

# ALBERTA SAFE JOB PROCEDURES MANUAL

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DEMOLITION - EARTHWORKS - SITE SERVICES - ENVIRONMENTAL REMEDIATION



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# 1 SJP - AIR BRAKE ADJUSTMENT

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Other workers and equipment	Steel toe boots	Operator Training Certificate
Machine malfunction	Hard hat	
	Safety glasses	
	Gloves	
	Safety vest	
	Chocks/Blocks	

#### Safe Work Procedure

- 1. PPE should be worn at all times.
- 2. If unit has auto slack adjuster, do not try to adjust. See supervisor if travel is more than 2"
- 3. Park on level ground, out of the way of any traffic.
- 4. Lock out the ignition.
- 5. Make sure psi will maintain 115 psi for duration of adjustment
- 6. Block/chock the wheels
- 7. Release the brake
- 8. Check the brake lining thickness (min3/8")
- 9. Check for air leaks and repair
- 10. Check for damaged brake pot or stack adjuster, worn lining or leaking wheel seals
- 11. Ensure lock sleeve is operational
- 12. Ensure push rod travel is between  $\frac{3}{4}$ " 1  $\frac{1}{2}$ ' and within the  $\frac{1}{4}$ ' of each other
- 13. Ensure push rod angle is between 85 and 90 degrees (90 degrees being the best angle)
- 14. Report any of the above problems to your supervisor
- 15. Ensure brakes do not drag.
- 16. With psi at a minimum of 115 make one full brake application
- 17. PSI should not drop more than 12 psi; if so, recheck adjustment.

#### Report any hazardous situations to your supervisor

#### **Guidance Documents/Standards:**

Alberta OH&S regulations and guidelines: This SJP will be reviewed any time the task, equipment or materials change and at a minimum of once a year.



# 2 SJP - AERIAL WORK PLATFORM

# PURPOSE

The purpose of this document is to define PDI practice related to aerial work platforms. This practice applies to all PDI employees, contractors, clients, suppliers, and members of the public.

An aerial work platform is a device used to lift people and sometimes materials to an elevated work area. To maintain safe work practices while using an aerial work platform, be aware of the following points.

## RESPONSIBILITIES

Supervisors are responsible for ensuring:

• That all workers are properly trained to work with aerial work platforms, as well as safe work practices related to aerial work platforms.

Workers are responsible for ensuring:

- They are familiar with safe work practices related to aerial work platforms.
- Read and follow manufacturer operator's instructions.
- Perform job site inspection and walk around inspection of the equipment.
- Ensure ground is firm and level.
- Be aware of power line proximity.
- Ensure correct aerial platform is utilized.
- Do not overload the machine at any time.
- No platform is to be made higher by the use of a scaffold, boxes, or ladders.
- Wear the applicable safety harness attached to the machine when operating any aerial platform.
- Get on and off the platform when it is in the lowered position.
- While operating an aerial work platform, the operator shall not use any hand-held device(s) while the equipment is being operated.

## PRACTICES

## **BEFORE A LIFT**

- Ensure the aerial work platform is operated only by workers who have been instructed in the operation, inspection, and safety mechanisms of the machine.
- Workers must not go in the air unless a trained person on the ground is immediately available to assist in lowering the aerial work platform in case of emergency.
- Conduct daily inspections and maintenance as required by the manufacturer.



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- The ground area in the vicinity of the aerial work platform is to be roped off and posted for "Danger" or "Overhead Work".
- Understand the types of working surfaces on which the machine is designed to be used.
- Know the maximum rated working loads of the machine. The total load, including the workers, tools, and supplies, cannot exceed the manufacturer's capacity.
- Be aware of special conditions or limitations of the machine.
- Know the significance of alarms and the location of emergency controls.
- Do not use damaged aerial work platforms until they are repaired by a qualified mechanic.
- Do not use an aerial work platform under high wind conditions. This is especially important for smaller scissor lifts and boom type devices.
- Ensure there is a dry chemical extinguisher available on the equipment at all times.

# **DURING A LIFT**

- Use only manufacturer's platform extenders to extend the platform on an aerial work platform. Do not extend a platform by using cantilevered planks or similar materials.
- Know the capacity rating for an aerial work platform and do not exceed it. Whenever possible, a load should be distributed evenly over the platform.
- Ensure that an aerial work platform is not used for pulling, pushing, or dragging materials.
- Maintain three-point contact when getting on or off the platform of a man lift device.
- Ensure that the terrain on which the device is placed, and that the terrain it will travel over, is firm enough to support the device and its rated working load.
- Do not move a vehicle mounted aerial work platform unless the platform is fully retracted and stowed.
- Drive the aerial work platform in its raised position only on surfaces specified by the manufacturer. It should not be driven in a raised position close to holes, depressions, trenches, or similar hazards.
- Know the safe clearance distance from overhead power lines. An aerial work platform or any other part of a lifting device should not be moved closer than 3 metres (10 feet) to an overhead power line. Depending on the power line voltage, this distance may be further.
- Turn off the power system when the aerial work platform is not in use. This will prevent exhaust fumes from accumulating in an enclosed work area.
- Do not climb from an aerial work platform to another elevated position while in the air.
- Secure an approved safety harness and lanyard from the boom to the workers in the air.

PDI shall ensure that every scaffold is designed, constructed, and erected to support or resist, in the case of a metal scaffold, at least 2.2 times the load that may be imposed on the scaffold. in the case of any components suspending any part of a scaffold supporting workers, at least 10 times the load that may be imposed on those components, and four times the maximum load or force to which the scaffold is likely to be subjected without overturning. Where a scaffold is partially or fully enclosed, an employer shall ensure that all scaffold components and tie-ins are adequate



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to support the added load that may be placed on the scaffold as a result of wind or other adverse weather conditions. PDI shall ensure that all workers who are required to work on a scaffold are provided with the maximum working load of the scaffold.

PDI shall ensure that:

- A worker who operates an aerial device or elevating work platform is trained to operate the device or platform safely; and
- The training includes the manufacturer's instructions and recommendations, the load limitations, the proper use of all controls, and any limitations on the surfaces on which the device or platform is designed to be used.

PDI shall ensure that a maintenance and inspection record tag:

- is provided for an aerial device, elevating work platform, suspended powered scaffold, personnel lifting unit, or scaffold, and is attached to the device, platform, unit, or scaffold near the operator's station; and
- has the following recorded on it:
  - the date of the last maintenance;
  - $\circ$   $\,$  the name and signature of the person who performed the maintenance; and
  - an indication that the maintenance has been carried out in accordance with the manufacturer's recommendations.

PDI shall ensure that scaffold planks are inspected by a competent worker to ensure that the scaffold planks are free of defects before the planks are incorporated in a scaffold. Where a metal scaffold is used, an employer shall ensure that the metal scaffold is inspected, by a competent person, prior to use and daily when in use for any damage, deterioration, or weakening of the scaffold or the scaffold's components.

If a metal scaffold or a component of a metal scaffold is damaged, deteriorated, or weakened so that the strength or stability of the scaffold is affected, an employer shall ensure that the scaffold is not used until the scaffold or component is repaired or replaced by a competent person in accordance with the manufacturers or a professional engineer's specifications and recommendations.



# 3 SJP - ASBESTOS AWARNESS

# CONTENTS

- (1) Overview of Asbestos History
- (2) Properties and Uses of Asbestos
- (3) Characteristics of Asbestos Fibers
- (4) Health Effects of Asbestos Exposure
- (5) Applicable Legislation
- (6) Controlling Exposure to Asbestos
- (7) Air Monitoring and Analysis
- (8) Personal Protective Equipment (PPE)

# **OVERVIEW OF ASBESTOS - HISTORY**

Asbestos is a group of naturally occurring minerals that was widely used to insulate buildings, piping, and structures from the 1950's to mid-1970's due to its non- combustibility and flame-resistant properties.

1970 – The Occupational Safety and Health Administration sets the first federal standards for workplace exposure to asbestos.

1975 – The government determines that asbestos is a major industrial health hazard, and the EPA bans its use in thermal insulation products.

# 1. PROPERTIES AND USES OF ASBESTOS

Asbestos was also used as a reinforcing or binding agent in plastic, piping, cement, brake drums and other construction materials due to its strength and flexibility.

## Asbestos Containing Building Materials:

- Exteriors asbestos cement, felts and mastics, stucco brick and mortar, insulation
- Ceilings T-bar ceiling tile, cement ceiling tile, acoustic and stippled finishes, plaster/ drywall joints
- Flooring- VAT, Sheet vinyl flooring, floor leveling compounds
- Walls Plaster/ drywall joints, stippled finishes, thermal spray, cement panels
- Service areas boiler room insulation, fan room insulation, machine room insulation, crawl space insulation, wall cavity insulation



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• Pipes – Insulation on either exposed or concealed pipes (steam or hot water, domestic water, rainwater lines, gaskets in flanged pipe joints).

# 2. PROPERTIES AND USES OF ASBESTOS



# ASBESTOS HAZARDS IN DEMOLITION, RENOVATION AND SALVAGE



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#### Friability

Friability – the ease with which a material can be ground or pulverized and the ease with which fiber can be released into the air.

The friability of a product determines how it must be handled (risk ranking: low/ moderate or high-risk work).

## 3. CHARACTERISTICS OF ASBESTOS FIBER

A fiber is hazardous if its length is greater than 5 microns and the width is less than 60% its length. (An average human hair is 40 microns in diameter). These fibers can penetrate deep into the lung. Typical airborne asbestos fibers range from 0.11 to 0.24 microns in diameter. Manmade fiber such as fiberglass cannot be split along their length, but instead become shorter when broken down. When disturbed, an asbestos fiber can be split into thinner and thinner fiber.

## 4. HEALTH AFFECTS OF ASBESTOS EXPOSURE

Breathing asbestos fiber can cause a buildup of scar like tissues in the lungs called asbestosis and result in loss of lung function that often progresses to disability and death. Asbestos also causes cancer of the lung and other diseases such as mesothelioma of the pleura which is a fatal malignant tumor of the membrane lining the cavity of the lung or stomach. Three main diseases can be created by inhalation of asbestos: asbestosis, lung cancer and pleural and Peritoneal Mesothelioma.

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Asbestosis is an irreversible, fatal disease. The lungs are destroyed (made in flexible) by a buildup of scar tissue, resulting from the macrophages attempts to remove asbestos fiber from the lungs. As the amount of scar tissue increases, the lungs become more rigid, making it difficult to breathe, consequently air transfer in the lungs is decreased.

Lung Cancer from asbestos exposure typically does not develop until 15-20 years after first exposure. As little as 4 to 6 months of exposure to asbestos may be enough to cause lung cancer. Lung cancer represents 5-15% of asbestos related lung problems. Asbestos exposure & smoking increases the risk of lung cancer by as much as 70 times. Mesothelioma is cancer of the lining of the lung (pleura) or chest/ abdominal wall (peritoneum). It is extremely rare and always fatal (within months of diagnosis). 85% of individuals with mesothelioma have been exposed to asbestos. Length of exposure to asbestos in mesothelioma patients ranges from 2 months to 50 years. The period between exposure and disease onset ranges from 15-55 years, with an average of 40 years before disease development.

# 5. LEGISLATION

Occupational Health & Safety (OHS) Act

• Applicable portions found in Part 4 (Code of Practice Section 26, General provisions for asbestos, silica, coal dust and lead Section 28, Asbestos worker course, Section 37, Requirements for health assessments, Section 40).

## Employers' Duties

- Ensure the health and safety of their workers and other workers present at the worksite.
- Ensure that workers working for them are aware of their duties under the Act.

• Minimize the release of asbestos fiber into the air. Keep worker exposures as low as reasonably achievable, and never above the OEL (Occupational Exposure Limit).

- Keep the worksite clean of unnecessary asbestos accumulations.
- Prevent workers' street clothes from becoming contaminated.
- Provide workers with and ensure that they wear P.P.E.
- Ensure that workers suitably decontaminate themselves.

• An employer must assess a worksite and identify existing or potential hazards before work begins at the worksite and the employer must prepare a report of the result of a hazard assessment and the methods used to control or eliminate the hazards identified.



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## Workers' Duties

• To take reasonable care to protect their safety and the safety of other workers present at the worksite.

• Cooperate with their employers to protect the health and safety of themselves and others at the worksite.

# 6. CONTROLLING EXPOSURE TO ASBESTOS

## Low Risk Work

Operations classified as "low risk" have a minimal risk of releasing asbestos fiber into the air. The precautions to adequately protect workers are relatively simple to follow.

Examples of Low-Risk Work:

- Use of hand tools to remove asbestos containing wallboard.
- Cutting asbestos containing wallboard or pipe by hand.

# Moderate Risk Work

Activities where there is a moderate risk of exposure to airborne asbestos fiber include:

- Using non-powered hand tools to cut, shape drill or remove a non-friable manufactured product containing asbestos if water is not used to control fiber release.
- Using a mechanical or electrically powered tool, fitted with a HEPA filter dust collector, to cut, shape or grind non-friable manufactured products containing asbestos.

• Removing all or part of a false ceiling to gain access to a work area and where friable asbestos containing materials are, or are likely to be, lying on the surface of the false ceiling.

• Removing, encapsulating, enclosing, or disturbing minor areas (less than 0.09m2 or 1 ft2) of friable asbestos containing material during the repair, alteration, maintenance, demolition, or dismantling of a building, structure, machine, tool or equipment, or parts of it.

- Performing glove bag operations.
- Dry buffing and stripping of vinyl asbestos tile.
- Renovation or hand demolition involving drywall joint compound, block mortar.



## High Risk Work

Activities where there is a high risk of exposure to airborne asbestos fiber include:

• Removing, encapsulating, or enclosing areas 0.09m2 (1ft2) in size or greater of friable asbestos containing materials during the repair, alteration, maintenance,

• Demolition, or dismantling of a building, structure, machine, tool or equipment, or part of it.

• Cleaning, maintaining, or removing air handling equipment in buildings where it is sprayed fireproof.

• Asbestos containing material has been applied to airways or ventilation ducts.

• Repairing, altering, or dismantling a boiler, furnace, kiln or similar device, or part thereof, where asbestos containing materials have been used or applied.

• Removal of more than 9.3m2 (100ft2) of contiguous ceiling tile containing asbestos or sheet vinyl flooring having an asbestos backing.

- Dry removal of friable asbestos containing material.
- Exceed the 8-hour OEL (ex. restricted space).

Decontamination is required. Risk level dependent, this will always mean hand washing, clothing change prior to eating and drinking. High risk work may require complete shower within the procedure.

Structural demolition will use water to control dusts and airborne contaminants.

## 7. AIR MONITORING AND ANALYSIS

Air sampling is conducted to estimate airborne asbestos fiber concentrations before, during and after removal.

Air monitoring can assist in evaluating:

- The selection of respirators
- The effectiveness of decontamination and
- The integrity of the containment throughout removal.

## 8. PERSONAL PROTECTIVE EQUIPMENT

Respirators are specialized P.P.E. Training on selection, use, care, and maintenance is mandatory prior to use. Anyone required to wear a mask must have a completed fit test, documented, and administered by a qualified person.

Air purifying respirators – The predominant feature of an air purifying respirator is that the air is 'cleaned' or filtered before it is inhaled by the user.



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Supplied air respirators – Clean air from a compressor outside of the immediate contaminate environment is supplied to the user's facepiece. Can be worn in IDLH atmospheres if certain conditions are met.

Another PPE may be required, including:

- Disposable coveralls (hooded with elasticized cuffs);
- Work gloves;
- Safety footwear (steel toed, seamless, lace less rubber boots);
- Hardhat;
- Hearing protection; and
- Safety glasses.

\*Asbestos handling will only be performed by qualified and currently trained personnel\*.

Trained professionals with specialized procedures for personal protective equipment will prevent the asbestos fiber from becoming airborne. Friable asbestos waste will be captured as soon as it is removed, bagged, or encapsulated and taken to a Class 1 or Class II landfill. Asbestos materials including waste when fixed in a natural or artificial binder material (ex. non-friable form) is not subject to TDG requirements.

When removing, handling, and transporting asbestos waste, occupational health and safety, transportation and environmental requirements will be strictly adhered to. 'Asbestos waste' refers to waste containing asbestos in a concentration greater than 1% by weight. Alberta Environment governs procedures when asbestos is suspected of being present in a friable material. A friable material easily crumbles under hand pressure and the more friable a material the more likely it is to release fiber into air.

#### **References:**

Alberta Asbestos Abatement Manual prepared by Alberta Human Services outlines comprehensive information on all aspects of asbestos management emphasizing occupational health and safety issues

• British Columbia has slightly different regulations regarding asbestos handling and local requirements shall always be reviewed and followed.



# 4 SJP - AIR COMPRESSOR

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Noise Airborne particles Slip/Tripping Explosion of tank or air line	Steel toe boots Safety glasses Hearing protection Gloves Safety vest	Operator training on use of compressor

#### Safe Work Procedure:

- 1. Ensure a clear understanding of how compressor operates.
- 2. Follow manufacturer's guidelines.
- 3. Place out of the way of another worker's workspace.
- 4. Ensure tail piece is tight, the hose end is clear of debris, gaskets are in place and valves are closed.
- 5. Check fluids when applicable.
- 6. Turn tank on.
- 7. Follow through with task, being sure not to direct air at yourself or others.
- 8. Shut down when finished.

#### Report any hazardous situations to your supervisor

#### **Guidance Documents/Standards:**

Alberta OH&S regulations and guidelines: This SJP will be reviewed any time the task, equipment or materials change and at a minimum of once a year.



# 5 SJP - ATMOSPHERIC MONITORING AND HOT WORK

#### Atmospheric Monitoring

#### **Detection Equipment**

All work locations that have the potential of hazardous gases must have detection equipment available for testing the atmosphere for  $H_2S$  (and other toxic gases if known to be present), combustible gases, and oxygen content prior to and during work procedures. NOTE: Breathing apparatus <u>must</u> be worn by any individual performing a test for gases where dangerous or unknown concentrations may be present.

