked prior to each use.
3. Storage of respirators should be in a convenient, clean and sanitary location and stored in a manner that does not subject them to damage or distortion.
4. Respirators assigned for the exclusive use of one worker, should be cleaned, disinfected and inspected after each shift.
5. Respirators used by more than one worker, should be cleaned, disinfected and inspected after each use.
6. Any respirator parts that are damaged or that have deteriorated should be replaced before the respirator is used.
7. For additional information on the use, care, and maintenance of respirators please refer to the CSA standard Z94.4-02.
8. Ideally respirators should be assigned for the exclusive use of one worker. But before a decision is made for a respirator to be shared by more than one worker, the following factors should be considered:
 - a) the fit of the equipment

- b) the health and safety risk to the worker that would be caused by non-exclusive use of the equipment
- c) any undue economic hardship to the employer that would be caused by exclusive use of the equipment.

Respirators with a tight-fitting facepiece must be fitted to the worker in such a way that there is an effective seal between the equipment and the worker's face. Each worker must be fit-tested for each type of respirator to be worn.

Training

Training is an important component in preventing worker exposure to silica. Control methods, measures and procedures can only be as effective as the workers carrying them out. It is therefore essential for training to cover the following:

1. WHMIS training
2. the hazards of silica, including health effects and symptom recognition;
3. the recognition of typical operations containing silica;
4. personal hygiene, respirator requirements, and work measures and procedures;
5. the use, care, maintenance, cleaning and disposal of personal respiratory protective equipment.

Medical Surveillance

Medical surveillance can be used as a preventive and remedial measure. By providing regular medical examinations and clinical tests on workers exposed to silica, subsequent adverse health effects can be detected. The examining physician can then alert the worker, the employer and the joint health and safety committee to exposure problems in the workplace that might otherwise go unrecognized. This should ensure that remedial steps will be taken.

Workers working with silica on a regular basis should have pre-placement medical examinations that include chest X-rays and pulmonary function tests, followed by periodic medical examinations. The frequency of the periodic examination will depend on the intensity and length of exposure to silica and shall be decided by the examining physician. It need not be the same for all workers but shall be done at least once every two years. Additional information on the medical surveillance program for silica exposed workers can be found in Appendix 1.

CLASSIFICATION OF WORK

A key feature of this standard is the classification of work. It is the classification of the work that determines the appropriate respirators, measures and procedures that should be followed to protect the worker from silica exposure. In this standard, silica-containing construction operations are classified into three groups, Type 1, Type 2, and Type 3 operations, and can be thought of as being of low, medium and high risk. From Type 1 to Type 3 operations, the corresponding respirator, and measures and procedures become increasingly stringent.

The classification of typical silica-containing construction tasks is based on available and published exposure data. Type 1, Type 2, and Type 3 operations, are based on the following airborne concentrations of respirable crystalline silica in the form of cristobalite, tridymite, quartz, and tripoli:

	TYPE 1 OPERATIONS	TYPE 2 OPERATIONS	TYPE 3 OPERATIONS
Cristobalite and Tridymite	> 0.05 to 0.50 mg/m ³	> 0.50 to 2.50 mg/m ³	> 2.5 mg/m ³
Quartz and Tripoli	> 0.10 to 1.0 mg/m ³	> 1.0 to 5.0 mg/m ³	> 5.0 mg/m ³

The following section lists the typical construction operations that generate silica-containing dust:

TYPE 1 OPERATIONS

1. The drilling of holes in concrete or rock that is not part of a tunnelling operation or road construction.
2. Milling of asphalt from concrete highway pavement.
3. Charging mixers and hoppers with silica sand (sand consisting of at least 95 per cent silica) or silica flour (finely ground sand consisting of at least 95 per cent silica).
4. Any other operation at a project that requires the handling of silica-containing material in a way that may result in a worker being exposed to airborne silica.
5. Entry into a dry mortar removal or abrasive blasting area while airborne dust is visible for less than 15 minutes for inspection and/or sampling.
6. Working within 25 metres of an area where compressed air is being used to remove silica-containing dust outdoors.

TYPE 2 OPERATIONS

1. Removal of silica containing refractory materials with a jackhammer.
2. The drilling of holes in concrete or rock that is part of a tunnelling or road construction.
3. The use of a power tool to cut, grind, or polish concrete, masonry, terrazzo or refractory materials.
4. The use of a power tool to remove silica containing materials.
5. Tunnelling (operation of the tunnel boring machine, tunnel drilling, tunnel mesh installation).
6. Tuck point and surface grinding.
7. Dry mortar removal with an electric or pneumatic cutting device.
8. Dry method dust clean up from abrasive blasting operations.
9. The use of compress air outdoors for removing silica dust.
10. Entry into area where abrasive blasting is being carried out for more than 15 minutes.

TYPE 3 OPERATIONS

1. Abrasive blasting with an abrasive that contains ≥ 1 per cent silica.
2. Abrasive blasting of a material that contains ≥ 1 per cent silica.
3. Employers, supervisors, and workers should be able to recognize and correctly classify the types of operations carried out in the workplace, in order to select appropriate respirators, and implement appropriate measures and procedures.
4. Respirator requirements are listed in Table 1 (below) for Type 1, Type 2, and Type 3 operations.

Table 1: Respirator Requirements

Operations	Required Respirator
Type 1 (> 0.05 to 0.50 mg/m ³ of silica in the form of cristobalite and tridymite) (> 0.10 to 1.0 mg/m ³ of silica in the form of quartz and tripoli)	NIOSH APF = 10
<ul style="list-style-type: none"> The drilling of holes in concrete or rock that is not part of a tunnelling operation or road construction. Milling of asphalt from concrete highway pavement. Charging mixers and hoppers with silica sand (sand consisting of at least 95 per cent silica) or silica flour (finely ground sand consisting of at least 95 per cent silica). Any other operation at a project that requires the handling of silica-containing material in a way that may result in a worker being exposed to airborne silica. Entry into a dry mortar removal or abrasive blasting area while airborne dust is visible for less than 15 minutes for inspection and/or sampling. Working within 25 metres of an area where compressed air is being used to remove silica-containing dust outdoors. 	Half-mask particulate respirator with N-, R-, or P-series filter and 95, 99 or 100 per cent efficiency.
Type 2 (> 0.50 to 2.5 mg/m ³ of silica in the form of cristobalite and tridymite) (> 1.0 to 5.0 mg/m ³ of silica in the form of quartz and tripoli)	NIOSH APF = 50
<ul style="list-style-type: none"> Removal of silica containing refractory materials with a jackhammer. The drilling of holes in concrete or rock that is part of a tunnelling operation or road construction. The use of a power tool to cut, grind, or polish concrete, masonry, terrazzo or refractory materials. The use of a power tool to remove silica-containing materials. The use of a power tool indoors to chip or break and remove concrete, masonry, stone, terrazzo or refractory materials. Tunnelling (operation of the tunnel boring machine, tunnel drilling, tunnel mesh installation). Tuckpointing and surface grinding. Dry method dust clean-up from abrasive blasting operations. Dry mortar removal with an electric or pneumatic cutting device. The use of compressed air outdoors for removing silica dust. Entry into area where abrasive blasting is being carried out for more than 15 minutes. 	Full-facepiece air-purifying respirator with any 100-series particulate filter. Tight-fitting powered air-purifying respirator with any 100-series particulate filter. Full-facepiece supplied-air respirator operated in demand mode. Half-mask or full-facepiece supplied air respirator operated in continuous-flow mode.
Type 3 (> 2.5 mg/m ³ of silica in the form of cristobalite and tridymite) (> 5.0 mg/m ³ of silica in the form of quartz and tripoli)	NIOSH APF ≥ 1000
<ul style="list-style-type: none"> Abrasive blasting with an abrasive that contains ≥ 1 per cent silica. Abrasive blasting of a material that contains ≥ 1 per cent silica. 	Type CE abrasive-blast supplied air respirator operated in a positive-pressure mode with a tight-fitting half-mask facepiece. Type CE abrasive-blast supplied air respirator operated in a pressure-demand or positive pressure mode with a tight-fitting full-facepiece.

* NIOSH APF = National Institute of Occupational Safety and Health Assigned Protection Factor

Note: It is recommended that compressed air that is used to supply supplied air respirators meet the breathing air purity requirements of CSA Standard Z180.1-00. Where an oil-lubricated compressor is used to supply breathing air, a continuous carbon monoxide monitor/alarm should be provided.

MEASURES AND PROCEDURES FOR WORKING WITH SILICA

Protective measures and procedures should be implemented when working with silica. Specific measures and procedures will depend on how the work is classified. This section of the standard outlines the general measures and procedures for all work with lead, followed by specific recommendations for Type 1, Type 2 and Type 3 operations.

Type 1, Type 2, and Type 3 Operations

The following is a list of general measures and procedures that should be followed for all work with silica:

1. Clean-up after each operation is encouraged to prevent dust containing silica from spreading;
2. Compressed air or dry sweeping should be avoided when cleaning a work area;
3. Compressed air should not be used for removing dust from clothing;
4. Workers exposed to silica should be provided with or have access to washing facilities equipped with clean water, soap, and individual towels;
5. Silica dust on personal protective clothing and equipment should be removed by damp wiping or HEPA vacuuming;
6. Contaminated personal protective clothing and equipment should be handled with care to prevent disturbing the silica dust and the generation of airborne silica dust;
7. Washing facilities and laundering procedures must be suitable for handling silica contaminated laundry.

Preparation of the Work Area

Warning signs should be posted in sufficient number to warn of the hazard. If it is an indoor operation, signs should be posted at each entrance to the work area. The signs should display the following information in large, clearly visible letters:

1. There is a silica dust hazard.
2. Access to the work area is restricted to authorized persons.
3. Respirators must be worn in the work area.

Dust Control Measures

The generation of airborne silica-containing dust should be controlled with a mechanical ventilation system, wetting, or the use of a dust collection system. If silica-containing airborne dust is generated, mechanical ventilation with an air flow sufficient to remove airborne contaminants from workers' breathing zone should be provided. The air flow of the mechanical ventilation system should be at least 50 cubic feet per minute per square foot of face area (0.25 m³/s per square meter of face area). However, if it is determined that none of these methods are practical, workers may be provided with respirators (see Table 1: Respirator Requirements) to protect them from exposure. The following should be considered before assigning respirators:

1. Risk to workers using wetting or a dust collection system.
2. Likelihood of damage to equipment if wetting or a dust collection system is used.
3. Frequency and duration of the operation.

If compressed air is being used to remove silica-containing dust outdoors, the operator and workers within 25 metres of the work area who may be exposed to the dust must either be removed from the path of the dust cloud or provided with respirators (see Table 1: Respirator Requirements). Where effective dust control measures are in place and where an employer can demonstrate on a continual basis that the silica exposure levels are below the OEL, respirators may not be required.

Measures and Procedures for Type 1 Operations

A half-mask particulate respirator with N-, R-, or P-series filter and 95, 99 or 100 per cent efficiency should be provided for workers performing Type 1 operations. Respirators should also be provided when:

1. Entering a dry mortar removal area with visible airborne dust for less than 15 minutes for the purposes of inspection and/or sampling purposes.
2. Work is being performed within 25 metres of an outdoor area where silica-containing dust is being removed with compressed air.

Measures and Procedures for Type 2 Operations

1. Respirators with a NIOSH APF of 50 (see Table 1: Respirator Requirements) should be provided for workers performing Type 2 operations.
2. In addition, the generation of silica containing airborne dust should be controlled by thoroughly wetting the area prior to and/or during drilling or cutting operations and during the loading, scraping or moving of rock.
3. Other workers entering a work area where Type 2 operations are being performed should remain at least 10 metres away.
4. Ropes or barriers should be set up to prevent unauthorized personnel from entering the work area. If this is not possible and there are workers within the 10-metre limit, the Type 2 operation should be enclosed to prevent the escape of airborne silica containing dust (see Section 6.4.1: Barriers, Partial Enclosures and Full Enclosures).

Measures and Procedures for Type 3 Operations

1. The operator of the abrasive blasting nozzle should wear a Type CE abrasive blast supplied air respirator operated in a pressure demand or positive pressure mode with a tight-fitting half mask or full facepiece.
2. It is recommended that compressed air that is used to supply supplied air respirators meet the breathing air purity requirements of CSA Standard Z180.1-00. Where an oil-lubricated compressor is used to supply breathing air, a continuous carbon monoxide monitor/alarm should be provided.
3. While abrasive blasting is in progress or the airborne dust from abrasive blasting is visible, any worker entering the work area where abrasive blasting is being carried out for less than 15 minutes for inspection and/or sampling purposes should wear a half-mask particulate respirator with N-, R-, or P-series filter and 95, 99 or 100 per cent efficiency.
4. Any worker entering a work area where abrasive blasting is being carried out for more than 15 minutes should wear a respirator with a NIOSH APF of 50 (see Table 1: Respirator Requirements).
5. Workers engaged in cleaning dust from abrasive blasting operations, should wear a respirator with a NIOSH APF of 50 (see Table 1: Respirator Requirements).
6. Where abrasive blasting is conducted, barriers, partial enclosures and full enclosures should be in place to prevent other workers from being exposed to silica-containing dust and to prevent the spread of dust to other work areas.

Barriers, Partial Enclosures and Full Enclosures

Barriers, partial enclosures, and full enclosures are used to separate the work area from the rest of the project, and in some cases, to prevent silica exposure to other workers not directly involved in the operation. Partial and full enclosures can also prevent or reduce the dispersion of silica into the

surrounding work area and environment. Barriers should only be used where full and partial enclosures are not practicable.

Barriers

Ropes or barriers do not prevent the release of contaminated dust or other contaminants into the environment. However, they can be used to restrict access of workers who are not adequately protected with proper PPE, and also prevent the entry of workers not directly involved in the operation. Ropes or barriers should be placed at a distance far enough from the operation that allows the silica-containing dust to settle. If this is not achievable, warning signs should be posted at the distance where the silica-containing dust settles to warn that access is restricted to persons wearing PPE. For example, the removal of mortar and cutting operations, ropes or barriers should be located at least 10 metres away. All workers within the barrier or warning sign zone must be adequately protected.

Partial Enclosures

Partial enclosures allow some level of emission to the atmosphere outside of the enclosure. Partial enclosures may consist of vertical tarps and floor tarps so long as the tarps are overlapped and securely fixed together at the seams. A partial enclosure is not a recommended containment system if significant dust is being generated.

Full Enclosures

Full enclosures are tight enclosures (with tarps that are generally impermeable and fully sealed joints and entryways). Full enclosures allow minimal or no fugitive emissions to reach the outside environment.

For a Type 3 operation, full enclosures, the following requirements should be met:

1. Entry ways in the enclosure should be equipped with air locks, overlapping door tarps or doors;
2. The enclosure should be supported by a secure structure;
3. All joints in the enclosure should be fully sealed;
4. The escape of abrasive and debris from the enclosure should be controlled, at air supply points, by the use of baffles, louvers, flap seals and filters;
5. General mechanical ventilation should be provided to remove contaminated air from the enclosure and replacement air should be provided to replace the exhausted air;
6. The air pressure within the enclosure should be negative relative to the outside;
7. Equipment venting such air shall be equipped with filters adequate to control vented air to Provincial environmental standards;
8. The air velocity within the enclosure should provide an average minimum cross-draft or down-draft past each worker during abrasive blasting operations as follows:
 - a) cross-draft velocity of 0.5 m/sec (100 ft/min)
 - b) down-draft velocity of 0.25 m/sec (50 ft/min).

