Safe Work Practice Table of Content

1. First Aid

Equipment Requirement

- First aid equipment supplies and first aid attendants that meet or exceed regulatory requirements.
- Schedule 2: Table 6 or 7
    - Lab/Office Medium Hazard Work: 2-9 workers: 1 Emergency First Aider & No 1 First Aid kit.
    - Field work High Hazard Work:
        - 2- 4: 1 emergency first Aider, No1 first Aid kit
        - 5-9: 1 emergency first Aider, 1 Standard First Aider, No2 first Aid kit
        - 10-19: 1 emergency first Aider, 1 Standard First Aider, No2 first Aid kit, 3 blankets

Work Practice

Lab and Office:

- First Aid Equipment and Supplies will be stored in the lab entrance to the main building and in the main building First floor copy room will be drawn closer to the Kitchen. This will include at minimum a Level One first aid kit. AED is location in front reception area

Shop Location and Manufacturing Locations

- First aid Equipment and supplies are located in the shipping receiving areas.

Site Locations

- First Aid equipment is located with all vehicles on site and alternative locations must be outlined within the daily site hazard assessment.
    1. Employees will receive training in first aid and they will be available to attend to all injured or ill workers.
    2. When a first aid attendant is needed, they will respond immediately and will have complete authority over the treatment of the injured worker until a higher level of trainer takes over. Injuries are to be reported to the Safety Advisor immediately.
    3. The first aid attendant must record all treatments rendered and injuries reported in a *First Aid Report form*
    4. The first aid attendant will notify the office to arrange for transportation of the injured worker. Depending on the nature of the injury it could include; company vehicle or provincial ambulance. Access to the site will depend on where the injured patient is located. If the injury allows the worker to be moved to the office, this is where the injured worker will be transported from. If the injuries do not allow moving of the injured worker, then the provincial ambulance should be directed to the incident site.

2. Fire and Use of Fire Extinguishers

General:

Good Housekeeping is essential in the prevention of fires. Fires can start anywhere and at any time. Therefore, it is important to know which fire extinguisher to use and how to use it.

Always keep fire extinguishers visible and easy to get at. Fire extinguishers must be properly maintained to do the job. Where temperatures are a factor, ensure that care is taken in selecting the right extinguisher.

NOTE: The Company has equipped their vehicles, equipment and facilities with ABC fire extinguishers.

Types of Fires

Class A: These fires consist of wood, paper, rags, rubbish and other ordinary combustible materials.

- Recommended Extinguishers
    a. Water from a hose, pump type water can, or pressurized extinguisher, and soda acid extinguishers.
- Fighting the Fire
    a. Soak the fire completely – even the smoking embers.

Class B: Flammable liquids. Oil and grease

- Recommended Extinguishers
    - ABC units, dry chemical, foam and carbon dioxide extinguishers.
- Fighting the Fire
    - Start at the base of the fire and use a swinging motion from left to right, always keeping the fire in front of you.

Class C: Electrical equipment

- Recommended Extinguishers
    - Carbon dioxide and dry chemical (ABC units) extinguishers.
- Fighting the Fire
    - Use short bursts on the fire. When the electrical current is shut off on a Class C fire, it can become a Class A fire if the materials around the electrical fire are ignited.

3. Housekeeping

General:

Housekeeping is the number one problem on work sites. Many incidents and near misses occur resulting from poor housekeeping. Efficiency and morale at the worksite is greatly improved if a positive attitude and proper care is taken towards housekeeping.

Housekeeping is not just cleaning up the garage and building materials. Good housekeeping provides a sound basis on which to strengthen overall safety practices at all our work locations.

Take the initiative and start-off on the right foot. Good Housekeeping reduces the chances of slips, trips and more serious incidents. We all can show we care by setting a good example and watching out for poor housekeeping. It can save a lot of time and money if good housekeeping is done on an ongoing basis. (Cleanup 'as you go').

Examples of poor housekeeping are numerous:

- Tools not properly stored are more easily damaged
- Time is wasted cleaning up or looking for items lost in the mess
- Garbage areas attract rodents, insects and can create health hazards with high levels of bacteria
- Emergency exits and access to fire extinguishers can be blocked
- Sharp objects, wires, greases, scrap materials and lumber with protruding nails are among the typical workplace hazards
- Fire safety is reduced with improper storage of material

Housekeeping the Right Way

Housekeeping done poorly is done wrong. Do it right the first time and get help when needed. There are many things we can do to make housekeeping easier and the jobsite safer:

- Set a special time for general cleanup
- Do it at the same time every day – probably at the end of the shift in most cases
- Immediately clean up situations that pose a hazard – things like oil spills, water, sharp objects and grease
- Always "clean as you go". Hazards will be reduced and major cleanups avoided. Keep your area free from tripping hazards
- Talk to the other workers and departments – have everyone take responsibility for their part of the housekeeping – there can be safety in numbers!
- Storage procedures are crucial. The expression "a place for everything and everything in its place" really works
- Never continue to work where housekeeping has become a hazard – a tragic incident is almost certain

Ensure someone is responsible for regular housekeeping inspections and has the authority to order a cleanup and a cleaning routine.

4. Material Handling & Storage

General:

Canadian Road Builder Inc. handles many types of materials: totes, bags, pails, drums are to name a few. Every material handling is different; each part of the construction industry must take care to ensure practices are in place when handling various materials.

All employees have a role to play in handling and storing of materials. Good housekeeping, proper lifting, loading procedures, and proper packaging are all important. Employees should always check for dangerous goods or any other hazards that may be part of the handling and/or storage of materials.

Pallets

Use of pallets for loading and handling materials is extensive throughout the company. Be sure the pallets are in good condition. Cross piling and other safe loading techniques are required. Tie and secure any unstable loads and repack if necessary.

Planning Each Move

Materials should be moved only when necessary. When you plan to; move, ship or receive materials, consider all parts of the operation:

- How will it be transported?
- Are the workers experienced enough?
- Do you have enough workers to do the job right?
- Is the vehicle operator skilled enough for the job at hand?
- Are the packages or load sizes appropriate?

Materials Handling Equipment

When you think about how to handle materials or place them in storage properly, think about equipment that can assist you. Wherever possible use:

- Trucks
- Forklifts
- Dollies

Save your back and increase job efficiency by using the right tool for the right job. When manual assistance is required at any stage in the job, ensure that there are enough workers to share the workload.

Stacking and Storage

Proper stacking and storage are an essential part of material handling and good housekeeping no matter what kind of worksite you are at. When storing or stacking materials, check:

- Do stacks restrict access?
- Do they interfere with visibility?
- Are they stable and secure?
- Are they too high – so they pose a danger of toppling over?
- Is there a danger of contact with power lines?
- Will single packages or items in a pile drop from up high if bumped at a lower level?
- Barrels and bags – have removal of any items created instability?
- Is there safe working space for workers, pallet jacks, forklifts or trucks?
- Is there any fire risk? Keep flammables away from potential ignition sources.

The use of wall brackets, shelving and other storage systems in order to put materials at the right height. This will reduce bending, stretching or twisting. Ensure that the storage system is strong enough for the material being stored.

In Transport

Employees transporting dangerous goods are required to have on their person the TDG certificate, verifying they have completed the required training.

Many incidents and mishaps occur during transportation of materials. Check:

- Is the speed limit being observed?
- Is the load balanced and loaded properly?
- Is the vehicle being used for its designed purpose?
- Has the load been properly secured?

On arrival check for any spillage or leakage. Before transporting, see that hazardous materials are properly labeled. A Safety Data Sheet should be readily available.

5. Chemical Safety

Every chemical should be treated as though it were dangerous

- Workers must receive training in the safe use, handling, disposal and cleanup of hazardous chemicals and products.
- Ensure that the Safety Data Sheets (SDS) for the materials you work with are readily accessible.
- Use the personal protective equipment (e.g. gloves, goggles, dust mask, etc.) as recommended in the SDS.
- Ensure that all containers of controlled products are properly labeled according to the Workplace Hazardous Materials Information System
- Replace defaced or accidentally removed supplier or workplace labels.
- Ensure that portable containers are properly labeled with a workplace label when a controlled product is decanted from the supplier's original container.
- Store chemicals and products in a designated area.
- Close caps and lids tightly before storing any container.
- When storing chemicals side by side make sure they are compatible and will not react to produce a hazardous chemical reaction.
- Store only the products you require and quantities you need.
- Know how to handle emergencies (e.g. fire, spill, personal injury, etc.) and the appropriate first aid measures (i.e. for eye contact, skin contact, ingestion, inhalation, etc.)
- Know where the closest eye/face wash station and/or washrooms are located, and how to use them.
- Be aware of the potential hazards (e.g. fire/explosion, health, chemical reactivity, etc.) for the materials you work with.
- Practice good housekeeping, personal cleanliness and equipment maintenance.
- Handle containers safely to avoid damaging them.
- Report all incidents and chemical spills to your supervisor.
- Follow the recommended cleanup procedures in case of a spill.
- Outdated controlled products should be disposed of in a timely and appropriate manner.
- Do not mix chemicals and cleaning products unless you have consulted the SDS and are sure that it is safe (e.g. mixing ammonia and bleach will produce a highly toxic gas).
- Do not use the contents of unlabeled containers.
- Do not leave open containers of flammable products such as paint brush cleaner, varnish, toluene etc.
- Do not dispose of flammable materials in the trash.
- Do not smoke, eat or drink while using chemicals.
- Do not reuse empty containers; the residue may be hazardous.
- Do not open a container that appears to be swollen.

6. Use of Cleaning Solvents & Flammables

General:

Cleaning solvents are used in day-to-day work to clean tools, equipment within the shop and on mobile work sites. Special care must be taken to protect the worker from hazards created from the use of these liquids. Wherever possible, solvents should be non-flammable and nontoxic.

The Supervisor must 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.

The following instructions or rules apply when solvents/flammables are used:

1. Use non-flammable solvents for general cleaning.
2. When flammable liquids are used, make sure that no hot work is permitted in the area.
3. Store flammable liquids and solvents in special storage areas.
4. Check toxic hazards of all solvents before use. (SDS)
5. Provide adequate ventilation where all 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.
9. When breathing hazards exist, use the appropriate respiratory protection.
10. Never leave solvents in open tubs or vats – return them to appropriate storage drums or tanks that are consistent with the WHMIS and TDG regulations.
11. Ensure that proper containers are used for transportation, storage and field use of solvents/flammables.
12. Where solvents are controlled products, ensure all employees using or in the vicinity of use or storage are trained and certified in the WHMIS. Ensure all WHMIS requirements are met.

7. Asbestos Containing Material (ACM)

Responsibilities

Operations/General Manager	General Managers must take reasonable and practical measures to ensure that systems and resources are in place to ensure work will be conducted in a manner that protects people, property and the environment.
Project Manager/ Superintendents	It will be the responsibility of the Superintendent to take reasonable and practical measures to identify situations where work may involve asbestos containing materials (ACM). The Superintendent is responsible to ensure all work with ACM is planned in such a manner that the work is in compliance with safety requirements, and that workers are protected from contact with airborne asbestos fibers. The Superintendent will ensure all equipment, tools, protective clothing, etc. are made available and used in accordance with the applicable regulations and manufacturer's specifications. The Superintendent is responsible for ensuring safe means of disposal of ACM.
Supervisor	It will be the responsibility of the Supervisor to take reasonable and practical measures to ensure personnel they supervise are protected from airborne asbestos fibers and use safe handling procedures when working with ACM. The Supervisor is responsible to ensure workers have received proper instruction and training in the hazards of asbestos work, and safe use of related equipment and personal protective equipment prior to performing this type of activity.
Worker	Workers must report to work fit for duty and adhere to the safety requirements regarding this specific task as detailed in this *Safe Work Practice*, applicable *Safe Job Procedures*, company policy, manufacturer's instructions and regulatory requirements. Workers will inspect their equipment prior to use including pre-trip inspections, and inform the Supervisor of any damage, deviation in operation, excessive wear, etc., prior to using equipment or related materials.
Safety Advisor	The Safety Supervisor will provide support resources to field personnel to help ensure worker safety and compliance with legal requirements.

Equipment Requirements

1. Additional PPE and clothing required:

	Safety glasses		Gloves – disposable		Tyvek disposable coveralls
	Respirator – half face elastomeric with P100 (HEPA) filter cartridge				

2. Plastic (6 mil or thicker) poly sheets or disposal bags and duct tape for placing ACM.
3. Clean water for washing hands, face and respirator.
4. Non-powered tools for cutting ACM,
5. Asbestos Handling Kit that includes the following: Hazard Assessment Forms, disposable coveralls with head cover, disposable boot covers, disposable rubber gloves, duct tape, eye protection, respirators with P100 HEPA filters, 6 ml plastic bags, 6 ml plastic, warning signs.

Environmental Requirements

1. All personnel will comply with the company and regulatory environmental protection requirements.
2. Personnel will be trained in spill and leak response appropriate for the conditions and risk.
3. Spills and leaks must be reported immediately, and appropriate spill response initiated without delay.
4. Water courses will be protected from contamination and siltation.
5. Waste generated from the work will be handled and disposed of in accordance with applicable regulatory requirements.

6. Asbestos must be transported as a hazardous waste and only disposed of at approved facilities.

Hazards and Cautions

Personnel performing this work must be aware of the following:

1. Asbestos is the generic name for a group of naturally occurring fibrous minerals. Asbestos colour may range from white to a pale yellow, green or blue. Asbestos fibers cause lung scarring (asbestosis), lung lining scarring (pleural scarring), cancer of the lung lining (mesothelioma) and/or lung cancer. Time lapse before the disease becomes evident may be 20-40 years after exposure. Workers who smoke have a 10-15 times greater risk of lung cancer from asbestos exposure than workers who do not smoke.
2. A maximum exposure limit of 0.1 fibres/cc, and lists asbestos as a known human carcinogen. Asbestos is an ALARA substance (exposure to be kept As Low As Reasonably Achievable), which means that no exposure is permitted.
3. The high strength, flexibility, heat and chemical resistance, and frictional properties of asbestos led to its widespread use in electrical insulation, high strength asbestos cement products, pipe covering, floor tiling and asphalt. The hazard posed by asbestos is its friability - the ease with which it can be crumbled or pulverized. Products with "bound" asbestos do not pose a hazard unless they are cut, sawn, ground or sanded.
4. New construction materials do not normally contain asbestos. Our employees and subcontractors are not likely to encounter asbestos unless working on or with construction materials produced before 1980. This is most likely to occur when working with old water/sewer pipe or during demolition work.

Work Practice

1. If you believe there may be asbestos where you are working (e.g., inside a pipe chase, old pipe, building materials, etc.), alert your supervisor immediately. The supervisor will take immediate actions including:
   - alerting workers in the vicinity to the presence of the material
   - removing the workers from the environment where exposure may occur
   - restricting access to the area and posting warning notices
   - informing the Regional Safety Supervisor without delay
2. No work will be permitted to continue in the hazard area before the Safety Advisor has been notified, and workers who may be affected by the presence of asbestos are protected from exposure.
3. Any potential asbestos work must be assessed by a qualified safety professional prior to beginning the work activity. There must be a documented Hazard Assessment in place prior to starting work and it must be communicated to the personnel conducting the work.
4. The **Risk Level** must be determined before any company employee engages in asbestos work:
   - ***Low Risk:*** Work activity in proximity to friable asbestos-containing material, where the material is not disturbed and there is no significant release of asbestos fibre.
   - ***Moderate Risk:*** Work activity involving the handling of asbestos-containing material or working in proximity to friable asbestos-containing material, not otherwise classified as low or high-risk work activities.
   - ***High Risk:*** Work activity involving the handling of asbestos-containing material or working in proximity to friable asbestos-containing material, where there is a high level of control necessary to prevent exposure to excessive concentrations of airborne asbestos fibre.
5. Our employees will not perform any High-Risk asbestos work**.** This type of work will be contracted to a qualified asbestos contractor.
6. Our employees may engage in Low Risk or Moderate Risk ACM work where there is low risk of exposure to airborne asbestos fibres. Examples are as follows:

   Low Risk:

- Working in close proximity to material containing asbestos provided that the asbestos material is not disturbed.
- Installing or removing of manufactured products containing asbestos where sanding, cutting or similar operations are not required.
- Transporting or handling materials containing asbestos in sealed containers.