#### **Gas Detector Tube Devices**

Detector tube devices are portable, measure the presence of gas, and identify approximate concentrations. They are used to test an atmosphere at a point in time, but do not give a continuous reading. Depending upon certain factors, they are only accurate to  $\pm$ - 25%. Always ensure the proper tube for the gas being sampled is used.

A given quantity of gas is drawn through a sampling tube. The operator must ensure a full volume of sample has been drawn through the tube before it is removed from the environment being sampled. Always consult the manufacturer's guidelines located in the box of tubes and with the sampler for correct sampling procedure for their equipment, as each type of sampler is different.

#### **Electronic Personal and Portable Monitors**

Electronic sensors measure the airborne concentration of  $H_2S$  or other gases. They may be able to monitor more than one gas and can be capable of indicating oxygen concentration and LEL%. The signal can also be used to set audible and visual alarms at specific concentrations and provides a visual indication of the concentrations present. The advantage of this type of unit is that monitoring can be continuous.

The unit may be carried on a belt (personal monitor) or temporarily mounted (portable monitors) in areas where gases could accumulate. Many locations and clients now require continuous use of personal gas monitors for work on their locations. These will be provided by Priestly Demolition Inc. Operations for employee use. Always follow manufacturer's instructions on the correct procedure for their particular equipment.

## **Permanent Monitoring Units**

All buildings where H<sub>2</sub>S may exceed 100 ppm should have fixed monitoring units set to give an audible and visual alarm at 10 ppm. Most gas plants or other industrial facilities where hazardous gases may be present will have some type of permanent gas monitors. Safe operating procedures must be written and followed should circumstances preclude such installation.



# Effects on Levels of $O_2$ , $H_2S$ , and CO

Effect of Various Oxygen Levels

OXYGEN BY VOLUME	<b>RESULTING CONDITION / EFFECT ON HUMANS</b>
23.5% and above	Oxygen enriched, extreme fire hazard.
21%	Oxygen concentration of "Air".
19.5%	Minimum "Safe Level": OSHA, NIOSH.
16%	Disorientation, impaired judgement, and breathing.
14%	Faulty judgement, rapid fatigue.
8%	Mental failure, fainting.
6%	Difficult breathing, death in minutes.

Effect on Various H<sub>2</sub>S Levels

H₂S LEVEL IN PPM*	<b>RESULTING CONDITION / EFFECT ON HUMANS</b>
0.13	Minimal perceptible odor.
4.60	Easily detectable, moderate odor.
10.0	Beginning eye irritation. Permissible exposure level, 8 hours (OSHA, ACGIH).
27.0	Strong, unpleasant odor, but not intolerable.
100	Coughing, eye irritation, loss of sense of smell after 2 to 5 minutes.
200 – 300	Marked conjunctivitis (eye inflammation) and respiratory tract irritation after one hour of exposure.
500 – 700	Rapid unconsciousness, cessation (stopping or pausing) of respiration, and death.
1000 – 2000	Unconsciousness at once, with early cessation of respiration and death in a few minutes. Death may occur even if individual is removed to fresh air at once.

\*PPM = Part Per Million 10,000 PPM = 1% by volume

All values are approximate. The effects can vary depending on the individual's health and type of physical activity being performed.

Source: American National Standards Institute (ANSI Standard No. Z37.2-1972)



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# Effect on Various CO Levels

CO LEVEL IN PPM*	RESULTING CONDITION/EFFECT ON HUMANS
35	Permissible exposure level, 8 hours (OSHA).
200	Possible mild frontal headache in 2 to 3 hours.
400	Frontal headache and nausea after 1 to 2 hours. Occipital after 2 $\frac{1}{2}$ to 3 $\frac{1}{2}$ hours.
800	Headache, dizziness, and nausea in 45 minutes. Collapse and possible death in 2 hours.
1600	Headache, dizziness, and nausea in 20 minutes. Unconsciousness and danger of death in 10 to 15 minutes.
12,800	Immediate effect unconsciousness. Danger of death in 1 to 3 minutes.

\*PPM = Part Per Million 10,000 PPM = 1% by volume

All values are approximate. The effects can vary depending on the individual's heath and the type of physical activity being performed.

## Source: American Industrial Hygiene Association

Personnel who are prepared to work on the particular construction or maintenance activity where specific known hazards, such as fire, explosion,  $H_2S$ , or toxic gases exist, will be briefed on the hazards associated with the job. This briefing will include a review of what the hazards are and what specific safety equipment is necessary to safely perform the job. These briefing sessions will occur whenever it is deemed necessary to keep personnel informed.

All gas testing equipment must be regularly calibrated and certified as per the manufacturer's instructions. All personal and portable monitors must be function or bump tested each time they are used. Results of this test must be recorded on form SF-01-06 Bump Test Log.

## Hot Work Areas

A combustible gas test shall be taken when work is performed within 25m of any well, process vessel, tank, or related equipment where combustible gas is, or may be present. Spark-producing tools, electrical tools, an open flame, or other sources of ignition are not allowed within this prescribed area, unless a combustible gas test indicates the area is safe or unless equipment (e.g., an open flame) is fitted with an approved flame arrestor system.

When the above work must be performed within 25m of a flammable environment or in or near buildings or tanks containing hydrocarbon atmospheres, the following must be adhered to prior to initiation of "hot work."

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**NOTE:** A deviation to this policy may take place if a risk assessment is conducted and approved by Priestly Demolition Inc. Operations HSE management.

# Whenever possible:

- All vessels, piping, and equipment shall be relieved of all pressure and hydrocarbon liquids contained within. Prior to steam cleaning or purging, special precautions shall be taken to ensure that air is not mixed or introduced into the system. All areas shall be purged with an inert gas and steam cleaned as required.
- Floors, ditches, drains, and the general work area shall be washed, and steam cleaned as required.
- The area, vessels, tanks, and piping shall be thoroughly checked with a gas tester for flammable vapors as often as is deemed necessary. The atmosphere in the area shall never be allowed to exceed 10% of the LEL of the flammable gas or vapor.
- 20Lb dry chemical fire extinguishers shall be available at all building entrances and adjacent to the immediate work site.

# Under extreme circumstances:

When pressure relief or removal of hydrocarbon substances is not possible, the following precautions shall be implemented in addition to the above procedures.

- All connecting valves shall be closed and tagged in the "CLOSED" position. The valves shall then be blinded on the downstream side of the hydrocarbon source.
- Blinded valves shall be flagged with brightly colored flagging tape to clearly indicate the valve has been closed and blinded.



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# 6 SJP - BACKING UP

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Backing over objects Backing over people	Steel toe boots Safety vest Communication device	Operator training and certification for large trucks and low beds.

#### Safe Work Procedure:

- 1. Avoid backing up whenever possible.
- 2. Always Park so that the first move is forward.
- 3. Check clearances (front, back, side and overhead).
- 4. Sound horn frequently (even if equipped with back up alarm).
- 5. Back slowly (never at a speed faster than a brisk walk).
- 6. Use a spotter whenever possible.
- 7. If you lose sight or eye contact with the spotter, stop immediately and locate that person before proceeding.
- 8. If parked or stopped always use proper parking procedures:
  - Set brake.
  - Transmission in appropriate gear.

#### Report any hazardous situations to your supervisor

#### **Guidance Documents/Standards:**

Alberta OH&S regulations and guidelines: This SJP will be reviewed any time the task, equipment or materials change and at a minimum of once a year.



# 7 SJP - BACKFILL FROM TOP OF A BANK

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Noise	Steel toe boots	Operator training
Airborne particles	Safety glasses	
Slip/Tripping	Hearing protection	
Other workers	Gloves	
Machine malfunction	Safety vest	
Working on loose grounding		

#### Safe Work Procedure:

- 1. Designate a spotter who will be responsible for directing the driver/operator to the bank and to dump load.
- 2. Check ground for stability before proceeding to top of bank.
- 3. Ensure that all other workers and equipment are aware of, and stay clear of, the dump.
- 4. Follow through with dump when spotter signals that it is safe to do so.
- 5. Once load is completely dumped, lower the box, and carefully pull away from the bank.

#### Report any hazardous situations to your supervisor

#### **Guidance Documents/Standards:**

Alberta OH&S regulations and guidelines: This SJP will be reviewed any time the task, equipment or materials change and at a minimum of once a year.



# 8 SJP - BARRICADE PROTECTION

# PURPOSE

The purpose of this document is to define Priestly Demolition Inc. practice related to barricade protection. This practice applies to all Priestly Demolition Inc. employees, contractors, and clients.

# RESPONSIBILITIES

Supervisors are responsible for ensuring:

• To facilitate and/or provide proper instruction to their workers on protection requirements

Workers are responsible for ensuring:

- Work area has been surveyed and a Field Level Hazard Assessment has been completed.
- Always be aware of your surroundings. Staying alert and being cautious will make you much safer on a worksite.
- Different colors of tape are used according to how imminent the danger of the upcoming hazard is.
- Caution tape:
- Caution tape has yellow background with the words "CAUTION" all along the tape
- This tape is used to warn of potential hazards inside an area that is barricaded off.
- If there is an alternate route around the barricaded area, then it should be used by those not associated with the specific task
- If it is necessary to enter the barricaded area, then the tag hanging from the caution tape must be read to understand the hazards.
- Only after clearly understanding the hazards of the barricaded area, should a person enter under caution.
- Never remove caution tape without permission of an authorized member of the crew performing the task within the taped of area.
- Always completely remove when the task is finished.
- Re-inspect when coming back from break or lunch, to ensure nothing was taken down while you were removed from the area.
- A caution tape tag must be completed and placed on all tape that is most likely to be seen. More then one tag may be necessary. Fill out the tag completely, with worker name, company name, supervisor phone number.
- Danger tape:
- Danger tape has red background color with the words "DANGER" written along the tape.
- This tape is only to be used if and immediate hazard exists in the area. Use alternate route if not directly associated with specific activity.
- If it is absolutely necessary to cross the danger tape, then the danger tag hanging from the tape must be read to understand the hazards. Also, only with permission from an



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authorized member of the crew who is responsible for the activities conducted within the barricaded area.

- Never remove danger tape without permission of an authorized member of the crew who is responsible for the barricaded area.
- NEVER GO INTO A DANGER TAPED OFF AREA WITHOUT PERMISSION!
- A danger tape tag must be completed and placed on all tape that is most likely to be seen. More than one tag may be necessary. Fill out the tag completely, with worker name, company name, supervisor phone number.

# PRACTICES

- 1. Always be aware of your surroundings. Staying alert and being cautious will make you much safer on a worksite.
- 2. Different colors of tape are used according to how imminent the danger of the upcoming hazard is.
- 3. Caution tape:
  - Caution tape has yellow background with the words "CAUTION" all along the tape
  - This tape is used to warn of potential hazards inside an area that is barricaded off.
  - If there is an alternate route around the barricaded area, then it should be used by those not associated with the specific task
  - If it is necessary to enter the barricaded area, then the tag hanging from the caution tape must be read to understand the hazards.
  - Only after clearly understanding the hazards of the barricaded area, should a person enter under caution.
  - Never remove caution tape without permission of an authorized member of the crew performing the task within the taped of area.
  - Always completely remove when the task is finished.
  - Re-inspect when coming back from break or lunch, to ensure nothing was taken down while you were removed from the area.
- 4. A caution tape tag must be completed and placed on all tape that is most likely to be seen. More than one tag may be necessary. Fill out the tag completely, with worker name, company name, supervisor phone number.
- 5. Danger tape:
  - Danger tape has red background color with the words "DANGER" written along the tape.
  - This tape is only to be used if and immediate hazard exists in the area. Use alternate route if not directly associated with specific activity.
  - If it is absolutely necessary to cross the danger tape, then the danger tag hanging from the tape must be read to understand the hazards. Also, only with permission from an authorized member of the crew who is responsible for the activities conducted within the barricaded area.
  - Never remove danger tape without permission of an authorized member of the crew who is responsible for the barricaded area.
  - NEVER GO INTO A DANGER TAPED OFF AREA WITHOUT PERMISSION!

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6. A danger tape tag must be completed and placed on all tape that is most likely to be seen. More than one tag may be necessary. Fill out the tag completely, with worker name, company name, supervisor phone number.



# 9 SJP - BATTERIES - CHARGING AND SERVICING

The purpose of this document is to define Priestly Demolition Inc. practice related to servicing and charging batteries. This practice applies to all Priestly Demolition Inc. employees, contractors, and clients.

## RESPONSIBILITIES

#### Supervisor

Supervisors are responsible for making sure that workers get the necessary training regarding personal protection and safe work practices for servicing and charging batteries.

#### Worker

Workers must wear the appropriate personal protective equipment and follow the safe work practices listed below.

- Batteries contain sulphuric acid and should be handled only by trained personnel in approved battery charging areas.
- Work in an area where an eye-wash station and a safety shower are readily available.

## PRACTICES

- Wear acid-proof clothing, boots, face shield, apron, gloves, and safety glasses when working with lead-acid storage batteries.
- Use a battery carrier to lift and carry a battery.
- Before charging a battery, inspect it for defective cables, loose connections, corrosion, cracked cases or covers, loose hold-downs, and deformed or loose terminal posts. Do not charge a damaged battery.
- Replace worn or unserviceable parts.
- Ensure the charger is off before attaching or removing clamp connections. Use a cable puller to remove a cable clamp from the battery terminal.
- Clean dirt from the battery with a baking soda solution. Clean the battery terminals and the cable clamps with a tapered brush.
- Remove corrosion from the terminal posts, the hold-down tray, and the hold-down parts.
- Tighten cable clamp nuts with the proper sized wrench.
- Check the indicator to ensure battery cells are filled to safe levels. If necessary, add distilled water before charging the battery.
- Ensure the battery charging area is sufficiently vented.
- Ensure the charger is off before attaching or removing clamp connections.

Attach clamps to the battery in the correct sequence and polarity.



# **10 SJP - BEHAVIOUR BASED SAFETY**

## Purpose

The Priestly Demolition Inc. Operations Behavior Based Safety (BBS) initiative is an education and observation process used to improve safety and reduce risk in the workplace for our Canadian operations. This process uses a proactive approach and is intended to communicate to employees the elements and the procedures of Behavior Based Safety that will assist in reducing at risk behaviors which in turn reduces injuries in our workplaces.

#### Scope

The Priestly Demolition Inc. Operations BBS applies to all staff in Canada. Employees are permitted to participate in BBS initiatives already in place at customer locations if required by the customer. Employees are requested to participate in Behavior Based Safety process and follow the process guidelines.

#### Requirements

Safety awareness principles are the foundation of the Priestly Demolition Inc. Operations Behavior Based Safety process. The key concepts teach employees to recognize when they may be in one of the following states:

- Rushing.
- Frustration.
- Fatigue.
- Complacency (which can cause or contribute to these critical errors).
- Eyes not on task.
- Mind not on task.
- Line of fire.
- Loss of balance/traction/grip (which in turn increase the risk of injury).

Pre-task Analysis is a process to evaluate the work environment by performing a Job Safety Analysis (JSA) of each job. The purpose of which is to eliminate or control all hazards that may be encountered to complete the job. This process is included in the Behavior Based Safety process to establish the correct habits and work procedures in order to reduce at-risk behaviors. The observation process is designed to raise safety awareness and provide a feedback mechanism for management to make changes in design, process, or procedure in order to reduce at-risk behaviors. The key to this process is raising awareness of behavior through observation and feedback. The process has three key elements:

## 1. Conducting Formal Observations of Employees Work Behavior

Formal job observations are performed for the Priestly Demolition Inc. Operations employees. Job observations are used to identify unsafe behaviors. They provide direct, measurable information on employees' work practices. Job observations are never to be used to discipline employees. They are intended to help employees identify the safest ways to perform their work.

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The process starts with the observation of workers - fellow employees, other contractor employees and customer employees as they perform their tasks. Observers collect information about worker performance and provide feedback via the observation card. The emphasis is not on who was observed but rather what behavior was observed. During the observation the observer records their findings on the BBS Observation Form. Items to be observed include but are not limited to:

- Personal Protective Equipment.
- Procedures / Methods.
- People.
- Work Environment.
- Equipment.

Feedback is provided to observed employees after an observation is complete. Upon completion of an observation, the observer is expected to have a discussion with the employee he/she observed. The observer shall:

- Review the results with the observed employee,
- Reinforce safe behaviors observed,
- Describe unsafe behaviors observed,
- Obtain feedback from the employee on why the work was performed that way, and
- Emphasize that the purpose of observations is help employees perform their jobs safely, not to punish or discipline.

Documenting feedback allows workers to assess what should be repeated and what should change to reduce risks in the workplace. Job observations are documented. Job observations must be documented on an observation form or checklist. Records of observations shall be kept.

## 2. Collection of Data and Performing Trend Analysis

Observation results are analyzed to identify trends and increase safe behaviors. Management and/or the Safety Department shall analyze results to identify trends and enhancements that can be made to make work activities safer. Individual departments, as well as Priestly Demolition Inc. Operations as a whole, will compare these measurements and track these results by an acceptable method so that numerical and statistical comparisons can be made over time. BBS Observation Forms are forwarded to the corporate safety manager for input into the BBS database. Reports are generated and forwarded to management.

## Elements of an Action Plan After the Trend Analysis is Completed

Once trend analysis is complete, appropriate action plans shall be developed to address unsafe behaviors. Action planning will include:

- Evaluate unsafe behaviors from trend analysis and prioritize.
- Develop action plan for unsafe behaviors based on comments and feedback from data sheets.
- Designate responsible parties and timeframes within the action plan.