If the enclosure is located outdoors these additional requirements should be met:

1. The enclosure should be made of windproof materials that are impermeable to dust.
2. The enclosure should be supported by a structure that prevents more than minor movement of the enclosure.

Indoor Operations

If abrasive blasting is being conducted indoors and persons other than those doing the abrasive blasting may be exposed to silica-containing dust, the abrasive blasting area should be separated from the rest of the project by an enclosure that will confine the dust within the abrasive blasting area. When an indoor abrasive blasting operation is completed, dust and waste should be cleaned up and removed by vacuuming with a HEPA-filter-equipped vacuum, wet sweeping or wet shovelling.

Outdoor Operations

If abrasive blasting is being conducted outdoors and persons other than those doing the abrasive blasting may be exposed to silica-containing dust, the work area should be identified by ropes or barriers located at least 25 metres from the abrasive blasting area, to prevent entry by workers not directly involved in the operation.

If it is not possible to locate the ropes or barriers at least 25 metres from the abrasive blasting operation, the employer should ensure that the abrasive blasting area is separated from the rest of the project by an enclosure that will confine the dust within the abrasive blasting area.

MEDICAL SURVEILLANCE OF SILICA-EXPOSED WORKERS

Where construction workers are exposed to airborne silica, measures and procedures to control their exposure should be implemented. This standard has outlined the types of controls that should be in place for various work activities. However, even with the appropriate measures to control the silica hazard, some workers may be affected. Workers should therefore be periodically examined to determine if they are experiencing any adverse effects. The essential features of a silica medical surveillance program are presented below.

Medical Surveillance Program

Objective

The objective of a medical surveillance program is to protect the health of workers by:

1. Ensuring their fitness for exposure to silica
2. Evaluating their absorption of silica
3. Enabling remedial action to be taken when necessary
4. Providing health education.

Program

The medical surveillance program should include the following:

1. Pre-employment and pre-placement medical examinations
2. Periodic medical examinations
3. Clinical tests
4. Health education
5. Record keeping.

Medical Examinations - Medical examination should include the following:

1. History

The initial medical and occupational history should include enquiries about the worker's previous exposure to silica, personal habits (smoking) and history of present or past respiratory disorders (particularly tuberculosis). At the periodic examination, the history shall be updated to include:

(a) information on the frequency and duration of exposure to silica since the previous examination; and

(b) the occurrence of signs and symptoms of respiratory disease, e.g., dyspnea, cough, sputum, haemoptysis, wheezing and chest pain.

2. Physical Examination

Medical surveillance should include a general physical examination, with attention particularly directed to the respiratory system. The frequency of periodic examinations will depend on the intensity and length of exposure to silica and should be decided by the examining physician. It need not be the same for all workers but should not be less than once every two years.

3. Clinical Tests

X-rays and pulmonary function tests should be taken to assess a worker's fitness for continued exposure to silica. Refer to the Code for Medical Surveillance of Silica Exposed Workers in R.R.O. 1990, Reg. 845 for specific requirements.

To avoid unnecessary x-rays at a pre-placement medical examination, the examining physician should, where practicable, obtain the medical status from another facility if the worker has been previously examined in the past year. Radiographs should be closely examined for early signs of silicosis or other chest disease. When exposure is discontinued, the frequency of X-rays and the period of surveillance will depend on the intensity and duration of exposure and the findings in previous X-rays. The examining physician shall determine the duration and frequency of follow-up.

4. Pulmonary Function Tests

Pulmonary function tests should be taken in conjunction with the chest X-rays. Calibration of the instruments should meet current standards. Tests should include FEV1, FVC, FEV1/FVC per cent and a mid-flow rate such as FEF 25-75 per cent. All relevant data should be corrected to body temperature and pressure (BTPS).

5. Action Levels

An assessment of a worker's fitness for work should be based on both the clinical examination and clinical test results. For this reason, no specific action levels are stated for the latter. If silicosis is confirmed, the physician should then determine whether the worker is fit, fit with limitations or unfit for further exposure. A worker should not be removed from silica exposure before consultation with the Workplace Safety Insurance Board (WSIB). To qualify for compensation or rehabilitation further assessment by the WSIB will be necessary.

RESPIRATOR REQUIREMENTS & SWP FOR TYPE 1, 2, AND 3 SILICA-CONTAINING OPERATIONS

OPERATIONS	REQUIRED RESPIRATOR	OTHER MEASURES & PROCEDURES
TYPE 1		
<ul style="list-style-type: none"> The drilling of holes in concrete or rock that is not part of a tunnelling operation or road construction. Milling of asphalt from concrete highway pavement. Charging mixers and hoppers with silica sand (sand consisting of at least 95 per cent silica) or silica flour (finely ground sand consisting of at least 95 per cent silica). Any other operation at a project that requires the handling of silica containing material in a way that may result in a worker being exposed to airborne silica. Entry into a dry mortar removal or abrasive blasting area while airborne dust is visible for less than 15 minutes for inspection and/or sampling. Working within 25 metres of an area where compressed air is being used to remove silica-containing dust outdoors. 	Half-mask particulate respirator with N-, R-, or P-series filter and 95, 99 or 100% efficiency.	<ul style="list-style-type: none"> Clean-up after each operation should be done to prevent dust containing silica from spreading. Compressed air or dry sweeping should be avoided when cleaning a work area. Compressed air should not be used for removing dust from clothing. Workers exposed to silica should be provided with or have access to washing facilities equipped with clean water, soap, and individual towels. Silica dust on personal protective clothing and equipment should be removed by damp wiping or HEPA vacuuming. Contaminated personal protective clothing and equipment should be handled with care to prevent disturbing the silica dust and the generation of airborne silica dust. Washing facilities and laundering procedures must be suitable for handling lead contaminated laundry. Warning signs should be posted in sufficient numbers to warn of the silica hazard. There should be a sign, at least, at each entrance to the work area. The signs should display the following information in large, clearly visible letters: <ul style="list-style-type: none"> - Restricted Area.....Silica dust hazard - Respirators must be worn in work areas.
TYPE 2		
<ul style="list-style-type: none"> Removal of silica containing refractory materials with a jackhammer. The drilling of holes in concrete or rock that is part of a tunnelling operation or road construction. The use of a power tool to cut, grind, or polish concrete, masonry, terrazzo or refractory materials. The use of a power tool to remove silica-containing materials. The use of a power tool indoors to chip or break and remove concrete, masonry, stone, terrazzo or refractory materials. Tunnelling (operation of the tunnel boring machine, tunnel drilling, tunnel mesh installation). Tuckpointing and surface grinding. Dry mortar removal with an electric or pneumatic cutting device. Dry method dust clean-up from abrasive blasting operations. The use of compressed air outdoors for removing silica dust. Entry into area where blasting is being carried out for more than 15 minutes. 	<ul style="list-style-type: none"> Full-facepiece air-purifying respirator with N-, R-, or P-series filter and 100% efficiency. Tight-fitting powered air-purifying respirator with a high-efficiency filter. Full-facepiece supplied-air respirator operated in demand mode. Half-mask or full-facepiece supplied air respirator operated in continuous-flow mode. 	<ul style="list-style-type: none"> In addition to Type 1 measures and procedures. Other workers entering a work area where Type 2 operations are being performed should remain at least 10 metres away. Ropes or barriers should be set up to prevent unauthorized personnel from entering the work area. If this is not possible and there are workers within the 10-metre limit, the Type 2 operation should be enclosed to prevent the escape of airborne silica-containing dust (partial or full enclosures).

RESPIRATOR REQUIREMENTS & SWP FOR TYPE 1, 2, AND 3 SILICA-CONTAINING OPERATIONS

OPERATIONS	REQUIRED RESPIRATOR	OTHER MEASURES & PROCEDURES
TYPE 3		
<ul style="list-style-type: none"> Abrasive blasting with an abrasive that contains ≥ 1 per cent silica. Abrasive blasting of a material that contains ≥ 1 per cent silica. 	<ul style="list-style-type: none"> Type CE abrasive-blast supplied air respirator operated in a positive-pressure mode with a tight-fitting half-mask facepiece. Type CE abrasive-blast supplied air respirator operated in a pressure-demand or positive pressure mode with a tight-fitting full-facepiece. 	<p>(In addition to Type 1 and Type 2 measures and procedures.)</p> <ul style="list-style-type: none"> While abrasive blasting is in progress or the airborne dust from abrasive blasting is visible, <ul style="list-style-type: none"> any worker entering the work area where abrasive blasting is being carried out for less than 15 minutes for inspection and/or sampling purposes should wear a half-mask particulate respirator with N-, R-, or P-series filter and 95, 99 or 100% efficiency. any worker entering a work area where abrasive blasting is being carried out for more than 15 minutes should wear a respirator with a NIOSH APF of 50. workers engaged in cleaning dust from abrasive blasting operations, should wear a respirator with a NIOSH APF of 50. Where abrasive blasting is conducted, barriers, partial enclosures and full enclosures should be in place to prevent other workers from being exposed to silica-containing dust and to prevent the spread of dust to other work areas.

SECTION 61 – HOISTING & RIGGING

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate & review our standards for hoisting and rigging on the construction projects and in workplace.

STANDARD: To reduce the risk of employee injury or property damage, it is a requirement that the use of all hoisting & rigging components be operated in accordance with the manufacturer's instructions and in accordance with the Occupational Health & Safety Act/Regulations.

All hoisting & rigging components shall be inspected and/or maintained as per the manufacturer's specifications and the documentation shall be forwarded to the office to be kept on file. Management and supervisors are responsible to ensure that employees perform routine inspections, service, and maintenance on the equipment involved, including the proper documentation filed with their supervisor. A competent person appointed by a supervisor shall perform all hoisting & rigging operations. The office shall maintain a copy of the written proof indicating that the worker is trained in the safe operation of all hoisting and rigging procedures.

Employees shall be able to provide proof, at all times, of their training in safe operations of hoisting and rigging. Employees shall perform a visual inspection of all hoisting & rigging components prior to and during use. A personal log of the inspection shall be kept on file. Any components that may pose a hazard shall be immediately removed from service, tagged "Do Not Operate", and returned to the supervisor for repairs or disposal.

EQUIPMENT

1. Supervisor shall ensure the equipment, crane, hoist or lifting device complies with Provincial Regulations.
2. Supervisor or designate shall refer to the Section 51 & 52 of this manual to ensure compliance.
3. All cranes, hoists and lifting devices shall be equipped with a max load & SWL capacity sign, load capacity chart and all devices for an operator to clearly observe during all lifts.

GUIDELINES FOR HOISTING

1. Determine load weight and proper rigging procedures before rigging a load.
2. All rigging equipment such as hooks, slings, blocks, beams, and hoisting lines must be counted as part of the load.
3. No worker shall operate a hoisting device capable of raising, lowering, or moving material that weighs more than 7,260 kilograms unless the worker is certified as a hoisting engineer.
4. Never exceed the safe working load of slings and other rigging devices, as noted on equipment.
5. All equipment must be keep up to standard. Use of defective hardware / tackle is not permitted under any circumstances. Do not use if SWL is not visible or identified.
6. Keep wire rope out of distance from damaging factors such as cutting and welding operations.
7. Rigged loads must be properly fastened to prevent the load from loosening or coming apart.

8. Never wrap a wire rope sling around a hook. The tight radius will damage the sling.
9. Hoisting hooks must be equipped with safety latches and should be loaded at the middle of the hook.
10. Use taglines to guide heavy or awkward loads.
11. Stand clear when loads are being lifted or lowered and when slings are being pulled out from under a load.
12. Avoid hoisting in high winds, poor visibility, and other limiting factors.
13. Always look for overhead obstructions and power lines.
14. Keep rigging, load, and hoisting equipment at least ten (10) feet away from overhead power lines.
15. Communication between crane operator and signal person must always be clear and concise. The signal person must be a supervisor or a competent, trained person (hand signals for hoisting operations) appointed by the supervisor.
16. Hoisting devices shall have a permanent record of all inspections, tests, repairs, modifications and maintenance of the hoisting device kept with the equipment.

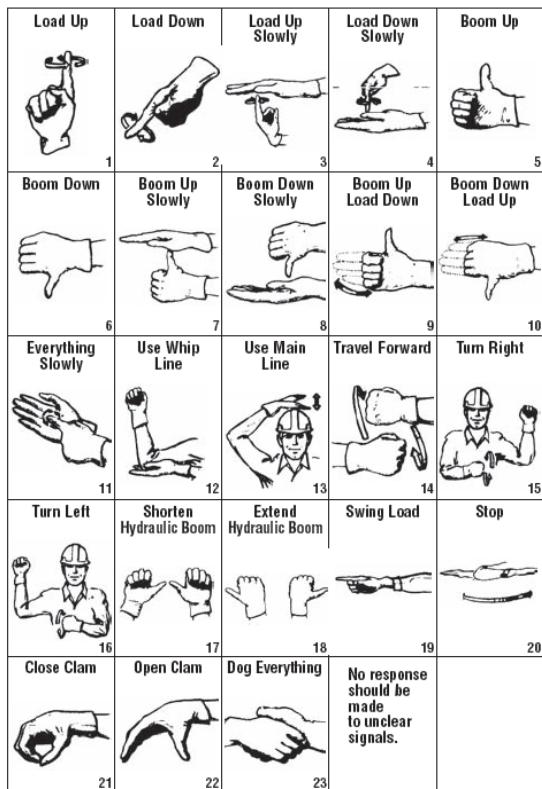
GUIDELINES FOR RIGGING:

1. A competent and properly trained person shall be involved in rigging devices.
2. The General Manager shall name at least one member of a crew that is competent and has been given training, to act as the signal person and instruct the equipment operator to recognize signals from that person only. The signal person shall be careful not to order a move until they have received the "all ready" signal from each member of the crew.
3. Each rigger shall be sure they are in the clear before they give the "all ready" signal to the signal person. When you have positioned the sling or choker release it before giving the "all ready" signal.
4. If it is not possible to release the sling or choker before giving the "all clear" signal, be sure that your hands are clear of all pinch points.
5. Inspect ropes, slings, and chokers and other rigging devices regularly and before each use. Discharge or repair items that are found in poor condition. Document inspection weekly.
6. Watch for the roll or swing of the load. Since it is almost impossible to position the load in the center of the hook, there will almost always be a swing or a roll. Anticipate the swing or roll of the load and work away from it.
7. Never place yourself between material, equipment, and any stationary object while placing a load.
8. Check the area where the load is to be set and remove debris and obstructions that may cause the load to tip or cause damage.
9. Never stand under a load, and keep out from under the boom as much as possible.
10. Be sure to keep hands, feet and other body parts clear when lowering or setting a load. Set load down easy and slowly to prevent any mishaps.
11. Identify the signal person by the use of a vest or other distinguishing clothing.
12. Use tag lines to control the loads.

Hand Signals for Hoisting & Rigging Operations

When performing hoisting & rigging operations with an operator the ground man and the operator shall rely on the following information to communicate if a communication device is not available.

HAND SIGNALS FOR HOISTING OPERATIONS



Working Load Limit (WLL): Tons of 2000 lbs UNI-LOC® 6-strand Wire Rope Slings - 6 x 19, 6 x 26, 6 x 25 and 6 x 36 IWRC - Design Factor = 5						
Nom. Rope Dia. Inch	Vertical	Choker	2 Sling Bridle, or single Basket Hitch	Weight of one 10 ft long Std Loop Sling w/o any hardware approx. lbs		
1/4	0.65	0.48	1.1	0.91	0.65	1.6
3/8	1.4	1.1	2.5	2.0	1.4	3.5
1/2	2.5	1.9	4.4	3.6	2.5	6.8
5/8	3.9	2.9	6.8	5.5	3.9	10.9
3/4	5.6	4.1	9.7	7.9	5.6	16.5
7/8	7.6	5.6	13	11	7.6	23.5
1	9.8	7.2	17	14	9.8	32.5
1-1/8	12	9.1	21	17	12	41.0
1-1/4	15	11	26	21	15	53.5
1-3/8	18	13	31	25	18	68.5
1-1/2	21	16	37	30	21	85.0
1-3/4	28	21	49	40	28	130.0
2	37	28	63	52	37	178.0
2-1/4	44	35	77	63	44	243.0
2-1/2	54	42	94	77	54	315.0

For Choker Bridle Sling, multiply values by 3/4.
For Double Basket Sling, multiply values by 2.