Moderate Risk:

- Using hand tools to cut, shape, drill, grind, or remove non-friable manufactured products containing asbestos, e.g., asbestos cement pipe.
- Drilling with wetting agents through non-friable asbestos-containing materials.
- Collecting asbestos samples for laboratory analysis.

7. A crew safety briefing (Tailgate Safety Meeting) must be completed prior to starting any work that involves ACM, or if ACM is suspected. The crew safety briefing must be documented and include the following:
   - Type of known or suspected ACM that will/may be encountered so that personnel are able to recognize ACM.
   - The hazards of exposure to asbestos fibres and the means to prevent exposure.
   - The safe work practices to be used to ensure worker safety as provided in this *Safe Work Practice* and modified as necessary for the specific work to be performed.
8. A copy of this *Safe Work Practice* is to be attached to the Tailgate Safety Meeting record and be kept on site for the duration of the work.
9. The following actions will be taken to control exposure to asbestos during **Low Risk** work:
   - Ensure ACM has not been disturbed or damaged in any way that would produce a dust or powder. If damage has occurred the risk level must be reassessed.
   - All personnel handling ACM will wear a half-mask, dual cartridge respirator with P100 filters. Personnel must have a current respirator fit test and be clean shaven.
   - Restrict access to the designated asbestos work area and only allow persons wearing appropriate protective equipment, i.e., respirator, to enter the work area. Use "Asbestos" caution tape and warning signs to establish the asbestos work area.
   - Protect ACM from damage when handling.
   - Whenever possible, wet materials to be handled to help ensure there are no airborne asbestos fibers.
   - Place ACM to be disposed of in a minimum 6 mil poly and ensure the ACM is completely sealed inside the poly before transporting. The poly must be clearly marked as "*ASBESTOS*".
   - Ensure asbestos waste is delivered to an approved dump site that conforms to provincial and municipal requirements. For identification of approved sites contact the Regional Office of the AB Ministry of Environment. Transport drivers must be informed of the precautions that must be taken and vehicles may be required to carry signs or placards specifying the nature of the cargo (refer to the *Transport of Dangerous Goods Act*).
10. The following actions will be taken to control exposure to asbestos during **Moderate Risk** work:
    - Use "Asbestos" caution tape and warning signs to establish the asbestos work area.
    - Ensure personnel handling ACM:
      - Wear a half-mask, dual cartridge respirator with P100 filters. Personnel must have a current respirator fit test and be clean shaven.
      - Wear a disposable coverall with hood and "booties" over top all work clothes. Wearing a high-vis vest over the coveralls is not required as the work will be conducted in a designated work area. Any clothing or hi-vis vest worn over top of the coveralls must be disposed of with the coveralls when they are removed.
      - Use disposable gloves.

  - Remove protective clothing/equipment as follows before leaving the designated asbestos work area:
    - Remove coveralls and fold inside out to contain any asbestos containing material that may have gotten on the coveralls.
    - Place the coveralls inside a 6-mil poly bag.
    - Remove gloves and place in a bag.
    - Rinse the outside of the respirator with clean water or wipe down with a damp paper towel before removing. Place a paper towel in the bag.
- Restrict access to the designated asbestos work area and only allow persons wearing the protective equipment as described above.
- Handle and remove the ACM only if it is in a water saturated condition. Handling ACM dry is not permitted.
- Do not dry-sweep to clean up ACM or use compressed air for any cleaning purposes.
- Air in the vicinity of workers engaged clean-up of waste material will be continually misted with water.
- Where necessary, use plastic drop sheets or similar materials to prevent the spread of asbestos dust to other work areas. When cutting the pipe, place a drop sheet underneath to catch any materials produced by the cutting process.
- When non-powered hand tools are used to cut, shape or drill ACM, the material will be wetted to minimize release of airborne asbestos fibers.
- During the work and immediately upon completing the work:
  - Clean up dust and waste by vacuuming and discharging the air through a HEPA filter, or wet-sweeping or mopping.
  - Drop sheets must be wetted, folded to contain the dust, bagged, placed in a sealable container and disposed of as asbestos waste.
  - A continuous clean-up and disposal program must be in place to prevent unnecessary accumulations of waste ACM. At the end of each work shift, all ACM waste must be in proper containers. Prior arrangement must be made by the project supervisor for an acceptable disposal site.
  - Tools used for cutting pipe must be cleaned to remove any potential ACM. The material removed from the cutting tool must be disposed of as ACM.
- Protect ACM from damage when handling.
- Place ACM to be disposed of in a minimum 6 mil poly and ensure the ACM is completely sealed inside the poly before transporting. The poly must be clearly marked as "*ASBESTOS*".
- Ensure asbestos waste is delivered to an approved dump site that conforms to provincial and municipal requirements. For identification of approved sites contact the Regional Office of the AB Ministry of Environment. Transport drivers must be informed of the precautions that must be taken and vehicles may be required to carry signs or placards specifying the nature of the cargo (refer to the *Transport of Dangerous Goods Act*).
- Disposable clothing such as gloves and protective coveralls will be treated and disposed of in the same manner as the ACM.

8. Trichloroethylene Safety

Hazards and Cautions

Personnel performing this work must be aware of the following:

1. Trichloroethylene is a very hazardous toxic material. It is a mutagen, skin/eye irritant, suspect cancer hazard, and possible reproductive hazard.
2. It is extremely important that engineering controls are in place, protective equipment requirements are being met, and personal hygiene measures are being followed.
3. Employees working with this material should be trained regarding its safe use and its hazards.
4. Personnel must be familiar with information found in the SDS for Trichloroethylene.

Work Practice

1. If Trichloroethylene is released, immediately put on a suitable respirator and leave the area until the severity of the release can be determined.
2. In case of spills, proper respirators and protective equipment should be available.
3. All unprotected people should avoid all contact with this chemical including contaminated equipment.
4. Closed handling systems should be used when dealing with Trichloroethylene. If no closed handling system is available, use as small of an amount as possible in a well-ventilated area away from storage spaces.
5. Avoid producing vapours and mists in the general working area.
6. Do not perform any welding, cutting, soldering, drilling or other hot work on an empty vessel, container, or piping until all liquid and vapours have been cleared.
7. Follow the chemical supplier's manual for advice regarding checking and maintaining appropriate levels of stabilizers.
8. Do not use incompatible materials such as strong bases and alkali metals.

Checklist when using Trichloroethylene:

- □ Never return contaminated materials to original container
- □ Inspect containers for leaks before handling
- □ Stand upwind of all opening, pouring, and mixing operations
- □ Prevent damage to containers
- □ Label containers
- □ Open containers on a stable surface
- □ Keep containers tightly closed when not in use
- □ Assume that empty containers contain residues, which are hazardous
- □ Keeping work areas clean is essential
- □ Use work surfaces that can be easily decontaminated
- □ Following precautions on Safety Data Sheet
- □ Have suitable emergency equipment for fires, spills, and leaks readily available
- □ Practice good housekeeping
- □ Maintain equipment regularly
- □ Comply with handling regulations
- □ Use a non-sparking, grounded ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside.
- □ Take necessary precautions for environmental protection.
- □ Supply sufficient air to make up for air removed by exhaust systems.

9. Hot Asphalt Cement Handling

General:

Asphalt cement is an integral part of lab operations and on specific sites. One hazard of handling asphalt cement is that you may breathe in fumes.

Symptoms of overexposure may be:

Immediate:

- Drowsiness, dizziness, light-headedness
- Nausea, vomiting
- Eye/throat irritation
- Allergic responses, such as hives
- Shortness of breath

Long Term:

Other health situations that may be caused by overexposures to asphalt fumes are:

- Dermatitis
- Nerve, kidney or liver damage
- Asthma-like wheezing with tightness in the chest

All employees are required to be knowledgeable in chemical hazards regulations, SDS, WHMIS, Occupational Exposure limits and PPE when performing work with asphalt.

- Ensure workers are fully trained and knowledgeable.
- Follow manufacturer's recommendations.
- Ensure the area is ventilated.
- Practice good housekeeping.
- Have a fire extinguisher on hand.
- Wear the proper protection, eye protection, lab coat and gloves. Make sure your PPE fits well to achieve the maximum protection.
- Ensure the correct cleaning product for cleanup.

10. Back Injury Prevention

General:

Eliminate manual lifting whenever possible.

- Adjust work heights
    - Lifting above the waistline has high injury potential.
    - Raise floor level bending by platforms, benches, etc.
- Keep floor surfaces even and unobstructed.
- Footwear must be in good shape. Avoid high heel-type boots.
- Eliminate body twisting during lifting functions.
- Space confinement restricts proper body position and lifting procedures.
- An unevenly balanced load creates a "jolt" potential.
- Assure a firm grip of load
    - Two or more men lifts must be done smoothly.
- Abnormal or increase of lifting requirements should be regarded as an increased injury potential and preparation (warm-up) exercise should proceed.
- Avoid long duration of one-man lifting functions
    - Relieve periodically whenever possible.

11. Manual Lifting

General:

Most lifting incidents are due to improper lifting methods. All manual lifting should be planned and safe lifting procedures followed. Manual lifting can take in some twisting of the body causing it to do things it is not accustomed to doing. Workers sometimes get in a hurry instead of waiting for some assistance in moving something heavy or awkward. Here are some things to keep in mind.

1. Ease into physically demanding tasks. Muscles are not machines; they require stretching before any labor or lifting jobs.
2. Ensure that you know your physical limitations and the approximate weight of materials.
3. The use of power equipment or mechanical lifting devices should be considered and employed where practical.
4. Obtain assistance in lifting and employ proper lifting technique. (squat technique)
5. Ensure a good grip before lifting. Gloves will help and protect your hands.
6. Avoid reaching out.
7. Be aware of hazardous or unsafe conditions. E.g. slippery or tripping, spilling contents.
8. Don’t overexert yourself; reduce the weight of the load.
9. Store materials at or above hip height – this reduces the need for bending.
10. Minimize the distance needed to carry items –plan your storage and movements properly.
11. Reduce twisting of your body: keep loads in front of you; turn by moving your feet, not your body.
12. Protect yourself. Always wear appropriate PPE when handling and moving materials. Gloves, coveralls and safety boots are standard gear. Check to see if the materials are hazardous and wear additional equipment if needed

12. Preventing Slips & Falls

General:

Increased prevention of slips and falls should be a primary safety objective in all our daily routines. Fatal incidents can be prevented. So can many minor slips and falls. Starting the day with everything in order is crucial. Previous crews should do their housekeeping. Next shift should pick up where they left off. Watch out for materials and hazards that may be potential trouble spots which could cause slips and falls.

Avoiding Common Slips and Falls:

- Ensure proper lighting in corridors, stairwells and on the worksite.
- Check for proper handrails and guardrails.
- Replace or properly repair any damaged handrails or guardrails.
- Always keep at least one hand free to grip railings.
- Don't allow or take part in any on site horse play
- No running in gangways or on stairs
- Watch for or move stacked materials that could cause a tripping hazard.
- Watch for doors opening the wrong way – change the doors, or post danger notices and have all staff informed.
- Change the location of wires, electrical equipment, furniture, and other materials so they are not in the way. Tripping over cords and wires is very common.
- Always maintain good general housekeeping.
- Falls to Avoid and Prevent
- Take extra care to avoid falls in the following situations:
- Roofs:
- Know the strength of the roof before going on it. Use protective equipment while on sloped roofs and have adequate platforms. Guard both roof edges and any openings.
- Stairs:
- Watch out for irregular stairs, water and spills. Always watch where your foot will be placed. Don't pull yourself up by the handrail – put your foot firmly on each stair tread.
- Vehicles/Equipment:
- Always use three points of contact when mounting or dismounting from a vehicle or equipment.
- Never jump from a vehicle or equipment especially when it is moving.

Falls to Avoid and Prevent

Take extra care to avoid falls in the following situations:

- Roofs: Know the strength of the roof before going on it. Use protective equipment while on sloped roofs and have adequate platforms. Guard both roof edges and any openings.
- Stairs: Watch out for irregular stairs, water and spills. Always watch where your foot will be placed. Don't pull yourself up by the handrail – put your foot firmly on each stair tread.

Vehicles/Equipment:

- Always use three points of contact when mounting or dismounting from a vehicle or equipment.
- Never jump from a vehicle or equipment especially when it is moving.

13. Office Safety

General

The office environment is often overlooked as not being associated with injuries to employees. Office hazards can be in the form of fire, chemical, ergonomics and electrical hazards.

- Ensure you are familiar with emergency evacuation.
- Ensure that all electrical cords are in good condition and are not overloaded.
- Ensure that computer monitors are adjusted to correct height and kept clean.
- Ensure fans/space heaters are used to manufacturer specifications.
- Ensure that only one drawer of filing is open at one time and those drawers are closed when not in use.
- Ensure floors and aisles are kept clear and not cluttered.
- Ensure the proper type of fire extinguisher is available.
- When transporting materials of a heavy nature ensure that handcarts and trolleys are used properly.
- Operate microwaves according to manufacturer's specifications.
- Ensure coffee makers are used according to manufacturer specifications.
- Ensure the photocopier is maintained according to manufacturer specifications.
- Ensure chairs are in good repair.
- Ensure rugs are kept clean and in good repair – free of tripping hazard.
- Ensure the paper cutter blade is replaced in closed lock position, operates properly and is used for its intended use.
- Ensure all loose clothing is tied back when using a paper shredder.
- Check all office equipment for WHMIS warning labels.

14. Work Site Safety

General:

Worksites have many activities happening at once. Employees need to be aware of all activities and coordinate them to reduce the potential of hazards.

All employees are required to have the necessary training to perform their duties. (WHMIS, TDG, Propane, Flagperson, etc.)

1. Ensure signage is in good condition, clean, legible and suited to the purpose.
2. Ensure traffic control signage is to be of acceptable standards.
3. Routinely inspect signage for replacement. Cleanliness and physical damage.
4. Ensure road traffic control signs are covered when no activity is present.
5. Ensure you are fully trained to erect road traffic signage.
6. Have fire extinguishers at strategic points.
7. Continually monitor areas for changing conditions.
8. Ensure that all workers are wearing the Personal Protective Equipment for the worksite.
9. Flagperson should be visible at all times, dressed in specified PPE and certified in their training. They should always be standing in a position facing oncoming traffic. Must stand alone and not mingle with the crew or traveling public.
10. Be aware of the traffic at ALL times. Never assume what the driver will do.
11. When site work is completed ensure all signage, tools, equipment and materials have been removed.
12. Move signage as required during operations.
13. Check signs periodically to ensure good visibility and placement.

15. Working Near Power Lines

General:

Because of the danger involved in working around power lines it is essential that all workers are aware of the proper safety procedures. If it is determined, on the hazard assessment, that power lines will be a factor then work shall not start until it is ascertained what the voltage of the power line is and if work can be carried out within the minimum safe working distances. Guidelines for working near power lines are found in the OH&S table defining minimum safe working distances is as follows:

When the minimum distance of (10ft.) cannot be maintained because of circumstances of work or the inadvertent movement of persons or equipment, an assurance in writing (form 30M33) must be completed and signed by a representative of the owner of the power system.

Before starting work or operating any equipment near a power line a SAFETY PLAN shall be made that will prevent any contact with the power line.

Supervisors should be familiar with the appropriate regulations and safety rules.