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- Define who is responsible for action planning.
- Ensure management support.

## **3.** Action Plan Follow Up

All action plans shall be arranged by a set time period. To ensure effectiveness of the BBS followup is necessary to ensure the closure of all actions listed. The follow-up process will include:

- Monthly frequency for review of action by the safety manager, senior management, and employees.
- Assign accountability for closeout of action plans within Priestly Demolition Inc. Operations.
- Document archiving of action plans with completed action items.

## Responsibilities

#### Oversight

The manager/supervisor has these oversight responsibilities:

- Coach observers and develop action plans to ensure continuous improvement.
- Ensure that all employees are trained on the Behavior Based Safety elements.
- Maintain communication with workforce by channeling information in a timely manner (feedback).
- Collect and review process modification change requests from employees.
- After reviewing and giving feedback the BBS/JSA cards should be forwarded to the corporate safety director for data entry.

Each employee plays a specific role in the Behavioral Based Safety process. These roles include observe, observer, supervisor, manager, and safety manager.

#### Person being observed

- Be willing to be observed.
- Be open and cooperative.
- Avoid being defensive.
- Participate in problem-solving meetings.
- Be familiar with the Behavior Based Safety process.

#### Person performing the observation

- Learn the Behavior Based Safety process and the benefits of reducing at-risk behaviors.
- Trained in how to conduct an observation and how to provide effective feedback.
- Promote the Behavior Based Safety process.
- Be courteous, helpful, and open to coaching.
- Make observing proactive.
- Assist workers by offering suggestions to safely perform a task or help them with a task if necessary.
- Communicate with the workers being observed.



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- Give constructive feedback after observations.
- Stress the safe behaviors before the at-risk behaviors.
- Offer and work towards solutions of problems found.
- Record a comment for every recorded "at-risk" to include what and why. Make quality observations, concentrating on quality comments.

#### Manager

- Actively promote and participate in the behavior safety process by supporting the goals and objectives of the Behavior Based Safety process.
- Ensure that all employees are aware of what is expected of them regarding the BBS process.
- Encourage employees to participate in observations so that incidents/injuries are reduced in the workplace.
- Provide necessary resources to keep process productive.
- Attend safety meetings and offer feedback on areas of improvement.

#### Supervisor

- Actively promoting and participating in the Behavior Based Safety process by reviewing BBS Observation Forms turned in at least weekly and giving feedback, completing corrective actions needed, etc.
- Refraining from using data from the Behavior Based Safety process in a punitive manner.
- Assisting in problem solving and completing corrective actions in a timely manner.
- Understanding the behavior safety process and the benefits of reducing at-risk behaviors.

#### Safety Manager

- Support the goals and objectives of the Behavior Based Safety process.
- Encourage, promote, provide technical support, and assist in acquiring the resources needed for the Behavior Based Safety process.
- Address the concerns and suggestions of field personnel.
- Collect all observation data cards.
- Enter data into BBS database.

#### Training

Employees are provided training on how to conduct effective job observations. Employees are provided training on job observations. Training must include how to conduct an observation and how to provide effective feedback on observed behaviors. Training will include:

- Program objectives and incident metrics reviewed.
- How to conduct the observation.
- How to complete the observation form.
- What do the behaviors mean?
- Feedback training and role play (mentoring and coaching).
- Employees should be aware they may be observed at any time.

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# **BBS Safety Observation Form**

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	LI BBS Observation     LI Unsafe Act     Condition     LI Recognition     LI Environmental						Linnonmental				
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# 11 SJP - BLOODBORNE / BODILY FLUID PATHOGEN EXPOSURE CONTROL

The following exposure control plan (ECP) aims to eliminate or minimize occupational exposure to blood borne or body fluid pathogens.

Blood borne, or body fluid pathogens are infectious materials found in blood or body fluids that can cause disease in humans. They include, but are not limited to, Hepatitis A, Hepatitis B, and the human immunodeficiency virus (HIV). Workers exposed to these pathogens risk serious illness or death.

# Responsibilities

Employers are responsible for:

- Providing or making it possible for workers, on request, to receive vaccinations if they exist (e.g., Hepatitis A & B) for identified blood borne pathogen risks, at no cost to the worker.
- Referring a worker to a medical provider as soon as possible (target within 2 hours) if potentially exposed to a blood borne pathogen.
- Maintaining training and incident records.
- Ensuring compliance with all the regulations governing the workplace.

The Field Supervisor or designee is responsible for:

- Assessing the nature and level of risk as part of the initial Project Hazard Assessment and developing an ECP that minimizes the identified risks.
- Ensuring site workers know and understand the ECP and are trained in emergency response procedures as applicable to their roles and responsibilities.
- Ensuring appropriate personal protective equipment, cleaning materials, and sharp item disposal containers, as needed, are available for worker use.
- Ensuring workers are trained in the care, cleaning, and use of any shared equipment (e.g., SCBA).
- Ensuring workers are aware of their personal responsibility to take appropriate action to prevent contact/exposure risks to co-workers (e.g., seeking first aid for all cuts and scrapes; covering open wounds; informing safety of need to clean up blood due to a cut or scrape).
- Ensuring all incidents that have the potential for blood borne pathogen exposure are reported.
- Establishing a reasonable and practicable site-specific procedure to minimize contact risks to workers (e.g., for those sites at high risk of inappropriate disposal of needles, it may be necessary to inspect and clean up the site every morning before work begins).

Workers are responsible for:

- Following established safe job procedures and safe work practices.
- Using assigned personal protective equipment in an effective and safe manner.
- Reporting any unsafe acts or conditions to their supervisor.

# **Risk Assessment**



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On construction sites, the following situations can result in accidental exposure:

- During treatment of injured or sick workers (emergency response workers and first responders).
- Accidental contact with discarded needles (e.g., buried in or on ground, in water, in portable bathrooms, left on equipment) due to inappropriate disposal.
- Inadequate cleaning or care of reusable personal protective equipment (e.g., SCBA).
- Use of shared construction tools or equipment after a worker has sustained a cut or is working with an open wound.
- Inadequate cleaning of an injury location after an accident.

Emergency Responders (first aiders, first responders) are most at risk. Although first aiders are trained and equipped to respond to site emergencies, co-worker first responders may not be adequately protected. It is essential to remind workers at Orientation and in subsequent safety meetings of the importance of following established Emergency Response Procedures to minimize the risk of exposure.

#### Worker Training

Training should include the following:

- Applicable regulations for work location and required documentation.
- An explanation of the Exposure Control Plan.
- Hazards of the workplace and an evaluation of risk.
- An explanation of the use and limitations of engineering controls, work practices, and PPE.
- Information on Hepatitis A and B vaccinations and availability (where and at no cost).
- Emergency Response Procedure.
- Information on medical follow-up after exposure incident.

## **Exposure Control**

Site:

- Inform all workers of the Exposure Control Plan during Orientation, remind workers frequently (e.g., toolbox meetings, tailgate meetings) during the course of the project and during training.
- Provide workers who are potentially at risk with the option of obtaining vaccinations at no cost. Workers requesting vaccination must be informed of the risks and benefits and provide written consent prior to administration by a qualified medical provider.
- Post Exposure Control Plans and any relevant information on site bulletin boards.
- As reasonable and practicable, based on the risk assessment for the site, establish an inspection, cleanup, and disposal plan/schedule to remove discarded hypodermic needles and drug paraphernalia from the site.
- Place sharp disposal containers in appropriate locations (e.g., portable bathrooms, change rooms, etc.) for legitimate needle users (e.g., diabetics).
- Inspect/maintain sharp disposal containers regularly to prevent overfilling. Workers assigned this task must be trained and properly equipped to prevent accidental exposure and to ensure correct handling of full containers.



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- Train workers in the proper use and care of PPE.
- Handle and dispose of contaminated materials in labeled, closable, puncture resistant, leak-proof containers.
- Clean and decontaminate bins, pails, and equipment as soon as feasible after visible contamination.
- Pick up and remove potentially contaminated broken glass or other materials using mechanical means (e.g., dustpan and brush), wherever possible.
- Ensure workers are aware of their personal responsibility to take appropriate action to prevent contact/exposure risks to co-workers (e.g., seeking first aid for all cuts and scrapes; covering open wounds; informing supervision of need to clean up blood due to a cut or scrape).

#### First Aid Attendant:

- Ensure all applicable vaccinations (e.g., Hepatitis A & B) are current. The company will reimburse cost of needed vaccinations.
- Use personal protective equipment when treating injured workers (e.g., medical gloves, pocket masks with one-way valves, eye, and face protection).
- Collect in properly marked bags and dispose of all contaminated equipment, clothing, and tissues as per applicable rules and regulations for location of work.
- Wash thoroughly with soap and running water.
- If contact occurs with blood or body fluids, it is essential to receive medical attention as soon as possible, preferably within a 2-hour window of being exposed.
- Supervisor is to document/investigate exposure incident if it occurs, to determine if a change in procedure(s) would prevent reoccurrence (e.g., review preventative controls in use at the time, work practices followed, devices, if applicable, being used, PPE in use at the time, location of incident, procedure being performed at the time, training, etc.).

#### Workers:

- Report all personal injuries and location of incident to supervisor immediately to ensure appropriate cleanup.
- Report all observed potential contaminants to supervisor immediately to allow for isolation and cleanup. It is better to assume all blood and/or body fluids are infected and to treat accordingly.
- Report the location of any discovered discarded hypodermic needles immediately.
- Workers doing cleanup must use a sharp handling kit and dispose of sharp containers as per the rules and regulations governing the work location.
- If first on the scene of an injury accident:
  - Ensure no danger to self and others,
    - Isolate injured worker,
    - Summon First Aid Attendant,
    - Contact supervisor,
    - Only treat injured worker if trained and equipped to do so (e.g., have available applicable protective equipment to avoid potential contamination).
- Wash thoroughly with soap and running water.
- If contact occurs with blood or body fluids, it is essential to receive medical attention as soon as possible, preferably within 2-hour window of being exposed.



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• If an exposure incident occurs, supervisor to document/investigate to determine if a change in procedure(s) would prevent reoccurrence (e.g., review preventative controls in use at the time, work practices followed, devices and/or PPE used, location of incident, procedure being performed at the time, and training).

## Post Exposure Incident

- At medical center, conduct confidential medical evaluation, treatment (e.g., clean, flush eyes or other mucus membranes, etc.) and follow-up.
- Document routes of exposure and how the exposure occurred.
- Identify and document source of exposure, if possible. Ensure confidentiality and privacy rights are respected.
- Obtain written consent and arrange to have source individual tested as soon as possible to determine infectivity potential, if not already known. All results are confidential and communicated on a strictly "need to know" basis. Inform persons receiving this information of applicable disclosure laws and regulations.
- If exposed worker gives written consent, blood will be collected and tested for baseline testing and then again as per established medical procedure. If exposed worker does not give consent for blood collection and testing, document refusal in writing.



# 12 SJP – CABLE CUTTER

(Milwaukee M12 Cordless 600 MCM Cable Cutter)

Perform a hazard assessment prior to commencement of work.

- 1. Put on all required PPE.
- 2. Before starting, ensure work area is clean and well lit. When using tools outdoors, use caution in wet or rainy conditions
- 3. Ensure power is disconnected to the cable that is being cut. Lock out source and tag opposite end of the cable, if not within sight. Always test the cable for power with a multimeter.
- 4. Inspect the cable cutter prior to use. Ensure upper blade bolt and blade release bolt are securely tightened.
- 5. The blades are very sharp. Always pay attention when using tool. Keep hands and fingers away from all moving parts. Lacerations and amputations can occur.
- 6. Only use the cable cutter on recommended materials and sizes.
- 7. Copper cable (Maximum 600 MCM).
- 8. Aluminum Cable (Maximum 750 MCM).
- 9. Communications Cable (Maximum 1.16").
- 10. Pull the blade release lever to open the jaws. Insert the workplace squarely between the upper and lower blades. Ensure the materials is only cut straight. The machine cannot make angled cuts.
- 11. Hold the cable cutter firmly on the grip provided and support the workpiece.
- 12. Press down on the trigger unlock button and pull the trigger. When the cut is complete, release the trigger.
- 13. When storing the cable cutter, always keep the blades in the fully closed position.
- 14. Clean work area of scrap, material and / or dust.




# 13 SJP - CHOP SAW

## Job Procedure

- Safety glasses, protective gloves, dust mask, and hearing protection must be worn when operating a chop saw. Additional PPE may be required depending on the task being performed. Loose clothing, long hair, or jewelry must not be worn as it may catch in the rotating parts of the saw.
- Read the manufacturer's instruction manual before operating.
- Before operating, inspect the tool for any defects. Never use a defective tool and ensure the tool is locked out if it is found to be defective.
- All guards must be in place and operating properly.
- Use only the recommended RPM and blade sizes as per manufacturer's specifications.
- Keep fingers / hands clear of the path in which the saw blade travels. To avoid losing control or placing hands in the blade path, hold or clamp all material against the fence when cutting.
- Never re-cut small pieces. Long material should be supported at the same height as the saw table.
- After completing a cut, release the trigger switch and allow the blade to come to a complete stop, then raise the blade from the work piece.
- Use the brake if one is provided. To avoid contact with a coasting blade, never reach into the cutting area until the blade comes to a full stop.
- Never leave a saw running unattended. Turn off the power and make sure the machine has stopped completely before leaving the area.



# 14 SJP – CIRCULAR SAW

## What should you do before start cutting with a circular saw?

- Wear safety glasses or goggles, or a face shield (with safety glasses or goggles).
- Wear an approved respirator or dust mask when exposed to harmful or nuisance dusts.
- Use appropriate hearing protection equipment in noisy areas.
- Check the retracting lower blade guard to make certain it works freely.
- Ensure that the blade that you have selected is sharp enough to do the job. Sharp blades work better and are safer.
- Check the saw for proper blade rotation.
- Set the depth of the blade, while the saw is unplugged, and lock it at a depth so that the lowest tooth does not extend more than about 0.3 cm (1/8") beneath the wood.
- Keep all cords clear of cutting area.
- Circular saws are designed for right-hand operation; left-handed operation will demand more care to operate safely.
- Inspect the circular saw and ensure it is in good operating condition and is equipped with all proper functioning guards in place.
- Make sure you are familiar with the safe operating procedures and any limitations on the use of the saw. 3
- Use sharp blades designed for your work and recommended by the tool manufacturer.
- Check the retracting lower blade guard frequently to make certain it works freely. It should enclose the teeth as completely as possible and cover the unused portion of the blade when cutting.
- Make sure the saw is connected to a suitable extension cord with a proper grounding connection. Conduct a daily pre-operating check and repair or replace damaged cords.
- Allow the saw to reach full power before cutting.
- Make sure the lower blade guard is fully returned before laying down the saw.
- Disconnect the power supply before adjusting or changing the blade.
- Keep all electrical cords clear of the cutting path.
- Use both hands to operate the saw.
- Keep the saw blade guards and motor clean and free of sawdust.
- Secure the work while cutting

## What should you do to work safely with a circular saw?

- Check the retracting lower blade guard frequently to make certain it works freely. It should enclose the teeth as completely as possible and cover the unused portion of the blade when cutting.
- Check that the retracting lower blade guard has returned to its starting position before laying down the saw.
- Keep upper and retracting lower blade guard clean and free of sawdust.

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- Disconnect power supply before adjusting or changing the blade.
- Allow the saw to reach full power before starting to cut.
- Use two hands to operate saws one on a trigger switch and the other on a front knob handle.
- Keep motor free from accumulation of dust and chips.
- Select the correct blade for stock being cut and allow it to cut steadily. Do not force it.
- Secure stock being cut to avoid movement.

## What should you avoid when cutting with a circular saw?

- Do not hold or force the retracting lower guard in the open position.
- Do not place hand under the shoe or guard of the saw.
- Do not over tighten the blade-locking nut.
- Do not twist the saw to change, cut or check alignment.
- Do not use a saw that vibrates or appears unsafe in any way.
- Do not force the saw during cutting.
- Do not cut materials without first checking for obstructions or other objects such as nails and screws.
- Do not carry the saw with a finger on the trigger switch.
- Do not overreach. Keep proper footing and balance.
- Do not rip stock without using a wedge or guide clamped or nailed to the stock.





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# **15 SJP - CAT OPERATOR**

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Other workers and equipment	Steel toe boots	Operator training
Equipment malfunction	Safety glasses	
Slip and trip	Gloves	
Pinch points	Dust mask	
Noise	High visibility vest	
Dust	Hearing protection	

## Safe Work Procedure:

- 1. Use cold start procedure and do pre-trip inspection while machine is warming up.
  - Check that:
  - There are no leaks or loose bolts
  - Lights and back up alarm are working
  - Hydraulics are running properly
- 2. Mount and dismount machine using three-point contact.
- 3. Proceed to work area checking steering and brakes as you go.
- 4. Maintain proper distance from other workers and equipment and always look directly behind before backing up.
- 5. Pay constant attention to all gauges.
- 6. When stopped, check machine over and do not drag winch cable or have hook dangling loosely.
- 7. Park in a safe area and drop the hydraulics.
- 8. Use hot shut down procedure.
- 9. Check over machine and clean rad and tracks when finished.
- 10. Fill all required paperwork on a daily basis.

#### Report any hazardous situations to your supervisor

#### **Guidance Documents/Standards:**



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# 16 SJP – CHAINSAW

## **STARTING A CHAINSAW**

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Amputation Personal injury Projectiles Bodily strains Noise Dust	High visibility vest Steel toed safety boots Safety glasses/ shield Gloves Hard hat Chainsaw chaps Hearing protection	First aid Chainsaw certification

## Safe Work Procedure:

- 1. Wear all applicable PPE.
- 2. Inspect the chainsaw thoroughly as per the chainsaw manufacturer instructions.
- 3. Check and oil while the chainsaw is cool.
- 4. Hold the saw firmly in the ground (one foot on foot plate and one hand on top handle with the chain away from the body and clear of obstructions).
- 5. Use a quick, sharp pull motion on the ripcord.
- 6. Make sure the choke is turned off once idling without the chain turning.
- 7. Run saw at top speed and kick in chain break to ensure it is working properly.
- 8. Stop the saw and adjust or repair if needed.