NOTES: 1) Working Load Limit (WLL) based on UNI-LOC® splice only.
2) Values for Chokers valid only if A is greater than 30°.
3) Values based on ropes with a tensile strength of EIPS.
4) Shackles and fittings must be sized to the full WLL of sling.
5) WLL Basket Hitch is based on D/d ratio of 25.

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WEIGHTS OF MATERIALS (Based On Volume)			
Material	Approximate Weight Lbs. Per Cubic Foot	Material	Approximate Weight Lbs. Per Cubic Foot
METALS		TIMBER, AIR-DRY	
Aluminum	165	Cedar	22
Brass	535	Fir, Douglas, seasoned	34
Bronze	500	Fir, Douglas, wet	40
Copper	560	Fir, Douglas, glue laminated	50
Iron	480	Hemlock	34
Lead	710	Pine	30
Steel	480	Poplar	30
Tin	460	Spruce	28
MASONRY		LIQUIDS	
Ashlar masonry	140-160	Alcohol, pure	49
Brick masonry, soft	110	Gasoline	42
Brick masonry, common (about 3 tons per thousand)	125	Oils	58
Brick masonry, pressed	140	Water	62
Clay tile masonry, average	60	EARTH	
Rubble masonry	130-155	Earth, wet	100
Concrete, cinder, taydite	100-110	Earth, dry (about 2050 lbs. per cu. yd.)	49
Concrete, slag	130	Sand and gravel, wet	75
Concrete, stone	144	Sand and gravel, dry	120
Concrete, stone, reinforced (4050 lbs. per cu. yd.)	150	River sand (about 3240 lbs. per cu. yd.)	105
ICE AND SNOW			120
Ice	56	VARIOUS BUILDING MATERIALS	
Snow, dry, fresh fallen	8	Cement, portland, loose	94
Snow, dry, packed	12-25	Cement, portland, set	183
Snow, wet	27-40	Lime, gypsum, loose	53-64
MISCELLANEOUS		Mortar, cement-time, set	103
Asphalt	80	Crushed rock (about 2565 lbs. per cu. yd.)	90-110
Tar	75		
Glass	160		

Table 7

Caution: This table contains sample values for the purposes of illustration only. Refer to the manufacturer of the material you're using for precise values.

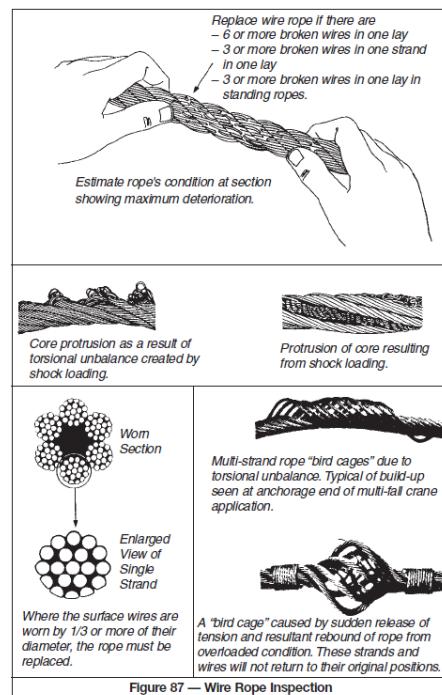


Figure 87 — Wire Rope Inspection

Rigging Safety Tips

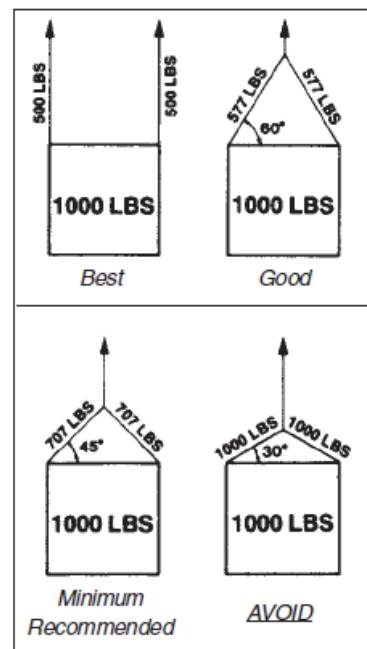
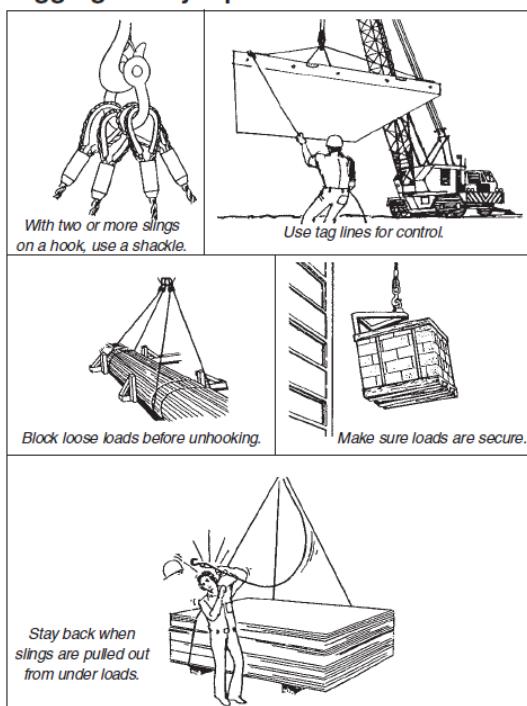
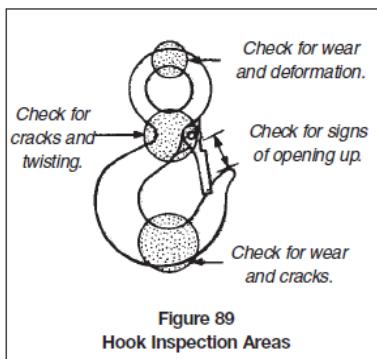
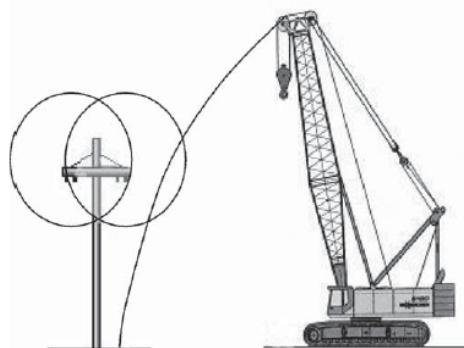
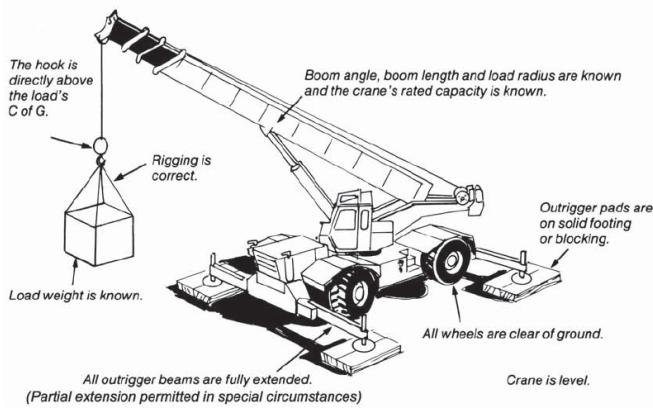


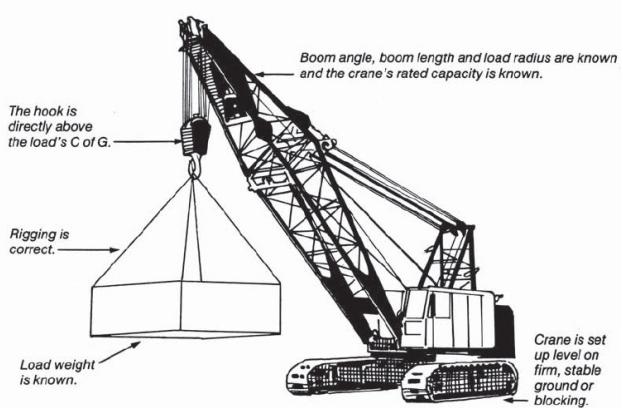
Figure 92
Effect of Sling Angle on Sling Load

A crane is properly set up for lifting when the following conditions are met.

For Cranes Operating "On Outriggers"



For Crawler-Mounted Cranes or When Lifting "On Rubber"



SECTION 62 – MAN BASKET CRANE LIFT

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate & review our standards for preventing an unwanted exposure to a hazard during a Man Basket Crane Lift.

STANDARD: This standard shall be used to assess all possible hazards to which workers may be exposed while working within the aforementioned Man Basket Crane Lift and to outline the acceptable safe work practices that shall be implemented in order to complete the task.

This Man Basket Crane Lift Procedure & the applicable Provincial Regulations for Construction Projects, specifically Section 153 shall apply to all managers, supervisors, employees, visitors and subcontractors in our employ or under contract with New Alliance Ltd. as it relates to.

Project Location:
Project Start Date:
Project Supervisor:
Description of Man Basket:
Description of Crane
MOL Project Number:
Project Completion Date:
Professional Engineer(s):

By signing and dating this document below, the Professional Engineer(s) are confirming that the requirements set out in section 153 of the Regulation for Construction Projects, O. Reg. 213/91, have been complied with and to the best of their experience, knowledge and training have identified all actual/potential hazards that may be encountered while working with in or around the aforementioned man basket &/or crane. Please note the Professional Engineer may provide a signature and affix his/her seal to the assessment or attach a separate cover letter that identifies similar information as stated herein.

Man Basket inspected by:	Signature:	Date:
Crane inspected by:	Signature:	Date:

PROCEDURE: The following safe work procedures and practices shall be in compliance prior to operating for the purpose of production on the job site:

1. A toolbox talk shall be held with all employees involved to discuss the safe work procedure, emergency response plan and the sequences, responsibilities of job tasks identified with the fall protection hazards associated with the man basket lift.
2. No worker shall be moved with the man basket unless the following steps have been completed and confirmed.
3. The Emergency Response Plan shall be in writing and be posted.
4. All equipment used in the emergency response plan (PPE, lifelines, harnesses, alarms, radios/telephones, first aid kits) shall be inspected by a competent person. The designated competent person shall post and keep readily available a document detailing the time and date of the inspection of the equipment.
5. Only trained, licensed crane operators will operate the crane. At no time shall an apprentice operate the crane for the purpose of hoisting the Man Basket. The position of competent signal person or as a "rigger" is permissible with the site supervisor's & operator's approval.
6. The crane shall be operated as per a **Reduced Load Chart**. The chart shall be set so the crane operator is not to lift in excess of 25% of its maximum rated load when lifting personnel in the man basket. Please refer to the Reduced Load Chart for details.
7. The crane while attached to the crane shall only lift the attached man basket. No other materials or equipment shall be lifted at the same time.
8. The crane shall have a designated loading and unloading area which will be identified with "Danger Due To" signs and either with red "danger" tape, rope or barrels.
9. The crane operator will be provided with a telephone and/or 2 way radio system. This will allow the crane operator and the designated signal person to communicate with each other.
10. One designated signal person (ground man) shall be available to communicate with the crane operator at all times. The designated crane signal person(s) are:

Primary Signal Person: (Print)	Signature:
Alternate Signal Person: (Print)	Signature:
Crane Operator: (Print)	Signature:

11. The crane's potential swing path area shall be identified on a site map located in the site trailer. The "No swing zone" shall be identified on a map to ensure that no load is moved in a way to endanger the public with an overhead hazard.
12. No crane operator shall lift/move within the "No swing zone" unless instructed to do so by the site supervisor in conjunction with a member of the Police, Fire, Ambulance, the Owner for the purposes of providing help during an emergency operation.

13. No crane shall operate when the wind speeds reach 35 km/hr. or as indicated on the stamped engineered drawings, dated _____. The crane operators shall have the ultimate decision on when to operate safely in any wind condition. If the crane operator must shut down as a result of wind, he shall communicate this to the signal person, the signal person shall inform the Site Supervisor at the site office immediately.
14. The crane's manual for the manufacturer's instructions and recommendations shall be adhered to at all times.
15. When the crane is being shut down due to adverse weather or at the end of the work day, the empty hook of crane will be brought up to its highest position & the boom shall be in a position approved by the Site Supervisor & the Owner.
16. All employees, contractors, & visitors must be "suitably equipped" with, trained & use the approved personal protective equipment appropriate prior to gaining access the engineered Man Basket. Items included (but not limited to):
 - CSA approved head protection, safety glasses.
 - Full body harness equipped with a shock absorbing lanyard or Self Retracting Lifeline.
 - CSA approved boots/shoes.
 - CSA approved retro reflective vest.
17. **ANY DEVIATION FROM THE OUTLINED PROCEDURE SHALL BE UNDER THE DIRECT SUPERVISION OF THE SIGNING PROFESSIONAL ENGINEER AND SITE SUPERVISOR.**

EMERGENCY RESPONSE PLAN

The supervisor shall have all workers, sub-contractors and/or visitors sign a training roster to acknowledge the Emergency Response Plan. In the event of an emergency, the attendant shall perform the following crisis management steps:

Conscious or Unconscious Worker (Site Specific)

1. Activate the emergency audio alarm (Air horn),
2. Use the radio or telephone to notify the supervisor/crane operator immediately,
3. If required, send someone to guide the Emergency Services to the upper landing area,
4. Communicate with the person; calm the person,
5. If accessible and safe to do so, allow the injured person the additional time & equipment to climb/walk out safely to the lower landing platform for the waiting Man Basket. A supervisor or designated person shall provide first aid until the Emergency Services arrives to the upper landing area.
6. If the work area is accessible and the injured person cannot climb/walk as result of their injuries, to the lower landing area; use the Rescue Stretcher to safely transport to the lower landing platform for the waiting Man Basket. A supervisor or designated person shall provide first aid until the Emergency Services arrives to the upper landing area.

7. If the work area is not accessible and it is unsafe for you to easily rescue the worker, call 911, and wait until the Emergency Services arrives at the upper landing. Have the designated person ensure that the Emergency Services Personnel are wearing the Fall Protection for the lift down to the lower landing. Never risk your safety to rescue a worker, wait for the Emergency Services,
8. Call our main office to activate our internal response plan,
9. Stay with the injured person until the supervisor arrives or the Emergency Services arrives,
10. Turn the scene over to the supervisor, restrict access to the accident scene, Emergency & MOL personnel only,
11. Rope off the accident area for the accident investigation team,
12. Notify the Safety Representative/JH&SC, union (if any), the Owner.

SECTIONS 63 – EXCAVATING & TRENCHING

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish and communicate information prior to performing any excavating & trenching operations while under direction of New Alliance Ltd. Please be advised; responsibilities associated with this standard is contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project.

Standard: This standard has been designed to review the basic principles of trenching & excavations in the workplace. The information shall be referred to both as a training aid and as a quick reference guide for employees and subcontractors of New Alliance Ltd. for various excavating and trenching operations.