7 Steps to Electrical Safety

Learn them and pass then on!

1. 10 meters to safety: Stay back at least 10 meters or 33 feet from any downed power line, exposed underground cable, or where there is contact with an overhead power line. Depending on voltage, this distance may increase up to 32 meters or 105 feet.

2. Where's the Line: Workers who operate machinery or equipment that could come in contact with overhead or underground power lines need to look up and check for overhead power lines or obtain underground locates (see 6) before beginning work.

3. Know Your Limits: Workers operating machinery or equipment in close proximity to power lines, always maintain the limits of approach: from three to seven meters or 10-23 feet depending on the voltage. For proper safe working distances contact Alberta Workplace Health and Safety @ 1-866-415-8690. In keeping with the Alberta OH&S Code, if equipment could come closer than the minimum distance, you must contact ATCO Electric beginning work.

4. Don't Hang Around Operating Equipment: Stay at least 10 meters or 33 feet away from equipment operating near power lines because if it contacts an energized line, the electricity will go to ground. The operator should be on the vehicle with everyone else clear of the vehicle when a boom is in motion. If you must approach, ensure the equipment is not operating.

5. Shuffle or Hop don't step: If the machinery you are operating contacts an energized line, move it away from the line to break line contact. If this can't be done, remain on the machine. If there is an uncontrollable fire, jump off the machine keeping your feet together. Never contact the machine and the ground at the same time. Once clear of the machine, shuffle away, never allowing the heel of one foot to move beyond the toe of the other, or, hop with both feet together to a minimum distance of 10 meters or 33 feet.

6. Call before You Dig: The Alberta OH&S Code states that whenever digging or drilling is to occur, you must determine the location of all underground services. Call Alberta One Call before you dig at 1-800-242-3447.If a cable is incidentally dug up, call ATCO Electric immediately at 1-800-668-5506. Move the digger bucket clear of the cable and stay out of the trench. If the machine can't be moved, keep workers 10 meters or 33 feet away and have the operator remain on the vehicle. In the case of fire, follow the "Shuffle or Hop, Don't step" rule.

7. Don't Become a Victim: Always call your local emergency services when someone is injured in an electrical incident. If they are still in contact with the electrical source and you touch them, you could be seriously injured or killed. Keep everyone back, a minimum distance of 10 meters or 33 feet and have someone call for help immediately.

IF YOU ACCIDENTALLY CONTACT AN OVERHEAD POWER LINE – STAY CLEAR AND CALL ATCO ELECTRIC 1-800-668-5506.

16. Traffic Control Persons

Responsibilities for Safety

Being a traffic control person is one of the most important positions on the job site.
They have the responsibility:

- To direct the actions of motoring and pedestrian traffic for their own safety, the safety of the work crew and the public
- Of looking after their own safety so that they can effectively look after their duties to protect the safety of the work crew and the public

Hazards of the Job

Traffic control people have the right to know what the hazards of the job are. Before starting the job, a hazard assessment must be done. Things to look for would include but not be limited to:

- Traffic volumes
- Speed limits
- Sight distances
- Work process
- The presence of pedestrian traffic
- The tools and equipment including the signs
- Communications
- Proximity to other workers (working alone)
- Road surface
- Proximity of heavy equipment or traffic
- Noise
- Training competencies for traffic control persons
- Ensure they always have a plan of escape

The position of traffic control person can be hazardous. To reduce the hazards the traffic control person must be in good physical shape with good vision and hearing. They need to be alert and aware of everything that is going on around them.

The Traffic Control Person and Public Relations

Every day on the worksite, the traffic control person is the most visible person to the public. It is critical that a positive image be projected. The TCP must be neat and clean and attired professionally. The equipment and tools they use should be clean and in good repair to give a good visual image of professionalism.
The TCP must take charge and, as much as possible, avoid delaying traffic unnecessarily. Avoid long conversations. Always treat the public with respect and act professional.

The Traffic Controllers Equipment

Legislation and owner clients dictate the type of safety apparel that the TCP must wear. The following is a list of equipment for traffic control people:

- Highly visible fluorescent headgear
- Appropriate protective footwear
- A flagging suit coverall that will be fluorescent yellow-green with reflective silver striping. The striping must be a minimum of 50mm wide and shall be sewn onto a 100mm wide red-orange background material.
- A 45 cm stop/slow paddle which should be equipped with a 1.6 m pole when extended flagging is anticipated
- Two flag person signs (Additional signage may be required depending on the circumstances)
- A logbook and pen
- Flashlight with semi-transparent or fluorescent orange/red wand for nighttime operations (L.E.D. may be utilized)
- Air horn, whistle or other warning device
- Communication devices
- Rain gear as required

Safe Work Practices

- Pre plan all traffic control sites
- Plan an escape route
- Stand alone
- Never leave the station unattended
- Never wave the paddle
- Keep signs clean and in good condition
- Remove or cover signs when not in use
- Never stand or walk in the path of moving vehicles
- No vehicle radios or other distractions at traffic control sites
- Know what is happening
- Check to make sure your signs are in place
- Use eye contact to get drivers attention
- Stay alert

Once the site is established, make sure that it is operating properly. Hard braking, complaints about visibility from the public, and lack of response to the controls all mean that you should advise the supervisor to reassess the site to determine what improvements are required. Predetermined times should be made for breaks and checking of the signs during their shift.

How to Prepare

Traffic control people need to make sure they are prepared by reviewing their training workbook. Be well rested and ready to work. Take plenty of fluids and make sure they have food with them to maintain their energy throughout the day.

17. Signs and Barricades

General:

When you work near traffic you need to protect yourself, co-workers and the public. Proper use of signs and barricades is a crucial part of any job. Take time to update your knowledge and understanding of various road safety procedures, signs and barricades. In general, traffic control zones look like this:

Advance Warning Area– tells traffic what to expect ahead

Transition Warning Area– tells traffic that speed change ahead

Buffer Zone– Protects for traffic and workers before work zone

Work Zone– moves traffic out of its normal path

End of Construction– tells traffic to resume to normal speed

(Additional signs may be required)

Check Before Starting

Before work starts, you and others will want to make sure that all signage and barricades are properly placed in each of the zones approaching the work areas to meet safety requirements and regulations of the responsible level of government (province, county, municipal district, city, town, etc.)

Prepare a FLRA (hazard assessment) or tailgate meeting and go over it with all workers on site.

Golden Safety Rule

One of the most important rules about signs is to make sure they are covered or removed when not in use. If warning signs are left up when not needed, drivers begin to ignore them. They think they're just another waste of time – and that's when tragedy can strike.

Signs

There are four basic groups of signs:

- Regulatory – indicates traffic regulations such as black and white speed limit signs
- Guide – provide information for route selection such as route markers or green and white directional signs
- Warning – provide advance warning of hazardous conditions or potentially hazardous situations such as black on yellow curve signs
- Temporary Condition Signs – provide information about construction or maintenance activities. They include black and orange signs and barricades

Traffic Accommodation

The "5 W's" will help you to determine worksite signage needs. You will need to know:

- Who is responsible for the job?
- What traffic accommodations must be provided (i.e. signs, signals, flag persons, etc.)
- Why the accommodations are required
- When it will be required
- Where it will be required

Traffic Barriers

Traffic barriers may be used to separate the traffic flow from the work area. They may be the New Jersey type concrete barrier or water filled barriers. Barriers should never be at 90 degrees to the roadway.

Barricades should be made of reflective materials and they must never be placed in the line of traffic without warning signs.

Loading and Unloading of barricades

Barricade made from wood or metals can weight over 50lbs and require two people to be loaded and offloaded from vehicles. When loading or offloading good communication is key! Employees are to grab barricades from opposite sides and lift them off the truck. No one should be handing them down from inside the deck/box of the truck as this can create an awkward position resulting in loss of balance and strained on the muscles.

Channelization

This is a technique which gradually reduces the width of the road. It is effective and safe only if the devices used are placed in appropriate sequences.

The most common channelization devices are barricades, cones, barrels, pedestal flashers, and reflectorized chevrons.

Sign Logs

Signs must be check on set frequency to ensure they are visible at all time to traffic. The sign checks must be recorded on a company sign log. Any correction made must be noted with date and time to ensure compliance.

18. Extreme Weather Exposure

General

While more often than not weather conditions can be a nuisance, there are times when it can become extreme (or severe) enough to present a safety concern. The best way to deal with extreme weather is to avoid it when possible. Hazard assessment and precautionary measures must include:

1. Monitor the Weather- use local sources such as radio stations, weather websites, and contact numbers to stay current with temperatures, conditions, forecasts, and safety information. Watch for darkening skies, developing thunderstorms, lightning flashes or increasing winds.
2. Consider Postponing activities to prevent being caught in a dangerous situation and have a plan in place to safely terminate operations in case of sudden deterioration in the weather conditions.
3. Seek Shelter- pre plan shelter options for the possible hazards and seek as quickly as possible.

- Supervisors must monitor the weather and take precautions in a timely manner to minimize the risk to all personnel.
- Employees must keep themselves informed of the weekly weather conditions, dress accordingly and bring sufficient nutrients for the day.

Types and Precaution to Weather

Heat Exposure

The nature of our industry requires us to perform physical tasks and work extended hours in the outdoor heat. This can be demanding at the best of times, but the higher the temperature and humidity, the higher the risk of heat related illnesses, or heat stress.

- Consider the temperatures and forecast during the hazard assessment
- Learn to recognize the symptoms of heat stress and how to treat them
- Understand you are at higher risk if you are overweight, out of shape, over 40 years of age, have pre-existing medical conditions, use medications that block sweating, abuse drugs or alcohol, have had heat stress before, and are not acclimatized to the conditions.
- Try to do the most physical demanding jobs during the coolest part of the day
- On hot days, drink two glasses of water before starting work and one glass every 20 minutes while working. DON'T wait until you are thirsty, as you will already be dehydrated. Other early signs of dehydration are dark colored urine, or infrequent urination in small amounts.
- Supervisors must ensure a constant supply of fresh drinking water for workers, nearby and accessible at all times.
- Avoid alcohol, caffeinated drinks, or heavy meals
- Wear loose clothes made of cotton, silk, or other fabrics that let air pass through. Wear lighter colors that reflect rather than absorb heat.
- Take frequent breaks in a cool spot

Wind/ Hail

Keep in mind that extreme wind and/ or hail could be part of a bigger storm, like a tornado or lightning storm, and take the applicable precautions. With extreme wind, be aware of potential for flying debris. If caught without shelter in large hail, place the wind at your back and protect your head.

Lightning

All thunderstorms produce lightning and can be dangerous. Lightning often strikes outside the area of heavy rain, even as far as ten miles from any rainfall. Regardless of the immediate conditions, if you can hear thunder, lightning is close enough to pose an immediate threat.

The closer the flash and thunder are together, the closer the lightning strike, and the more imminent the danger. As a rule, every five seconds between the lightning and thunder is equal to one mile in distance.

19. Sun Exposure

General:

The most common cause of skin cancer is overexposure to the sun. Ninety percent of all skin cancers occur on parts of the body normally not covered by clothing. People who sunburn easily and have fair skin with red or blond hair are most prone to develop skin cancer. The amount of time spent in the sun also affects a person's risk of skin cancer.

1. To prevent skin cancer:
    a. Cover up by always wearing a hard hat and a bandanna for your neck. Wear long-sleeved shirts and pants which the sun cannot penetrate.
    b. Use sunscreens to help prevent skin cancer as well as premature aging of your skin. Use a Sun Protective Factor (SPF) rating of 15 or higher. Women may receive added protection by using tinted opaque cosmetic foundation along with a sunscreen. Apply sunscreen at least an hour before going out in the sun and again after swimming or perspiring.
    c. You can still get burned on a cloudy day. Try to stay out of the direct sun at midday, because the sun's rays are strongest between 10 a.m. and 3 p.m. Beware of high altitudes - where there is less atmosphere to filter out the ultraviolet rays.
2. Know your skin. Whatever your skin type, do a monthly self-examination of your skin to note any moles, blemishes or birthmarks.
3. Check them once a month and if you notice any changes in size, shape or color, or if a sore does not heal, see your physician without delay.

20. Cell Phone Usage

General:

For those Canadian Road Builders Inc. employees who are authorized to use a cell phone:
We must protect workers from injuries associated with the IMPROPER use of cell phones while operating a motor vehicle. Using a cell phone improperly while operating a motor vehicle may be hazardous to the worker and general public.

- Make driving your first priority.
- Whenever possible, let your voicemail take any incoming calls.
- Do not engage in stressful or emotional phone conversations.
- Utilize a hands-free device whenever possible.
- Ensure you know your wireless phone and its features, such as speed dial and redial.
- Avoid taking notes or looking up phone numbers while driving.
- NO TEXTING while driving.
- Bluetooth use should be kept to a minimum: “Hi, I am driving, I will call you back”.
- Find a legal pull-out to make a phone call, such as a driveway, parking lot, or side road.

Reference to the company’s Distracted Driving/ Operating Policy

21. Distracted Driving

General:

Canadian Road Builders Inc. is committed to providing a safe working environment for its employees and ensuring compliance with applicable laws. The Company recognizes that the improper use of cellular phones/other electronic devices and the many other driving distractions could result in significant risk of injury to employees, the public and possible damage to property

1. Make driving your first priority.
2. Whenever possible, let your Voice Mail take your incoming calls.
3. Do not engage in stressful or emotional conversations.
4. Always utilize a hands-free device.
5. Employees should never use a handheld device while driving.
6. Avoid taking notes, texting or looking up phone numbers while driving.
7. Set music, eat and drink prior to, after refueling or reaching your destination.
8. Bluetooth use should be kept to a minimum. “Hi, I am driving, I will call you back”.

Find a legal pull out to make a phone call, i.e. Driveway, Parking lot or Side road. Not on the side of a highway/shoulder.

22. Driving

General:

Operations of motor vehicles must be performed according to all vehicle codes, traffic laws, company procedures, and manufacturer's recommended operating guidelines.
Supervisors are responsible to facilitate and provide instruction to their workers on roadside emergency equipment, training and compliance.

1. Ensure you have a valid operator's license c/w air brake ticket if applicable.
2. Be knowledgeable with traffic laws and regulations.
3. Drive defensively.
4. Always use a spotter as a guide when backing or maneuvering in tight areas.
5. Ensure the vehicle has an emergency triangle road kit.
6. Never drive under the influence of alcohol or drugs.
7. Avoid driving when fatigued.
8. Ensure seatbelts are worn at all times when driving.
9. Be familiar with the vehicle and its capabilities.
10. Do not offer rides to strangers or hitchhikers unless for emergency situations.
11. Always perform pre/post trip inspections.
12. Always have a copy of schedule 1 in the vehicle (Front of logbook).
13. Use good judgment and understand the basic recovery skills appropriate to the vehicle you are driving.
14. Avoid eating and drinking while driving, maintain control, focus on driving.
15. Avoid parking in areas that are not on level surface and/or unstable ground.
16. Refer to Safe Work Practice for "Distracted Driving/Operating Policy".
17. No one shall operate or permit another person to operate a commercial vehicle if the vehicle or its equipment is in a condition that is likely to cause danger to a person or property.