## Report any hazardous situations to your supervisor

#### **Using Chainsaws Safely**

#### **Pre-job Preparation**

- Complete a safe work permit for all chainsaw work.
- Review emergency communications and response procedures with everyone on site.
- Verify that appropriate first aid services, supplies and equipment are readily available.
- Review proper maintenance and handling procedures for the chainsaw and verify that they are clearly understood by the operator.
- Ensure chainsaw operators are fit for work and capable of handling a chainsaw.
- As a minimum, wear the following personal protective equipment to operate a chainsaw:
  - hard hat with a wire mesh visor
  - o safety shield
  - o hearing protection
  - o hand protection appropriate to the weather
  - o steel-toed footwear at least 20 cm in height
  - o close-fitting clothes
  - o chainsaw pants or chaps designed to protect for a threshold chain speed of 3600 ft/min.



## Preparing a Chainsaw for Use

- Ensure the chain saw teeth have been properly sharpened.
- Check chain tension and the lubrication system for proper function.
- Ensure the air filter, sparkplug and muffler are functioning properly.
- If making adjustments to the chain or the engine, follow manufacturer's advice in the operating manual.

## Starting and Operating a Chainsaw

- Check the operating manual for starting and operating instructions.
- Use both hands when starting the chainsaw, one to hold the saw and the other to pull the starter cord.
- If designed to do so, use a foot to hold the saw steady during starting.
- Always start the chainsaw on the ground on a stable surface it is dangerous to start a saw while holding it in mid-air.
- While cutting, always use two hands to hold and steady the chainsaw.
- Never force a chainsaw through a cut; if it is properly sharpened, it will pull itself through the cut.
- Always avoid making cuts with the saw between the legs cut with the saw to the outside of the legs.
- Don't stand on a log and saw between the feet.
- Always stand to one side of a limb, never straddle it.
- Always be aware of where the chain will go if it breaks and ensure that the operator or other people are not in line with the chain.
- Keep the chain out of the dirt; it will dull the teeth and shorten the chain life.
- Frequently check and readjust the chain as it will stretch with use.
- Check the chain lubricating oil often and refill according to manufacturer's instructions.

## Avoiding Kick-back

- Keep the tip guard on the chainsaw.
- Cut branches at the base of the blade not the tip.
- Use a high chain speed when reinserting the blade into a cut or removing it from a cut.
- Keep the saw teeth sharp.
- Always cut below shoulder height.

## Transporting and Storage of Chainsaws

- Transport chainsaws in a level position with the gas cap up.
- Do not carry chainsaws in the passenger area of a vehicle.
- Transport chainsaws in a case, or at least with the chain guard in place.
- When storing a chainsaw, drain the fuel from the system in a safe ventilated area.
- Remove the chain and store it in a container of oil to prevent rusting.
- Keep the saw in a safe dry place.
- Review the manufacturer's manual for any additional storage instructions.



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# 17 SJP- CHANGING ATTACHMENTS (LOADER)

## PURPOSE

Eliminate the risk of Injury, harm to the environment and equipment damage.

## **OPERATOR RESPONSIBILITIES**

An operator, prior to Changing Attachments on the Loader, must review the following procedure, review JSA-L203 and conduct a Hazard Assessment to determine if the task can be completed safely, with zero impact to the environment and/or equipment damage.

## ASSESSING HAZARDS

Before an operator changes Attachments on the Loader, a Hazard Assessment must be performed that considers the following.

- the location where task is to be performed,
- the environmental conditions,
- stored energy
- line of sight
- locking pin condition and position

If the hazard assessment determines that there is a potential for injury, environmental damage, and/or equipment damage all reasonably practical measures are to be used to eliminate or reduce the potential

## ADDITIONAL PROCEDURES

The following list of procedures will also be required to be reviewed in addition to this procedure (SOP-L203)

• No additional procedures required

## METHOD/PROCEDURE-

## Attaching: Bucket, Pallet Forks and Stinger

- 1. Slowly approach the back of the attachment with the loader
- 2. Slightly tilt boom downwards until boom arm is centered with hooks on attachment
- 3. Once aligned with attachment
  - Slowly raise boom arm until attachment completely hooked on
  - Slowly tilt back on control lever until attachment rests completely with backside of tilt arm (\*ensure attachment is completely rested on backside of tilt arm prior to engaging locking pins\*)
  - Engage locking pins
- 4. Place loader in neutral
- 5. Engage lock switch for gear selector



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- 6. Set Park brake and turn off loader
- 7. Exit cab with 3-point contact and do visual check

## **Detaching: Bucket, Pallet Forks and Stinger**

- Ensure attachment is lowered to ground
- Engage release locking pins and wait until fully retracted
- Slowly lower boom arm until clear of attachment
- Back up slowly away from attachment

## Attaching Grapples

- Ensure loader is in park and engine shut off
- Uncap both ends of the hydraulic fitting for the grapple line
- Inspect any wear on couplers and lines
- Place grapple lines to corresponding ends (female coupler to male coupler until they snap into place)

## **Detaching Grapples**

- 1. Follow steps 1-4 for DETACHING
- 2. Engage parking brake
- 3. Turn ignition to ON position
- 4. Bleed off any excess hydraulic fluid in grapple before disconnecting. (Pull the OPEN/CLOSE lever on the grapples for 10 seconds, until hydraulic fluid is bled off.)
- 5. Once loader is in park position and engine shut down
  - Exit cab using 3-point contact
  - Disconnect grapple lines from loader (avoid spilling any hydraulic fluid on ground, make sure to use a rag to clean up any excess hydraulic fluid.)
- 6. Ensure grapple lines are capped at both ends, this prevents any contamination from entering hydraulic lines

## Report any hazardous situations to your supervisor

## **Guidance Documents/Standards:**



# **18 SJP - CHANGING BUCKET TEETH**

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Pinch points Injury from cuts Projectiles Bodily/ muscle strains Noise Crush by machine Other workers	Steel toe boots Safety glasses Gloves Hard hat High visibility vest Hearing protection	Operational training

## Safe Work Procedure:

- 1. Park equipment on level ground with brake applied, or machine shut down.
- 2. Raise bucket and place supports underneath.
- 3. Hammer out pins, using bolts from left to right side.
- 4. Remove teeth with hammer.
- 5. Clean shank with wire brush.
- 6. Install pin lock.
- 7. Install tooth.
- 8. Drive pin lock in left to right.
- 9. Clean up tools and debris from site

## Report any hazardous situations to your supervisor

## **Guidance Documents/Standards:**



# **19 SJP - CHANGING EQUIPMENT BLADES**

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Pinch points	Steel toe boots	Operational training
Injury from cuts	Safety glasses	
Projectiles	Gloves	
Bodily/ muscle strains	Hard hat	
Noise	High visibility vest	
Crush by machine	Hearing protection	
Other workers		

## Safe Work Procedure:

- 1. Two qualified personnel are required for this task.
- 2. Move machine to level ground.
- 3. Make sure all tools and new blades are on hand.
- 4. Lift blade up and drop hydraulics so it can be worked on comfortably and block it under the C frame.
- 5. Using the hot engine shut down procedure, shut the engine off and make sure the brake is on.
- 6. Avoid being under the blade at any time.
- 7. Clean the dirt off the blade.
- 8. Use penetrating oil on all the bolts to be loosened.
- 9. Using the proper sized wrench and socket, loosen all bolts.
- 10. Starting on one side, remove corner bit and continue across the blade.
- 11. Ensure you have several bolts loosely in the blades, so it does not fall.
- 12. With help, remove the corner bits and blades.
- 13. With your assistant, put new blades and corner bits in loosely, and then tighten them in place.
- 14. Torque to specification.
- 15. Remove any tools, old blades, etc. away from the machine.
- 16. Start the machine, raise the blade, and remove blocking.
- 17. Try the blade and recheck the bolts to ensure they are tight.

## Report any hazardous situations to your supervisor

## **Guidance Documents/Standards:**



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# 20 SJP – CHANGING TIRE

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Pinch pointsSBodily/ muscle strainSExplosionCrushingWrenches slippingI	Steel toe boots Safety glasses Gloves Hard hat High visibility vest	Operator training

## Safe Work Procedure:

- 1. Bring unit into the shop, shut off machine, and set the brake.
- 2. Place jack under walking beam, raise the truck, and release the park brake.
- 3. Take sledgehammer and hit outer ring of tire lug, break loose.
- 4. Remove nuts.
- 5. Remove flat tire and install new tire.
- 6. Make sure valve stem is 180 degrees away from its mating valve stem.
- 7. Make sure tire is tightened evenly to eliminate run out.
- 8. Run out can be checked by placing a piece of wood approximately 1' from the tire and spinning the tire with your hand. Make sure the tire is 1' away from the wood all the way around the tire.
- 9. After one trip, check to make sure the lug nuts have not come loose, and the tire has not turned.
- 10. Re-tighten the lug nuts.

## Report any hazardous situations to your supervisor

## **Guidance Documents/Standards:**



# **16 SJP - COLD START EQUIPMENT**

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Equipment failure Slips and trips Falls	Steel toe boots Safety glasses Gloves Hard hat High visibility vest	Operator training Fire extinguisher training First aid training

## Safe Work Procedure:

- 1. Check all appropriate fluid levels and record in pre-trip book.
- 2. Visually inspect for leaks and worn belts.
- 3. Do a walk around to ensure it is safe to start machine.
- 4. Proceed to start engine using the three-point contact to enter machine.
- 5. Let machine idle and do another overall check for leaks.
- 6. Once machine is warm, proceed to task.

#### Report any hazardous situations to your supervisor

## **Guidance Documents/Standards:**



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# 17 SJP - CRAWLER LOADER

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Other workers and equipment	Steel toed safety boots	Operator training
Vehicle damage	Safety glasses	Fire extinguisher training
Slip/trip	Gloves	First aid
Pinch points	Hard hat	
Noise	Reflective vest	
Dust	Hearing Protection	

## Safe Work Procedure:

- 1. Inspect work area and surroundings.
- 2. Ensure all permits have been acquired.
- 3. Mount machine using three-point contact method.
- 4. Perform pre-trip inspection on machine, including back up alarm.
- 5. Follow through with task carefully. Always be aware of surroundings.
- 6. Park on level ground with bucket to the ground.
- 7. Allow for enough cool down time before shutting off machine.
- 8. Close and lock doors and make sure windows are shut.
- 9. Dismount machine using three-point contact method.

## Loading Crawler Loader

- 1. Enter machine using three-point contact method.
- 2. Drive up to back of trailer, making sure you are straight and properly aligned.
- 3. Raise bucket on machine.
- 4. Move ahead slowly until front of tracks are on the trailer.
- 5. Proceed to the front of the trailer carefully.
- 6. Lower bucket and set brake, swing brake.
- 7. Shut off engine.
- 8. Exit cab using three-point contact method.
- 9. Dismount trailer by sitting on deck and pushing off. Jumping off of the trailer is prohibited.
- 10. Secure machine with chains.
- 11. Inspect load and document.

## Report any hazardous situations to your supervisor

#### **Guidance Documents/Standards:**



# **18 SJP - DEMOLITION HAMMER / BREAKER**

Perform a hazard assessment prior to commencement of work.

## JACK HAMMER

## Procedure:

- Establish traffic control when required.
- Review pre-excavation permit (required at all times). Have mark underground utilities when required. Supervisor to review these field markings when underground utilities are marked and notify supervisor with any concerns or problems.
- Position jackhammer near job. Caution: jackhammer is heavy (80 pounds). Use good body positioning and get help if required.
- Check jackhammer and bit lock and condition of bit. If equipment is not in good condition
  or the jackhammer is not operating properly, an equipment trouble report should be filled
  out, your supervisor should be notified, and the equipment dropped off at small equipment
  for repair. If you find the jackhammer has excessive recoil / bouncing / hammering it could
  be the compression cylinder is not fully charged with nitrogen.
- Install bit: Ensure, when installing or changing bit, that jackhammer is disconnected from power supply (hydraulic/air/electric). Install bit by laying jackhammer on its' side or have another worker install bit while you are holding jackhammer.
- Connect hose to jackhammer. Turn on power (hydraulic/air/electric).
- Position jackhammer where you want to start cut. Narrow your stance so feet are either side of bit to stabilize the bit. Pull jackhammer trigger.
- As soon as bit starts to break through, widen your stance to an athletic position.
- Maintain full pressure holding down on jackhammer.
- Check dust levels. Wet down material set up local exhaust ventilation and/or wear respiratory protection when excessive dust levels are present.
- Do not jackhammer down beyond the depth of the cutting bit.
- Caution: Release air trigger whenever lifting up on jackhammer. If jackhammer trigger is operated when jackhammer is not being held down with pressure, it could jump around uncontrolled and injure a worker.

## Removing "Stuck Bit" Procedure:

From time to time you may get the bit "stuck" in the material.

- Attempt to free the bit by moving the jackhammer back and forth from side to side.
- If this does not free the bit, disconnect jackhammer from power supply (hydraulic/air/electric) and then release the bit from the jackhammer and set it aside. Use a brass hammer to jar the bit loose.
- If bit is still stuck, put a second bit into the jackhammer and work at stuck bit from an angle.



## Musculoskeletal injury (MSI) Risk:

 There is a high risk of a musculoskeletal injury from vibration when the equipment is continuously used for over two hours a day. The use of good body positions may dampen vibration. Care must be taken when jackhammer is used on surfaces other than what the worker stands on.

## Demolition Hammer / Breaker (Hilti (TE 500-3000 Series)

- Put on all required PPE. A face shield is mandatory when using a demolition hammer / breaker. Recommended PPE includes dust mask / respirator with P100 cartridge, and hearing protection. Be aware that when breaking through concrete, the bit will get very hot.
- 2. Before starting, ensure work area is clean and well lit. When using tools outdoors, use caution in wet or rainy conditions.
- 3. Inspect the demolition hammer prior to use. Ensure cord, hammer, chuck, and bit are all mechanically sound.
- 4. Demolition hammers can cause the user's hands to become sore from the vibrations being transferred from the handles to the hands. Take occasional breaks to help alleviate this soreness.
- 5. If the work involves breaking or drilling through to the floor below, flag off the area with danger tape or provide a spotter. Notify any trades in the area of the work that will be happening. This will eliminate injuries to workers or equipment below.
- 6. Before starting, ensure there are no in-slab electrical or other systems in concrete.
- 7. Hold demolition hammer securely with both hands on the grips or handle provided. Use the auxiliary handle (if equipped). Loss of control can cause personal injury.
- 8. Precut a section of concrete (if possible) before beginning to use the demolition hammer.
- Before installing or removing a chisel drill bit, ensure the demolition hammer is unplugged. First, pull down the chisel collar or turn it to open it. Insert your selected chisel. Spade chisel will break up masonry into large pieces. Pointed chisel collar or tighten the chisel neck (depending on your model).
- 10. Plug in the demolition hammer. Set the chisel on the concrete or masonry surface. If the hammer has multiple speeds, use the lowest speed to start. Switch the hammer to on or press the trigger.
- 11. For concrete surfaces, continue pushing the demolition hammer through the surface and moving it backwards until you have broken up the entire concrete surface. Do no apply excessive pressure to the hammer. This does not increase the concrete breaking performance of the tool.
- 12. For masonry surfaces, turn up the speed of the hammer to your desired speed, one setting at a time. Insert the chisel bit and lightly press until the chisel goes through the stone. Lift the chisel and move it back 2-4 inches and then press it into the masonry again.
- 13. When finished task, turn the hammer to off or release the trigger. Make sure to clean work area of debris and / or dust. Remove flagging or danger tape from the work area.

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# **19 SJP – DEMOLITION**

A documented hazard assessment will be completed and reviewed with the crew prior to proceeding with any demolition work. All hazardous materials will be identified in the Pre-job survey (environmental consultant) and reviewed with workers in orientation to identify substances and preventative exposure measures.

# A demolition permit is required on-site to provide mandatory written verification that all utility services have been disconnected.

With respect to demolition work, Priestly Demolition Inc. Ltd. will proceed as follows:

- A competent Supervisor will remain onsite at all times while work is in progress.
- All chemical and biological substances that may be hazardous to workers during demolition are removed from the structure or the part of the structure that is being demolished and existing concrete at the worksite is not disturbed or removed until any embedded facilities have been isolated or identified by markings.
- Locate temporary offices and toolboxes clear of falling material.
- Remove all glass from the exterior walls of the buildings adjacent to a public walkway before demolition commences.
- Where the demolition of a structure may affect the stability of an adjoining structure, carry out the demolition in accordance with the procedures that will safeguard the stability of the adjoining structure and that have been certified by a professional engineer.
- If tensioned steel cables or bars are known to be in the building or structure, demolition procedures are certified and supervised by a professional engineer.
- If there are workers in the building or structure during the demolition, the demolition is performed floor by floor from the top down.
- Steel structures are dismantled column length by column length and tier by tier.
- A structural member that is being removed is not under stress other than its own weight and is secured or supported to prevent unintentional movement.
- Unless it is being demolished at the time, a wall or other part of the building or structure is not left unstable or in danger of collapsing unintentionally.
- Do not allow materials and debris to accumulate in the areas where overloading of a structure could result in the collapse of a part of a structure.
- Where material chutes are installed at an angle of more than 45 degrees from the



horizontal, enclose them totally. Workers are not permitted to enter into an area to which material is dropped, thrown, or conveyed by a materials chute. Warning signs in the area are required.