Trenches & Excavations

1. Notify Ministry of Labour as per sections 6, 7 (O. Reg. 213/91).
2. Arrange locates for underground services at least two weeks before job starts.
3. All cut backs or sloping of trench or excavation walls shall be done in accordance with the Construction Regulations taking into account the soil type.
4. In all methods of excavating and trenching, the soil types shall be determined by a competent person who shall document the type of soil by physically & visually inspecting the conditions. Once the competent person has determined the soil type he/she shall compare and/or refer to the soil type documentation from the owner.
5. The Supervisor or designated person shall continuously monitor an excavation or trench to ensure that it is safe to work in.
6. The supervisor or designated person shall inform the workers to evacuate the work area if the conditions of the excavation or trench are inadequate. No worker shall enter or remain in an excavation or trench until a resolution and an approval is provided for a re-entry.
7. If there are more than 2 types of soil encountered, the soil type shall be classified using the highest number determined.
8. If the soil types are confirmed and correct continue with the work operation; if the soil types are in conflict stop work and contact the Supervisor immediately and wait for instructions.
9. Gas, electrical and other services shall be accurately located, marked, and documented prior to digging the excavation.
10. Pipes, conduits, and cables in an excavation shall be supported to prevent their failure or breakage.
11. Excavations where workers will be present must be kept free of water accumulations.
12. There must be a clear distance of 18 inches between an excavation wall and another wall, formwork or masonry.
13. Loose rock or debris that may slide or fall shall be stripped from the walls.
14. No work shall be performed unless a secondary worker is stationed above ground in close proximity to the trench.

15. A 1 metre level area at the top of the trench wall shall be kept free and clear of equipment and materials at all times.
16. No person shall operate or locate a machine or other equipment in a manner that could affect the stability of an excavation wall.
17. Methods of protection against trench Cave-ins that are available for use are sloping, trench box or shoring.
18. No employee, subcontractor or visitor shall enter a trench deeper than 1.2 metres (4 feet) unless the walls are rock solid, and/or it is properly sloped, shored or protected by a trench box.
19. No worker shall move a backhoe, shovel, crane, or other similar lifting device or its load closer than the length of the boom of the lifting device to a power line for electricity or above ground gas supply.
20. No person shall ride on or in any area of the vehicle or equipment other than in the cab (where seat belts are provided).
21. No person shall remain on or in a vehicle where he may be endangered during the loading or unloading of the vehicle.
22. When an excavating machine is not in use, the bucket shall rest on the ground.
23. No person shall ride on the load, hook or sling of a crane or other similar hoisting machine.

BARRIERS

1. Hazardous areas shall be cordoned-off with barriers or danger tape.
2. A 1.1 m (4') barrier shall be erected where a worker may fall more than 2.4 m (8') into an un-sloped excavation.
3. Barriers may only be removed for work to proceed with permission of the supervisor. They shall be replaced immediately after work is completed. Workers involved in these operations shall be protected against any hazards present.

SLOPING

1. For all **Type 1 and 2 soils**, an operator shall cut/grade the trench walls back at an angle of **1 to 1** (45 degrees). That is one metre back for each metre up. The walls shall be sloped **from 1.2 metres (4 feet) from the base of the trench**.
2. For all **Type 3 soils**, an operator shall cut/grade the trench walls back at an angle of **1 to 1** (45 degrees) **from the base of the trench**.
3. For all **Type 4 soils**, an operator shall cut/grade the trench walls back at an angle of **1 to 3** (45 degrees) from the base of the trench. **That is three metres back for each metre up from the base of the trench**.
4. If sloping is to be used at the top of a trench box, the top portion of the cut/grade shall be first sloped 1 to 1. Only then can the trench box be lowered into position.

TRENCH BOXES

1. No worker shall dig with a backhoe, shovel, crane, trencher or other similar digging device without first having the proper service locates supplied.
2. Trench boxes are not to be used as a shoring system; they are to be used to protect workers in case of a cave-in.

3. All trench boxes shall be accompanied with the manufacturers' specifications, design drawings and must be signed and sealed by a professional engineer who designed the system.
4. The supervisor shall ensure that a copy is supplied from the manufacturer and is available for review in a toolbox talk. The document shall include the manufacturers' instructions on how to properly use, install and the limitations of the trench box.
5. A toolbox talk shall be performed and documented with all of the employees working in or around any trench box.
6. All access/egress from the trench box shall be with a ladder that shall be secure into position inside the trench box and extend 3 feet above the landing area.
7. The operator shall back fill to keep the space between the trench box and the excavation/trench as small as possible.
8. All workers shall remain inside the trench box at all times; only leave the trench box when the trench box is required to be moved.
9. No internal combustion engine will be operated in a trench unless adequate provisions are made to ensure the exhaust gases are discharged well above the top of the trench, and away from the trench alignment.
10. Where rock-drilling operations are carried on in a trench, adequate supply of water must be provided at the drill hole.
11. Where no water is available, the drillers and any other person required to work near the drilling operation must wear a dust mask.
12. All excavations shall be kept reasonably free of water at all times.
13. No excavated material, tools, timber, machinery or other objects in or near a trench shall be placed or kept in a manner that may endanger a worker in the trench.
14. No trench shall be left open unless it is adequately barricaded to prevent persons from falling into the trench. During darkness, flashing signals shall mark the barricades.
15. No person shall remain on the operating platform working with a crane, shovel or similar machine is in operation and No person shall be within the radius or rotation of any part of the crane or similar machine.
16. A competent signalman shall assist the operator of a crane, shovel or similar machine whose view of the path of travel for any part of the machine or its load is obstructed.
17. No more than one man shall give signals to an operator at the same time
18. Do not stand under a suspended load or move a suspended load over the top of anyone.

BURIED UTILITY LINES & SERVICES

Please refer to the following reasonable steps that are required prior to performing an operation that involves excavating in ground that may have known Service or Utility lines.

1. Contact "Ontario One" at 1 800 400 2255 or the owner of the service at least 5 days in advance.

2. Perform a toolbox talk to discuss the potential hazards associated with the buried service or utility lines and the site specific safe work procedures.
3. Locates are not required for removing asphalt but are required for removing sidewalks.
4. When requesting locates, provide the required information on location, time, duration, scope, nature of the work and the company's information.
5. The Utility representative is required to provide site specific documentation (i.e. Locates) and site information using labeled stakes and/or high visibility paint marks on the surface of the ground matching the information provided contained in the Locates.
6. Ensure the markings provided are the centreline of the underground structure.
7. Where there are no buried utility lines in the defined area of the proposed excavation & locates, the utility representative may provide a verbal confirmation – DO NOT ACCEPT VERBALS, REQUEST A DOCUMENTED CONFIRMATION.
8. Ensure the excavation operations are limited to the boundaries of the existing Locates.
9. Ensure no excavating is performed without a current Locate.
10. Locates expiration date shall be on the document provided – 30 days is normal.
11. The accuracy of the Locate shall be considered to be 1 metre on the either side of the surface centre line Locate or 1 metre on either side of the marked limits of the underground structure.
12. Hand dig test holes to expose and confirm the location of the lines.
13. Only use a shovel with a wooden or insulated handle to Hand dig. Do not use a pick, bar, stake or earth piecing device.
14. The separation between test holes shall not exceed 4.5 metres.
15. Test holes may be excavated by one of the following methods:
 - a) Mechanical excavation may be used to dig a test hole immediately outside the boundary limits (1 metre) and then hand dig used laterally until the service or utility line is found.
 - b) A combination of hand digging between & mechanical excavation as follows:
 - i. Hand dig between the boundary limits of the locate in cuts of at least 0.3 metre (1 foot) in depth,
 - ii. Mechanical excavation could then be used to widen the hand dug trench to within 0.3 metre (1 foot) of the depth of the hand digging,
 - iii. Repeat the two steps until the service or utility line is found.
16. Where test holes have been completed and the service or utility line(s) have been located:
 - a) Using mechanical equipment, a parallel excavation shall be performed at least 1 metre outside of the known location of the lines found in the existing test hole, and

- b) If mechanical equipment used for excavating is needed within the 1 metre area, additional test holes are required to expose the lines along the width of the excavation and then mechanical equipment can only be used within 1 foot of the known location of the lines.
17. A supervisor shall ensure that every reasonable precaution is taken in the circumstance for the protection of a service and/or utility line.
18. All excavating operations shall stop if the information on the Locate sheet is incorrect.
19. Contact "Ontario One" at 1 800 400 2255 or the owner of the service when a Locate Sheet is found to have incorrect information.

NEW LEGISLATION

Section 228 of the Regulation for Construction is revoked and the following substituted:

Precautions Concerning Services

Subsection 228 (1), Before an excavation is begun,

- (a) the employer excavating shall ensure that all gas, electrical and other services in and near the area to be excavated are located and marked;
- (b) the employer and worker locating and marking the services described in clause (a) shall ensure that they are accurately located and marked; and
- (c) if a service may pose a hazard, the service shall be shut off and disconnected.

Subsection 228(2) If a service may pose a hazard and it cannot be shut off or disconnected, the owner of the service shall be requested to supervise the uncovering of the service during the excavation.

Subsection 228(3) Pipes, conduits and cables for gas, electrical and other services in an excavation shall be supported to prevent their failure or breakage.

SECTION 64 – WELDING, CUTTING & BURNING

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate & review our basic principles of welding, cutting, and burning operations in the workplace and projects.

STANDARD: Welding is a process which uses heat and/or pressure to join metals. Shield Metal Arc Welding (SHAW) uses a short length of consumable electrode, which melts as it maintains the arc. Gas Metal Arc (GMAC) or Metal Inert Gas Welding (MIG) uses an uncoated consumable wire that is fed continuously down the middle of the welding torch. Flux Cored Arc (FCAW) is a variation of MIG welding. Gas Tungsten Arc Welding (GTAW) or Tungsten Inert Gas Welding (TIG) uses a non-consumable tungsten electrode that maintains the arc and provides enough heat to join metals. The filler metal is added in the form of a rod held close to the arc. Oxyacetylene Welding & Cutting see below.

1. Always ensure that adequate ventilation is supplied since hazardous fumes can be created during welding, cutting, or burning.
2. All cylinders, regulators, gauges, hoses, and fittings shall be tested using an approved testing substance prior using the equipment.
3. Where other workers may also be exposed to the hazards created by welding, cutting, and burning, they shall be alerted to these hazards and protected from them by the use of protective screens and PPE.
4. A worker shall not begin welding / cutting / burning work without proper authorization from a competent supervisor.
5. The work area shall be inspected for combustible, flammable, or explosive material or vapours prior to commencing welding / cutting / burning work.
6. Cables and hoses shall be inspected for cracks, cuts, or burns prior to use. Cables and hoses shall be monitored and protected from slag and spark damage during use.
7. Ensure that any hot-work permits have been obtained prior to welding or cutting of drums, tanks, and lines. **No welding, torching, cutting or burning where atmosphere is above 5% of LEL.**
8. Never enter, weld, or cut in a confined space. The worker shall refer to, or create, a procedure for confined space entry prior to commencing any hot or cold work in a confined space.
9. When working overhead, fire resistant materials (blankets, tarps) to control or contain slag and sparks from the area below shall be used.
10. Cutting and welding shall not be performed where sparks and cutting slag will fall on cylinders (move all cylinders away to one side) or other combustible materials.
11. Open all cylinder valves slowly. The wrench used for opening the cylinder valves shall always be kept on the valve spindle when the cylinder is in use.
12. Never leave the valve wrench on the cylinder when it is not in use.
13. Welding, cutting, and burning shall be performed only by persons experienced and duly certified and trained and wearing all required PPE

14. Never attempt to stop the flow of any compressed gas (or air) by placing any body part against the gas flow. This could result in a bubble of the gas entering the blood stream at the point of contact. Gas bubbles in the blood stream can be fatal.
15. Electric welding machines shall be properly grounded prior to use.
16. Rules and instructions supplied by the manufacturer of cutting or welding equipment shall be followed at all times.
17. When electrode holders are to be left unattended, the electrode shall be removed and the holder placed or protected to prevent electrical contact with workers, the public, or conducting objects.
18. When a welder stops work for any length of time, or when the welding machine must be moved, the power switch must be rendered in a non-operational position.
19. New or used electrodes shall not be left lying on floors or walkways causing a potential tripping or slipping hazard. Deposit used electrodes in the designated metal bucket.

FIRE PREVENTION

All cutting, grinding and welding operations shall ensure that no sparks or slag is exposed to any flammable materials or electrical equipment. This includes preventing sparks and slag from accessing cracks in walls, floors and air ducts. The following steps shall be complied with to prevent fires and explosions:

1. If required, obtain a hot work permit through the site supervisor.
2. All welding areas shall be kept free of flammable & explosive materials.
3. Use a flammable gas and oxygen detector to determine if a hazardous atmosphere exists.
4. For all welding, cutting & grinding operations, a welding screen or fire blanket shall be used.
5. Fire extinguishers shall be readily available prior to all operations; up to including having a fire extinguisher stored with every cutting, grinding and welding buggy.
6. All oxyacetylene torches shall be equipped with a reverse flow check valve and flame arrestors to prevent flashbacks and explosions. All valves shall be installed as per the manufacturer's instructions.
7. A torch shall be lit using proper igniters or strikers.
8. All lines, drums and tanks that have previously stored flammable or combustible materials shall be cleaned of flammable products prior to welding. As a precaution, use an inert gas such as nitrogen or carbon dioxide and fill with water to within the limits of area of the weld/cut and vent to atmosphere.
9. A competent person shall maintain a fire watch during and for at least 30 minutes after the process.

OXYACETYLENE WELDING & CUTTING

GENERAL: Oxyacetylene Welding & Cutting burns a mixture of gases – oxygen & acetylene – to generate heat for welding metals. Acetylene is a mixture of carbon and hydrogen. Its stored energy is released as heat when it burns. When burned with oxygen, acetylene can produce a higher flame temperature (3,300°C) than any other gas used commercially. The flammable range of Acetylene is 2.5% - 81% in air, which is greater than most commonly used gases.

1. Oxygen and acetylene pose the most common hazards of fire and explosion. Pure oxygen will not burn or explode but supports the combustion of other materials, causing them to burn much more rapidly than they would in air.
2. Do not accept or use any compressed gas cylinder, which does not have the proper identification or WHMIS labels.
3. All cylinders shall be transported in a secured upright position either on a handcart or service truck.
4. Do not hoist a cylinder using slings or magnets; use an approved cart or platform designed for cylinders.
5. Do not allow cylinders to strike anything or free fall to a level below.
6. Identify all empty cylinders with a chalk "MT".

STORING CYLINDERS:

1. All cylinders shall be stored in a secure, upright, dry, well-ventilated area that is identified specifically for this purpose.
2. No flammable or combustible materials such as oil and gasoline shall be stored in the same area.
3. Do not store the cylinders near walkways, stairwells, exits, or area where they may be damaged or knocked over.
4. Do not store oxygen cylinders within 20 feet of flammable or combustible gases unless separated by a partition that is 5 foot high with a fire-resistance rating of at least 1 hour.
5. Store empty and full cylinders separately.
6. No smoking.