Refer to National Safety code in section of the safety manual for further information

23. Backing-up

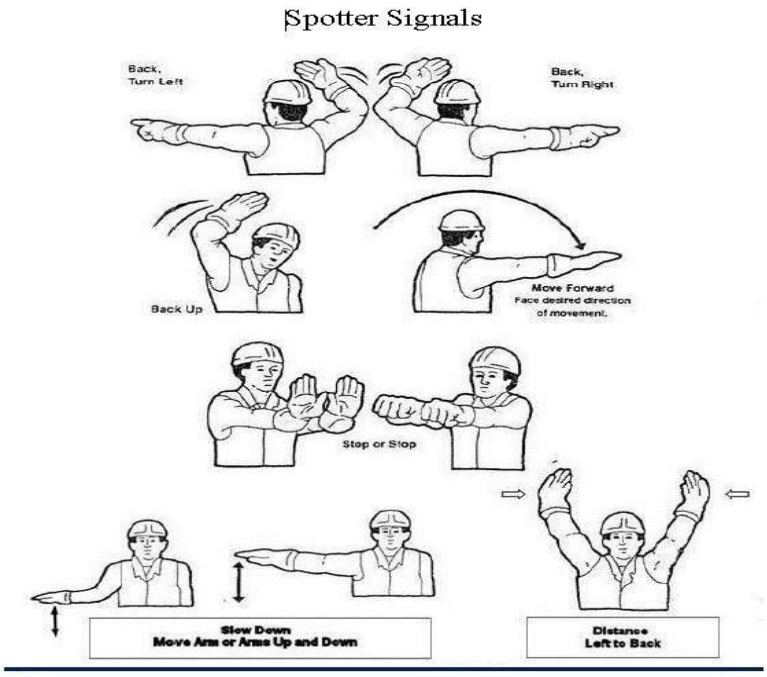
General:

Lafrentz Road Marking drives trucks of various sizes and are used many times in confined spaces. These place challenges on the driver to operate their vehicle or equipment safely without damaging the vehicle or any other obstacles nearby. Whenever possible, park to avoid backing up. Park away from other vehicles in open areas or pull straight through to the second parking stall for you can pull forward when leaving. Back into parking spaces to be able to leave moving forward to assist with visibility. Always park away from congested parking lots/areas to prevent the need for backing and/or receiving damages from posts or other vehicles.
If backing is necessary, use the following guidelines:

1. The driver must check the area around the vehicle to be aware of other vehicles, equipment or obstacles (buildings, small equipment, spacing of door opening, etc.) that might be struck while maneuvering and backing the unit.
2. Remove any obstacles. NOTE: Equipment operators should not park or leave any equipment parked behind a unit that is not visible to the driver.
3. Driver shall sound the horn with 2 quick beeps before backing up.
4. If risks of backing up cannot be eliminated a spotter or two must be obtained to assist the driver. **One spotter** is required to back in or near other units, hooking up to trailers, lots of activity on jobsite or in the yard. **Two spotters** are required on both sides or front and back to assist the driver when in very close quarters, like exiting through a bay door, between two vehicles, buildings, etc.
5. The spotter or spotters must maintain visual contact with the driver to communicate when a hazard exists and when to change direction to avoid contact with obstacles.
6. Spotter(s) should not leave the driver until the maneuver is completed.
7. Backup slowly to allow time to respond or stop.
8. Be cautious of front-end movement when turning while backing up.

Spotter Signals - see image

TIP: Back in and drive out whenever possible. This allows you to examine the area to be backed into as the vehicle approaches it and gives more visibility when leaving the parking spot.



24. Vehicle Incident Practice

General

The following is a general guideline of the practice to follow should you, your vehicle or the equipment you are operating get into an incident.

1. If injuries have occurred call 911, secure the scene and administer what first aid you are capable of doing.
2. If vehicle or Property damage has occurred contact the foreman/Super or Safety Officer immediately after the incident.
3. Obtain a copy/info of another party involved in the incident; Driver License, registration and insurance (take pictures of them to avoid mistakes or confusion).
4. If witnesses can be obtained get their name, address, phone number and a brief written statement.
5. If possible, take pictures of the scene: witness documentation, damage, licenses...
6. Try and have the vehicle left in a stationary position until the foreman can arrive on site, if not safe to do so, move to a safe location nearby.
7. Once the vehicle is safely cleared from the scene all individuals involved must fill out a witness statement (include diagrams with vehicle positions and direction of travel).
8. If requested, aid the foreman in completing an incident report.
9. If visible damage is apparent a police report must be filled out and a copy handed in with your incident report.
10. Post incident Drug and Alcohol testing may be required.

11.

25. Eating Periods

Potential Health and Safety Concerns

Cleanliness is also vital to food safety. Washing your hands and cleaning food preparation surfaces, containers and utensils can also stop the spread of foodborne diseases. There are a number of good reasons for following food safety guidelines. They are as follows:

- Discomfort
- Pain
- Nausea
- Vomiting
- Diarrhea
- Cramps
- Dehydration
- Weight Loss
- Fever
- Spread of diseases
- Death

Best Practices

- Practice social distancing: do not eat in crowded lunchrooms, allow for stagger break periods.
- Be aware of co-workers with allergies and ensure their safety. Check for allergies, especially if consuming Nuts or Oranges.
- Wash your hand before and after eating. Gloves are to be taken off with care to prevent getting contaminates on hands.
- Do not leave food uncovered or unattended
- All consumption of food is to be away from equipment/chemicals in designated areas up wind from the work being performed.
- No food is to be present around chemicals, application processes, or while operating. working around equipment.
- Do not spray or store chemical in areas that are utilized for eating periods
- All food waste and containers are to be disposed of in the appropriate locations
- If your lunch spills wash or wipe up area immediately
- All food must be stored in lunchboxes, cooler or fridges until consumed in appropriate areas.

26. Defective Tools

General:

Defective tools can cause serious and painful injuries.
If a tool is defective in some way, **DON'T USE IT**. Tag it out of order, let the shop Foreman know and he will direct you where to place the tool.
Be aware of problems like:

- Chisels and wedges with mushroomed heads
- Split or cracked handles
- Chipped or broken drill bits
- Wrench with worn out jaws
- Tools which are not complete, such as files without handles

To ensure safe use of hand tools, remember:

1. never use a defective tool;
2. double check all tools prior to use; and
3. Ensure defective tools are repaired.

Air, gasoline or electric power tools, require skill and complete attention on the part of the user even when they are in good condition. Do not use power tools when they are defective in any way.

Watch for problems like:

- Broken or inoperative guards,
- Insufficient or improper grounding due to damage on double insulated tools,
- No ground wire (on plug) or cords of standard tools,
- The on/off switch not in good working order,
- Blade in cracked,
- The wrong grinder wheel in being used, or
- The guard had been wedged back on a power saw.

27. Electrical Lockout

General

The purpose of the lockout procedures established at Canadian Road Builders Inc. is to protect, in the simplest and most positive manner possible, any employee working on or around equipment which could be inadvertently started.

Most equipment can be safely locked out by the individual employee on several of the major pieces of equipment in order for it to be rendered safe.

Normal Lockout Procedures

No employee is to work on, enter or approach the unguarded parts of any machinery until they have locked out the power supply with a padlock in such a manner as to make it impossible for the machine to be started.

The normal lockout procedure for electrically powered equipment is:

- Inform the Supervisor and the person immediately responsible for the operation of the equipment of your intention to lock it out.
- Have the equipment shut down in the normal manner and visually ensure that it has stopped. Do not use disconnect switches to stop machinery.
- Turn the power supply disconnects switch/breaker for the equipment to the ‘OFF’ position, and then place your personal lock on the switch or tag it out of service and remove the keys. An attempt should be made to put the switch back to the 'ON' position to ensure that it is correctly locked out.
- The employee working on the locked-out equipment must keep the key for the padlock on his person until he has completed working on the job and removes his safety lock or keep the keys until it has been cleared for usage.

Immediately upon completion of the job, all locks are to be removed and power restored to the equipment. The last employee to remove his lock will inform the supervisor and the person immediately responsible for the operation of the equipment that he is finished.

28. Lockout Procedure

Lockout for Servicing or Repair Equipment

1. If the equipment is operating, shut it down by the normal stopping procedure (depress stop button, open toggle switch, etc.). Only workers knowledgeable in the operation of the specific equipment should perform shutdown or restart procedures.

2. Do not clean, unplug, lubricate, adjust or repair any machine while it is running, unless it is specifically recommended in the service or owner's manual.

3. Person servicing will remove keys and keep them on themselves or placed in a lock box.

4. Batteries will be disconnected before any work is performed and tag placed in a visible location in the cab identifying that equipment is out of service.

5. Engage safety locks if the hydraulic cylinders are so equipped.

Release from Lockout/Tag out

1. Before locks and/or tags are removed and energy is restored to the machine or equipment, inspect the work area to ensure that non-essential items have been removed and that machine or equipment components are operationally intact.

2. Ensure workers are a safe distance from any potential hazard.

3. Each lock and tag should be removed from each energy-isolating device by the worker who applied the lock and/or tag.

4. Notify affected workers that locks and/or tags have been removed.

Lockout for Hydraulic Systems

1. Workers should always follow instructions in the operator's manual for servicing hydraulic systems. Where appropriate, a properly qualified and certified mechanic should perform repairs and maintenance.

2. Shut off the engine that powers the hydraulic pump.

3. Lower implement to the ground or onto a solid support.

4. Move the hydraulic lever back and forth several times to relieve pressure.

5. When applicable, blanking devices should be used.

29. Equipment Repair

General

No other person (this includes mechanics, supervisors or operators) will remove this tag except the person responsible for putting it in place. In case of emergency a mechanic or supervisor in the shop will decide if or how the equipment will be moved.

Lockout

Workers must fill out a work order for all equipment/vehicles to be repaired. This must include

- Worker's name
- Unit #
- Kilometers/hours
- Date
- List of all concerns

(Ensure units are clean inside and out prior to maintenance)

The mechanic will troubleshoot and decide what the problem is with the equipment.

The mechanic will place a lock out tag to the most visible area in the cab (starter, switch, steering, etc.) thus "locking out" equipment and take the keys.

The mechanic will proceed to repair equipment in a safe manner.

When equipment is repaired and ready to work, then the "Danger Do Not Operate" tag is removed by the mechanic.

30. Power and Hand Tool Use

General:

Canadian Road Builders Inc. employees work with power and hand tools to perform their work duties. The uses of these tools are an everyday occurrence and can easily be overlooked as having the potential of hazards. Power tools and hand tools shall be used and maintained in compliance with manufacturer's guidelines.

1. Electrical tools must have 3 wire (grounding) cord and plug, excluding double insulated tools.
2. Grinder discs, buffers and stones to be used only for designed application and at rated speed. (See: 1. Grinding & 7. Use of Portable Grinders for more information)
3. On/off switches must be functional and positioned for easy access by the operator.
4. Accessories can only be used that are designed for use with tools specified.
5. Saw blades must be designed for the product being cut and at the rated speed, O.E.M. guards must be in place and functional.
6. Chisels, punches, hammer, wrenches, etc. to have all burrs ground from striking areas.
7. Chisels, punches, screwdrivers, etc. to have tips properly dressed.
8. Cracked and/or splintered handles to be replaced.
9. All tools must be cleaned after use and repairs made before being properly stored.
10. Tools to be used for designed purposes only.

Repairs to tools must be performed by qualified personnel, using O.E.M. parts or equivalent.

31. Drill Press Practice

Required Personal Protective Equipment:

- Safety Glasses
- Ear Protection
- Steel Toed Footwear
- Use of guards at all times

Visual inspect the drill press:

- Check fluid levels
- Wipe down column
- Oil bed ways / grease machine
- Wipe down knee

Check and understand how to clamp the work piece down.

- Clamp work piece as close as possible to the column
- Use a clamping method that will hold the work piece with maximum amount of force, but not enough to damage the work piece
- When using a vice, ensure the vice is clamped in two places
- Use brass shims when clamps make contact with a finished machine surface. i.e.: Drilling an IHCP pin.
- Ensure when using a jig, that the jig is firmly in place over the work piece and has enough clamping force applied to it to prevent movement.
- When drilling close to the knee, ensure there is enough clearance between the knee and work piece with drill bit and the table.
- Use screw jacks (Do not drill into the table with unsupported work piece)
- Select proper drill size
- Check condition of bit (Sharpen if necessary)
- Select proper feed and speeds i.e.: C.S. x 4 = Speed (Diameter of drill)
- Wipe inside the taper. Ensure no foreign material gets inside (Can damage inside of taper or cause taper not to hold correctly)
- Check condition of Tapers (cracks & wear)
- Position the drilling head with enough clearance to allow easy removal of drill bit but the spindle length is kept to a minimum
- Turn on drill press (and coolant pump if equipped).
- Ensure there is enough coolant in the reservoir (Add more if necessary)
- When drilling, always use our soluble coolant unless drilling an exotic material like aluminum, stainless, etc. and then you'll have to use recommended coolants.
- Always clear chips when the spindle is stopped. Never grab chips with your hand or a gloved hand. Place chips away from you and not in your workspace. (Tripping hazard)
- Careful when moving around the radial arm (i.e. Hitting your head on the end of radial arm)
- Always clear and remove chips when drilling thick work pieces.

Adjust to correct speeds and feeds when drilling very hard materials. (i.e. AR400 / QT100)

Check to ensure air hose has no leaks (chips tend to cut the hose & fix with proper clamps in warehouse if required)

- When using air-hose, be aware of other people and yourself. (Do not spray when somebody is walking by or spray yourself in the face)
- Careful with loose clothing. Make sure cuffs are buttoned up. Remove all rings and jewelry.

- Be aware of coolant spills. Place boards around the drill press to prevent a coolant spill, always place floor dry over spill (ASAP)
- Be aware of boring mill operators when they are moving large pieces with the crane. They may not be able to see you when they are moving things with the crane (Blind spot)
- When removing drill bits from the spindle, always grab the drill bit firmly and use the sliding drift. Careful attention should be paid when removing the drill as to not allow the drill fall onto the table or slam into your hand. If you use a regular drift, always use a rubber hammer so you won't nick the spindle.
- Keep the bench neat and tidy. Careful to avoid work pieces falling off the bench. Keep all walkways clear of obstructions.
- When sharpening a drill bit make sure the drill bit is kept cool. Too much heat will remove the tempering from the bit.
- When the drill is chipped or cracked, use the pedestal grinder to remove most of the damage. The sharpener is meant only to ensure proper cutting angle and the lips are the same length.
- Equal passes on both sides of the drill. i.e.: 5 Passes one side / cool / Flip over and 3 passes on opposite end.
- Put drill bits back sharp and in the correct place.

32. Grinding

General:

Severe injury may occur if proper protective equipment is not used and properly maintained. Use equipment guards, training and personal protective equipment as part of your safety plan.

1. Check the tool rest for the correct distance from the abrasive wheel, maximum 1/8" m or 3 mm.
2. Replace the grindstone when adjustment of the rest cannot provide 1/8" or 3mm clearance.
3. If the wheel has been abused and ground to an angle or grooved, reface the wheel with the appropriate surfacing tool.
4. Protect your eyes with safety glasses and a face shield at all times when grinding.
5. Protect your hands with gloves.
6. Protect your hearing with ear plugs or muffs.
7. Keep hands and clothing from getting caught in the grinding wheel.
8. Each time a grinding wheel is mounted, the maximum approved speed stamped on the wheel bladder should be checked against the shaft rotation speed of the machine to ensure the safe peripheral speed does not exceed the manufacturer's recommendation.
9. The flanges supporting the grinding wheel should be maximum of 1/3 the diameter of the wheel and must fit the shaft rotating speed according to the manufacturer's recommendation.
10. Bench grinders are designed for peripheral grinding. Do not grind on the side of the wheel.
11. Do not stand directly in front of the grinding wheel when it is first started.
12. Sparks from the grinding wheel can cause a fire or explosion if used too close to flammable materials. Remove any flammable materials first then set up protective barriers to contain sparks.
13. Never remove or disable the guard even if it allows you to work faster.
14. Allow the grinding wheel to run until maximum RPM is reached before grinding.
15. Inspect grinding wheel for cracks and defects prior to using. It is possible for the wheel to break and send pieces flying at great speeds.

Read manufacturer's specifications and OH&S Code for further information.

33. Use of Hand-Held Power Circular Saws

General:

This type of power hand tool is one of the most commonly used in construction. Because of this common use there numerous incidents due to thoughtless acts.