- Where material chutes present a danger to the workers, install a guardrail around the top of the chute to prevent workers from falling into the chute.
- Dismantle steel structures column length by column length and tier to tier.
- A structural member that is being removed is not under any stress other than its own weight and is secured or supported to prevent any unexpected movement.
- Where workers are or may be present in a building during the demolition, perform the demolition floor by floor from the top downward.
- Before powered mobile equipment is placed on a floor or similar surface for the purpose of demolition, ensure the floor or surface is capable of supporting the loads.
- Except during actual demolition, do not leave any walls or other parts of the structure unstable or in danger of accidental collapse.
- Prepare, communicate, and supervise site specific procedures to ensure no danger is created for workers or the public.
- Disassemble pressurized vessels by hand under the supervision of the site foreman.
- Ensure hard hats, CSA approved work boots with adequate ankle support, safety glasses or full-face shields, and gloves are worn by employees, subcontractors, and visitors.
- Ensure regularly inspected first aid facilities and fire extinguishers are readily accessible.
- No smoking is allowed on demolition sites involving construction debris.
- Ensure a trained flag person is on-site.
- Ensure project planning incorporates security of materials from windy conditions as to pose no hazard to workers or the public.
- Signal plan established.
- Prior to demolition, structures must be completely checked for people! 2 workers will do walkthrough as to not put themselves at risk encountering vagrants that may not want to leave the property. Do not participate in confrontation, call Police



# 20 SJP – DEMOLITION - POTENTIAL EXPOSURES TO HAZARDOUS SUBSTANCES:

# ASBESTOS

Asbestos is a group of naturally occurring minerals that was widely used to insulate buildings, piping and structures from the 1950's to mid 1970's due to its non- combustibility and flame-resistant properties. Asbestos was also used as a reinforcing or binding agent in plastic, piping, cement, brake drums and other construction materials due to its strength and flexibility. 'Asbestos waste' refers to waste containing asbestos in a concentration greater than 1% by weight. Alberta Environment governs procedures when asbestos is suspected of being present in a friable material. A friable material easily crumbles under hand pressure and the more friable a material the more likely it is to release fiber into air.

\*Asbestos handling will only be performed by qualified and currently trained personnel. \*

Trained professionals with specialized procedures for personal protective equipment will prevent the asbestos fiber from becoming airborne. Friable asbestos waste will be captured as soon as it is removed, bagged, or encapsulated and taken to a Class 1 or Class II landfill. Asbestos materials including waste when fixed in a natural or artificial binder material (ex. non-friable form) is not subject to TDG requirements.

When removing, handling, and transporting asbestos waste, occupational health and safety, transportation and environmental requirements will be strictly adhered to.

## **References:**

- Alberta Asbestos Abatement Manual prepared by Alberta Employment and immigration outlines comprehensive information on all aspects of asbestos management emphasizing occupational health and safety issues. 1-866- 415- 8690.
- Asbestos Waste Disposal Guidelines Alberta Environment
- Transportation of Dangerous Goods Regulations available online or contact 1-800-272-9600.

## FREON

Freon may be present at the worksite in refrigerators, freezers, or air conditioning units. Freon must be disposed of by a trained and approved contractor (sub) as it's release impacts the environment and may pose hazard to the worker.

Chlorofluorocarbons (CFCs) have ideal thermodynamic properties for use as refrigerants. They are non-flammable, chemically stable and low in toxicity. Freon 11 (R-11), for example, has been widely used for many years as a refrigerant in low- pressure centrifugal chillers for commercial building refrigeration and air- conditioning systems. Similarly, CFC-12 (R-12) has been used as a refrigerant in automotive air-conditioning systems and domestic refrigerator freezers. However, the stability of these refrigerants and their chlorine content have linked them to the depletion of the stratospheric ozone layer and to an increase in the earth's temperature

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(the "greenhouse effect"). Ozone-layer depletion increases the amount of damaging ultraviolet radiation that penetrates to the earth's surface. The net effect will likely be significant increases in skin cancers in humans and dramatic changes in weather patterns. As part of an effort to protect people and the environment, an international agreement was reached in September 1987 to phase out all fully halogenated CFCs by the year 2000 and to regularly review the use of transitional ozone-safe alternative refrigerants, which are scheduled to be replaced no later than 2040.

## **RADIOACTIVE MATERIAL**

Minimal quantities of radioactive materials can be present on the worksite in building smoke detectors and compaction testing equipment. On demolition projects with a quantity of smoke detectors, these units will be contained and disposed of according to provincial regulatory standards. If compaction testing equipment is damaged, as with all incidents, report to your Supervisor IMMEDIATELY.

## MERCURY

Mercury is found in thermostat units and exposure may cause harm to workers. These units will be contained and disposed of according to provincial regulatory standards, by trained and approved facilitators.

## PCB's

PCBs can be discovered at the worksite in light ballasts. An Environmental hazardous material surveys will be completed by certified personnel prior to starting work on demolition projects.

This process will identify those ballasts or other electrical equipment that require proper removal and disposal by certified personnel, meeting Provincial regulator standards. Polychlorinated biphenyls (PCBs) are a group of manufactured organic chemicals that contain 209 individual chlorinated chemicals. Concentrated PCBs are either oily liquids or solids and are colorless to light yellow in color. They have no known smell or taste. There are no known natural sources of PCBs. PCBs don't burn easily and are good insulating material. They have been used widely as coolants and lubricants in transformers, capacitors, and other electrical equipment. The manufacture of PCBs stopped in the United States in 1977 because of evidence that they build up in the environment and cause harmful health effects. Products containing PCBs are old fluorescent lighting fixtures, electrical appliances containing PCB capacitors, old microscope oil, and hydraulic fluids.

Potential Exposure Effects

- Neurological development of children
- Harmful to the reproductive system
- May cause cancer



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- Harmful to the immune system
- Endocrine disruptor

## ANIMAL FECES - RESPIRATORY IRRITANTS AND DISEASE CARRYING POTENTIAL

Structures pending demolition can harbour rodents or birds that produce bacteria and viruses in their urine or feces that can cause disease in humans. The most notable of these diseases include, but are not limited to:

- Salmonella Hantavirus
- Lymphocytic Choriomenengitis Virus (LCM) Histoplasmosis

## **TYPES OF DUST**

Structures pending demolition can harbour rodents or birds that produce bacteria and viruses in their urine and feces that can cause disease in humans (Zoonoses). The effects of exposure that may cause any of these diseases range from flu-like symptoms to death.

Where you are required to enter a building or structure that has been sitting unused and has evidence of dust or animal droppings, you must wear a half mask respirator with P100 cartridges to protect your respiratory system. Other equipment that must be worn to protect yourself are disposable coveralls, gloves, CSA hard hat/boots/ safety glasses.

The other dust that could potentially be created on this project is related to the task of demolishing the buildings.

## Silica

Silica is the second most common mineral on earth and makes up nearly all of what we call "sand" and "rock." Silica exists in many forms—one of these, "crystalline" silica (including quartz), is the most abundant and poses the greatest concern for human health.

Some common materials that contain silica include:

- Rock and sand
- Topsoil and fill
- Concrete, cement, and mortar
- Masonry, brick, and tile
- Granite, sandstone, and slate
- Asphalt (containing rock and stone)
- Fibrous-cement board containing silica

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## Silica - Health Hazards

Crystalline silica dust can cause a disabling, sometimes fatal disease called silicosis. The fine particles are deposited in the lungs, causing thickening, and scarring of the lung tissue. The scar tissue restricts the lungs' ability to extract oxygen from the air. This damage is permanent, but symptoms of the disease may not appear for many years.

A worker may develop any of three types of silicosis, depending on the concentrations of silica dust and the duration of exposure:

- Chronic silicosis—develops after 10 or more years of exposure to crystalline silica at relatively low concentrations
- Accelerated silicosis—develops 5 to 10 years after initial exposure to crystalline silica at high concentrations
- Acute silicosis—develops within a few weeks, or 4 to 5 years, after exposure to very high concentrations of crystalline silica

## Silica - Health Hazards

Initially, workers with silicosis may have no symptoms; however, as the disease progresses, a worker may experience:

- Shortness of breath
- Severe cough
- Weakness

These symptoms can worsen over time and lead to death. Exposure to silica has also been linked to other diseases, including bronchitis, tuberculosis, and lung cancer. Priestly Demolition Inc. Ltd. demolition procedures on this project have been developed to minimize the production of dust. A concrete processing attachment on the end of an excavator stick will downsize all the concrete from the buildings.

This engineering control minimizes the production of dust. Ground workers are not permitted near the excavator during demolition, so this also minimizes the exposure potential. Wind conditions can be a factor where dust may be produced. Water assist in minimizing dust, as required. As a site worker you are responsible to remain out of the identified 'drop zone' where the machines are working. At all times you will have a designated half mask, cleaned, inspected and readily accessible for use where required.

## Waste Management Planning and Reduction

Priestly Demolition Inc. recognizes that in pursuing its contractual obligation and commitment to environmental requirements, it has a responsibility to protect and nurture the environment. By exercising proper control over its construction activities, will promote the use of best management practices and discourage wasteful or damaging practices.

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The company will adhere to the compliance to relevant federal, provincial, municipal law, the implementation of waste management, reduction and environmental protection plans, and to the Client Environmental Policy. Priestly Demolition Inc. is committed to the conservation and improvement of the environment, to minimizing the environmental impacts, and to take action to minimize the risks arising from its activities. Operations will be managed in ways that are environmentally sustainable, economically feasible, compliant to policies, and provide appropriate training to all worksite participants (through orientation) on environmental aspects and protective measures. Company construction practices are designed to significantly reduce or eliminate the negative impacts of the site disturbance during the completion of this contract through:

- Priestly Demolition Inc. safety orientation and safe work procedures
- Environmental protection measures will be identified and controlled in all phases of hazard assessments, task procedures, safe work practices, emergency planning and reporting protocol for all activities executed by Priestly Demolition Inc. Ltd. employees and subcontractors.

## Project preplanning and site operations will:

- incorporate compliance with all governing bodies,
- incorporate conservation of resources,
- maximize recycling options,
- minimize pollution, and
- prevent releases of contaminants.

## Recycling, Reuse and Material Salvage Opportunities

Priestly Demolition Inc. Ltd. includes, but not limited to, the following materials eligible for recycling to local approved and authorized facilitators:

- Metals, including by not limited to steel, tin, aluminum, copper. All applicable site materials that fall within these categories of metals will be included in the segregated areas source separation (ex. rebar, piping, conduits, ductwork, doors, fixtures etc.)
- Wood wood framing, plywood, timber will be source separated and transported to where they will process for reuse.
- Concrete can have rebar removed, then processed on site with mobile equipment pulverizing attachment to downsize.
- Asphalt

## Priestly Demolition Inc. Ltd. Waste Tracking System

The Waste Tracking System begins onsite by completing the Priestly Demolition Inc. Waste Tracking Form daily, providing a log of material type, destination (facility), transporter, volume, and ticket numbers. Quantities of each material will be compiled from this tracking system (with back up weigh bills) at a regular interval, as specified by the client, and a summary included in

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Project close out submittals. This standardized form must meet the approval of the Client prior to field use.



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# 21 SJP - DRILLING

Perform a hazard assessment prior to commencement of work.

- 1. Put on all required PPE. It is recommended to wear hearing protection.
- 2. Inspect drill prior to use. Ensure cord, drill, chuck, and bit are all mechanically sound and work area is free of debris.
- 3. If you are drilling a hole thorough ceiling or wall, ensure there is a spotter of that the area is sufficiently flagged / barricaded off. If necessary, refer to the "Ladders" SWP.
- 4. Insert the pilot / drill bit by undoing the chuck (use chuck key, if necessary). Make sure the drill bit is sitting properly in the chuck and it is tightened down firmly. A loose drill bit won't make straight holes and can slip.
- 5. Ensure you have good footing and a firm grip on the drill. It is preferable to use two hands to grip the drill to prevent it from twisting if the bit binds.
- 6. Ensure any material you are drilling is being firmly held down with either foot pressure, or with a vice. It is recommended to drill a pilot hole first. This makes drilling the hole easier and lessen the wear on the uni-bits and larger drill bits. Use cutting oil to reduce wear on drill bits.
- 7. Proceed with drilling. It is <u>important</u> to use the right amount of pressure while drilling. Use light to medium pressure, gradually feeding the drill into the material, until the drilling begins to progress at its own speed. Increasing pressure on the drill will do little to reduce the time it takes you to complete a hole, but it will cause your drill to overload and overheat, which will lead to excessive wear on the drill and defects in the material being drilled.
- 8. Finish drilling. Clean up / dust / wood / shavings / metal shavings. Remove barricading / flanging.

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# 22 SJP – DUST IN CONSTRUCTION

It is the responsibility of Priestly Demolition Inc. Ltd. to provide the worker with a complete assessment of the potential hazards they may encounter on the Radium Lodge Project. The following information outlines identification of the substances you may be exposed to, what controls there are in place to minimize exposure and provide protection against potential hazards related to dust.

# Types of Dust

Structures pending demolition can harbour rodents or birds that produce bacteria and viruses in their urine and feces that can cause disease in humans (Zoonoses). The most notable of these diseases include but not limited to salmonellosis, hantavirus pulmonary syndrome, LCM, and histoplasmosis. The effects of exposure that may cause any of these diseases range from flulike symptoms to death. More information on these infections is available for your review in Appendix A of this document.

Where you are required to enter a building or structure that has been sitting unused and has evidence of dust or animal droppings, you must wear a half mask respirator with P100 cartridges to protect your respiratory system. Other equipment that must be worn to protect yourself are disposable coveralls, gloves, CSA hard hat/boots/ safety glasses.

The other dust that could potentially be created on this project is related to the task of demolishing the buildings.

## Silica

Silica is the second most common mineral on earth and makes up nearly all of what we call "sand" and "rock." Silica exists in many forms—one of these, "crystalline" silica (including quartz), is the most abundant and poses the greatest concern for human health.

Some common materials that contain silica include:

- Rock and sand
- Topsoil and fill
- Concrete, cement, and mortar
- Masonry, brick, and tile
- Granite, sandstone, and slate
- Asphalt (containing rock and stone)
- Fibrous-cement board containing silica

## Silica - Health Hazards

Crystalline silica dust can cause a disabling, sometimes fatal disease called silicosis. The fine particles are deposited in the lungs, causing thickening, and scarring of the lung tissue. The

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scar tissue restricts the lungs' ability to extract oxygen from the air. This damage is permanent, but symptoms of the disease may not appear for many years.

A worker may develop any of three types of silicosis, depending on the concentrations of silica dust and the duration of exposure:

- Chronic silicosis—develops after 10 or more years of exposure to crystalline silica at relatively low concentrations
- Accelerated silicosis—develops 5 to 10 years after initial exposure to crystalline silica at high concentrations
- Acute silicosis—develops within a few weeks, or 4 to 5 years, after exposure to very high concentrations of crystalline silica

Initially, workers with silicosis may have no symptoms; however, as the disease progresses, a worker may experience:

- Shortness of breath
- Severe cough
- Weakness

These symptoms can worsen over time and lead to death. Exposure to silica has also been linked to other diseases, including bronchitis, tuberculosis, and lung cancer.

Silica is so common that many workplace activities that create dust can expose workers to airborne silica. The Occupational Health and Safety Regulation has established occupational exposure limits (OELs) for five different forms of silica; three of these are amorphous, and two are crystalline (quartz and cristobalite). The form most likely to cause serious problems for worker health is quartz.

- Silica occurs in two forms: crystalline and amorphous.
- The crystalline form is the type of silica known to cause severe health effects. Most crystalline silica comes from quartz. Quartz is extremely common in nature. It is found in rocks and in sand. Some rocks, such as granite, contain a high percentage of quartz.
- Exposure to crystalline silica causes the lung to become fibrous or scarred around the trapped silica particles. This condition is called silicosis. Silicosis causes shortness of breath, fever, and bluish skin. Having silicosis increases the risk of getting tuberculosis.

## Silica - Health Hazards

There are three types of silicosis:

- Chronic silicosis, which may develop after 10 or more years to relatively low concentrations.
- Accelerated silicosis, which may develop 5-10 years after exposure to high concentrations.
- Acute silicosis, which may develop within a few weeks to 4-5 years after exposure to very high concentrations.

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One reason silicosis is such a serious disease is that the condition can worsen even after exposure has ended. There is also evidence that crystalline silica may cause cancer. Priestly Demolition Inc. Ltd. demolition procedures on this project have been developed to minimize the production of dust. A concrete processing attachment on the end of an excavator stick will downsize all the concrete from the buildings. This engineering control minimizes the production of dust. Wind conditions can be a factor where dust may be produced. Water assist in minimizing dust, as required. As a site worker you are responsible to remain out of the identified 'drop zone' where the machines are working. At all times you will have a designated half mask, cleaned, inspected and readily accessible for use where required.

Use and Care of Half Mask Cartridge Respirator

- A "Fit Test" administered by a qualified Supervisor is mandatory when issued your half mask respirator. You must be clean shaven to achieve a proper seal.
- The disposable filter cartridges usually contain a chemical absorbent to trap contaminants. The filter cartridge should be replaced immediately if it becomes more difficult to inhale. It should also be changed if you begin to smell or taste the contaminant.
- Inspect your respirator on a daily basis or before each usage. Examine the elastic headband(s) to assure it has not lost elasticity. Also check the headband for tears, frays, and loose strands. Take the cartridges off and examine the cartridge housing to make certain it is not cracked. Check the cartridge threads to ensure they are not stripped or damaged in any way.
- Check the facepiece for tears, cuts, or holes. Inspect the exhaust valves and intake valve to make certain they are not sticking or damaged. Clean your respirator after each use. The cleaning process usually consists of washing, disinfecting, rinsing, and drying. You should refer to the manufacturer's suggestions for specifics. Most facepieces can be washed with warm water.