USING CYLINDERS:

1. Use oxygen and acetylene cylinders that are secured in an upright position in an approved buggy equipped with a fire extinguisher.
2. The cylinder valve cap shall be in secure in place when a cylinder is not in use.
3. Do not force connections on cylinder threads that do not fit.
4. Open cylinders slowly; use the hand wheel, spindle key or supplier's wrench.
5. Always use a pressure reducing regulator with a compressed gas cylinder.
6. Prior to connecting a regulator to a cylinder, slightly crack the cylinder valve to remove any debris that may be lodged in the opening. Please ensure that the valve is not pointed in a direction of an individual or an open heat source (i.e. flame, sparks or welding operation).
7. Open the fuel gas cylinder valve not more than 1½ turns unless marked back-seated.
8. Do not use the acetylene cylinder if the pressure is greater than 15 psig.
9. Do not use oil or grease as a lubricant on the valve or attachments of oxygen cylinders. Do not handle with oily hands, gloves or clothing. The combination of oxygen with oil or grease is highly combustible.
10. Do not use oxygen cylinders in place of compressed air for pneumatic tools.
11. Release pressure from the regulator prior to removing from the cylinder valve.

12. When a gas runs out, extinguish the flame and connect the hose to the new cylinder. Purge the lines before re-igniting the torch.
13. When the work is finished, purge the regulators, and then turn them off. Use a proper handle or supplier's wrench to turn off the cylinders.

START UP:

1. Keep cylinders away from sources of heat or damage and secure them upright.
2. Stand to one side and slightly crack the cylinders valves to blow out dust.
3. Attach regulators to respective cylinders. Please use the proper wrench to tighten the nuts.
4. While releasing the pressure on the cylinder, use the adjusting screws on regulator.
5. Connect the green hose to the oxygen regulator and the red hose to the fuel gas regulator.
6. Connect the hoses to the torch – green to oxygen inlet and red to the fuel gas inlet.
7. Connect the mixer and welding tip assembly to torch handle.
8. Open oxygen cylinder slowly and fully.
9. Open the fuel gas cylinder $\frac{3}{4}$ to $1\frac{1}{2}$ turns.
10. Open oxygen torch valve. Turn oxygen regulator pressure adjusting screw to desired pressure. Continue oxygen purge for about ten seconds for each 100 feet of hose. Close the oxygen torch valve.
11. Open fuel gas torch valve. Turn fuel gas regulator pressure adjusting screw to desired pressure. Continue oxygen purge for about ten seconds for each 100 feet of hose. Close the fuel gas torch valve.
12. To light torch, follow the manufacturers' instructions – do not use matches.

CLOSE DOWN:

1. Close torches according to the manufacturers' instructions.
2. Close fuel gas cylinder valve then close the oxygen cylinder valve.
3. Drain fuel gas cylinder line by opening torch fuel gas valve briefly. Drain oxygen – same.
4. Re-open both torches.
5. Release pressure adjusting screws on both regulators.
6. Disconnect regulators and torches.

CADMUM WELDING HAZARDS

1. Cadmium is used frequently as a rust-preventive coating on steel and as an alloying element. Exposures to high levels of cadmium fumes can produce severe lung irritation, pulmonary edema and, in some cases, death. Long-term exposures to low levels can result in emphysema and can damage the kidneys.
2. Cadmium is listed by OSHA, NIOSH and EPA as a potential human carcinogen.
3. No worker shall weld, burn or grind any product or material that may contain cadmium unless a site specific SWP is in place and management has provided approval.

SECTION 65 – HOT WORK PERMIT

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any hot work activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate & review our basic principles of welding, cutting, and burning operations and the hot work permit required prior to performing any of these operations in the workplace and projects.

STANDARD: Welding, cutting, and other operations that produce open flame or sparks can cause fires in flammable or combustible materials. Accordingly, when such Hot Work operations are to be carried out in areas, other than those specifically designated for hot work, a supervision approved Hot Work Permit must be implemented to prevent fires by removing flammables and combustibles from the area. A fire watch system must also be in place during and following the Hot Work.

Definitions

Fire Watch - Personnel assigned to the task of observing the area in and around where Hot Work is or has recently been performed to detect and extinguish possible smouldering fires.

Hot Work - Work involving flame, spark producing or other heat sources such as welding, cutting, brazing, etc.

Hot Work Permit - Written form used to document authorization to conduct Hot Work.

General Guidelines

1. Any employee who is going to perform any type of hot work must obtain and complete a Hot Work Permit before any welding or cutting begins.
2. If Hot Work is to be performed in a confined space a Hot Work Permit is required in conjunction with a Confined Space Permit.
3. Trained Fire Watch personnel will be at the work site during all burning and welding jobs.
4. A screen or barrier must be provided to protect area personnel or members of the public from weld flash.
5. PPE such as welding helmet, welding gloves, respirators, and cutting goggles/glasses etc. must be provided to the welder and any assistants.
6. If engineering controls are not available, or are deemed not capable of preventing the breathing of hazardous fumes from welding, the use of respiratory protection is required.
7. Before work begins, personnel will ensure that all equipment, cables, connections, regulators, etc., are in good condition and grounded properly.
8. When using acetylene with normal burning or welding equipment, do not use a regulator setting above 15 psi.
9. All oxygen and acetylene hoses are to be equipped with reverse-flow check valves mounted at the regulator end and at the torch handle.

Pre-Work Preparation

1. All underground areas will be tested by LEL instrument for presence of flammable liquids, gases or vapours and oxygen enrichment prior to and during hot work. Other site areas where flammable liquids or gases are handled will be tested by LEL instrument prior to hot work. Any positive

- readings on the LEL meter will require additional evaluation and potentially additional clean up to remove the flammable material before hot work is approved. **No hot work above 5% of LEL.**
2. Portable fire extinguishers suitable to the conditions and hazards involved shall be provided and maintained in an effective operating condition as indicated on the inspection tag. They should be conspicuously located and mounted where they are readily accessible. Extinguishers shall not be obstructed or obscured from view.
 3. Welding and cutting operations will not be conducted in an area where there is an out of service sprinkler system unless specific alternative protection, e.g. hose lines laid and charged, etc., is in place. Additional Fire Watches are required.
 4. All combustibles should be moved at least 35 feet from the hot work site. If relocation is not practical, cover combustibles with fire resistant covers and use additional Fire Watches.
 5. If work is to be done on a machine, accumulated oil, dust and debris will be removed to reduce the hazard. Additional Fire Watches may be required.
 6. Floors are to be swept clean and combustible floors wet down or protected by metal sheets. If work is in an open field, precautions to prevent grass and brush fires must be taken such as wetting down the area or removing the grass and brush.
 7. Wall and floor openings within 35 feet, where sparks or molten metal could pass, will be plugged or covered with non-combustible material. Additional Fire Watches are required if some openings cannot be covered.

Fire Watch

1. The Fire Watch must remain alert and watch for sparks and/or slag to insure that they do not start a fire.
2. The Fire Watch must be in place during and at least 30 minutes after a cutting or welding operation to insure that the area remains fire safe.
3. A minimum of one Fire Watch shall be posted with a properly rated fire extinguisher within two feet of him/her and knowledge of location of nearest working water hose/station. If more than one level is susceptible to spark or slag debris, then more than one Fire Watch may be required. Fire Watch shall be familiar with procedures for sounding/location of an alarm in the event of a fire.
4. If welding and/or cutting is to be conducted in a confined space, a site specific safety plan detailing all safety procedures to be implement to assure the safety of all workers, and the public, around the job site.

Review of Hot Work Preparations and Approval of Hot Work Permit

1. The hot work permit is prepared by the Supervisor or his/her designee. The permit preparation must identify the work to be done and the equipment or area involved. It must highlight the preparations made to remove flammables and combustibles from the area, if applicable, and the provisions made for fire watch.
2. Using the Hot Work Permit as guidance, Supervision is responsible to review each area proposed for hot work to ensure that proper preparations for hot work have been made.
3. Once supervision has determined that preparations have been properly completed, supervision approves the hot work by signing the permit.
4. When the hot work is completed, the permit is closed out and kept on file at the site for the project duration or for one year, whichever is longer.

SECTION 66 – PROTRUDING REBAR

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to provide information & guidance on the basic principles when working with protruding rebar and the minimum requirements for set-up and safe use in the workplace.

STANDARD: The following information shall be used when working in the area of protruding rebar and any other similar protruding hazards that may be a cause for a protruding hazard.

Round, mushroom caps are designed ONLY to provide scratch protection. The small, standard ones do not provide protection against impalement on vertical protruding rebar. When met with force, the rebar usually just goes through the small, round caps. Use these only when there is no risk of impalement (i.e. not vertical exposed rebar).

To be effective for impalement protection, a round rebar cap should be at least 4 ½ inches in diameter. (California OSHA standard)

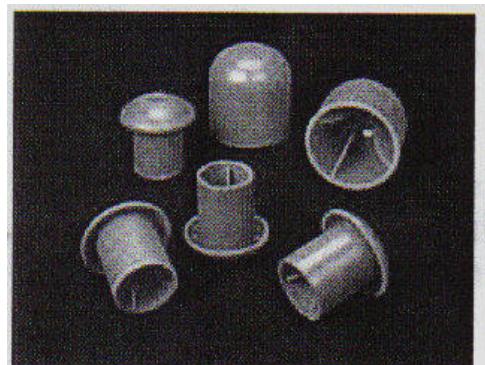
Preferable to the round mushroom caps, by far, are square rebar caps, which provide much better protection against impalement. It is noted that to be effective the square rebar caps must be at least 4 inches square in size. (California OSHA standard)

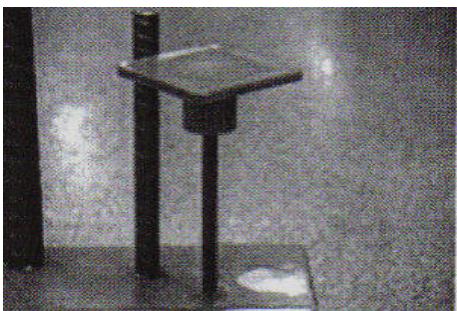
Preferred to any type of rebar caps is the practice of ‘candy caning’ the vertical rebar protrusions – where the exposed end of the rebar is bent downward in the shape of a candy cane.

One of the most common methods of ‘capping’ rebar is the use of wooden covers. Typically a piece of 2 x 4 is secured to the top of the rebar by either tie-wire or with a special clip. This method provides good protection against impalement but special care must be taken to ensure that the wooden cap is properly secured.

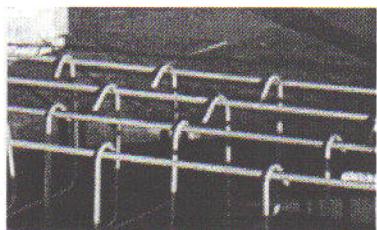
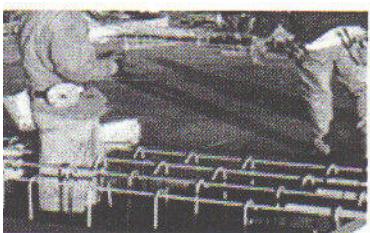
Properly capping rebar is important protection against both cuts and abrasions and the more serious potential for impalement if a worker falls on the exposed bar ends. However, the first and most important defence against injury caused by protruding rebar is fall protection (guardrails, etc.) if employees are working above the steel.

Standard, small mushroom caps do not protect against impalement. Round caps can only provide impalement protection if they are at least 4 ½ inches in diameter.





Square rebar caps are more effective than round ones for protection against impalement. They should be at least four inches square in size.



“Candy caning” is a preferred method of preventing injury from exposed reinforcing steel.

SECTION 67 – SUBCONTRACTOR MANAGEMENT PLAN

SCOPE: Every subcontractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate and review the steps and responsibilities required to ensure every subcontractor comply with our Health & Safety program and the applicable Provincial regulations.

STANDARD: New Alliance Ltd. management shall use this document as a guideline when confirming the selection of a subcontractor and their site-specific information. The following documentation requirements shall be submitted/collected and reviewed prior to awarding any work.

1. HSE statistics shall be obtained and analyzed to ensure that only safe subcontractors are hired. Obtain a copy of the subcontractor's workers compensation premium rate statement and compare their performance to others in their industry. Those who outperform the industry should be selected whenever practicable.
2. Subcontractors must ensure they obtain proof of WSIB coverage from their subcontractors. Subcontractors are not exempt from WSIB coverage.
3. Written Health, Safety, and Environmental programs and training documentation applicable to the type of work the subcontractor will perform shall be obtained and reviewed to assist with the hiring of safe subcontractors.
4. The Contractor/Subcontractor shall ensure that all work performed by their employees and/or the employees of their Subcontractor(s) meets the requirements of the Occupational Health & Safety Act and applicable regulations.
5. Specific duties, as outlined in the Act under Duties for Employers, Supervisors and Workers, shall be strictly adhered to by the contractor and any subcontractor(s) under contract to their firm, for the duration of their work on any New Alliance Ltd. property.
6. The Contractor/Subcontractor shall acknowledge receipt of the New Alliance Ltd. Safety, Health & Environmental Policy & Procedures, which shall be strictly adhered to at all times.
7. The Contractor/Subcontractor shall have a competent Supervisor available on site at all times to supervise the work of their employees and any subcontractor(s) under their control.
8. Subcontractors must be provided a site orientation that addresses health, safety, security, and/or environmental concerns.
9. NAL shall ensure that all of a Client's and NAL's H&S Program is communicated to the subcontractor.
10. Subcontractors must adhere to the requirements of the Drug and Alcohol policy of the Client and New Alliance Ltd. at all times while at the work site.
11. The Contractor/Subcontractor shall have a sufficient number of workers trained in Standard First Aid and these individuals, as required, shall be on site at all times. (Reg. 1101)

12. The Contractor/Subcontractor shall ensure that all workers, supervisors and project engineers have the required training in WHMIS, Fire Extinguisher, Fall Protection, Confined Space, Lockout & Tag, if required, and any other work specific training required by the Act.
13. In addition to the above, a successful Subcontractor shall make available upon request:
 - a) Health & Safety Policy Manual,
 - b) Ministry of Labour Form 1000,
 - c) MSDS,
 - d) Daily Hazard Assessment (Site Specific Safe Work Plan)
 - e) TDG Manifest, if required,
 - f) First Aid Certificate/Card,
 - g) Technical Qualifications Card – Crane Operators, if required,
 - h) Inspection records for equipment, as required.
 - i) Operating manuals for equipment & vehicles as required.
14. Subcontractors shall be responsible for performing a Daily Hazard Assessment prior to all work to be discussed in pre-job meetings and Toolbox talks.
15. All motorized equipment, powered tools and equipment to be used on site shall have all appropriate logbooks, manufacturers' instruction booklets and maintenance records including a record of training for those individuals qualified to operate their machine, tool, device or thing.
16. All incident/accidents shall be reported to a New Alliance Ltd. site supervisor & a member of the JH&SC and the Client immediately. The New Alliance Ltd. Accident Form shall be completed and submitted to the New Alliance Ltd. Manager within 24 hours of the Incident/accident. Failure to do so shall result in a full investigation at the Subcontractor's expense.
17. Copies of all written investigation reports and notice submissions to outside agencies, as they pertain to an accident on our property, **shall be submitted to the New Alliance Ltd. Manager and JH&SC at the same time it is submitted to the outside agency or the same day.** This shall ensure compliance to the required information standards.
18. The Contractor/Subcontractor shall take every precaution reasonable to protect all workers from injury and illness. All workers shall be trained in the proper use of any and all PPE to be used and worn. This shall include instruction on use, cleaning, and limitation of the equipment.
19. All personnel on site shall adhere to the New Alliance Ltd. site-specific safety plan. Where such a plan has been created jointly between the Contractor/Subcontractor and the New Alliance Ltd., which consist of safety policies that are in conflict, the New Alliance Ltd. policy shall be enforced.
20. Post job performance reviews shall be conducted for subcontractors. A combination of factors may be considered including, but not limited to, housekeeping, cost, active participation in safety meetings, and quality of work.