The following are the minimum accepted practices to be used with this saw.

1. Approved safety equipment such as safety glasses or face shields are to be worn.
2. Where harmful vapors or dusts are created, approved breathing protection is to be used.
3. The proper sharp blade designed for the work to be done must be selected and used.
4. The power supply must be disconnected before making any adjustments to the saw or changing of the blade.
5. Before the saw is set down be sure the retracting guard has fully returned to its down position.
6. Both hands must be used to hold the saw while ripping.
7. Maintenance is to be done according to the manufacturer's specifications.
8. Ensure all cords are clear of the cutting area before starting to cut.
9. Before cutting, check the stock for foreign objects or any other obstruction which could cause the saw to "kick back".
10. Check the blade for cracks. Ensure that saw blades with a crack of any size adjacent to the collar line or with a crack elsewhere that exceeds the limits specified in OH&S - Schedule 8, Table1 is removed from service and replaced or repaired.
11. Safety guard, blade and cord should be inspected prior to each use.
12. Store the saw safely in the tool crib when not in use.

34. Use of Portable Grinders

General:

Abrasive wheels can cause severe injury. Proper storage of new wheels, proper use of wheels and proper maintenance of wheels must be observed.

1. Familiarize yourself with the grinder operation before commencing work.
2. Ensure proper guards are in place (at least 120 degrees), and that safety glasses, ear protection, face shields, gloves and safety footwear are worn when using portable grinders.
3. Never exceed the maximum wheel speed (every wheel is marked). Check the speeds marked on the wheel and compare it to the speed on the grinder.
4. When mounting the wheels, check for cracks and defects, ensure that the mounting flanges are clean, and the mounting blotters are used. Do not over tighten the mounting nut.
5. Before grinding, run newly mounted wheels at operating speed to check for vibrations.
6. Do not use grinders near flammable materials.
7. Never use the grinder for jobs for which it is not designed.

35. Welding, Cutting & Burning (shop)

General:

Work involving welding, cutting and burning can increase the fire and breathing hazard on any job, and the following should be considered prior to the start of work.

1. Always ensure that adequate ventilation is supplied since hazardous fumes can be created during welding, cutting or burning.
2. Ensure adequate personal protective equipment is available before using and avoid watching arc. This includes buffing and grinding operators.
3. Where other workers may also be exposed to the hazards created by welding, cutting and burning, they must be alerted to these hazards or protected from them by the use of "screens".
4. Never start work without proper authorization.
5. Always have firefighting or prevention equipment on hand before starting welding, cutting or burning.
6. Check the work area for combustible material and possible flammable vapors before starting work. Remove these dangers before starting any project.
7. A welder should never work alone. A fire or sparks watch should be maintained.
8. Check equipment regularly for defects, particularly for defective cables and hoses. Protect them from slag or sparks.
9. Never weld or cut lines, drums, tanks, etc. that have been in service without making sure that all precautions have been carried out.
10. Never enter, weld or cut in a confined space without proper gas tests and a required safety lookout.
11. When working overhead, use fire resistant materials (blankets, tarps) to control or contain slag and sparks.
12. Cutting and welding must not be performed where sparks and cutting slag will fall on cylinders (move all cylinders away to one side).
13. Ensure cylinders are secured and in upright position.
14. Open all cylinder valves slowly. The wrench used for opening the cylinder valves should always be kept on the valve spindle when the cylinder is in use.

36. Use of Portable Arc Welders

General:

Portable arc welders are a piece of equipment that has to be treated like a vehicle. Do not operate them indoors.

1. Be sure the machine is firmly attached to the transporting unit.
2. Check all fluid levels, water, oil and gas to be sure they are at acceptable levels for operation.
3. When fueling, Do Not "top off" the gas tank. Gasoline expands as the outside temperature rises, this may result in seepage and an ensuing fire.
4. Do not fuel the machine while it is running.
5. Be sure the radiator and gas caps are in proper working order and securely attached.
6. Do a "walk around" to check for damage and obvious leaks.
7. Any repairs should be done by qualified mechanics or technicians.
8. Make sure all cables are wound securely when transporting.
9. Ensure the side covers are kept closed to protect the machine from any damage from external objects and outside weather, as well as to protect the operator and others from the moving parts of the machine.

37. Batteries/Charging and Servicing

General:

Canadian Road Builders Inc. mechanics and other employees work with batteries in their normal duties of maintenance and servicing of equipment and vehicles. Batteries contain sulphuric acid and should be handled by trained personnel and be charged in approved battery charging areas and/or with the proper charging equipment.

The following is the safe work practice when charging a battery.

1. Ensure the charger is off before attaching or removing clamp connections.
2. Attach clamps to the battery in proper polarity.
3. Ensure proper ventilation is in place where batteries are charged.
4. Inspect for defective cables, loose connections, corrosion, cracked cases or covers, loose hold-downs and deformed terminal posts.
5. Replace worn or unserviceable parts.
6. Tighten cable clamp nuts with the proper size wrench.
7. Utilize a cable puller to remove a cable clamp from the battery terminal.
8. Remove corrosion on the posts, hold-down tray and hold-down parts.
9. Use a tapered brush to clean battery terminals and the cable clamps.
10. Clean dirt from the battery with a water and baking soda solution.
11. Utilize a battery carrier to lift a battery.
12. Ensure battery cells are not filled above the level as indicated.
13. Wear safety glasses and gloves to protect your eyes in case of splashing or explosion.

38. Extension Cords

Only approved listed flexible electric extension cords shall be permitted for use.

- Flexible cords used to power equipment or appliances requiring grounding shall have a grounding lug installed on the plug.
- Flexible cords shall be protected against environmental or physical damage.
- Flexible cords shall not be permitted as a substitute for fixed permanent electric wiring.
- Flexible cords shall not be permitted to run through walls, ceilings, floors, or to be attached to any facility, building or structure surfaces.
- Flexible cords shall not be permitted to run through doorways, windows etc.
- Flexible cords shall not be concealed behind wall, ceilings, floors or floor coverings.
- Flexible cords shall not be permitted to have worn, frayed or damaged areas.
- Flexible cords shall have strain relief at the attachment ends.
- Flexible cords shall be inspected for serviceability prior to each use.
- Flexible cords shall be plugged directly to an approved electric receptacle.
- Defective flexible cords shall not be used.
- Flexible cord plug terminals shall be integral to the plug.
- If you are in doubt about using a flexible cord, do not use it and advise your supervisor at once.

39. Tire Inflation

Equipment and Tools Required

Clip-on air chuck

Combination fill valve and tire pressure gauge

Sufficient length of hose between clip-on air chuck and combination fill valve and tire pressure gauge (6 to 8 feet) to allow service personnel to stand outside the trajectory area in the event of a tire blow-out.

Procedures

- Check for broken or damaged lock rings and rims. These items must be repaired or replaced by qualified tire personnel only.
- Check for maximum tire pressure as indicated on the tire sidewall.
- Check the air pressure of the tire. The tire must not be inflated until the air pressure has been checked.
- If tires have less than 80% of the maximum air pressure in them, they must be inflated by a qualified tire person.
- Canadian Road Builder Inc. service personnel must not inflate tires that are flat.
- Tires must not be inflated over the maximum tire pressure on the tire sidewall. Maintenance personnel must be standing in a safe zone out of the trajectory area, listening and watching while inflating a low tire.

40. Floor Jacks

1. Ensure location is level and on solid ground where the vehicle is parked.
2. Vehicle should be in park and an emergency brake applied.
3. Follow instructions on the jack use.
4. Raise the vehicle to the height required.
5. Install jack stands under front-end or differential (back application). Check the owner's manual to an acceptable location.
6. Adjust to level and lower vehicle on jacks.
7. Always use two jacks.
8. When work is complete raise the vehicle enough to remove the jack stands and lower vehicle to ground.
9. Ensure all tools and materials are clear before moving vehicle

41. Ladders

General:

Ladders are a commonly used tool on the worksite. Unfortunately, there are enough incidents involving ladders that show that people often don't know how to use them correctly. Proper use of ladders is an important step in a positive approach to safety.

Even a fall from a low height can result in a serious head injury or broken bones. So, think about your safety plans before you set up your ladder.

Proper Ladder Use:

- All ladders shall be inspected prior to performing a task.
- Wooden ladders shall not be painted.
- Conductive metal ladders or wire or wire reinforced wooden ladders shall not be permitted in energized areas.
- Make sure the ladder is placed on an even surface and within easy reach of your work
- Extend the ladder 1m (3 feet) above a landing if you are using it for a landing
- Ensure the ladder is tied off and set at the proper angle.
- Three points of contact should always be maintained when climbing up or down.
- Ladders should not be erected on boxes, tables, scaffold platforms, man lift platforms or on vehicles.
- A ladder shall not be placed against an unsafe support.
- Climb the ladder one step at a time
- Don't stand a ladder on ice or snow
- Don't use an unstable object – like a rock or a brick - to level the ladder's feet
- If you are setting up in front of a closed door, open the door or lock it
- Always climb and descend facing the ladder
- Do not stand on the top two rungs – if you need to get higher, get a longer ladder
- Use anti-skid adjustable feet, secure blocking or have someone hold the ladder

When you are setting up a stepladder:

- Open the step ladder as far as it will go
- Lock the spreader arms in place
- Push the bracket shelf down into place

Use bracket shelf to set tools or objects on.

42. High Pressure Hydraulics

Hydraulic System General Information;

Popular hydraulic systems must store fluid under high pressure. 3 kinds of hazards exist: Burns from hot, high pressure spray, bruises, cuts or abrasions from flailing hydraulic lines, and hydraulic injection of fluid into the skin.

**If fluid punctures the skin, even if no pain is felt, a serious emergency exists. Obtain medical assistance immediately. Failure to do so can result in loss of the injuries body part or death.*

Maintenance

Only properly trained persons should inspect, test or service hose assemblies. Periodically check for oil leaks and worn hoses. Keep contaminants from hydraulic oil and replace filters periodically. Coat cylinder rods with protective lubricants to avoid rusting.

General Safety Practices

Hazard assessment must be completed before any job and must identify the correct personal protective equipment required. Where there is a risk of fluid coming into contact with eyes, safety glasses must be worn.

Pre-trip inspection of all valves, fitting and lines must be completed prior to use.

If you cannot identify the safe working pressure of a component or fluid conductor, Do Not use it!

Practice good housekeeping - do not let tools and disassembled components accumulate in the work area that can create tripping hazards. Clean up any oil spills as they occur.

Lock out tag out must be used if repairs are being performed on a hydraulic system and communication with co-worker is required before repairs are performed.

Never place your finger, hand or any part of your body in front of the fluid spray or dispensing gun. Never clean yourself with a pressure washer or pneumatic blow gun. Never tighten a leaking fluid conductor or bolted flange while the system is pressurized.

Always assume pressure is present.

Hydraulic systems can run hot. Always touch lightly and carefully at first, using the back of your hand - use hand protection if you cannot wait for the system to cool down completely.

Components and items that contain fluid must be drained and stored in a manner that prevents fluid leakage before any maintenance is performed. Spill kit and rags should be closed in case a spill occurs.

Fire extinguishers must be close by as hydraulic fluids are flammable.

Fitting types must be matched carefully as some "O-Ring" fittings and pipe fittings can be assembled mismatched - they can leak, spray dangerously or blow out of the other fittings.

43. Scissor Lift

General

Scissor lifts provide a safe and reliable platform for workers to perform job tasks when used according to the manufacturer's instruction. When not used properly, they can present a serious hazard to workers. Only trained workers are allowed to operate the scissor lift on site.

Recommended Precaution to offset hazards

Do not perform any repair on Scissor Lift with the platform in the raised position.

Never go under, or service a scissor lift, without having safety blocks on the track.

All personnel must stand clear of the machine when the platform is in motion.

Do not put hands or feet under the platform when in motion.

Do not stand, sit or climb on the scissor lift Do not use on soft, uneven or unstable surfaces.

Do not exceed load capacity Do not tamper or remove cover of the electrical junction box. Only authorized qualified personnel should service the electrical systems

Do not maintain the switches energized if the scissor lift does not move or has reached its up or down limits. This may cause damage to the motor, pump, and controls.

Load Scissor Lift correctly

Do not exceed the maximum rate load. Position lift so it will be centered.

Do not stand, sit or climb onto the Scissor Lift when operating it in order to avoid injury

If the Scissor Lift fails to move or exhibits strange movement or sound, STOP immediately. Do not operate the Scissor Lift until it has been checked and repaired.

44. Use of Compressed Air

General:

Air tools are powered by compressed air supplied by rubber hoses. If not treated with respect, these tools can become a powerful enemy rather than a servant. Protecting workers from injuries associated with operation of air tools.

1. Regularly inspect tools and hoses for cuts, bugles or other damage before using. Ensure that defective hoses are repaired or replaced.
2. Wear personal protective equipment such as eye protection, face shields, work gloves, ear plugs and ensure other workers in the area are made aware of or have restricted access to the hazard area.
3. A proper pressure regulator and relief device must be in the system to ensure that correct desired pressures are maintained.
4. The correct air supply hoses must be used for the tool/equipment being used.
5. The equipment must be properly maintained according to the manufacturer's requirements and comply with legislated safety requirements.
6. Do not use an air tool for any purpose other than what it is intended for.
7. Compressed air must not be used to blow debris or to clean dirt from any worker's clothes.

The equipment must be properly maintained according to the manufacturer's requirements.

45. Use of Pressure Washers

General

Since most pressure washers typically operate between 0 and 3,500 psi or more, they are capable of inflicting severe injury. Therefore, prior to using any pressure washer, workers must be made familiar with the safe operation of the equipment by trained or experienced personnel.

Any worker engaged in pressure washing must be familiar with the following safe work practices.

- Ensure that you are familiar with the safe operating procedures.
- Personal Protective Equipment will be worn, and this will include but not be limited to appropriate coveralls, gloves, and shield or safety glasses.
- Use extreme caution when working in close proximity to the object being washed as contaminants, such as dirt particles, debris, etc., can cause serious injury.
- Guard against pointing the nozzle at any personal body part or at any co-worker.
- Also remember that the high operating pressure can easily peel paint and damage components being cleaned.

<u>NO HORSE PLAY.</u>

Use caution when using any of the various chemical-cleaning agents used to remove the buildup of tars and oils from the equipment. Workers must be aware of all relevant SDS and first aid procedures as well as the preventative measures that should be taken to avoid injury.

Keep the machine, hoses and all connections in good repair at all times. Ensure that any metal conduits are adequately covered to prevent burns

46. Proper Lifting Practices – Hoisting

General:

Lifting loads have many types of hazards to consider before preparing for a lift. Ensure that the lifting device is fit and safe for use. Check the plate on the lifting device prior to use of the rated load capacity of lifting device or load chart.

Evaluating the Load

Determine the weight of the object or load prior to a lift to make sure that the lifting equipment can operate within its capabilities.

Balance Loads

Estimate the center of gravity or point of balance. The lifting device should be positioned immediately above the estimated center of gravity.

Landing the Load

Prepare a place to land the load, lower the load gently and make sure it is stable before slackening the sling or chain.

1. Never exceed the working load limits of the lifting chains or straps.
2. Make sure the hoist or crane is directly over the load.
3. Use slings of proper reach. Never shorten a line by twisting or knotting. With chain slings, never use bolts or nuts.
4. Never permit anyone to ride the lifting hook or the load.
5. Make sure all personnel stand clear from the load being lifted.
6. Never work under a suspended load, unless the load is properly supported.
7. Never leave a load suspended when the hoist or crane is unattended.
8. Inspect all slings thoroughly at specified intervals and maintain them in good condition.
9. Inspect each chain or sling for cuts, nicks, bent links, bent hooks, etc., before use. If in doubt, don’t use it.
10. Ensure that safety latches on hooks are in good working condition.
11. Ensure that the signaler is properly identified and understands techniques of proper signaling.
12. Make sure a tagline is used to control the load at all times.