## Use and Care of Half Mask Cartridge Respirator

- Disinfecting with a disinfectant cleaner or germicidal detergent is a commonly acceptable practice. Rinsing should be done with water. Air drying is usually preferred as towel drying as heated quick drying may cause damage.
- It is important to store your respirator properly. Your respirator should be protected from heat, sunlight, dust, and vapor contaminants. Storage in a sealed plastic bag is the preferred practice. Be careful not to cram the respirator in a tight space or store it in an awkward position as both of these practices may warp the respirator permanently and alter the fit.
- Do a "seal check" often to make certain that you have a good seal. This can be done by covering the exhalation valve with your hand and gently exhaling into the facepiece. If air leaks out during gentle exhaling, the seal and facepiece should be checked by your supervisor.
- A user seal check must be done each time a respirator is donned. Before fit testing is done, the wearer must also do the user seal checks. Note that user seal checks are not substitutes for fit testing.

## NEGATIVE PRESSURE SEAL CHECK

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The negative pressure seal check is done by closing off or blocking the inlet opening(s) of the air purifying elements of the respirator so that when the user inhales, no air will flow into the face piece. The user then gently inhales and holds their breath for at least 5 seconds. The face piece should collapse slightly on the face and remain collapsed while the breath is being held. If this occurs, the test is successful. Otherwise, the user must verify the seal of the respirator to the face and adjust the face piece and harness and repeat the test. If the test cannot be successfully completed, the user should check the respirator face piece components for leakage or use a different brand/size of respirator.



## POSITIVE PRESSURE SEAL CHECK

The positive pressure seal check is done by closing off or blocking the exhalation valve or breathing tube, or both, of the respirator so that no air will flow out of the face piece. The wearer exhales gently and checks for a slight positive pressure in the face piece. If no air leaks from the face piece while positive pressure is maintained, the test is successful. Otherwise, the seal of the face piece must be checked, and the harness adjusted, and the test must be repeated. Again, if the user is not able to successfully complete this test, the respirator must be checked, or another type tried.



## DUST MASKS (ONLY USED WITH NON-HAZARDOUS DUSTS)

## SEAL CHECKS FOR DISPOSABLE RESPIRATORS (N95)

For disposable respirators, the user seal checks are done somewhat differently. For disposable respirators with no valve, both hands must be placed completely over the respirator while the wearer exhales. The respirator should bulge slightly. For disposable respirators that have a valve, both hands should be placed over the respirator and the user inhales sharply. The

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respirator should collapse slightly. If air leaks at the edges of the respirator, it should be repositioned and adjusted for a more secure fit and the test repeated. If the seal check cannot be successfully completed, another type/style/size of respirator should be



Salmonella -Salmonella bacteria is a common contaminate of fecal droppings and eggs. When ingested by humans, these bacteria has the potential for causing severe intestinal disease. Use of good personal hygiene measures, including effective and thorough hand washing along with the proper PPE, such as disposable coveralls and gloves will greatly reduce the likelihood of infection.

Hantavirus - Hantavirus is transmitted through inhalation of dried rodent feces and urine when such material is raised into the air from disturbed bedding or nesting material. Transmission can also occur through rodent bites and contamination of broken skin or mucous membranes. The infection progresses from flu-like symptoms to respiratory complications and has resulted in death over 50% of the cases, particularly when medical care was not quickly obtained. You can prevent exposure through the use of provided PPE, good personal hygiene, and wet, properly ventilated handling of waste bedding material.

Lymphocytic Choriomeningitis (LCM) VirusLCM virus is transmitted to humans by inhalation, broken skin or mucous membrane exposure to blood, urine, feces, and other body secretions from infected mice. The infection results in flu-like symptoms 1 to 3 weeks after exposure. More severe symptoms of meningitis and encephalitis can result. There is a special risk of exposure during pregnancy because the fetus can become infected.

Histplasmosis - Histoplasmosis is an infectious disease of the lungs caused by a fungus called Histoplasma capsulatum. The infection sometimes can spread to other parts of the body. This Histoplasma organism thrives in moderate temperatures and moist environments. Droppings from chickens, pigeons, starlings, blackbirds, and bats support its growth. Birds are not infected with it because of their high body temperatures, but they do carry it on their feathers. Bats can be infected because they have a lower body temperature than birds and can excrete the organism in their droppings. To multiply, Histoplasma capsulatum produces small spores called conidia. The conidia of Histoplasma capsulatum are only two millionths of a meter (microns, µm) in diameter. When these conidia are inhaled, they are small enough that they enter the lungs and start an infection. Many of these infections are easily overlooked because they either produce mild symptoms or none at all. However, histoplasmosis can be severe and produce an illness similar to tuberculosis. Infection can be prevented by using the following precautionary

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measures: Before disturbing potentially contaminated soil or debris, thoroughly mist-spray the material to control dispersion of dust and soil into the air. Wear protective, disposable coveralls, gloves, and a dust mask

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# 23 SJP - ELECTRIC PALLET JACK

- The electric pallet jack, often called pallet trucks, are designed for lifting and moving material loads over relatively short distances in a number of material handling applications on loading docks, distribution centers and in warehouses. This guide will discuss how to operate an electric-powered pallet jacks safely so operators can avoid property damage and injury to themselves while ensuring a successful delivery of their loads.
- Pre-operational Inspection: What to Look for Prior to Using Electric Pallet Jack
- Prior to operation, look around the surrounding area and ensure there is not any debris that will prevent safe use of pallet jack.
- While inspecting:
- Check to see if there are any leaking fluids.
- Check for any cracks or other damaged parts.
- Keep a special focus on the wheels, tires and forks.
- It's important to ensure that all the safety devices are attached and in full working order. This also includes making sure that all warning labels and data plates are in place and can be read clearly.
- Make certain that all the operating controls are tested.
- Check the forks by raising and lowering them.
- Check that the horn is fully operational.
- Check the braking system
- Check the forward and reverse controls
- Check the emergency reverse control
- IMPORTANT: The unit should not be used if your inspection reveals any issues to prevent you from using it safely. Tag it as out of order and inform your supervisor of the issues found.

## Safe Operation: Lifting

Lifting Loads Safely

- Make sure that the load is within the pallet trucks capacity. If you're not sure, ask.
- Prior to transporting the load, two important points need to be understood. The load needs to be stable and centered on the pallet before transporting. If it's not, it may fall during travel causing injury or damage. If the load is unstable or off centered, it will have to be reconfigured and potentially secured before moving.
- Before lifting, ensure both forks are fully under the pallet and that the load is against the back. This will prevent possible pallet damage and spilling of the load.
- IMPORTANT: Pay close attention and use caution when setting the forks and lifting the load to prevent pallet damage.

## TRANSPORTING AND PLACING LOADS

- Do know where you're going?
- Examine the route and make sure it's clear of any obstructions or hazards that may impede or make the transport unsafe.



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- Don't adjust the fork height while in motion
- Do bring the load off of the ground a few feet before moving and going to the drop spot.
- Make sure you come to a complete stop before lowering the pallet and dropping the load.

## WALKING WITH A PALLET TRUCK

- To allow for better visibility which lowers the possibility of an accidental collision, operate the pallet jack so that you're walking ahead and just to the side.
- If walking behind the unit is the only feasible way, ensure you use caution and have both of your hands on the controls.
- No matter the orientation of operation, in front or behind, use a normal walking speed when moving loads.
- Remain attentive and watchful for other vehicles and people.
- Keep in mind that the forks stick out beyond the pallet, so exercise added caution when approaching objects ahead of you.

## PALLET TRUCK PARKING

- Always lower your forks to the ground when parking.
- To prevent unauthorized use, if you have to leave the unit and it's going to be out of site, disconnect the battery or, if it has one, remove the key.
- When parking, be certain to keep it from blocking any exits, aisles or emergency equipment.

## **PROPER TRAVEL ON SLOPES**

- To prevent the load from tipping or falling, always moving straight up and down the incline and never on an angle.
- Make certain that the pallet truck and load is as stable as possible by always keeping your load uphill when moving up and down a slope.
- While on a slope, never stand in front of the walkie truck. Stay to the side of the unit.

## PRECAUTIONS WHILE WORKING ON LOADING DOCKS (A CHECKLIST)

- Is caution being used at all times?
- Are the trailer's brakes engaged and the wheels chocked?
- Are the dock boards and bridge plates of sufficient capacity, in good condition and secure to the dock and trailer?
- Is a jack stand being used if the cab isn't supporting the trailer?
- Has the trailer floor been inspected for and free of rotting, holes, cracks or other hazards that may make the shipment integrity at risk?



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# 24 SJP - ELECTRICAL WORK

## Purpose

Electrical standards address the concern that electricity has long been recognized as a serious workplace hazard, exposing employees to such dangers as electric shock, electrocution, fires, and explosions. The objective of the standards is to minimize such potential hazards by specifying design characteristics of safety in the use and maintenance of electrical systems and equipment.

## Scope

This procedure applies to all Priestly Demolition Inc. Operations employees, visitors, and subcontractors while performing work for Priestly Demolition Inc. Operations. If the client or facility owner has an Electrical Work Procedure, the most stringent shall be followed.

## Definitions

Accessible (as applied to equipment) — Admitting close approach; not guarded by locked doors, elevation, or other effective means.

**Accessible, readily** — Capable of being reached quickly for operation, renewal, or inspections without requiring those to whom ready access is requisite to climb over or remove obstacles or to resort to portable ladders, and so forth.

**Arc Blast** — Explosive release of molten material from equipment caused by high-amperage arcs.

**Arc Rating** — The maximum incident energy resistance demonstrated by a material (or a layered system of materials) prior to breakopen or at the onset of a second-degree skin burn. Arc rating is normally expressed in calories per centimeter squared (cal/cm<sup>2</sup>). Breakopen is a material response evidenced by the formation of one or more holes in the innermost layer of flame-resistant material that would allow flame to pass through the material.

**Class "A" Ground Fault Circuit Interrupter (GFCI)** — A GFCI that removes voltage from a tool when the current imbalance is greater than 4-6 milliamperes (mA). Class "A" GFCIs are used for personnel protection.

**Class "B" Ground Fault Equipment Protector Circuit Interrupter (GFEPCI)** — A GFCI that removes voltage when the current imbalance is 6-50 mA. This device is intended for equipment protection and must not be used for personnel protection. Class "B" GFCIs are normally used in heat-tracing circuits.

**Conductive** — Suitable for carrying electric current.



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**De-energized** — Free from any electrical connection to a source of potential difference and from electrical charge; not having a potential different from that of the earth. *De-energized does not describe a safe condition.* 

**Electrical Hazard** — A dangerous condition such that contact, or equipment failure can result in electric shock, arc flash burn, thermal burn, or blast injury.

**Electrical Safety** — Recognizing hazards associated with the use of electrical energy and taking precautions so those hazards do not cause injury or death.

**Electrically Safe Work Condition (also refer to Verified De-energized)** — A state in which the conductor or circuit part to be worked on or near has been disconnected from energized parts, locked/tagged in accordance with established standards, tested to ensure the absence of voltage, and grounded if determined necessary.

**Electrical Worker** — One who has skills and knowledge related to the construction, installation, maintenance, and operation of the electrical equipment and installations and has training to recognize and avoid the electrical hazards that might be present with respect to that equipment or work method.

**Enclosed** — Surrounded by a case, housing, fence, or wall(s) that prevents persons from accidentally contacting energized parts.

**Energized (also refer to Live Parts)** — Electrically connected to or having a source of voltage.

**Exposed (as applied to live parts)** — Capable of being inadvertently touched or approached nearer than a safe distance by a person. It is applied to parts that are not suitably guarded, isolated, insulated, or enclosed.

**Flame-Resistant (FR)** — The property of a material whereby combustion is prevented, terminated, or inhibited following the application of a flaming or non-flaming source of ignition, with or without subsequent removal of the ignition source.

**Flash Hazard** — A dangerous condition associated with the release of energy caused by an electric arc.

**Flash Hazard Analysis** — A study investigating a worker's potential exposure to arc-flash energy, conducted for the purpose of injury prevention and the determination of safe work practices and the appropriate levels of personal protective equipment (PPE).

**Flash Protection Boundary** — An approach limit at a distance from exposed live parts beyond which a person could receive a second degree burn if an electrical arc flash were to occur.

**Grounded** — Connected to earth or to some conducting body that serves in place of the earth.


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**Ground Fault Circuit Interrupter (GFCI)** — An electrical device that compares the amount of current flow between the supply and return conductors. When an imbalance of current flow is measured (by comparison) greater than the design intent, the device removes voltage from the tool. GFCIs are manufactured for two purposes: personnel protection and equipment protection.

**Guarded** — Covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers, casings, barriers, rails, screens, mats, or platforms to remove the likelihood of approach or contact by persons or objects to a point of danger.

**Incident Energy** — The amount of energy impressed on a surface, a certain distance from the source, generated during an electrical arc event. One of the units used to measure incident energy is calories per centimeter squared (cal/cm<sup>2</sup>).

**Insulated** — Separated from other conducting surfaces by a dielectric (including air space) offering a high resistance to the passage of electric current.

**Labeled** — Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the AHJ and concerned with product evaluation, that maintains periodic inspections of production of labeled equipment or materials, and by who's labeling the manufacturer indicates compliance with appropriate standards of performance in a specified manner.

**Limited Approach Boundary** — An approach limit at a distance from an exposed live part at or beyond which a shock hazard exists.

**Listed** — Equipment, materials, or services included in a list published by an organization that is acceptable to the AHJ and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services and whose listing states that the equipment, material, or services either meets appropriate designated standards or has been tested and found suitable for a specific purpose.

Live Parts (also refer to Energized) — Energized conductive components.

**Mobile Equipment** — Electric welders, mobile pump sets, portable light standards, etc., that can be readily moved.

**Overload** — Operation of equipment in excess of normal, full-load rating, or of a conductor in excess of rated ampacity that, when it persists for a sufficient length of time, would cause damage or dangerous overheating. A fault, such as a short circuit or ground fault, is not an overload.

**Portable Equipment** — Hand-held tools, lights, extension leads, etc., that are intended to be carried or moved while the electricity supply is connected and are normally used in heavy operating environments such as workshops, mining areas, processing areas, and construction sites.



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**Prohibited Approach Boundary** — An approach limit at a distance from an exposed live part at/beyond which work is considered the same as making contact with live part.

**Restricted Approach Boundary** — An approach limit at a distance from an exposed live part at or beyond which there is an increased risk of shock, due to electrical arc combined with inadvertent movement, for personnel working in close proximity to the live part.

**Shock Hazard** — A dangerous condition associated with the possible release of energy caused by contact or approach to live parts.

**Stationary Equipment** — Room air conditioners, refrigerators, office and kitchen equipment, water coolers, and workshop equipment that cannot normally be moved while in service.

Verified De-energized (also refer to Electrically Safe Work Condition) — A state in which the conductor or circuit part to be worked on or near has been disconnected from energized parts, locked/tagged in accordance with established requirements, tested to ensure the absence of voltage, and grounded if determined necessary.

**Voltage (of a circuit)** — The greatest root-mean-square (rms) (effective) difference of potential between any 2 conductors of the circuit concerned.

**Voltage to Ground** — For grounded circuits, the voltage between the given conductor and that point or conductor of the circuit that is grounded; for ungrounded circuits, the greatest voltage between the given conductors and any other conductor of the circuit.

Working Near (live parts) — Any activity performed at or beyond a limited approach boundary.

**Working On (live parts)** — Coming in contact with live parts with the hands, feet, or other body parts, with tools, probes, or with test equipment, regardless of the PPE a person is wearing.

#### Procedure

Step	Responsibility	Action
3.1	Responsibilities	
3.1.1	Management / HSE	<ul> <li>Approve any deviation from this procedure.</li> <li>Approve all energized electrical work.</li> <li>Approve use of client procedures for electrical work.</li> <li>Will assist Site Management and Entry Supervisors to ensure compliance with this Electrical Work Procedure.</li> <li>Will provide or arrange for training as defined within the procedure.</li> </ul>
3.1.2	Management / Supervision	Ensure all electrical work is performed in compliance with this procedure.