SECTION 68 – SAND & ABRASIVE BLASTING OPERATIONS

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any sand blasting operation or activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate & review our standards to ensure a safe working environment for our operations.

STANDARD: All operations shall be performed in a safe manner. Please refer to the following prior to beginning any sand or abrasive operation.

Sand blasting operations cannot be overlooked when preparing safety plans. Workers shall not be exposed to any of the known hazards when sand blasting operations are ongoing. Adequate protection is a must for every worker involved and around the operations.

Sandblasting equipment is used for the purpose of cleaning or preparing a variety of surfaces, using various types of abrasive materials. Workers who perform the sandblasting operation can be exposed to toxic materials, such as lead or zinc, while removing existing coatings from material surfaces.

Training shall be performed and provided as per the training standard located within the manual. The training for the workers, supervisors shall include the following as it relates to the Blasting Operations:

1. **WHMIS**, specifically the knowledge of the MSDS for the abrasive materials being used, the paint or other materials being removed from the equipment, tool or thing being worked on.
2. **Confined Space**, especially when an operator has to perform their operation in an area that is not made for continuous human occupancy, specifically inside some of the larger units.
3. **Personal Protective Equipment** shall include the standard PPE requirements along with the full body, foot, hands, skin & hearing protection. Respiratory protection, specifically the site specific supplied air system to be used during all sand blasting operations & the SCBA units that may be used for the rescue operations.
4. **Lockout & Tag**, for the unwanted exposure to any energy that is hazardous to the workers. This includes moving parts inside hoppers, static and routine electricity, built up pneumatic pressure in lines tools and equipment.
5. **Hoisting & rigging** for those individuals that are responsible for the material movement of the equipment, tools or thing being sand blasted.
6. **Emergency First Aid & Rescue** for any individual who is responsible for the emergency response for the workers located inside the sand blasting facility. Training shall Include every reasonable scenario that the workers may be asked to rescue in, including the equipment & tools that will be used for the retrieval of a worker inside a piece of equipment.
7. **Sand Blasting System**, every worker shall be familiar with the manufacturers' instructions to operate the system safely as required. This shall include the maintenance, service and inspection requirements as outlined in the manufacturer's operating manual.

Training is required for the following:

1. Every worker who is performing any task for the sandblasting operations including the individuals responsible for the emergency rescue.
2. Every worker who may be exposed to the hazards associated with the sandblasting operations.

3. Every supervisor or management member who is responsible for the safe use, maintenance, inspection and handling of any tool, equipment or task associated with the sandblasting operation.

As outlined in the training requirements of this section, every worker is required to be knowledgeable and aware of the known hazards that an employee may be exposed to during, before and after any sandblasting operations. Every worker is required to read and follow the requirements of the MSDS for the known hazardous materials for the sand blasting operations. Some of the obvious hazards of the operations are: Airborne dust, specifically Metal Dust, Confined Space, unwanted exposure to energy, respiratory hazards, visibility, irritation of the skin & noise levels.

Airborne dust is one of the most serious hazards associated with blasting operations. When evaluating this hazard, it's important to consider the concentration of dust and the size of particles. Larger particles, considered "nuisance" dust, are normally filtered out in the nose and throat. Smaller particles (10 microns or smaller) can bypass the lung's filtering system and penetrate deep into the respiratory system, where they may cause serious damage. Measures and procedures are required at all times for the sand blasting operations.

Metal dust in addition to the abrasive being used, contributes to the generation of airborne dust. Metals such as lead, cadmium, and manganese, can be extremely toxic when inhaled. Many existing paints have a lead base. Regulations require special handling, trained personnel, and medical monitoring when lead is present.

Lockout & Tag shall be used & complied with as per the standard found within this manual which is supported by the Provincial regulations. No maintenance shall be performed on any equipment a worker may be exposed to an unwanted energy. Every supervisor, worker and a supplier shall follow the manufacturers' instructions for all required maintenance and service.

Air supply - Air-supplied respirators must be used (1) when working inside the blast cleaning facility, (2) when using portable units in areas without enclosure, and (3) under any circumstances where the operator is not physically separated from the abrasive material by an exhausted enclosure. If airline respirators and compressors are used, make sure the intake hose is placed in an area that provides clean air. An attendant should be in the area at all times, monitoring breathing air and assuring the blaster's safety.

Supplied-air hood respirators (CSA approved, NIOSH approved) operated on continuous flow mode, or a self-contained breathing apparatus in pressure-demand mode, are required. Respiratory protection must meet the requirements of CSA Standard Z94.4 "Selection, Use and Care of Respirators." Refer to the PPE Standard located within this manual for more details. The air supplied to the approved respirator must be free from contaminants. If an oil-lubricated compressor is used, air shall be supplied in accordance with CSA Standard Z180.1 "Compressed Breathing Air" or in accordance with equally rigorous standards.

Handling and storing abrasives, dust is nearly always created at any point where abrasives are transferred, whether by hand or shovel. Therefore, all points of transfer must be properly exhausted and workers who handle abrasives manually should wear particulate filter respirators.

NIOSH-approved air lines and subassemblies must be used to deliver contaminant-free air to the user. NIOSH approvals are invalidated if an air line or subassembly has been replaced with any other

than the respirator manufacturers. Sandblast operators must wear an air-supplied hood that protects the head, neck and shoulders. This equipment must be inspected on a regular basis.

Noise, Sandblasting operations are noisy and where exposure to noise levels exceeds the recommended dBA levels employees shall comply with the requirements of the PPE Standard, specifically the Hearing Protection located within this manual.

Additional personal protective equipment for operators includes the use of long sleeved coveralls, protective gloves, aprons &/or leggings when appropriate, as well as the required CSA approved work boots.

Facility, the operations shall be carried out so that the abrasive materials and other particulate materials are contained, and pose no hazards to workers outside of the facility. Signs shall be posted to warn every worker of the known hazards of the sand blasting operation. "DANGER DUE TO....SAND BLASTING" & "DANGER KEEP OUT". The facility shall be inspected by a certified electrician to ensure no known energy sources can expose a worker to an electrical hazard. This includes the need for explosion proof lighting.

Maintenance & Inspection, the sandblast equipment shall be installed, maintained and used as per the manufacturers specifications at all times. This includes the ability for an emergency shut down. The operator must blow out all air lines and hoses. The entire sandblasting unit must be carefully examined for defects before any work commences. Sandblasting nozzles must be equipped with a remote control (dead-man) switch that allows the operator to control the sandblast at the nozzle. If an electrostatically conductive blast hose is not available, the blast nozzle must be grounded.

Confined Space, refer to the standard for Confined Space when the operations are conducted in an area that meets the definition for a confined space.

Supervisor for the fabrication shop, or designate, shall ensure that the following sand & abrasive blasting safe work measures and procedures are followed.

1. The facility designated for sand & abrasive blasting shall be continuously monitored for combustible gas prior to commencing operation and as required throughout.
2. Please ensure workers refer to the Confined Space & the Personal Protective Equipment standard prior to beginning a sand or abrasive operation.
3. Please ensure the MSDS is reference prior to beginning a sand or abrasive operation.
4. The compressor, hose, nozzle and operator must be properly grounded to prevent build-up of static electricity.
5. Ventilation requirements for the work area must be either natural or by mechanical measures.
6. The equipment operator must be able to stop the flow of material immediately, i.e., shut-off device located at nozzle.
7. If conducting abrasive blasting ensure that crystalline silica is replaced with a less harmful substance.
8. Minimize any release of dust (nuisance particulates, silica, lead, etc.).

9. Approved respiratory protection must be used to guard against inhalation of air borne contaminants. Refer to Respiratory Protection located in the Personal Protective Equipment Standard.
10. Safe handling requirements for sand blasting material, or material removed from surfaces must be addressed. Refer to the MSDS.
11. Approved personal protective equipment must be used to guard against injury to the operator. Refer to the Personal Protective Equipment standard.
12. That all personnel are properly trained in the safe use of the equipment

Employees shall:

1. Have experience be knowledgeable and trained as previously mentioned in this standard.
2. Be trained before attempting to do any work with or on any sandblasting equipment.
3. Employees shall follow the manufacturers' instructions for inspections, maintenance and use at all times for all sandblasting equipment, PPE and rescue equipment.
4. Always wear proper CSA approved head and face protection, long sleeve, jacket, pants, work shoes, and rubber gloves when using sandblaster.
5. Wear CSA approved respiratory protection at all times.
6. Any and all damaged or defective tools or equipment shall be removed and tagged "out of service".
7. Protect other people. Allow no one in blasting area unless they have complied with this standard.
8. Sand hitting metal can cause a spark. Never work near oily rags, gas tanks, or flammable liquids.
9. Never point sandblast stream at any person or part of body.
10. Always depressurize blaster and disconnect incoming air hose when sandblaster is unattended.
11. Check and tighten sand hose clamps and check other fittings for leaks and wear. Watch for loose or worn hose and fittings and replace as needed.
12. Do not operate sandblaster over the recommended PSI.
13. Prior to adding abrasive, fully pressurize the unit to check all hose and pipe fittings for tightness.
14. Check all valves and other components. Check for air leaks and tighten as necessary.
15. After reading the instruction and testing the unit without sand, you may then add sand and start to blasting.
16. Immediately contact the department supervisor:
 - a) For any task that is not supposed to happen.
 - b) For any damaged tool or equipment.
 - c) For any failure of a piece of equipment or tool.
 - d) For a deviation in this standard.
 - e) For entry into a potential confined space.
 - f) For any injury, illness or medical attention.
 - g) For any situation, task or condition that is not fully understood as per this standard.

SECTION 69 – PAINTING

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any painting operation or activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate & review our standards to ensure a safe working environment for our painting operations.

STANDARD: All operations shall be performed in a safe manner. Please refer to the following prior to beginning any painting operations by hand and air.

Training shall be performed and provided as per the training standard located within the manual. The training for the workers, supervisors shall include the following as it relates to the Painting Operations:

1. **WHMIS**, specifically the knowledge of the MSDS for the abrasive materials being used, the paint or other materials being used to prime the equipment, tool or thing being worked on.
2. **Confined Space**, especially when an operator has to perform their operation in an area that is not made for continuous human occupancy, specifically inside some of the larger units.
3. **Personal Protective Equipment** shall include the standard PPE requirements along with the full body, foot, hands & skin protection. Respiratory protection, specifically the full or half mask cartridge respirator system to be used during all painting or priming operations.
4. **Lockout & Tag**, for the unwanted exposure to any energy that is hazardous to the workers. This includes any service on any equipment that is powered with electricity, the built up or stored energy in the paint lines, tools or equipment.
5. **Hoisting & rigging** for those individuals that are responsible for the material movement of the equipment, tools or thing being painted.
6. **Emergency First Aid & Rescue** for any individual who is responsible for the emergency response for the workers located inside the paint facility. Training shall Include every reasonable scenario that the workers may be asked to rescue in, including the equipment & tools that will be used for the retrieval of a worker inside a piece of equipment.
7. **Paint System**, every worker shall be familiar with the manufacturers' instructions to operate the system safely as required. This shall include the maintenance, service and inspection requirements as outlined in the manufacturer's operating manual.

Training is required for the following:

1. Every worker who is performing any painting operation including the individuals responsible for the emergency rescue.
2. Every worker who may be exposed to the hazards associated with the painting operations.
3. Every supervisor or management member who is responsible for the safe use, maintenance, inspection and handling of any tool, equipment or task associated with the painting operation.

As outlined in the training requirements of this section, every worker is required to be knowledgeable and aware of the known hazards that an employee may be exposed to during, before and after any painting operation. Every worker is required to read and follow the requirements of the MSDS for the known hazardous materials for the painting operations. Some of the obvious hazards of the operations are: Respiratory hazards, Confined Space, Fire, Unwanted exposure to energy, Visibility and Irritation of the skin.

Hand Painting Operations:

1. All employees painting with brushes are required to wear the proper personal protective equipment. Refer to the PPE Standard, specifically the Respiratory Selection Guide located in this manual.
2. Proper precautions related to ladder or scaffold use must be followed. Refer to the Ladder and Scaffold Standard located in this manual.
3. All emergency response equipment shall be routinely inspected maintained and readily available prior to any painting operation. This includes Fire, Rescue, First Aid equipment & an Eye Wash Station.
4. Housekeeping shall be performed as required, at a minimum once daily.
5. Public barriers must be set up as per the public and visitor access procedure found in this manual.
6. Painter shall be familiar with and competent with the information provided in the MSDS for all materials being used.
7. Painter shall follow the information & instructions provided on the MSDS, specifically the PPE, storage, and safe uses of the materials.

Painting Operations using Compressed Air: Compressed air painting tools can be dangerous if not used as outlined by the manufacturer's specifications and instructions. When painting with the use of compressed air tools the following rules must be understood and complied with:

1. Refer to the safe measures and procedures located in the Hand Tools Standard located within this manual, specifically the Pneumatic Tools.
2. All employees painting with brushes are required to wear the proper personal protective equipment. Refer to the PPE Standard, specifically the Respiratory Selection Guide located in this manual.
3. Proper precautions related to ladder or scaffold use must be followed. Refer to the Ladder and Scaffold Standard located in this manual.
4. All emergency response equipment shall be routinely inspected maintained and readily available prior to any painting operation. This includes Fire, Rescue, First Aid equipment & an Eye Wash Station.
5. Housekeeping shall be performed as required, at a minimum once daily.
6. Public barriers must be set up as per the public and visitor access procedure found in this manual.
7. Painter shall be familiar with and competent with the information provided in the MSDS for all materials being used.
8. Painter shall follow the information & instructions provided on the MSDS, specifically the PPE, storage, and safe uses of the materials.
9. Never use compressed air to blow debris or to clear dirt from any worker's clothes.
10. Ensure that the air pressure has been turned off and the line pressure relieved before disconnecting the hose or changing tools.

11. Any hose that may whip when disconnected shall be attached to a rope or chain to prevent whipping.
12. DANGER DUE TO...Painting signs shall be posted warning others workers that the work area or facility hazardous and is a restricted access only.
13. Hoses shall be checked on a regular basis for cuts, bulges, or other damage. Ensure that defective hoses are repaired or replaced and all inspections are documented.
14. A proper pressure regulator and relief device shall be in the system to ensure that correct pressures be maintained.
15. The correct air supply hoses shall be used for the tool / equipment being used.
16. The equipment shall be properly maintained according to the manufacturer's requirements and maintenance shall be documented.
17. Follow the manufacturer's general instructions for use and maintenance and comply with legislated safety requirements.

Cleaning Brushes and Equipment with Solvents: Cleaning solvents are used in the day-to-day construction work to clean tools and equipment. Special care shall be taken to protect the worker and the environment from hazards that may be created from the use of these liquids. Wherever possible, solvents should be non-flammable and non-toxic.

The supervisor shall be aware of all solvents / flammables that are used on the job, and be sure that all workers who use these materials have been instructed in their proper use, and any hazard they pose. A MSDS on all cleaning solvents shall be readily accessible by all workers in contact with the chemical(s).

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

1. Use non-flammable solvents for general cleaning.
2. When flammable liquids are used, make sure that hot work is not permitted in the area.
3. Store flammables and solvents in approved and designated storage areas in well-marked containers as per the regulations.
4. Check toxic hazards of all solvents before use (read the MSDS).
5. Provide adequate ventilation in areas where solvents and flammables are being used.
6. Use goggles or face shields to protect the face and eyes from splashes or sprays.
7. Use rubber gloves to protect the hands.
8. Wear protective clothing to prevent contamination of worker's clothes and skin exposure.
9. When breathing hazards exist, use the appropriate, fitted respiratory protection.
10. Never leave solvents in open containers. Return them to storage drums or tanks.
11. Ensure that proper containers are used for transportation, storage and field use of solvents / flammables and are properly labelled.