If there are any doubts of the lifting device, the operator must not move any equipment or load until the working conditions are safe.

47. Exhaust Fan System

1) START-UP: (Vents off)

- Vehicle running uses exhaust venting.
- Welding/Torching/Dust, etc. use room exhaust or vehicle venting

2) Exhaust Venting:

- Hookup hose on tailpipe before starting vehicle & exhaust fan system
- Open lower vent door on the line to vehicle
- Check that the roof vent is shut
- Start up exhaust fan system
- Start vehicle

3) Room Exhaust Venting:

- Before work starts, engage the venting system.
- Ensure hose lines are closed.
- Open upper vents with chain and weight to ensure it stays open. (If required as some are automatic)
- Start up exhaust fan system

4) SHUT DOWN after the work activity has stopped.

Perform shutdown in reverse order for each application.

48. Exhaust Hood System

Hood Exhaust Venting:

a) Before work starts, engage the venting system.

b) Put material into the venting area.

c) Do not stick head into the venting area.

d) Engage in work to be performed.

SHUTDOWN after the work activity has stopped.

49. Care and Handling of propane cylinders

General:

Since propane is heavier than air and invisible, it is a special concern when it is being used on the jobsite. Protecting workers from injuries associated with the care and handling of propane cylinders can be accomplished by taking the following precautions.

No person shall handle propane cylinders or use propane cylinders until they are fully aware of the potential hazards and the precautions necessary to handle propane safely. Supervisors are responsible to facilitate and /or provide proper instruction to their workers on protection requirements and any training requirements. No one shall fill propane cylinders unless CERTIFIED by trained and recognized agents.

Cylinders:

1. Ensure WHMIS and/or TDG labels are attached and visible.
2. Cylinders are transported and secured (chained or tie strapped) in an upright position in a ventilated area.
3. Cylinders will not be stored inside buildings, or carried in closed canopies, vehicles, tool vans.
4. Regulator to be installed on cylinder prior to use.
5. When checking for leaks use a soapy water solution.
6. When not in use, cylinder to be secured in upright position, valve closed, and regulator removed.
7. Cylinders should not be used if the shoulder label/stamp is not legible or it is out of date. Annual spring checks are to be completed to ensure all are ready to be utilized during the construction season.
8. When not in use, a plug or cap must be used to seal the opening of the valve.
9. Ensure cylinders in storage or transit have been equipped with valve caps and the regulator is removed.

Cylinders can be painted after being inspected; however stamped numbers must always be legible.

50. Care and Handling of Propane Cylinders on Forklift

General

No person shall handle propane cylinders or use propane cylinders until they are fully aware of the potential hazards and the precautions necessary to handle propane safely. Supervisors are responsible to facilitate and /or provide proper instruction to their workers on protection requirements and any training requirements. No one shall fill propane cylinders unless CERTIFIED by trained and recognized agents.

Check Date of expiration on Tank before you do anything!

- Position the tank so the liquid propane does not come in contact with the relief valve.
- Make sure the locking pin engages into the cylinder.
- Make sure the valve is closed tightly.
- Store the cylinder outside, in an upright position, in an area where it can be secured and is protected from being struck.
- Put the cylinder down gently. Do not drop, dent or damage.
- Always protect the valve from any damage.
- Avoid contact with liquid propane, as it can cause frostbite.
- Wear protective gloves while making or breaking connections
- Ensure that only qualified persons repair carburetors and fuel supply systems.
- For repairs, use only components that agencies such as the CSA Group (Canadian Standards Association) have approved.
- Exchange removable cylinders outdoors or in well-ventilated areas, away from sources of ignition.
- Close the valve before breaking connections.

Procedure for changing propane (LPG) cylinders:

1. Wear eye protection and insulated, loose fitting gloves such as leather (dry) or insulated neoprene.
2. Close the valve on the cylinder.
3. Run the engine until it stops. This ensures that the connection hose is empty.
4. Shut off the engine.
5. Open the connecting nut and inspect valves for leaking. Do NOT use metal tools.
6. Disconnect the hose.
7. Disconnect the holding straps.
8. Remove the empty cylinder.
9. Replace with a full cylinder in the proper position.
10. Connect the holding straps.
11. Tighten the connecting nut (wiggle hose).
12. Open the valve on the cylinder slowly and check for leaks. Use a solution of soap and water. Smell – listen – look.
13. If the valve leaks:
    - 1st time - Tighten the nut and continue.
    - 2nd time - Change the cylinder.
    - 3rd time - Change the hose.
14. Open the valve fully (slowly).
15. Check that the hose is turned inward.
16. Secure the hose downward.
17. Secure the cylinder.
18. Start the engine and resume operation.

<u>Do Not's</u>

- Do not use metal tools when changing a cylinder.
- Do not use excessive force when opening the valve.
- Do not let the cylinder get too hot.
- Do not drag, drop, roll or slide cylinder or allow it to bang against other objects.
- Do not use matches or a flame to check for leaks. Use soap or a leak detector.
- Do not mount more than one LPG cylinder on any forklift truck.

51. Equipment Loading and Unloading

General

There are hazards associated with the loading and unloading of any equipment. This Safe work practice is to assist those workers who are involved in this activity, so that the commonly known hazards which they may encounter are addressed through either elimination, reduction or other procedural control.

Responsibility

Supervisors

It is the responsibility of the Supervisor to ensure that this SWP has been reviewed, is understood and adhered to by all Truck Drivers and designated labourers, prior to their loading or unloading of any equipment

Truck Driver

It is the responsibility of the Truck Driver to have reviewed this SWP and to follow the requirements as they are listed. Truck Drivers must inspect their trucks and trailers each day, prior to undertaking any work activities. Any defects must be noted and reported to their Supervisor prior to any loading or unloading operations. Truck drivers must also complete an inspection of the equipment they are assigned to load or unload and to review the contents of the equipment's logbook and sign in acknowledgement.

Designated Labourer

It is the responsibility of the Designated Labourer to adhere to this SWP. They must be familiar in the use of proper hand signals. All ground personnel including the Labourer must remain within the operator's line of vision when within the 6-meter hazard zone.

Procedure

1. Only competent Truck Drivers or competent Equipment Operators shall be allowed to load and unload equipment without direct supervision.
2. A Labourer shall be designated to assist where high ambient noise levels or poor visibility interferes with a Truck Driver's ability to see objects on all sides of the equipment during the loading/unloading process.
3. Designated Labourers are to ensure that eye contact and confirmed communication is carried out with truck drivers PRIOR to entering the 6-meter equipment "Danger Zone".
4. Truck Drivers must not park their truck or trailer in an area where equipment will enter within 15 meters of any power line during the loading or unloading process.
5. Equipment shall be lined up with the trailer and ramps so that no turning shall be necessary during loading & unloading.
6. For any loading and unloading the trailer must be secure from movement, the load must be balanced (side to side) and the trailer wheels must be parked on hard, level and stable ground so as to further ensure the deck end remains level.
7. The truck and trailer shall have their parking brakes applied during loading and unloading.
8. If a trailer is equipped with an air ride system, the system must be deflated prior to loading and unloading.
9. Equipment track must be appropriately clear of snow, ice, and mud prior to loading and unloading.
10. No one shall be allowed to stand to either side of the trailer deck, in the potential fall zone of equipment during the loading process.
11. Side booms, tack rigs, rubber-tired equipment as well as equipment with less than 12'6" of track contracting the ground shall NOT be loaded or unloaded over Beaver tails. This equipment is to be loaded or unloaded over the front of 'drop deck' or 'scissor-neck' style trailers.
12. The only exceptions to the above shall be in circumstances where the site condition or access conditions are such that it is unsafe or unreasonable to utilize a 'drop-deck' trailer or where a set of ramps that are approved for use by the supervisor are used. In either circumstance this task will be carried out only after consultation between supervisor and truck driver.
13. If the beaver tail ramp of a trailer is to be used for loading or unloading of any equipment, a Designated Labourer shall be present for the duration of the task.
14. When loading or unloading is to be carried out over beaver tails, the trailer must be hooked to a truck and the truck and trailer must be in alignment with each other. Exceptions to this practice shall be carried out only after consultation with the Supervisor and Truck Driver.

15. If the condition or design of the equipment is such that there may be insufficient braking, acceleration or handling capability to maintain adequate control during loading or unloading, the equipment must be assisted by the use of the winch line of the truck.
16. Gloves must be worn when handling wire rope cable. No person shall allow wire rope cable to slide through their hands, regardless of the type or thickness of gloves being worn.
17. The winch, its operating components and its wire rope line shall be properly maintained and shall be inspected prior to use.
18. Wire rope shall be securely fastened to the winch drum and at least five full turns of wire rope shall be kept on the winch drums at all times.
19. No person shall be allowed to stand in the potential recoil area in case of a failure of the winch line or any of its components when it is under tension.
20. When the winch line is under tension no one shall be allowed to pass between the equipment and the trailer or the equipment and the winch.
21. All truck Drivers must carefully inspect the equipment that they intend to load or unload. Equipment deficiencies which may affect loading or unloading are to be reported to the Supervisor immediately. Do not operate equipment, which is in an unsafe condition.
22. The three-point contact system is to be used when mounting and dismounting equipment, including truck cabs and trailer decks.
23. Only the person operating the controls is to be on the equipment when it is being loaded or unloaded.
24. Seat belts which are supplied by the equipment manufacturer shall be worn when equipment is being loaded or unloaded.
25. When loading or unloading dozers, the blade is to be kept as low as possible on ascent or descent from the trailer, so as to ensure a low center of gravity. The same consideration shall be made for any powered mobile equipment which had attachments (books etc.)
26. When crossing any balance point, progress is to be kept slow and steady. Any sudden movement, stopping, acceleration, decelerating and turning are to be avoided.
27. Unnecessary movement of the equipment while on the trailer deck shall be avoided.
28. Upon completion of loading or unloading all ground engaging attachments shall be lowered.
29. Chains are not to be used for lifting or towing. They are difficult to visually inspect and as such have the potential to unexpectedly break while under tension. Chain is only to be used for securement purposes and only grade 70 chain (or higher) shall be employed.
30. Lever-style boomers are not to be used. Levers have the high potential to snap unexpectedly to the open position when tension is being applied which could result in serious injury. Only ratchet style boomers are to be used.
31. Prior to transport, decks, platforms, steps, ramps and equipment shall be cleared of any oil, grease, ice, mud, loose tools, gravel, as well as any other loose items.
32. All loads must be fully secured, regardless of the distance being travelled.
33. *When unloading is complete, ramps must be placed in the upright (Transport) position to ensure that nothing can travel up ramps unattended. This is to ensure our crews safety should they be on the deck of trailer.*

52. Heavy Equipment Operation

General:

To reduce the possibility of property damage and personal injury while backing, mounting, or dismounting equipment, working in inclement weather, and working near overhead objects, supervisors shall verify that operators are capable and qualified on each type of equipment before allowing the equipment to be operated in an unsupervised situation.

- Operators shall perform a pre-operational check of their equipment;
- Operators shall be familiar with the operation manual;
- Report needed repairs promptly;
- Do not use any equipment that is unsafe;
- Keep windshield, windshield wipers, and mirrors clean;
- When mounting or dismounting equipment, use the steps and handholds provided, and three-point contact;
- Do not jump from the vehicle;
- When operating equipment, be aware of protruding or overhanging objects;
- When traveling, make sure blades are properly positioned;
- Slow down when crossing railroad tracks;
- Plan ahead to minimize the need for backing-up;
- Always check to the rear before backing up and use a spotter when available;
- Make sure back-up alarms are working properly;
- Be on the lookout for hazards in-or-adjacent-to the travel pathway, such as bridge joints, curbs, manhole covers, and other utilities;
- Operators shall wear a lap belt while seated, or stand-up harness while standing (if equipped);
- Tire chains should be utilized as dictated by weather conditions;
- Operators should be aware of employees and others on foot within the work zone;
- When in operation, only the operator shall be permitted on the machine

53. Operating Light Vehicles

General:

- Vehicles that would be considered light are: half or three-quarter ton pick-up trucks, three-quarter ton crew-cabs, and one-ton crew trucks that may haul a small equipment trailer;
- Prior to start up, a walk around inspection must be performed, visually checking all lights, tires, for any fluid leaks (i.e.: power steering fluid, etc.). At this time, you should also look under the hood to check fluid levels, belts, etc.;
- Report any deficiencies promptly and have any safety hazards repaired. Do not attempt to operate an unsafe vehicle;
- Do all adjustments while not in motion (i.e.: seat adjustments, tilt steering, seat belts, mirrors, etc.);
- Do not transport more passengers than your vehicle is designed to hold. Ensure all passengers have their seat belts on;
- Do not transport workers in the box of the truck at any time;
- Do not consume alcohol or drugs during or prior to operating a vehicle. Do not drive if you are taking prescription medicine which may affect your reactions, perceptions, or which may cause drowsiness;
- Drive according to road conditions. Adhere to posted speed limits on public highways, and do not exceed 80 km on secondary roads. Adhere to all federal, provincial, and municipal traffic regulations;
- Secure all loose objects inside the cab i.e. tools, parts, hard hats, etc. These can become dangerous flying projectiles in the event of an accident;
- Do not depend on the transmission to “hold” your vehicle when parking on a grade. Always shut off the engine and apply the parking brake. For steep slopes, also block the wheels with a suitable tire chock;
- Always maintain maximum visibility. Keep your windows and rear-view mirrors clean, and keep all lights free of dirt and grime;
- When materials, tools, equipment, and/or flammable substances are being transported in the box of a vehicle, they shall be loaded and secured in such a way as to prevent any movement of the load, which could create a hazard to workers/passengers (NOTE: the means of load restraint shall be capable of preventing significant movement of the load under emergency braking conditions);
- The interior of all vehicles must be kept clean and free from garbage build-up and the exterior washed as often as possible.

54. Load Ratchet Boomers

Workers must be trained in the use of ratchet boomers.

2) Protective equipment required:

- Steel-toed footwear
- Gloves
- Hard Hat
- Eye Protection

3) Operation Procedures:

A. Installing:

- Ensure chains have proper ratings.
- Inspect chains for damage and properly attach to the trailer or truck deck.
- Inspect ratchet boomers for damage and proper operation.
- Thread chain through fastening hooks, clevises or around frame.
- Keep in mind any piece of wheeled equipment over 4,500 kg, requires four independent points of securement.
- Ensure, when the chain is tightened, no damage to equipment will occur and the machine will be totally secure.
- Remove chain twists above and below the ratchet boomer.
- Fasten bottom end of ratchet boomer to chain link.
- Make adjustments to top or bottom chain /ratchet boomer connections to secure the machine.
- Check chain tension and that machine is secure. (DO NOT OVER TIGHTEN)
- Secure chain ends.
- Check periodically for tightness as per NSC regulations.

B. Removal:

- Visually check for any damage and dangers.
- Switch ratchet boomer setting to loosen chain.
- When ratchet boomer has been loosened and chain tension eased, disconnect chain links/ratchet boomer link at each end of ratchet boomer.
- Inspect ratchet boomer for damage, proper operation and store safely away.
- Remove, inspect and store chains safely away.

C. Potential Hazards:

1. Watch fingers when tightening the ratchet boomer.
2. Tension on boomers may have increased or decreased during transportation.
3. Damage to chain and/or ratchet boomer.