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Step	P Responsibility Action	
		<ul> <li>Ensure, when using client electrical work procedures, that they meet the minimum standards of this procedure and are approved by the HSE Manager.</li> <li>Ensure all workers who perform electrical work are trained.</li> <li>Ensure that FLRA are conducted for all electrical work.</li> <li>Ensure electrical hazards have appropriate signage.</li> <li>Ensure PPE and rescue equipment are inspected, and inspections are documented.</li> <li>Develop and review Energized Electrical Work Permit and prejob planning documents with all affected personnel prior to allowing energized electrical work to commence.</li> </ul>
3.1.3	Workers	<ul> <li>Follow all electrical work procedures.</li> <li>Be trained in electrical safety ESTS or hold a valid Journeyman Electrical Certification.</li> <li>Inspect all personal protective equipment required for electrical work as defined in this procedure and applicable regulations, standards, and codes.</li> <li>Conduct FLRA prior to conducting electrical work.</li> <li>Review and understand Energized Electrical Work Permit and pre-job planning documents prior to commencing work.</li> </ul>
3.2	General Require	ments
3.2.1 Live parts to which an employee might be exposed to must be de-energized employee works on or near them (within the limited approach boundary), un on energized components can be justified.		h an employee might be exposed to must be de-energized before an on or near them (within the limited approach boundary), unless work aponents can be justified.
	Note: All other op	tions must be exhausted prior to justifying work on live components.
Conductors and parts of electrical equipment that have been de-energi isolated in accordance with Priestly Demolition Inc. Operations Lock OProcedure, prior to any work commencing. Ground Fault protection for employees for all temporary wiring installar volt, 15, 20 and 30-amp receptacle outlets that are not part of the perform must have GFCI's. For receptacles other than 125-volt, 15, 20 and 30 GFCI's or an Assured Grounding Procedure may be used. Contractors that do not have an Assured Grounding Procedure in place GFCI's for all circuits on which portable electrical hand tools are used Only qualified and competent electrical workers may perform electricat testing, repair, and maintenance, in accordance with all applicable legicodes. When non-qualified workers are assigned to work with a qualified electrical journeymen) they shall be instructed in safety precautions, work procedure in the safety precautions, work procedure in the safety precautions, work procedure in the safety precautions work procedure in the safety precautions.		arts of electrical equipment that have been de-energized must be ance with Priestly Demolition Inc. Operations Lock Out Tag Out o any work commencing.
		ection for employees for all temporary wiring installations. All 125- D-amp receptacle outlets that are not part of the permanent wiring For receptacles other than 125-volt, 15, 20 and 30 amps, either ured Grounding Procedure may be used.
		o not have an Assured Grounding Procedure in place must use uits on which portable electrical hand tools are used.
		l competent electrical workers may perform electrical construction, d maintenance, in accordance with all applicable legislated safety
		ed workers are assigned to work with a qualified electrical worker (i.e., v shall be instructed in safety precautions, work procedures, and



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	electrical hazards in the area. Faulty equipment or equipment yet to be tested must be tagged as "out of service" until it is repaired or tested by a qualified electrical worker.		
3.3	De-Energizing Live Parts		
3.3.1	Electrical parts op tagged out to the r parts are exposed	erating at 50 volts or more must be de-energized and locked and maximum extent feasible before they are maintained or repaired, or if at or beyond the limited approach boundary.	
	If de-energized, bu equipment with a performing the wo	ut not locked and tagged out, parts must be treated as live – except cord and plug that is under the direct control of the employee rk. Situations/conditions when de-energizing is not required are:	
	<ul> <li>Increased or ventilation eq emergency a</li> </ul>	additional hazards, such as shut down of hazardous location uipment, removal of illumination for an area, or deactivation of larms.	
	<ul> <li>If the risk is s where no par boundaries.</li> </ul>	o minimal that de-energizing is a greater hazard, such as inspection t of the inspector's body passes beyond the restricted or prohibited	
	<ul> <li>Infeasibility due to equipment design or operational limitations that include;</li> <li>Testing of electric circuits that can only be performed with the circuit energized.</li> </ul>		
	<ul> <li>Work of would c would c hazard,</li> <li>Energized pa</li> </ul>	k on the circuits that form an integral part of a continuous process that Id otherwise need to be completely shut down, creating a greater ard, in order to permit work on 1 circuit or piece of equipment.	
	there is no increased exposure to electrical burns or explosion due to electrical		
	If de-energizing parts introduces additional risk or is impractical (due to design of the equipment or operational limitations), a documented plan (a detailed Job Safety Analysis) must be included in the general work plan for working at or beyond the restricted boundary (Table 1), along with the Permit to Work and Energized Work Permit for working at or beyond the prohibited boundary (Table 1) or exposed, electrically energized parts of 50 volts or greater.		
	Stored electrical energy that might endanger employees must be released. Discharge capacitors with a device approved for this use, and short circuit and ground high-capacitance elements if the stored electrical energy might endanger personnel.		
	Field conditions and planning documents must be verified as "matching". Resolve differences prior to releasing the work. If there are unresolved differences that could result in an inadvertent re-energization from another source, work may continue provided extra precautions are taken during the potential exposure; precautions incl the following;		



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	<ul> <li>Verify the circuit is de-energized.</li> <li>Conduct work using the safeguards required for energized systems for the remainder of the work.</li> <li>Use positive measure including approved grounds on both sides of the work, o where required, removal of circuit elements.</li> </ul>	
	<b>Note:</b> An Energized Electrical Work Permit (EWP) is not required in cases where possibility of re-energization exists.	
	It is an acceptable equipment, or con breakers in an ene condition that prev energized panel), cables left coiled i workers and the c	a practice to physically disconnect the energy sources of systems, inponents to removed hazards (such as lifting cables from circuit ergized panel). However, this physical disconnect must be left in a vents inadvertent reconnection (such as cutting back the cables in the or physically identifying the disconnection (such as tagging the in the energized panel) and communicating system status to affected ontrolling organization.
	Safe condition (ze component discor Tripped circuit bre determined that th	ro energy) checks must be performed on any system, equipment, or inected from its energy source immediately prior to performing work. akers and GFCI's may not be reenergized until it has been e equipment and circuit can be safely reenergized.
	<b>Note:</b> Only electric trip more than onc	cal workers or electrical engineers are authorized to reset GFCI's that re.
3.4	Work on Or Near	Energized Electrical Parts
3.4.1	A hazard analysis volts or more whe analyse potential s boundary must be	must be performed for all work on or near live parts operating at 50 re an electrical hazard exists. A qualified electrical person will shock and flash hazards. All work at and beyond the prohibited performed under an approved Energized Work Permit.
	Before work comn conducted with all associated with th source controls, a	nences, a task specific Hazard Assessment and briefing must be involved personnel and will specifically include electrical hazards e work, procedures to be followed, special precautions, energy nd PPE requirements.
	Barricades must b prevent or limit en barricade shall no may be placed no	e used in conjunction with safety signage where it is necessary to ployee access to work areas containing live parts. Conductive t be utilized where they may cause an electrical hazard. Barricades closer than the limited approach boundary.
	If signage and bar hazards, an atten duty and responsi	ricades do not provide sufficient warning and protection from electrical dant must be stationed to warn and protect employees. The primary bility of an attendant will be to keep unauthorized personnel outside



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	the area where exposure to an electrical hazard exists. The attendant must remain in the area as long as the potential for hazard exposure exists.	
3.5	Determining Approach Boundaries	
3.5.1	Limited Approach Boundaries - Working Near (refer to Table 1)	
	This boundary est electrical worker n approach boundar must advise them safeguarded.	ablishes the distance around exposed energized parts that only an nay enter. If another employee must work at or beyond the limited ry to perform a minor task, like inspection, then an electrical worker of the possible hazards and ensure that the employee is
	To work beyond	a limited approach boundary, the electrical worker must;
	<ul> <li>Determine if PPE is required for the task to be performed.</li> <li>Have specific knowledge of equipment.</li> <li>Have a documented plan if the task may cause accidental crossing of restricted boundary.</li> </ul>	
3.5.2	Restricted Appro	bach Boundary (refer to Table 1)
	This boundary est electrical worker n worker must;	ablishes the distance around exposed, energized parts that only an nay enter. To enter the restricted approach boundary, the electrical
	<ul> <li>Have a do the plan a direct supe</li> <li>An Energiz that can be</li> <li>Use contro</li> <li>Minimize e</li> </ul>	cumented plan including required PPE and insulated tools, and have pproved by Priestly Demolition Inc. Operations Management and the ervisor. zed Work Permit and/or a detailed Job Safety Analysis are methods e used to fill this requirement. of measures specified in the plan. exposure to the prohibited space.
3.5.3	.3 Prohibited Approach Boundary (refer to Table 1)	
	Crossing a prohib conductors or circ body parts, probe	ited boundary is considered working on exposed, energized uit parts. This includes crossing the boundary with hands, feet, other s, tools, or test equipment regardless of protective clothing.
	For Priestly Demo Electrical Work Pe beyond a prohibite	lition Inc. Operations an electrical worker must have an Energized ermit signed by the Direct Supervisor and Manager, to work at or ed approach boundary.
	For sub-contractor by the appropriate	ors, an electrical worker must have an Energized Work Permit signed e Sub-Contractor Manager, Supervisor and HSE Representative (if

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ыер	Responsibility         Action           applicable), along with Priestly Demolition Inc. Operations Manager, to work at or beyond a prohibited approach boundary.					
3.5.4	Table 1					
	Approach Dounda	Limited Approach Boundary		Restricted Approach Boundary		
	Nominal System Volta Range, Phase to Phas	ge Exposed Movable Conductor e	Exposed Fixed Circuit Part	Includes Inadvertant Movement Adder		
	<50V	Not Specified	Not Specified	Not Specified		
	50 V-150 V <sup>d</sup>	3.0 m (10 ft 0 in.)	1.0 m (3 ft 6 in.)	Avoid Contact		
	151 V-750 V	3.0 m (10 ft 0 in.)	1.0 m (3 ft 6 in.)	0.3 m (1 ft 0 in.)		
	751 V-15 kV	3.0 m (10 ft 0 in.)	1.5 m (5 ft 0 in.)	0.7 m (2 ft 2 in.)		
	15.1 kV-36 kV	3.0 m (10 ft 0 in.)	1.8 m (6 ft 0 in.)	0.8 m (2 ft 7 in.)		
	36.1 kV-46 kV	3.0 m (10 ft 0 in.)	2.5 m (8 ft 0 in.)	0.8 m (2 ft 9 in.)		
	46.1 kV-72.5 kV	3.0 m (10 ft 0 in.)	2.5 m (8 ft 0 in.)	1.0 m (3 ft 3 in.)		
	72.6 kV-121 kV	3.3 m (10 ft 8 in.)	2.5 m (8 ft 0 in.)	1.0 m (3 ft 4 in.)		
	138 kV-145 kV	3.4 m (11 ft 0 in.)	3.0 m (10 ft 0 in.)	1.2 m (3 ft 10 in.)		
	161 kV-169 kV	3.6 m (11 ft 8 in.)	3.6 m (11 ft 8 in.)	1.3 m (4 ft 3 in.)		
	230 kV-242 kV	4.0 m (13 ft 0 in.)	4.0 m (13 ft 0 in.)	1.7 m (5 ft 8 in.)		
	345 kV-362 kV	4.7 m (15 ft 4 in.)	4.7 m (15 ft 4 in.)	2.8 m (9 ft 2 in.)		
	500 kV-550 kV	5.8 m (19 ft 0 in.)	5.8 m (19 ft 0 in.)	3.6 m (11 ft 10 in.)		
	765 kV-800 kV	7.2 m (23 ft 9 in.)	7.2 m (23 ft 9 in.)	4.9 m (15 ft 11 in.)		
	Nominal System Volta Range, Phase to Phas	ge Exposed Movable Conductor e	Exposed Fixed Circuit Part	Includes Inadvertant Movemen Adder		
	<100V	Not Specified	Not Specified	Not Specified		
	100 V-300 V	3.0 m (10 ft 0 in.)	1.0 m (3 ft 6 in.)	Avoid Contact		
	301 V-1 kV	3.0 m (10 ft 0 in.)	1.0 m (3 ft 6 in.)	0.3 m (1 ft 0 in.)		
	1.1 kV-5 kV	3.0 m (10 ft 0 in.)	1.5 m (5 ft 0 in.)	0.5 m (1 ft 5 in.)		
	5 kV-15 kV	3.0 m (10 ft 0 in.)	1.5 m (5 ft 0 in.)	0.7 m (2 ft 2 in.)		
	15.1 kV-45 kV	3.0 m (10 ft 0 in.)	2.5 m (8 ft 0 in.)	0.8 m (2 ft 9 in.)		
	45.1 kV-75 kV	3.0 m (10 ft 0 in.)	2.5 m (8 ft 0 in.)	1.0 m (3 ft 2 in.)		
	75.1 kV-150 kV	3.3 m (10 ft 8 in.)	3.0 m (10 ft 0 in.)	1.2 m (4 ft 0 in.)		
	150.1 kV-250 kV	3.6 m (11 ft 8 in.)	3.6 m (11 ft 8 in.)	1.6 m (5 ft 3 in.)		
	250.1 kV-500 kV	6.0 m (12 ft 0 in.)	6.0 m (20 ft 0 in.)	3.5 m (11 ft 6 in.)		
	500.1 kV-800 kV	8.0 m (26 ft 0 in.)	8.0 m (26 ft 0 in.)	5.0 m (16 ft 5 in.)		
	Note. when asses used to perform w	รทาง นารเลกเรีย, เกิดเนนซ ork.	е пне непідпі от апу	conductive tool bei		



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3.6	Calculating / Determining Arc Flash Protection
3.6.1	Electrical arc hazards must be considered in pre-job planning for work at or beyond the limited, restricted, and prohibited approach boundaries. Arc flash incident energy and arc flash boundaries (using the National Fire Protection Association [NFPA] 70E standard) must be determined by a qualified electrical person. Appropriate PPE for
	hands, face, and body must be established where necessary and used.
3.7	Energized Electrical Work Permit (EWP) Process
3.7.1	This process is required when working at or beyond the prohibited boundary.
	Note: The Energized Electrical Work Permit is not required to:
	Perform zero energy checks for isolated systems or components.
	• Install safety barriers where the risk of electrical shock of burries unlikely.
3.7.2	Permits
	Safe Work Permit
	A Safe Work Permit must be obtained if work is taking place in a permitted area.
	Energized Electrical Work Permit
	Before performing energized electrical work, an EWP will be completed by the
3.7.3	Responsible Manager / Supervisor
	After consulting with the workers, ensuring that measures have been taken to de- energize all electrical sources and that there is no feasible alternative to completing work on the energized equipment that is at or beyond the prohibited boundary, they shall;
	<ul> <li>Obtain a Safe Work Permit (if required)</li> <li>Obtain an approved EWP</li> <li>Include the EWP, current drawings defining safety boundaries along with all other pre-job planning documents. (i.e., Job Safety Analysis, etc.)</li> </ul>
	• have a copy of the completed EVVP and pre-job planning documents available at the work location.
	Note: Standardized EWP's may be developed for routine tasks and must be re- approved every 6 months. Non-Standard EWP's must be reapproved every 30 days.
3.7.4	Workers

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	Actively participate in establishing protective measures, completing the EWP, reviewing the EWP, and ensuring that only current drawings are used. Include walk down and verification of initial conditions in the review before starting the work.
3.8	Personal Protective Equipment
3.8.1	Protective equipment must be maintained in a safe, reliable condition.
	Protective equipment must be stored and used according to the manufacturer's recommendation.
	Protective items that become contaminated with grease, oil, or flammable liquids and combustible materials shall not be used.
3.8.2	Protective Clothing
	Workers at and beyond the flash protection boundary will wear protective clothing and other PPE in accordance with the findings of the flash hazard analysis. Protected areas may include the following:
	<ul> <li>Head, face, neck, and chin</li> <li>Eye</li> <li>Full body</li> <li>Hand and arm</li> <li>Foot and leg</li> </ul>
	In absence of appropriate signage, Priestly Demolition Inc. Operations will determine;
	<ul> <li>Hazard Risk Category based on the specific task to be performed as defined by NFPA 70E, Table 130.7 (C) (9)</li> <li>The appropriate PPE as defined by NFPA, 70E, Table 130.7 (C) (10)</li> <li>The required minimum arc rating of PPE as defined by NFPA 70E, Table 130.7 (C) (11)</li> </ul>
3.8.3	Protective Equipment
	Inspect item(s) to be used before each use to verify the item is in satisfactory condition and has been tested as required.
	<i>Note</i> : Rubber protective equipment is inspected, sterilized, and tested at 6-month intervals. Hot sticks are tested at least every 12 months and date stamped at that time.
	Inspect voltage rated tools for defects and surface contamination such as moisture before each use. Do not rely on insulated tools alone for complete protection.
3.9	Work At or Beyond the Limited Boundary

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		Nev. Dute.		
3.9.1	The we	ork area must be s. Verify that pre-	e inspected for sufficient illumination, working space, and safe -job safety documentation is consistent with the scope of work.	
	If a lad non-co	lder is required for anductive side ra	or work near exposed energized parts, portable ladders with dry ils must be used.	
	Signs, of exp	barricades, or a osed energized e	ttendants must be used to isolate the work area and warn others electrical circuits. Signs should be worded as such;	
	DANG	ER - ELECTRIC	AL HAZARDS - AUTHORIZED PERSONNEL ONLY	
	Before particip again f	e starting, the sup pants involved w for the oncoming	pervisor of electrical workers must conduct a safety briefing of ith the work to be performed. The supervisor gives the briefing shift workers if the job continues through a shift change.	
	Insulat might i	sulated tools suitable for the voltages must be used where the tools or equipment ght make accidental contact with exposed energized parts.		
If you receive a your immediate		receive an electr nmediate superv	electrical shock (other than static), you must stop work and report to upervisor and the nearest first-aid facility.	
3.10	Work			
	WOIN	At or Beyond th	ne Restricted or Prohibited Boundaries	
3.10.1	Since PPE m protect Standa	At or Beyond tr each job may dif nay include volta tive barriers that ards Association	fer in electrical hazards, PPE also varies according to the job. ge rated rubber blankets, gloves, pads, tools, or insulated provide protection at least equivalent to that of Canadian (CSA) or NFPA qualified materials.	
3.10.1	Since PPE m protect Standa Emplo watche they m	At or Beyond tr each job may dif nay include volta tive barriers that ards Association yees must not w es, bracelets, me hay make contac	fer in electrical hazards, PPE also varies according to the job. ge rated rubber blankets, gloves, pads, tools, or insulated provide protection at least equivalent to that of Canadian (CSA) or NFPA qualified materials. rear or carry any conductive accessories (such as rings, etal framed glasses, earrings, etc.) in clothing pockets where t with exposed, energized parts.	
3.10.1	Since of PPE m protect Standa Emplo watche they m Worke flash a The fla PPE a beyond must m beyond	At or Beyond tr each job may dif hay include volta tive barriers that ards Association yees must not w es, bracelets, me hay make contac rs will wear FR of bove the thresho ash hazard analy nd FR clothing le d a flash protection of wear clothing d a flash protection	fer in electrical hazards, PPE also varies according to the job. ge rated rubber blankets, gloves, pads, tools, or insulated provide protection at least equivalent to that of Canadian (CSA) or NFPA qualified materials. ear or carry any conductive accessories (such as rings, etal framed glasses, earrings, etc.) in clothing pockets where t with exposed, energized parts. clothing where there is a potential exposure to an electric arc old incident-energy level for a second-degree burn, 1.2 cal/cm <sup>2</sup> . rsis required above will be used to determine adequate arc flash evels. Non-FR clothing may NOT be worn over FR clothing at or on boundary. Workers exposed to potential electric arc flash containing meltable material such as polyester or nylon, at or on boundary.	
3.10.1	Since of PPE m protect Standa Emplo watche they m Worke flash a The fla PPE a beyond must m beyond Worke center minimu	At or Beyond tr each job may dif hay include volta tive barriers that ards Association yees must not w es, bracelets, me hay make contac rs will wear FR of bove the thresho ash hazard analy nd FR clothing le d a flash protection to wear clothing d a flash protection rs who operate of (MCC) controlle um, non-melting	fer in electrical hazards, PPE also varies according to the job. ge rated rubber blankets, gloves, pads, tools, or insulated provide protection at least equivalent to that of Canadian (CSA) or NFPA qualified materials. ear or carry any conductive accessories (such as rings, etal framed glasses, earrings, etc.) in clothing pockets where t with exposed, energized parts. clothing where there is a potential exposure to an electric arc old incident-energy level for a second-degree burn, 1.2 cal/cm <sup>2</sup> . rsis required above will be used to determine adequate arc flash evels. Non-FR clothing may NOT be worn over FR clothing at or on boundary. Workers exposed to potential electric arc flash containing meltable material such as polyester or nylon, at or on boundary.	