12. Ensure all employees using WHMIS products, or in the vicinity of use or storage, are trained in the WHMIS and familiar with the specific MSDS for the products.
13. Ensure all the safe work measures and procedures provided on the MSDS are complied with.
14. Disposal of waste shall meet all applicable legislation and environmental requirements.

SECTION 70 – HEAT STRESS STANDARD

SCOPE: Operations, job tasks or activities performed under the direction of New Alliance Ltd. shall be guided by this heat stress standard as per the Occupational Health & Safety Act and the applicable regulations. This standard includes every employee, contractor, subcontractor, supplier, workplace and project.

PURPOSE: The purpose of this standard is to establish, communicate and promote some guiding principles for a safe working environment for our workplaces and projects as it relates to Heat Stress. Please be advised responsibilities associated with this standard are contained in the Occupational Health and Safety Act located at every safety board/box in the workplace or project.

DEFINITIONS:

Heat stroke: occurs when the body can no longer cool itself and body temperature rises to critical levels.

Heat exhaustion: occurs when the body can no longer keep blood flowing to supply vital organs and send blood to the skin to reduce body temperature at the same time.

Heat rash: also known as prickly heat – is the most common problem in hot work environments.

Heat Cramps: these are spasms in larger muscles – usually back, leg, and arm. Cramping creates hard painful lumps within the muscles.

Humidex: is a measure of discomfort based on the combined effect of excessive humidity and high temperature.

STANDARD: The management team of New Alliance Ltd. shall ensure that the following is implemented in every workplace or project where employees are working.

1. The management team shall review the standard annually to ensure it meets the Provincial standard for Heat Stress.
2. The project supervisor shall ensure that this standard is readily available for every worker at every H&S Communication board.
3. Ensure the employees are trained to review this standard to ensure the measures and procedures are understood & complied with.
4. The project supervisor shall monitor the working environment daily for heat stress conditions using the local Humidex readings from a recognized source or a Thermal Hygrometer.
5. Heat Stress measures and procedures shall be implemented when the Humidex reading is 28°C or more.
6. The project supervisor shall ensure this standard and any other heat stress related materials made available by the MOL or WSIB are made readily & reviewed in a site specific toolbox talk when the local daily Humidex is 28°C or more.
7. The supervisor shall ensure personnel trained in Standard First Aid, emergency measures and procedures are readily available in the event of an injury or illness from heat stress.

8. Supervisor shall ensure the workers are supervised to ensure the measures & procedures are being used as required. This includes the use of mechanical ventilations, scheduling of heavy work to cooler times of the day and ensuring that workers drink fluids as required.

EMPLOYEES shall ensure to:

1. Follow instructions and training for controlling heat stress.
2. Be alert to symptoms in yourself and others.
3. Get adequate rest and sleep.
4. Find out whether any prescription medications you're required to take can increase heat stress.
5. Drink small amounts of water regularly to maintain fluid levels and avoid dehydration.
6. Use a buddy system for all operations.
7. Notify a supervisor, IMMEDIATELY if a person appears symptomatic of Heat Stress.
8. Wear light, loose clothing that permits the evaporation of sweat.
9. Drink small amounts of water – 8 ounces (250 ml) every half hour or so. Do not wait until you are thirsty.
10. Avoid consumption of alcohol, illegal drugs, and excessive caffeine. Avoid beverages such as tea, coffee, or beer that make you pass urine more frequently.
11. Where personal PPE must be worn,
 - use the lightest weight clothing and respirators available
 - wear light-coloured garments that absorb less heat from the sun
 - use PPE that allows sweat to evaporate.
12. Avoid eating hot, heavy meals. They tend to increase internal body temperature by redirecting blood flow away from the skin to the digestive system.
13. Don't take salt tablets unless a physician prescribes them. Natural body salts lost through sweating are easily replaced by a normal diet.

GENERAL: The human body functions best within a narrow range of internal temperature. This "core" temperature varies from 36°C to 38°C. A worker performing heavy work in a hot environment builds up body heat. To get rid of excess heat and keep internal temperature below 38°C, the body uses two cooling mechanisms:

- 1) Heart rate increases to move blood and heat from heart, lungs, and other vital organs to the skin.
- 2) Sweating increases to help cool blood and body. Evaporation of sweat is the most important way the body gets rid of excess heat.

When the body's cooling mechanisms work well, core temperature drops or stabilizes at a safe level (around 37°C). But when too much sweat is lost through heavy labour or working under hot, humid conditions, the body doesn't have enough water left to cool itself. The result is dehydration. Core temperature rises above 38°C. A series of heat-related illnesses, or heat stress disorders, can then develop.

HEAT STRESS

	CAUSE	SYMPTOMS	TREATMENT	PREVENTION
HEAT RASH	Hot humid environment; plugged sweat glands.	Red bumpy rash with severe itching.	Change into clean dry clothes often & avoid hot work areas. Rinse skin with cool water.	Wash regularly to keep skin clean and dry.
HEAT CRAMPS	Heavy sweating from strenuous physical activity drains a person's body of fluid and salt, which can't be replaced just by drinking water. Cramps occur from salt imbalance resulting from failure to replace salt lost from heavy sweating.	Painful cramps in arms, legs or stomach which occur suddenly at work or later at home. Heat cramps are a warning of other more dangerous heat-induced illnesses.	Move to a cool area; loosen clothing, gently massage and stretch affected muscles and drink cool salted water (1/4 to 1/2 tsp. salt in 1 litre of water) or balanced commercial fluid electrolyte replacement beverage. If the cramps are severe or don't go away after salt and fluid replacement, seek medical aid. Salt tablets are not recommended.	Reduce activity levels and/or heat exposure. Drink fluids regularly. Workers should check on each other to help spot the symptoms that often precede heat stroke.
FAINTING	Fluid loss, inadequate water intake and standing still, resulting in decreased blood flow to brain. Can occur to new workers not acclimatized.	Sudden fainting after at least 2 hours of work; cool moist skin; weak pulse.	GET MEDICAL ATTENTION: assess for CPR. Move to a cool area; loosen clothing; make person lie down; and if the person is conscious offer sips of cool water. Fainting may also be due to other illnesses.	Reduce activity levels and/or heat exposure. Drink fluids regularly. Move around and avoid standing in one place for too long. Workers should check on each other to help spot the symptoms that often precede heat stroke.
HEAT EXHAUSTION	Fluid loss and inadequate salt and water intake causes a person's body's cooling system to start to break down.	Heavy sweating; cool moist skin; body temperature over 38°C; weak pulse; normal or low blood pressure; person is tired and weak, and has nausea and vomiting; is very thirsty or is panting or breathing rapidly; vision may be blurred.	GET MEDICAL ATTENTION: This condition can lead to heatstroke, which can kill. Move the person to a cool shaded area; loosen or remove excess clothing; provide cool water to drink; fan and spray with cool water. Do not leave affected person alone.	Reduce activity levels and/or heat exposure. Drink fluids regularly. Workers should check on each other to help spot the symptoms that often precede heat stroke.
HEAT STROKE	If a person's body has used to all its water and salt reserves, it will stop sweating. This can cause the body temperature to rise. Heat stroke may develop suddenly or may follow from heat exhaustion.	High temperature (+41°C) and any one of the following: the person is weak, confused, upset or acting strangely; has hot dry, red skin; a fast pulse; headache or dizziness. In later stages, a person may pass out and have convulsions.	CALL AMBULANCE. This condition can kill a person quickly. Remove excess clothing; fan and spray the person with cool water if the person is conscious.	Reduce activity levels and/or heat exposure. Drink fluids regularly. Workers should check on each other to help spot the symptoms that often precede heat stroke.

FACTORS OF HEAT STRESS - Factors that should be considered in assessing heat stress

Include:

1. Personal Risk
2. Environmental
3. Job

1. **Personal risk factors** – It is difficult to predict just who will be affected by heat stress and when, because individual susceptibility varies. There are, however, certain physical conditions that can reduce the body's natural ability to withstand high temperatures:

Weight – Workers who are overweight are less efficient at losing heat.

Poor physical condition – Being physically fit aids your ability to cope with the increased demands that heat places on your body.

Previous heat illnesses – Workers are more sensitive to heat if they have experienced a previous heat related illness.

Age – As the body ages, its sweat glands become less efficient. Workers over the age of 40 may therefore have trouble with hot environments. Acclimatization to the heat and physical fitness can offset some age related problems.

Heart Disease or High Blood Pressure – In order to pump blood to the skin and cool the body, the heart rate increases, this can cause stress on the heart.

Recent illness – Workers with recent illnesses involving diarrhea, vomiting, or fever have an increased risk of dehydration and heat stress because their bodies have lost salt and water.

Alcohol consumption – Alcohol consumption during the previous 24 hours leads to dehydration and increased risk of heat stress.

Medication – Certain drugs may cause heat intolerance by reducing sweating or increasing urination. People who work in a hot environment should consult their physician or pharmacist before taking medications.

Lack of acclimatization – When exposed to heat for a few days, the body will adapt and become more efficient. This process is called acclimatization; usually takes six to seven days. Benefits include a lower pulse rate and more stable blood pressure, more efficient sweating (causing better evaporative cooling) and improved ability to maintain normal body temperatures. Acclimatization may be lost in as little as three days away from work. Workers should be allowed to gradually re-acclimatize to work conditions.

2. **Environmental Factors** – Environmental factors such as ambient air temperature, air movement, and relative humidity can all affect an individual's response to heat. The body exchanges heat with its surroundings mainly through radiation and sweat evaporation. The rate of evaporation is influenced by humidity and air movement.

Radiant Heat - Radiation is the transfer of heat from hot objects through air to the body. Working around heat sources such as kilns or furnaces will increase heat stress. Additionally, working in direct sunlight can substantially increase heat stress. A worker is far more comfortable working at 24°C under cloudy skies than working at 24°C under sunny skies.

Humidity is the amount of moisture in the air. Heat loss by evaporation is hindered by high humidity but helped by low humidity. As humidity rises, sweat tends to evaporate less. As a result, body cooling decreases and body temperature increases.

Air Movement - Air movement affects the exchange of heat between the body and the environment. As long as the air temperature is less than the worker's skin temperature, increasing air speed can help workers stay cooler by increasing both the rate of evaporation and the heat exchange between the skin surface and the surrounding air.

3. Job factors

Clothing and Personal Protective Equipment (PPE) - Heat stress can be caused or aggravated by wearing PPE such as fire or chemical retardant clothing. Coated and non-woven materials used in protective garments block the evaporation of sweat and can lead to substantial heat stress. The more clothing worn or the heavier the clothing, the longer it takes evaporation to cool the skin. Remember too that darker-coloured clothing absorbs more radiant heat than lighter-coloured clothing.

Workload - The body generates more heat during heavy physical work. Heavy physical work requires careful evaluation even at temperatures as low as 23°C to prevent heat disorders. This is especially true for workers who are not acclimatized to the heat.

Heat stress reference chart

		RELATIVE HUMIDITY (%)																				
		100%	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%		
TEMPERATURE (°C)		49																		50	49	
		48																		49	48	
47																				50	47	47
		46																		49	46	46
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		28	48	47	46	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28
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		26	46	45	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26
25																				50	48	32
		24	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
23																				50	48	31
		22	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24
21																				50	48	30
		20	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23
		100%	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%		

HEAT STRESS HUMIDEX GUIDE		
Humidex 1	Required Response & Communication	Humidex 2
Moderate unacclimatized & heavy acclimatized work	Site Supervisor shall ensure the following measures and procedures are in place.	Light unacclimatized work (sitting/standing light arm work)
30 – 37	Low <ul style="list-style-type: none"> Alert workers to potential for heat stress. Ensure access to water. 	34 – 41
38 – 39	Medium <ul style="list-style-type: none"> Reduce physical activity (e.g., slower pace, increase breaks). Ensure mechanical ventilation. Perform heavy work at cooler times of day. Drink a cup of water every 20-30 minutes. 	42 – 43
44 – 45	Moderate <ul style="list-style-type: none"> Reduce physical activity further. Perform heavy work at cooler times of day. Ensure mechanical ventilation. Drink a cup of water every 15-20 minutes. 	40 – 42
43 – 44	High <ul style="list-style-type: none"> Ensure sufficient rest and recovery time. Perform heavy work at cooler times of day. Severely curtail physical activity. Drink a cup of water every 10-15 minutes. 	46 – 48
45 +	Extreme <ul style="list-style-type: none"> It is hazardous to continue physical activity. Perform heavy work at cooler times of day. Minimal manual labour. Increase use of mechanical methods for moderate to heavy work. Ensure mechanical ventilation 	49 +

SECTION 71 – PORTABLE DENSITY GAUGE

SCOPE: This document is to be used as a reference to supplement the Canadian Nuclear Safety Commission (CNSC) and the Nuclear Safety and Control Act, its Regulations and others such as the Transportation of Dangerous Goods (TDG) Act and Regulations.

PURPOSE: The purpose of this standard is to establish, communicate and promote some guiding principles for the use of a Portable Density Gauge.

GENERAL QUESTIONS:

What is a PNDG used for on a job site?

- Quality Control technicians use a PNDG to determine compaction of granular, soil and asphalt materials.

What does a PNDG look like?

- Although there are a few different models in use by many companies, subcontractors usually arrive with the Troxler PNDG. Most PNDG look quite similar and vary in size. The following picture shows what the BCG PNDG look like.



What about radiation?

- The PNDG uses two sources of radiation to perform testing. The nuclides used are Cesium-137 (Cs-137) and Americium-241 Beryllium (Am-241:BE)
- Cs-137 is produced by nuclear fission for use in gauges. The source is enclosed in a lead container within the gauge. If the lead containers of Cs-137 are opened, the substance inside looks like a white powder and may glow. The sources in these devices are designed to remain sealed and keep people from being exposed; however, if these canisters are intentionally or accidentally opened, the Cs-137 inside could be dispersed.
- Am-241:BE. Am-241 is a crystalline metal that is solid under normal conditions. It is combined with beryllium to produce neutrons. The Am-241 is a manmade metal this is produced from plutonium. It is inside a metal cylinder within the gauge. Am-241 is a silver-white metal that is solid under normal conditions.

Am I safe working around a PNDG?

- Only authorized workers who have been properly trained by a Radiation Safety Officer (RSO), or a company designated by the RSO, and who carry a current TDG certificate including CNSC requirements are permitted to use and/or transport the PNDG. Technicians wear a dosimeter badge that measures any exposure to the radiation. Health Canada monitors the radiation exposure of the authorized workers through a Dosimetry service.
- The radiation exposure from a PNDG decreases with distance. Therefore, if you don't need to be in the immediate vicinity (within 9m) of a worker performing PNDG tests, then don't be there. Background radiation is everywhere as a result of radios, TVs, cell-phones, computers, watches and so much more. We are all exposed to background radiation every day. Working safely on site with a PNDG **does not** put you at any greater risk of exposure.

How come BCG can have this material?

- The Canadian Nuclear Safety Commission (CNSC) issues the Nuclear Substances and Radiation Devices Licence. A subcontractor must have a licence pursuant to Section 24 of the Nuclear Safety and Control Act. This licence permits the subcontractor to possess, transfer, import, export, use and store the PNDG.

"Responding to Accidents Involving Portable Gauges" is included with this document and is to be posted at any site where a PNDG is located or will be located.

Radioactive Material can be a dangerous material if not treated with respect. Help avoid an accident by being aware of your surroundings. Don't take chances.