D. Recommended Actions:

1. Tighten slowly ensuring not to over tighten.

2. Check tension periodically and adjust accordingly. Always loosen slowly.

3. Inspect on a regular basis as per the NSC. (load checks are required in the first 80 km and every 240 km thereafter)

55. Truck Mounted Attenuator

Guidelines:

Travel Position:

When a unit is not in use or is in transit to or from a work zone, the unit should be in the raised position and securely locked in place. The hoist will raise the unit until it reaches the positive stops located on the bracket assembly where it will automatically lock in place. The chains can be restrained while the system is up by passing the supplied linchpin through the chain and the tabs provided at the top of the bracket assembly. Ensure there is slack on the winch strap to prevent damage to it.

In-Service Position:

The unit should be lowered to the horizontal position with its full weight resting on the support chains. The turnbuckles should be adjusted to ensure a traveling height of 12”-14” under the rear of the system.

CAUTION:

Care should be taken to ensure that there is no slack in the hoist strap prior to releasing the latching mechanism and lowering the system.

MPS 350-III SYSTEM PRODUCT WARNINGS

1. Do not install the system if suspended fuel tanks on the support vehicle are less than 10’-6” from the rear of the vehicle.
2. Do not install the system until the support vehicle is ballasted to proper operational weight (per local spec.)
3. Do not release the latching mechanism with excessive slack in the hoist strap.
4. Do not allow the hoist strap to support any system weight when the unit is in the down position.
5. Do not stand under the unit as it is being raised or lowered.
6. Do not use the unit to transport any loads at any time.
7. Do not replace support strut shear bolts from source other than manufacturer.
8. Do not stand or sit on any part of the unit at any time.
9. Do not replace rip plates from sources other than manufacturer.
10. Do not put in service until bumper assembly is braced to vehicle frame per installation instructions.
11. Do not attach unauthorized accessory equipment to the unit without prior approval from the manufacturer.
12. Do not modify the system in any way without prior approval from the manufacturer.
13. Do not travel to and from the work zone at highway speeds with the unit in the down position.
14. Do not allow the unit to bounce excessively when encountering known road hazards (slow U-turns when required).
15. Do not operate a unit without a light system connected and functioning properly.
16. Do not operate with more than 14” of ground clearance under the nose.
17. Do not operate units without verifying proper function of the hoist limit switch.

MPS 350-III SYSTEM FUNCTIONS

ITEM 1 IN-SERVICE HEIGHT: The MPS 350-III can be adjusted by raising the system with the electric hoist and then adjusting the turnbuckle in each chain assembly. The system should be adjusted for 12”-14” of ground clearance under either rear corner.

ITEM 2 VERTICAL LIMIT SWITCH: The MPS 350-III can be raised to a vertical position using the electric hoist and the control pendant supplied with hoist. As the frame approaches the vertical position, a pair of coil springs located on the bracket assembly will contact a structural cross piece on the frame. The frame will compress the springs until the safety latch drops into place. After the latch drops into place, the limit switch should stop the upward motion of the frame prior to its bottoming out against the tubes that contain the springs. The limit switch should be adjusted so that the upward motion of the hoist is topped after the latch falls and before the frame bottoms out against the tubes. ***Failure to adjust the limit switch properly may result in failure of the electric hoist.***

ITEM 3 LOWERING THE UNIT: The MPS 350-III can be lowered from the vertical traveling position to the horizontal deployed position by manually raising the safety latch and then lowering the unit with the electric hoist. The limit switch described in Item 2 above, only stops the upward motion of the electric hoist. Downward control is maintained at all times.

Lower the unit all the way down so that its weight rests on the support chains. If weight is left on the hoist strap while the system travels over the road, the hoist and the attachment point to the frame will be damaged.

CAUTION: The lift strap on the MPS 350-III should always go over the top of the electric hoist drum to ensure proper function of the limit switch system.

ITEM 4 USING THE JACKS: The MPS 350-III is supplied with three screw-type jacks that can be used to maneuver the system around the support vehicle. When not in use, the jacks should be fully retracted to ensure that they are not damaged during operations. When moving the system away from the vehicle, use the jacks to ease disconnection and then lower the system at all three jack points prior to rolling the system around.

On vehicles with a long overhang behind the rear axle it may be necessary to remove the bracket jacks from the jack plates to ensure that the jacks are not damaged during operations.

ITEM 5 CHAIN RETAINERS: The MPS 350-III is supplied with a linchpin and a pair of tabs located at the top of the bracket assembly. When the system is raised to the full vertical position, the operator should lock the chains between the tabs with the linchpin. This will keep the chains from swinging and will provide an additional level of safety.

IN CASE THE UNIT IS HIT

During a high-speed, design impact, the MPS 350-III will function as a series of events:

1. The 3/8” diameter shear bolts will release the bracket from the support struts.
2. The bracket will rotate to a vertical orientation until it hits the bottom cross piece on the bumper assembly.
3. The frame assembly will begin to move forward and under the vehicle as the galvanized plates on the sides of the beams are cut by the cutter plates.
4. The impacting vehicle and the MPS 350-III frame will come to rest together after some distance that depends on the speed and weight of the impacting vehicle.

A NUISANCE HIT in one that shears the 3/8” bolts and drops the bracket but does not cut any of the galvanized plates. The system can be returned to service in the following way:

1. Disconnect the chain assemblies on the rear of the system.
2. Run out a small amount of slack in the electric hoist strap.
3. Use the bracket jacks to raise the bracket back to its original 45° position.
4. Replace the 3/8” shear bolts with approved replacement items.
5. Retract the jacks to their traveling position.
6. Raise the frame with the electric hoist and/or the rear jack.
7. Reconnect the chain assemblies.
8. Retract the rear jack to its traveling position (if used).
9. Continue operations.

Note: In step 3, function of the jacks will initially be at a 45° angle. This angle can be reduced by pulling the support vehicle slightly forward while the MPS 350-III remains attached but still resting on the ground.

A LOW-SPEED HIT is one that rips less than 45” of the galvanized rip plates. This length includes the precise 6” slot on the frame assembly. Should such an impact occur, the bracket can be released from the bumper, bracket, frame, and then transported to a repair facility by a wrecker. In some cases, the electric hoist can be used to lift the nose of the system slightly off the ground and then the system can be transported by the support vehicle in a low ground clearance condition. The first 45” of rip plates can be replaced and the entire system reused.

A MEDIUM-SPEED HIT is one that trips between 45” and 87”. The system can be released from the support vehicle and transported by wrecker as described above. The frame assembly must be replaced. If damaged, the bracket and bumper must also be replaced.

A HIGH-SPEED HIT is one that rips beyond 87” of rip plate. The system can be released from the support vehicle and transported by wrecker as described above. The frame and bracket must be replaced. The bumper must also be replaced if it was damaged.

SEE: Section 6 Preventative Maintenance for specific guidelines on operation and maintenance.

Additional information:

- The horse show brackets located at the bottom of the unit when in the raised position need to be checked on a daily basis. If they are cracked or broken, they can cause an excessive “wobble” which will eventually do damage to the rip plates.

- Ensure the chargeable rip plates (closest to the truck) are not cracked, split or otherwise damaged as this will change the performance of the attenuator during a crash.

YOUR LIFE MAY DEPEND ON IT !!

56. - Refueling Equipment

General:

Refueling of equipment includes gas, diesel and propane. Ensure that the proper fuel for the unit is used and always use proper containers when transporting fuels. Refueling of equipment is a daily task in the construction industry which may be hazardous if not carried out properly.

1. Ensure you are familiar with the regulations.

2. Propane certification is required before a worker can refill any propane cylinder.

3. Ensure the refueling area is well ventilated.

4. Ensure equipment is shut off prior to refueling.

5. Ensure there is no ignition source within 7.5 meters of the vehicle.

6. Prevent the fuel overflowing or spilling onto equipment or ground.

7. Do not overfill the tank or jerry can, due to expansion of fuel from ambient heat.

8. Do not use an object or device that is not a part of the nozzle assembly to maintain the flow of fuel.

9. No smoking when refueling is in process

57. Towing

General:

Towing may be required when a disabled vehicle or piece of equipment needs to be relocated to a better location (E.g. blocking the flow of traffic). Towing vehicles or equipment requires proper training and tools.

1. Ensure warning signs or devices are in place.
2. Ensure that both parties are aware of proper hand signs.
3. DO NOT stand between vehicles.
4. Wear proper PPE (High visibility vests, gloves, etc.)
5. Attach a tow rope to a secure part of the unit. Do not connect the tow rope to the axle, will cause damage and void warranty.
6. Ensure the vehicle or equipment is in “N” neutral position or out of gear.
7. If required to move a vehicle more than a short distance do not exceed 50 km/h.
8. Ensure that the unit being towed has stopping capabilities.
9. NEVER TOW A VEHICLE IN REVERSE.
10. Use tow hooks attached to the front of the vehicle/equipment.

58. Spray Painting

General:

Spray painting is an integral part of Canadian Road Builders Inc. operations. It includes the application of highway marking and spraying equipment in maintenance work at the end of the season. The company is concerned with conditions of the application and the protection of the workers. One hazard of spray painting is that you may breathe in or swallow chemicals. Symptoms of overexposure may be:

Immediate:

- Drowsiness, dizziness, light-headedness
- Nausea, vomiting
- Eye/throat irritation
- Allergic responses, such as hives
- Shortness of breath

Other health situations that may be caused by overexposure to paint materials are:

Long Term:

- Dermatitis
- Heavy metal poisoning (Lead, nickel, chromium, and cadmium)
- Nerve, kidney or liver damage
- Asthma-like wheezing with tightness in the chest

All employees are required to be knowledgeable in chemical hazards regulations, SDS, WHMIS, Occupational Exposure limits and PPE when performing work with spraying of paint.

1. Ensure workers are fully trained and knowledgeable.
2. Follow manufacturer's recommendations.
3. Ensure all sources of ignition are eliminated. (torches, motors or heaters)
4. Ensure equipment is grounded.
5. Ensure the area is ventilated.
6. Never smoke around spray painting operations.
7. Practice good housekeeping.
8. Have a fire extinguisher on hand.
9. Wear the proper protection, eye protection, coveralls and gloves. Make sure your PPE fits well and is being used properly to achieve the maximum protection.
10. Ensure the correct cleaning product is used for cleanup.
11. Cleaning products and paint materials are disposed of in a correct manner.

59. Use of Tiger Torches

General:

Tiger torches, although valuable to a jobsite, are sometimes misused in a manner that can make them dangerous. Supervisors are responsible to facilitate and provide proper instruction to their workers on protection requirements and training.

When a torch is used, an adequate fire extinguisher must be present.

1. Ensure you are familiar with the operation of equipment
2. Follow proper procedures for lighting a torch.
3. Torches are not to be used for heating or thawing of lines and equipment, etc. when in use.
4. Ensure fuel lines are in good working conditions.
5. Ensure cylinders are properly secured and regulators in place.
6. When the torch is not in use, shut the torch off.
7. Ensure that the propane bottles are properly shut off.
8. Fuel lines to have regulators.
9. Regulators should be taken off before and during transportation of propane bottles.
10. Propane bottles shall be secured in an upright position.

Never leave a lite propane torch unattended or close to concrete as concrete will explode if overheated.

60. Filling/Pouring Pails of Thermoplastic

General:

Thermoplastic can cause serious and painful burns. Always ensure that proper Personal Protective Equipment is worn to eliminate or minimize the potential for burns.

- Use proper P.P.E. (Protective Heat Resistant or Kevlar sleeves over work gloves to prevent product from going into gloves)
- When able, position cooker truck as close as possible to work area.
- Check condition of pails.
- Sweep any glass beads away from the rear of the cooker. (Slipping hazard)
- Place pail directly below the chute.
- Stand off to either side of the chute. (Caution when windy)
- Open the chute slowly and fill the pail slowly.
- Fill pail until thermoplastic is 5-7 cm below the rim.
- Carefully take pail off the tray.
- Use extreme caution when carrying pail across intersections or near traffic and parked vehicles.
- Pour plastic in hand form starting closest to you, moving the pour from side to side inside the form.
- To stop, slowly return the pail to a level position.
- Use a spatula to wipe the front of the pail of any excess plastic.
- Use spatula to clean excess thermoplastic out of pail when finished.

Always practice good housekeeping on the job site.

61. Use of Thermoplastic Applicators

General:

The applicators that Canadian Road Builders Inc. uses are the S & S Hofmann and/or Trantex applicators. These applicators are specialized pieces of equipment and require an operator to understand the function and characteristics before operating. The operation, preparation and care must be done by the operator or someone with proper training.

<u>Training must include:</u>

- Proper personal protective equipment to be worn. This includes but is not limited to hearing, arm (Heat Resistant Kevlar sleeves), eye, foot, hand protection and no nylon clothing.
- Correct method of lighting burners.
- Safe Procedure for transferring plastic to the applicator.
- Proper methods of traffic control to ensure safety of workers and public.
- Observation of all traffic regulations.
- When operating, always stay alert.
- Use extreme caution when cleaning out the kettle at the end of the day.
- Once the application shoe has been removed, be sure it is not damaged and is cooled down enough to put into the cube van.

62. Tote Tanks – Use & Handling

1. Remove the bung in the lower exit pipe and thread in your 8-inch pipe with male quick fit adapter.

2. Attach your loading hose with its female quick fit fitting to the male fit on the exit pipe.

3. Remove ONE – 2-inch vent bung in the lid on the top of the tote tank. Pierce the plastic cover sheet, to let air enter the tank.

4. Under no circumstance should ring, bolt and cover be removed from the tote tank as it secures the inner liner of the tote tank.

5. Cut the security band on the handle of the valve at the bottom exit point, open the valve and load paint through the truck's loading pumps.

6. After loading paint close valve.

7. Replace all bungs (lid and valves) and tighten securely.

8. When returning empty totes to suppliers of products make sure to prepare proper shipping documentation.

63. Use of Asphalt Grinders

General:

Lafrentz Road Marking has Hand grinders, Weber, Wirtgen and/or Road Pro grinders to remove a strip of asphalt. The operation, preparation and care must be done by the operator or someone with proper training.

Training must include:

- Proper personal protective equipment to be worn. This includes hearing, hand, foot, eye protection and no nylon clothing.
- Correct method for lighting burners if required.
- Proper methods of traffic control to ensure safety.
- Observation of all traffic regulations.
- Proper method to change grinding head. Be careful of the burner area.
- Proper method for changing grinding teeth.
- When operating, always stay alert.
- Awareness of extremely hot surfaces.

64. Use of Weed Eaters/Lawn Mowers

General:

Employees help maintain the shop and yard areas. This sometimes includes assisting with the control of weeds for fire prevention. In performing this duty, the use of weed eaters/lawn mowers are required. There are possible injuries associated with the use of weed eaters/lawn mowers.

The weed eaters/lawn mowers should be utilized within manufacturer's recommendations. The following are guidelines for the use of weed eaters/lawn mowers.

1. Ensure P.P.E. is worn. (E.g. Eye and ear protection, footwear and long pants.)
2. Check with the manual to ensure the right mix of fuel is used.
3. Ensure the string amount and that it is installed correctly before starting.
4. Check fuel level.
5. Only service when the engine is off.
6. Shut off equipment when refueling.
7. Ensure string mechanism is away from you and all others before starting.
8. Check areas prior to using the weed eater to ensure there are no loose objects that can be struck and sent flying.
9. Ensure string does not hit fences, trees or rocks.
10. Ensure guards and protective devices are in place.

65. Hydraulic Post Pounder

General

1. Ensure locates are completed prior to any post pounding activity
2. Basic PPE, as well as hearing protection, gloves and safety glasses shall be worn while operating a hydraulic post pounder.
3. As is practical to do so, operate the hydraulic post pounder only on smooth and level ground.
4. Only trained and competent personnel may operate a hydraulic post pounder.
5. Loose clothing and body parts must be kept clear of all moving parts of the machine.
6. “Free-blows” should be avoided as the machine can jump on empty hits.
7. Never use the hydraulic post pounder around combustible materials due to the potential for sparks.
8. Hard or frozen ground can lead to post splintering. Do not hold the post with your hands.
9. Never use any tool or makeshift attachment that is not specifically designed for the Post Pounder.
10. Riding on the hydraulic post pounder is NEVER allowed.