POLICY: As a requirement of the Portable Density Gauge Licence, any worker that has authorization to use the gauge must meet the above Acts and Regulations.

ALARA (as low as reasonably achievable) is one of the main goals for the radiation protection program. In order to achieve compliance with all of the above, the following requirements must be met at all times without exception.

POSTING OF SIGNS, STORAGE, TRANSPORTATION, MAINTENANCE and DOSIMETRY BADGES

POSTING OF SIGNS AT STORAGE AREAS

- Every licensee who stores a nuclear substance shall post and keep posted, in a readily visible location at the place or on the vehicle where the nuclear substance is stored, a legible sign that indicates the name or job title and the telephone number of a person who can initiate the accident procedure referred to in the licence that has been issued in respect of the nuclear substance and who can be contacted 24 hours a day.
- Every licensee shall post a copy of the licence in a conspicuous place at the site of the licensed activity. This includes the storage location of the gauges.

POSTING OF SIGNS AT BOUNDARIES AND POINTS OF ACCESS and USE OF RADIATION WARNING SYMBOL

- Every licensee shall post and keep posted, at the boundary of and at every point of access to an area, room, enclosure or vehicle (*see note below), a durable and legible sign that bears the radiation warning symbol (trefoil) and the words warning for radiation, with one blade pointed downward and centered on the axis.

- *Note: Transport Canada **does not require** placards on the vehicle. Therefore, no sign is required on the outside of a vehicle. Also, CNSC does not require a sign on the vehicle.
- **However**, as part of the Radiation Safety Program, it is required that every vehicle transporting a gauge will have a trefoil radiation sign kept on the front passenger seat of the vehicle only when being transported.

FRIVOLOUS POSTING OF SIGNS

- No person shall post or keep posted a sign that indicates the presence of radiation, a nuclear substance or prescribed equipment at a place where the radiation, nuclear substance or prescribed equipment indicated on the sign is not present. (Therefore, all signs for vehicles are to be kept with the gauges in storage and used only when transporting a gauge.)

OBLIGATIONS OF LICENSEES—STORAGE/SECURITY

The licensee shall ensure that when in storage radioactive nuclear substances or radiation devices are accessible only to persons authorized by the licensee.

- Every licensee who possesses uses or produces an exposure device shall lock the exposure device and keep it locked when it is not being used.
- To meet the above obligations all gauges are to have a locked handle and locked yellow Type A case when not in use. This includes transportation on site.
- Gauges are to be securely locked in the tool box kept within the Type C container which is to be kept locked at all times.

TRANSPORTATION

- Every person who transports radioactive material shall act in accordance with the requirements of the Transportation of Dangerous Goods Regulations.
- Every person who transports radioactive material must have a copy of their valid TDG training certificate on them. (Workers not trained under TDG can handle and transport the gauges as long as they are doing so under the direct supervision of a BCG Radiation Safety trained person holding a TDG certificate).
- When transporting a gauge, the gauge is to be properly secured in the vehicle as far away from the occupant as possible within the locked Type A case. The gauge must be secured at all times when the vehicle is in motion, including while driving on site. The use of tie-down straps or another secure manner for tie-down of the gauge case is **mandatory**.
- A record of dates on which and the locations where the gauge is operated is to be kept up-to-date daily at the storage location according to the serial number of the gauge. This is a CNSC regulatory requirement as per Exposure Devices.
- The gauge is to be transported with the appropriate shipping document, transportation log, copy of the current CNSC licence, emergency procedures, leak test certificates, Type A Package certificate and Special Form Certificates for the cesium and americium/beryllium sealed sources. *The package of information supplied by the RSO and kept inside each gauge provides this information. It is the worker's responsibility to make sure the package is complete every time the gauge is logged out for use. Any missing information is to be reported to the RSO immediately.

- **The shipping document and transportation log must be kept in the cab of the vehicle with the driver, in a visible location, when transporting the gauge.** At the end of the worker's shift it is to remain with the gauge in the documentation package.

MAINTENANCE

- Gauges, gauge equipment and the yellow Type A containers are to be kept free of debris. A cloth should be used to wipe down the bottom of the gauges, particularly after granular compaction. This helps to eliminate excess moisture in the case that can result in damage to the internal controls of the gauge.

DOSIMETRY BADGES

- A licensee shall ascertain the magnitude of exposure to radon progeny and the effective dose and equivalent dose by direct measurement as a result of monitoring.
- The worker's Dosimetry badge is to be worn on the trunk of their body every time the gauge is used. It is to be kept away from direct ultraviolet light sources (dash/sun visor of vehicle, office lights, etc.) and any other unnecessary sources of radiation (near gauges, microwave sources, etc.)
- Dosimetry Badges are to be protected from damage, including puncture damage and stored in a safe reliable area so they are not lost. Any fees for lost badges will be collected from the worker.
- Any damage to the Dosimetry badge is to be reported immediately to the RSO.

OBLIGATIONS OF WORKERS

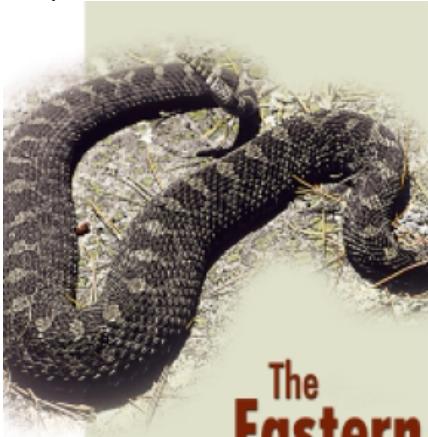
- Every worker shall comply with the measures established by the licensee to protect the environment and the health and safety of persons, maintain security, control the levels and doses of radiation, and control releases of radioactive nuclear substances and hazardous substances into the environment.
- Every worker is responsible for ensuring all of the above stated requirements are being met at all times. Therefore, it is mandatory that every worker shall perform a check of the storage area, gauge case, gauge and equipment, and all required materials for the gauge including tie-down straps at the beginning and end of every shift when a gauge is being used.
- Damage of the Type A case, gauge and any required equipment is to be reported immediately to the RSO. That includes all equipment from signs to storage locks, and everything required to meet the statements of this training guide. At no time shall any replacement of equipment take place without the RSO being informed.
- Workers will not carry the gauge by the rod that penetrates through the gauge radiation source. This rod comes in direct contact with the radiation source.

FAILURE TO COMPLY

- Any worker, who does not comply with this guide and its statements, will be subject to discipline as set out with the Progressive Disciplinary Action Plan. A blatant disregard of the rules & applicable regulations shall be deemed as a Zero Tolerance Disciplinary Policy.
- **Please direct all concerns or questions to Radiation Safety Officer (RSO) at the main office.**

SECTION 72 – NATURAL RESOURCES (Snakes & Bears)

STANDARD: This information has been provided by the Ministry of Natural Resources and shall be used to assess all possible hazards and safe work procedures for workers, visitors who may be exposed to either an Eastern Massasauga Rattlesnake or a Bear while employed at a NAL Project or workplace.



The Eastern Massasauga Rattlesnake

Ontario's only venomous snake, the Eastern Massasauga Rattlesnake is a unique and fascinating reptile. Many people will never get to see a massasauga because of the snake's behaviour. They are non-aggressive and will avoid people. They rely on their colouration and remaining still to stay hidden. The rattle may be used as a warning if someone moves too close.

... A Threatened Species

The Eastern Massasauga Rattlesnake once had a much wider distribution in Southern Ontario than it does today. Persecution, habitat fragmentation and loss have resulted in their decline. This threatened species is protected by both Provincial and Federal legislation. Massasauga rattlesnakes are a unique component of Ontario's natural heritage. By being aware of your surroundings and following some precautions, you can safely share habitat with the Eastern Massasauga Rattlesnake.

Identifying Ontario's Eastern Massasauga Rattlesnake

Learn to identify Ontario snakes, and to distinguish the Eastern Massasauga Rattlesnake from other snakes. Teach your children and visitors how to identify the massasauga. Ask children to tell an adult if they see a snake. The message is not meant to scare them, but to make them aware.



What To Look For

Colour

Brownish grey to dark grey background with dark saddle-shaped blotches on the back with several rows of alternating blotches on the side. Blotches are edged in white. Belly is dark.

Shape

Heavy-bodied snake. Head is diamond shaped with white stripes along jaw. Neck is narrow in contrast to wide head and body. Stubby tail has a brown, segmented rattle.

Eyes

Vertical (cat-like) pupils. Heat sensitive pits are located between eye and nostril. If you can see this you are probably too close! Try using binoculars to see these features.

Length 47 - 76 cm

www.massasauga.ca

Snake Safety Tips

DO NOT

pick up snakes or other wild animals.

DO NOT

harass, chase, or threaten a snake.



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THE ONTARIO TRILLIUM FOUNDATION
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Association


TorontoZoo



Parks
Canada

Parcs
Canada

1. Wear protective footwear (such as hiking boots that cover the ankle) and long, loose fitting pants, especially when hiking at night or in open rocky areas, through brush or long grass.

2. Use a flashlight when traveling at night.

3. Always watch where you are putting your feet and hands. Poke around gently with a stick before reaching into brush, under rocks, or into dark places where snakes may be hiding.

4. Keep pets on leashes; curious pets are more likely to encounter a snake than people.

5. If you hear a rattlesnake, STAY CALM! Stop walking, and then determine the snake's location. Slowly move away from the snake and give it room to also move away. Enjoy the unique encounter but observe it from a distance and try not to disturb the snake.

If a Snakebite Does Occur

1. Do not panic. Remain calm. Remember that the person may have been bitten but no venom injected.
2. Call emergency services to request transportation to the hospital. If possible, carry the patient or assist them in reducing activity. Ensure they are laying down while waiting for transportation. Remaining calm and inactive will slow the circulation of venom through the body.
3. Wash and cleanse the wound.
4. Remove any jewellery from the bitten limb in case of swelling.
5. Loosely splint the limb to reduce movement.
6. Always seek medical attention.

Never apply a tourniquet, ice, cut the bite area or apply suction. Never try to catch or kill the snake; this is unnecessary, dangerous, and illegal due to its protected status.

PLEASE TAKE NOTE!

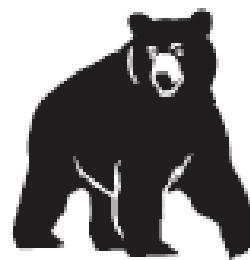
The massasauga rattlesnake's striking distance is limited to 1/2 its body length. The fangs and venom glands of the Eastern Massasauga Rattlesnake are quite small. The fangs are not likely to penetrate leather-hiking boots or loose clothing. If a rattlesnake does bite, there is a 25% chance that no venom is injected. In many other instances, only a small quantity of venom may be injected.

Keep the danger of snakebite in perspective. There have only been two fatalities in Ontario linked to snakebite. These fatalities occurred over 40 years ago, and in both cases, neither person received appropriate medical attention.

For more information: www.massasauga.ca

BEARS BASICS

- Bears are not like you see on TV; they are smart, curious, powerful and dangerous animals that must be respected.
- Adult males can weigh between 120 – 270 kilograms (250 – 600 lbs.).
- Adult females can weigh between 45 – 180 kilograms (100 – 400 lbs.).
- In Ontario, bears live in forests from Lake Ontario in the south to Hudson Bay to the north.
- Bears feed from middle of April to late fall and will travel 100 km for food feeding on plants animals and human foods from garbage.



IF YOU ECOUNTER A BEAR

- In an emergency, call your local police or 911. MNR Bear Hotline: 1– 866 – 514 – 2327.
- If you spot a bear, stay calm. Often the bear is simply passing through. Call your supervisor immediately.
- If the bear is not paying attention to you, slowly and quietly back away while watching the bear to make sure it isn't following you. When bears are caught off guard, they are stressed, and usually just want to flee.
- Do not approach the bear to get a better look.
- If the bear obviously knows you are there, raise your arms to let the bear know you are a human. Make yourself look as big as possible. Speak in a firm but non-threatening voice while looking at the bear and backing away.
- Watch the bear to gauge its reaction to you. Generally, the noisier the bear is, the less dangerous it is, providing you don't approach the bear. If a bear huffs, pops its jaws or stomps its paws on the ground, it wants you back away and give it space.

- If a Bear closely approaches you, drop any food you are carrying and continue to back up. Make your way towards a vehicle or building and get inside until the bear leaves.
- If the Bear continues to try to approach and you are unable to get inside a vehicle or building, stand your ground and be aggressive – use your whistle or air horn, yell, stand tall, wave your arms and throw objects.
- If a bear keeps advancing and is getting close, continue to stand your ground. Use your bear pepper spray and anything else to threaten or distract the bear – bears will often first test to see if it is safe to approach you.
- Do not play dead except in the rare instance where you are sure the mother bear is attacking you in defense of her cubs.
- Do not run or climb a tree. Bears can run faster and climb better.
- If a bear makes contact, fight back with everything you have.
- Once the bear leaves, assess the work area for other possible bears and attractants such as food, garbage, dirty barbecue, etc. Remove any attractant, this includes fruit or berries from the trees.
- To help avoid bear encounters please ensure the following:
 1. Avoid stock piling garbage on site.
 2. Use bear-resistant containers whenever possible and secure the lids at all times.
 3. Lock dumpster lids every night and use containers that are self locking.
 4. Empty garbage containers frequently.
 5. Clean the garbage containers frequently and thoroughly.
 6. Review this policy with all employees and visitors. Ensure no one leaves scraps or garbage on the ground.

SECTION 73 – DISMANTLING / REMOVING STRUCTURES

SCOPE: Every employee, contractor, supplier, workplace and project shall be under this standard as per the Occupational Health & Safety Act and applicable regulations during any painting operation or activity performed under the direction of New Alliance Ltd.

PURPOSE: The purpose of this standard is to establish, communicate & review our standards to ensure a safe working environment when dismantling/removing a structure or materials.

STANDARD: New Alliance Ltd. is not in the demolition business, but on occasion a structure, foundation or wall does need to be removed in order to continue with the installation process. Please refer to the following prior to beginning any operation that includes the dismantling/removal of a structure, building or a material or component of the structure or building.

1. Project Manager shall contact a NAL executive member whenever a structure, building, wall, foundation requires removal or dismantling.
2. Supervisor shall ensure that a Hazard Assessment is performed and approved by the Project Manager, Executive Member and a member of the JH&SC.
3. Supervisor shall perform a meeting to discuss the Hazard Assessment, specifically the hazards and resolutions for the safe dismantling or removal operation.
4. NAL H&S Manual shall be referenced, specifically Fall Protection, LOTO, Confined Space, PPE, housekeeping, Hand Tools, WHMIS & Traffic Control.
5. Every precaution shall be taken to prevent injury to a person on or near the project or the adjoining property that may result from the dismantling, removal or moving of a building or structure. All operations shall be performed in a safe manner.
6. Rubbish, debris, and other materials from the dismantling or removal operations on a project may be permitted to fall or may be dropped into an enclosed designated area to which people do not have access.
7. Barricades and barrier control devices and / or fencing shall be used to protect workers from falling materials.
8. Danger Due To....signs shall be posted at various locations to warn workers of the operations.
9. Every harmful substance shall be removed and every utility disconnected before any operations begin.
10. All gas, electrical, and other services that may endanger a person or worker who may have access to a building or structure shall be shut off and disconnected before, and shall remain shut off and disconnected during the dismantling and/or removal of the structure, building or component. All toxic, flammable, or explosive substances shall be removed.
11. No exterior wall of a building or structure shall be removed or dismantled until all glass is removed from windows, doors, interior partitions, and components containing glass or is protected to prevent the glass from breaking during the process.