    **Always shut the hydraulic post pounder off when refueling or servicing

66. Fall Arrest Harness Inspection

Important:

If the full body harness has been subjected to fall arrest or impact forces it must be immediately removed from service and destroyed. Extreme working conditions (harsh environments, prolonged use, etc.) may require increasing the frequency of inspections. All harnesses need to be inspected prior to use and record on the appropriate tracking sheet. Any worker working above 3 feet must be equipped with fall arrest in case of a fall.

Procedure

Where workers cannot be protected from falls by guardrails or travel restraint, they must be protected by at least one of the following methods:

- Fall-restricting system
- Fall-arrest system.

In the event of a fall, these systems must keep a worker from hitting the ground, the next level below, or any other objects below. A fall-restricting system is designed to limit a worker's free-fall distance to 0.6 metres (2 feet).

- Temporary fixed supports used for anchorage with a fall restricting system must support at least six kilonewtons (1,350 pounds) without exceeding the allowable unit stress for each material used. A safety factor of two should be applied.
- Components described under fall-arrest systems can be used for fall-restricting systems.
- Fall-restricting systems generally fasten to a sternal connection on your harness, then to a wire rope grab or fixed ridged rail system used for climbing ladders.

A fall-arrest system

- Must include a CSA-approved full-body harness
- Must include a lanyard equipped with an energy absorber unless the energy absorber could cause a falling worker to hit the ground or an object or a level below the work
- Must include an adequate fixed support; the harness must be connected to it via a lifeline, or via a lanyard and a lifeline
- Must prevent a falling worker from hitting the ground or any object or level below the work
- Must not subject a falling worker to a peak fall-arrest force greater than 6 kilonewtons.
- All fall protection equipment must be inspected for damage, wear, and obvious defects by a competent worker before each use
- Any worker required to use fall protection must be trained in its safe use and proper maintenance.

Anchor Systems

There are three basic types of anchor systems for fall protection:

1. Designed fixed support – load-rated anchors specifically designed and permanently installed for fall protection purposes as an integral part of the building or structure (for example, roof anchors on high-rise buildings)
2. Temporary fixed support – anchor systems designed to be connected to the structure using specific installation instructions (for example, nail-on anchors used by shinglers)
3. Existing structural features or equipment not intended as anchor points but verified by a professional engineer or competent person as having adequate capacity to serve as anchor points (for example, rooftop mechanical rooms, structural steel, or reinforced concrete columns).

Designed fixed support can be used to anchor a fall-arrest system, fall-restricting system, or travel-restraint system if the support has been installed according to the Building Code and is safe and practical to use.

Temporary fixed support can be used as anchorage if it meets the following conditions:

- It can support at least 8 kilonewtons (1,800 pounds) without exceeding the allowable unit stress for each material used
- When used with a fall-arrest system incorporating an energy absorber, it can support at least 6 kilonewtons (1,350 pounds) without exceeding the allowable unit stress for each material used
- When used with a travel-restraint system, it can support at least 2 kilonewtons (450 pounds) without exceeding the allowable unit stress for each material used.

In all cases, a safety factor of at least two should be applied when determining the minimum load that an anchor point must support. As a general rule with fall-arrest systems, choose an anchor capable of supporting the weight of a small car (about 3,600 pounds). When existing structural features or equipment are used as anchor points, avoid corners or edges that could cut, chafe, or abrade fall protection components. Where necessary, use softeners such as wood blocking to protect connecting devices, lifelines, or lanyards from damage.

Never anchor to;

- Roof vents
- Roof hatches
- Small pipes and ducts
- Metal chimneys
- TV antennas
- Stair or balcony railings
- Fixed-access ladders.

Inspection Steps:

Step 1 Inspect harness hardware (buckles, D-rings, back pad, loop keepers); these items must not be damaged, broken, distorted, and must be free of sharp edges, burrs, cracks, worn parts, or corrosion. PVC coated hardware must be free of cuts, rips, tears, holes, etc. in the coating to ensure non-conductivity. Ensure buckles work smoothly. If present, inspect the quick connect buckles by ensuring that the release tabs work freely and that a click is heard when the buckle engages. Inspect parachute buckle spring.

Step 2 Inspect webbing; material must be free of frayed, cut, or broken fibers. Check for tears, abrasions, mold, burns, or discoloration. Inspect stitching; Check for pulled or cut stitches. Broken stitches may be an indication that the harness has been impact loaded and must be removed from service.

Step 3 Inspect labels; all labels should be present and fully legible.

Step 4 Inspect each system component or according to manufacturer's instructions.

Step 5 Record the inspection date and results in the tracking sheet.

Step 6 If inspection reveals a defective condition, remove the unit from service immediately.

Note: Some harnesses are equipped with a "stand up D-ring" in the dorsal (back) D-ring location. If the spring in the D-ring is damaged or lost and the D-ring no longer stands up, this does not compromise the harness integrity. As long as the D-ring passes inspection criteria in Step 1, it is safe to use. Only parties certified and authorized in writing may make repairs to this equipment.

Emergency Rescue

** Refer to Chapter 11 Rescue from Heights for rescue procedure. **

It's important that a worker involved in a fall arrest be brought to a safe area as quickly as possible without causing injury or putting rescuers at risk.

The Hazard Assessment can be used to indicate the nearest hospital and the phone numbers of fire, ambulance, and police services.

Site management must ensure that;

- Everyone on site is aware of the rescue plan
- Equipment and other resources are available
- Designated personnel are properly trained

67. Hydrogen Sulphide (H2S)

The following practice applies to all work areas within ACP Applied Products that hydrogen sulfide gas may be present. It outlines responsibilities, safe work procedure and training, personal protective equipment and emergency response procedure requirements.

Hydrogen sulfide is a colorless, flammable, extremely hazardous gas with a "rot- ten egg" smell. Some common names for the gas include sewer gas, stink damp, swamp gas and manure gas. It occurs naturally in crude petroleum, natural gas, and hot springs. It can be detected by smell at very low concentration ranging from0.01-0.3 parts per million. Detection by odour is not reliable because high concentrations (e.g. 100ppm), hydrogen sulfide deadens a person's sense of smell thus make it undetectable.H2S is very quickly absorbed into the lungs. Short term exposure may cause irritation of nose, throat, eyes and lungs. The Alberta Occupational Exposure Limit (O.E.L) is 10 parts per million (ppm) for 8 hours and 15ppm as a ceiling limit.

Table 1: Health effects from short-term exposure to hydrogen sulphide (CH029 Alberta Work Safe)

Concentration (ppm)-	**Health Effect**
0.013-0.3	Odour threshold
1-20	Offensive odour, possible nausea, tearing of the eyes or headaches with prolonged exposure
20-50	Nose, throat and lung irritation; digestive upset and loss of appetite; sense of smell starts to become fatigued; acute conjunctivitis may occur (pain, tearing and light sensitivity)
100-200	Severe nose, throat and lung irritation; ability to smell odour completely disappears.
250-500	Pulmonary edema (build-up of fluid in the lungs)
500	Severe lung irritation, excitement, headache, dizziness, staggering, sudden collapse (knockdown), unconsciousness and death within a few hours, loss of memory for the period of exposure
500-1000	Respiratory paralysis, irregular heartbeat, collapse and death without rescue

Exposure Limits

Exposure time	PPM Limit	Mg/m3 Limit
8-hour	occupational exposure limit	10 14
5-minute or ceiling limit	15	21

First aid measures

- Immediately remove the victim from further exposure. Designated rescuers must wear properly fitting, positive pressure self-contained breathing apparatus (SCBA) and other required safety equipment appropriate to the work site.
- If the worker is not breathing, apply cardio-pulmonary resuscitation in the nearest safe area.
  - Remove contaminated clothing but keep the individual warm.
  - Keep conscious individuals at rest.
  - Be aware of possible accompanying injuries (e.g. the victim may have fallen when they were overcome) and treat them accordingly.

- If the victim's eyes are red and painful, flush with large amounts of clean water for at least 15 minutes.
- Ensure the worker receives medical care as soon as possible. The worker must not be allowed to return to work or other activities.

Responsibilities

Supervisors

- Identify projects that use H2S or where H2S may be present
- Assess hazards associated with the use of H2S in the specific project
- Implement appropriate engineering controls
- Develop safe work procedure
- Provide the necessary Personal Protective Equipment to address the identified hazards
- Implement emergency response procedures that provide clear instructions on actions to take in the event of an emergency
- Train all workers that work with hydrogen sulfide, so they understand the hazard associated with the use of hydrogen sulfide and the safe work procedure
- Provide portable gas detectors and ensure they are calibrated and maintained as per manufacturer's recommendations.
- Maintain records of all training provided

Workers

- All workers working with H2S must participate in training and follow the established safe work practice/ procedure
- Must wear appropriate personal protective equipment and identify hazards before starting any work with H2S

Health and Safety

- Assist in the development of safe work procedure, training and other matters related to health and safety.
- Provide current and regulatory information updates necessary for compliance with OH&S legislation
- Review and update safe work practice and procedure.

Control Measures

Administrative controls

Work practices that can be implemented to reduce potential exposure to hydrogen sulphide include:

- Educating workers about the hazards associated with hydrogen sulphide and symptoms of overexposure. Workers must participate in training and monitoring programs in the workplace. Courses such as "H2S Alive" and First Aid are recommended when workers may be exposed to hydrogen sulphide at the work site.
- Developing safe work procedures for environments that may contain hydrogen sulphide, and training workers in these procedures.
- Proper maintenance and training for engineering controls and other equipment used to control exposure.

Engineering controls

Engineering controls are used to eliminate exposure to a substance. Engineering controls remove the substance from the air or provide a barrier between the worker and the substance. Examples of engineering controls that can be used to prevent exposure to hydrogen sulphide include the use of:

- ventilation to control hydrogen sulphide concentrations in the air
- closed systems that vent to a flare, and treatment methods to remove hydrogen sulphide from liquid and gas streams

- Using personal or area monitoring equipment where there are potential sources of hydrogen sulphide. This equipment should have audible alarms that will warn workers when concentrations are too high. These instruments should be set to alarm at a level no higher than the Occupational Exposure Limit (OEL) for hydrogen sulphide.

Personal Protective Equipment

If it is not practicable or feasible to use engineering or administrative controls to reduce the potential for exposure to hydrogen sulphide, or if these measures are not sufficient, the employer must provide workers with appropriate personal protective equipment. Respiratory protective equipment is used to protect workers from inhaling airborne contaminants.

Since hydrogen sulphide is irritating to the eyes, air-tight goggles or full-face respirator masks should be worn.

A full-face piece positive pressure supplied air respirator is needed for work areas where hydrogen sulphide concentrations exceed the OEL. The National Institute for Occupational Safety and Health (NIOSH) specifies an IDLH (immediately dangerous to life or health) concentration for hydrogen sulphide of 100 ppm. NIOSH allows the use of air purifying respirators for hydrogen sulphide only for escape purposes at concentrations below the IDLH concentration. Above the IDLH concentrations, or for emergency or planned entry into unknown concentrations, a full-face piece positive pressure supplied air respirator must be used. Whatever the type of respirator used, the worker must be clean-shaven where it seals to the skin of the face and must be fit-tested for the type of equipment being used.

Training

All workers working with Hydrogen sulfide must be trained in safe use, storage, handling of H2S. The training will include but not limited to:

- Understanding of the hazards associated with the use of hydrogen sulfide gas and the information contained in the hazard assessment documents and safe work procedures and how the hazards will be managed.
- Selection, use and maintenance of the required Personal Protective Equipment
- Emergency response procedures to follow in the event of an accidental leak or exposure
- Fire Extinguisher use
- H2S Alive

Hydrogen Sulfide Detectors

H2S monitors are required in all areas that use or may have H2S. All workers must ensure that they maintain and calibrate their detectors on a regularly scheduled basis as per the manufacturer’s recommendations.

Working Alone

Working alone with H2S is not allowed. No one is to enter an area with H2S without a safety watch.

General Principles

1. Become familiar with the hazards of H2S, Hydrogen sulfide.
2. Maintain awareness of where to expect significant levels of H2S
3. Monitor the wind direction
4. Use personal monitors to detect H2S in the breathing zone
5. Reduce the amount of H2S that could affect workers, when possible.

Specific Practices that may Result in H2S Exposure
Installing Coletanche BGM in and around areas where H2S exposure is possible.

Control Options for Specific Practices

- Wear a personal monitor that is in adequate safe working condition.
- Ensure all personnel are properly trained and certification is up to date for H2S training.
- Scan area prior to commencing work. Special consideration should be taken to low lying areas.
- Recognize that H2S is heavier than air.
- Ensure all employees have reviewed and are knowledgeable of the site-specific ERP.

68. Pre-Trips

Daily Trip inspection(s) must be completed to ensure employees actively search for and report vehicle defects. The early reporting of defects may prevent vehicles from being operated, if they are likely to cause or contribute to collisions or breakdowns.

It is the Drivers responsibility to preform a pre and post trip inspection.

Pre-Trips are done prior to leaving the yard or where unit is parked for the night.

Driver/operators are also responsible for monitoring the performance of the unit while operating. If something feels off or sounds unusual, find a safe spot to complete another inspection or contact foreman/mechanic to take a look.

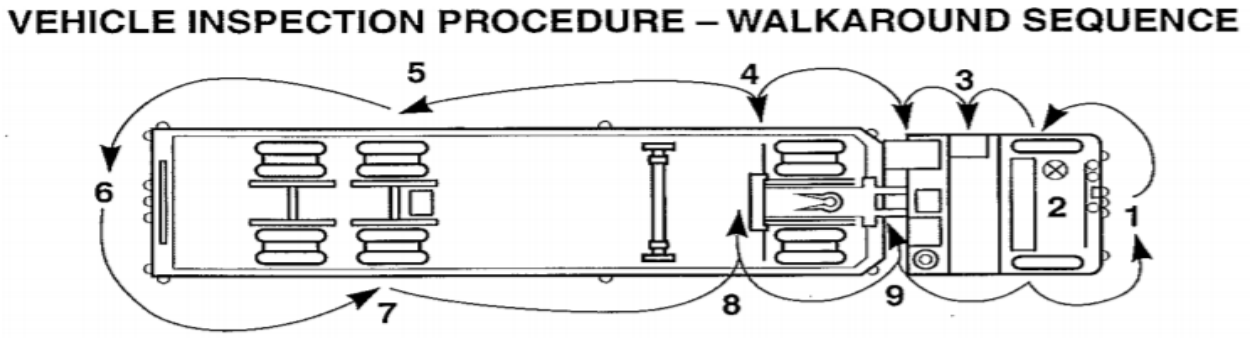
If conducting a pre-trip in poor lighting, use a flashlight to look in hard to see areas.

Depending on the type of vehicle/equipment being operated, inspection items may differ, check with your foreman if unsure.

When walking around the vehicle always watch your footing and make sure all decals/lights are clean.

When opening hood/doors watch where you are placing your hands/finger to avoid pinch points.

Example;



#1. Check: Oil, coolant, belts, steering , fluid leaks, general condition of vehicle

#2. Check Cab: Documentation (insurance, registration, Safety Fitness Certificate), gauges, warning indicators, windshield wipers, brakes, seat belt, horn, driver seat, steering, clutch

#3 & 9. Check: suspension, frame, wheels, rims, lugs, tire battery connections/cord, lights/reflectors, couplings devices, batteries, emergency equipment, fuel tank

#4, 5, 7, 8. Check all of #3 and; Axle oil levels, suspension, brakes, frame, mudflaps and tiedowns, air lines

#6. At the rear check for license plate, lights, door/gates and rear underride protection

When walking around the vehicle always watch your footing and make sure all decals/lights are clean.