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	when potential arc incident energy is more than 8 cal/cm <sup>2</sup> (HRC 3 and above). A backup person is required for work on energized components. This person observes the worker to ensure that clearance distances are maintained and performs electrical emergency rescue, if required. The backup person must be CPR certified and trained in first aid.			
	<ul> <li>Exception:</li> <li>For voltages less than 150 volts to ground/neutral, a backup person is not required if the risk does not warrant it.</li> <li>For testing and troubleshooting at any voltage, a backup person is not required if the risk does not warrant it. Document the exception if the voltage is greater than 150 volts to ground/neutral.</li> </ul>			
3.11	Testing and Troubleshooting			
3.11.1	Testing and troubleshooting on live, energized parts is allowed when an Energized Electrical Work Permit for troubleshooting is developed and approved. If a problem is discovered during the troubleshooting and either a component must be removed, or rework must be performed, this is no longer troubleshooting. At that time, the circuit must be de-energized and locked out in accordance with Priestly Demolition Inc. Operations' Lock Out Tag Out Procedure. Another Energized Electrical Work Permit must be developed and approved before the work can be started if de-energizing is not feasible.			
	<b>Note:</b> While troubleshooting, work may continue under the original "troubleshooting" EWP. However, the original "troubleshooting" EWP is not valid for any rework or component removal.			
	Note: Removing or installing a fuse from a circuit above 150 volts to ground requires			

# **Underground Temporary Electrical Components**

Temporary electrical components placed underground must be marked so that identification and approximate location are readily apparent above ground.

# **Electrical Testing**

Only electrical workers or electrical engineers who are trained in the operation and limitations of the equipment may use electrical test equipment.

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Electrical test equipment will be visually inspected immediately prior to use – do not use if it is defective. Identify defective test equipment by tagging it out of service and repair or dispose of it properly.

Electrical test equipment may be used only for intended applications. Make operating instructions and limitations for the test equipment available to the electrical worker. Check electrical test equipment for proper operation immediately before and after use when verifying that circuits are de-energized. When performing zero energy checks, ensure that stored electrical or mechanical energy cannot reenergize the circuit.

**Note:** If the circuit to be de-energized is over 600 volts, the test equipment is checked against a known source before and after the circuit test.

# **Electrical Equipment**

- Portable electrical equipment and extension leads must be tested quarterly.
- Mobile and stationary equipment must be tested at least every 12 months.
- The tests and inspections shall be completed by an electrical worker and must be documented.
- Frames of arc welding and cutting machines will be grounded.



# SJP - CHEMICAL MATERIALS MANAGEMENT & STORAGE

WHMIS is a regulated requirement of all employees and subcontractors. WHMIS must be issued by Priestly Demolition Inc. Ltd. and is valid for 3 years. Current WHMIS certification is a regulated requirement of all employees and subcontractors. Generic WHMIS received through the CSTS training must be evolved to incorporate company specific products that workers may use during their tasks.

WHMIS is a Canada wide system to provide employers and workers with information about the hazardous products they work with on the job so as to protect their health and safety. Its rules apply to every province and territory, as well as the workplace covered by Federal law.

#### WMHIS is a 3-part system:

1. Warning labels on containers of hazardous products.

2. Separate safety data sheets providing further detailed information (known as Safety Data Sheets or SDS).

3. Worker training on how to use this information.

#### WHMIS Training

• All Priestly Demolition Inc. staff members and subcontractors who work with or near hazardous products will be provided WHMIS training.

#### **SDS - Safety Data Sheets**

• Must be acquired for all hazardous products at the worksite and readily accessible for worker reference.

• Subcontractors will provide a binder with their applicable SDS and their employee current WHMIS training certificates. This binder will be kept with the Priestly Demolition Inc. Ltd. project safety binder and taken with the Subcontractor upon the completion of their tasks.

# **Container Labels**

• Supervisors must verify that all containers received are having clearly legible Supplier labels identifying the product.

• Existing labels on chemical containers will not be removed or defaced. If labels are damaged the container is marked immediately with a workplace label.

• Workers who transfer chemicals into approved portable containers will ensure these containers are appropriately labelled with a workplace label.

# TDG – Transportation of Dangerous Goods Class 1 - Explosives

- 1.1 A substance or article with a mass explosion hazard.
- 1.2 A substance or article with a fragment projection hazard, but not a mass explosion hazard.
- 1.3 A substance or article which has a fire hazard along with either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.
- 1.4 A substance or article which presents no significant hazard; explosion effects are largely confined to the package and no projection or fragments of appreciable size or range are to be expected.
- 1.5 A very insensitive substance which nevertheless has a mass explosion hazard like those substances in 1.1.
- 1.6 An extremely insensitive article which does not have a mass explosion hazard.

#### Class 2 - Gases

- 2.1 Flammable Gas. Commonly used as fuel (example: propane).
- 2.2 Non-Flammable, Non-Toxic Gas. Commonly used in food refrigeration (example: nitrogen).
- 2.3 Toxic Gas. Commonly used in pulp bleaching (example: sulfur dioxide).
- 2.2 (5.1) Oxygen and oxidizing gases.

#### **Class 3 - Flammable Liquids**

A liquid which has a closed-cup flash point not greater than 60.5oC.

Commonly used as fuel (example: gasoline, ethanol, fuel oil (diesel).

# Class 4 - Flammable Solids, Substances liable to spontaneous combustion; Substances that on contact with water emit flammable gases (water-reactive substances)

4.1 - A solid that under normal conditions of transport is readily combustible or would cause or contribute to fire through friction or from heat retained from manufacturing or processing or is a self-reactive substance that is liable to undergo a strongly exothermic reaction *Commonly used in lacquers (example: napthalene).* 

4.2 - A substance liable to spontaneous combustion, under normal conditions of transport, or when in contact with air, liable to spontaneous heating to the point where it ignites. *Commonly used in rocket fuel (example: sodium hydrosulphite).* 



4.3 - A substance that, on contact with water, emits dangerous quantities of flammable gases or becomes spontaneously combustible on contact with water or water vapor. *Commonly used in heat exchangers (valves) (example: sodium).* 

# **Class 5 - Oxidizing Substances and Organic Peroxides**

5.1 - A substance which causes or contributes to the combustion of other material by yielding oxygen or other oxidizing substances whether or not the substance itself is combustible.

Commonly used in fertilizers (example: ammonium nitrate).

5.2 - An organic compound that contains the bivalent "-O-O-" structure which is a strong oxidizing agent and may be liable to explosive decomposition, be sensitive to heat, shock or friction or react dangerously with other dangerous goods

Commonly used in automobile body shops as body filler (example: dibenzoyl peroxide).

# **Class 6 -Toxic Substances and Infectious Substances**

6.1 - A solid or liquid that is toxic through inhalation, by skin contact or by ingestion.

Commonly used as a germicide or general disinfectant (example: phenol).

6.2 - Micro-organisms that are infectious or that are reasonably believed to be infectious to humans or animals.

Commonly used in disease research (example: rabies virus).

# Class 7 - Radioactive Materials

Substances defined as Class 7, Radioactive Materials in the *Packaging and Transport of Nuclear Substances Regulations.* 

Commonly used in nuclear fuel rods (example: radioactive material - LSA (yellow cake). There are three categories which indicate the surface radiation level for a package with Category I being the lowest level and Category III the highest.

# **Class 8 - Corrosives**

A substance that causes destruction of skin or corrodes steel or non-clad aluminum. Commonly used in batteries and industrial cleaners (example: sulphuric acid and sodium hydroxide).

#### **Class 9 - Miscellaneous Products, Substances or Organisms**

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A substance that does not meet the criteria for inclusion in Classes 1 to 8. This includes genetically modified micro-organisms, marine pollutants, elevated temperature materials and environmentally hazardous substances.

Used in dry cell batteries (example: ammonium chloride).

Reference "Government of Alberta - Transportation" for further guidelines and specifications.

Small Means of Containment (less than 450L)

Large Means of Containment (core that 450L)

# Slip Tanks

Tidy tanks and slip tanks fall under the classification of Intermediate Bulk Containers (IBC's). Tidy tanks are manufactured according to United nations standards, and they are given a UN code number. For example, UN code 31A (steel) 31B (other metals) and 31H (plastic). IBC's must be tested, inspected, and certified according to the standard CAN/ CGSB-43.146-2002 "Design, Manufacture and Use of Intermediate Bulk Containers for the Transportation of Dangerous Goods". The testing must be done by a facility registered with Transport Canada to do so. If the IBC shows any leakage or damage it fails, the testing and inspection requirements and the certification marks on the IBC must be removed and the container must be identified as unsuitable for dangerous goods transport.

All employees and subcontractors on Priestly Demolition Inc. Ltd. projects will retain current TDG training certification where applicable to their tasks and / or as specified by the client.

Chemical storage will be in a designated area in NO proximity (minimum 30 m) of waterways, drainage systems/ channels/ storm/ sanitary, low-lying areas where rain or snow melt may accumulate and where no impact to people, plant life, animals, air, water, and soil.

This storage area will be free of all potential ignition sources (ex. No engines running) and not in a hot work area.

Used oils, fluids, lubricants, paints, and coatings will be treated by employees as specialized waste. Containment and prompt disposal will be coordinated by the Supervisor.

An approved container (small drum with second containment) will be present to hold used rags, oil containers, small spill cleanup materials, etc.). This container will be included in the site inspection process and off sited by and to approved facilities.

Containers must not be opened, handled, or stored in ways that could cause leaks or punctures.

All transport of products will have done in compliance with all TDG & DOT regulations.

Quality housekeeping standards are required at all work areas. Cleaning up per task and inspecting per shift assists in prevention of tripping, fire hazards and overflow of containers. No burning or burying of waste is permitted

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Fire extinguishers and spill kits inspected and ready for use will be present in close proximity to higher risk areas. Specific locations are reviewed in at site orientation.

Compressed gas storage - Inventory of compressed gas cylinders will be kept to as low as reasonably practical and adhere to the requirements of this standard and best practices for storage of compressed gas. Cylinders not in use are considered to be in storage and must be located in a designated area designed for that purpose and that are compliant with the Alberta Building Code and the Alberta Fire Code. Storage areas must be clearly identified. Full cylinders must be stored separate from empty cylinders. Quantities of stored compressed gas cylinders a minimum of twenty feet from flammable gas cylinders or separated by a non-combustible barrier at least five feet high. See M.S.D.S. and supplier's references.

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# **25 SJP - ENERGY ISOLATION – LOCK OUT TAG OUT**

# Purpose

Uncontrolled energy can have immediate and serious consequences to workers, equipment, facilities, and customer assets. Understanding, managing, and controlling energy sources are



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required to ensure work activities are safe and that they protect people, facilities, the environment, and customer assets.

This procedure will outline methods to:

- Prevent unexpected start-up or release of energy that may result in injury to personnel or damage to machinery, equipment or customer assets, or the environment.
- Identify minimum energy isolation control requirements for workers working with energy sources.
- Meet the requirement of provincial legislation.

# WARNING: Violation of LOTO will result in serious discipline action up to and including termination of employment.

#### Scope

This procedure applies to all Priestly Demolition Inc. Operations employees, visitors, and subcontractors while performing work for Priestly Demolition Inc. Operations. If the client or facility owner has an Energy Isolation – Lock Out – Tag Out Procedure, the most stringent shall be followed.

# Definitions

LOTO - Lock out/Tag out

Types of Energy: Potentially hazardous energy sources may include but are not limited to:

- Electrical
- Mechanical
- Hydraulic
- Pneumatic
- Thermal
- Residual stored energy
- Gravity
- Pressurized liquid/gases
- Chemical
- Radiation

**Energy Isolation Device** – A mechanical device that physically prevents the transmission of energy in a system. e.g., blind, blind flange, double block and bleed, keyed lock, electrical disconnects, etc.

**Lockout** – Placement of a device that uses a positive means to hold an energy-isolating device in a safe position. Normally operated by a key or permanent sealed tie wire.

**Tagout** – The placement of a prominent warning tag, through established procedures (customer procedures, manufacturing requirement, or engineering guidelines) to indicate that the energy



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isolating device and the equipment being controlled may not be operated until the tag and lock is removed.

**Isolated/Disconnected** – Complete separation of energy source from work area. e.g., disconnecting a piping system, pulling a breaker/fuse system, etc.

**Group Lockout/Tagout** – When more than one worker or trade is to perform work on a piece of equipment that has been isolated.

Authorizer – Means a person who gives a guarantee of isolation.

Guarded – Means totally secure from any contact with people, material, or equipment.

**Lock Box** – A sealed device used to place keys for multiple lockouts where worker(s) can lock onto the lock box.

**Double Block and Bleed** – Closing and locking of two block valves with an open, operable locked bleed valve between the block valves, with work being conducted on the downstream side of the block valve. Some block valves may have a bleed built into the body of the valve.



#### WARNING:

Unless certified by a professional engineer, a blind or blank must be manufactured in accordance with the specification of one of the following standards. The most current standard must be used.

- ANSI Standard AP1/590-Steel Line Blanks
- ANSI Standard ASME/ANSI B16.5, Pipe Flanges and Flange Fittings
- ANSI Standard ASME/B31.3, Power Piping
- ANSI Standard ASME/B31.3, Chemical Plant and Petroleum Refinery Piping

**Qualified Worker** – One who is specifically trained in LOTO procedures and understands energy sources and isolation techniques including the positive verification of isolations.

**Live Electrical**– Having an AC or DC voltage of sufficient current to cause injury due to arcing, shocking, or another similar event.

**Exposed Conductor** – A conductor having no covering or electrical insulation.

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**Safety Watch** – A suitably equipped, trained, and competent person who is able to recognize hazards and summon rescue operations.

**Blind or Blind Flange** – The placement of a solid, certified metal disc between two flanges that act as a positive barrier.

**NOTE:** Wherever possible blinds and blind flanges will be pressure rated for the normal process operating pressure.



#### Procedure

Step	Responsibility	Action
4.1	Responsibilities	5
4.1.1	Lockout Authority	<ul> <li>Normally a supervisor or qualified leader who is competent in his / her trade and has knowledge of Lockout Systems.</li> <li>Ensures all energy sources are identified.</li> <li>Ensures proper isolation of identified energy isolation sources.</li> <li>Acts as the "Authorizing Supervisor" for issuing energy isolation permits and authorizes all group LOTO.</li> <li>Assigns locks to individual workers.</li> <li>First person to check for zero energy state and isolate any and all necessary equipment on behalf of Priestly Demolition Inc. Operations, except in the case of the Temporary Power Crew.</li> <li>Maintains lock up cabinet and ensures all locks are accounted for at the end of each day.</li> <li>Assists the Safety Representative in completing a lock audit.</li> <li>When required, is the only person to remove another worker's lock, as per the lock removal procedure.</li> <li>Ensures all systems and equipment is safe for use prior to removing their lock (usually referred to as "First on, last off").</li> </ul>



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Step	Responsibility	Action
4.1.2	Management / Supervision	<ul> <li>Ensure all personnel are aware of and follow all energy isolation procedures.</li> <li>Authorize the removal of a lock from service, as per the remove from service procedure.</li> <li>Authorize the removal of a lock during an emergency, as per the lock removal procedure.</li> <li>Authorizes the removal of a worker's lock when worker is not available, only in extreme cases when the worker is not available.</li> <li>Maintains a minimum/maximum supply of LOTO devices in supply to meet LOTO requirements. e.g., locks and tags, blinds, chains, etc.</li> <li>Ensures personnel are aware of and follow LOTO procedures for equipment and/or facilities.</li> <li>Ensures compliance to the LOTO procedures.</li> <li>Ensures fire protection systems are locked and tagged in the appropriate fail-safe position.</li> <li>Ensures EIP is completed and issued for all facility or equipment energy disconnects/isolations, where required.</li> <li>Maintains files for all EIP for a minimum of one year from date of issue.</li> <li>Identifies critical work tasks that may expose workers to hazardous energy sources.</li> <li>Ensures all workers are aware of hazardous energy sources and the steps to control hazardous energy.</li> <li>Develops safe work procedures for work on energized machinery or equipment.</li> <li>Inspects, daily, LOTO devices that are within their area of control when employees are dependent on these devices to control when employees are dependent on these devices to control when employees are dependent on these devices to control when employees are dependent on these devices to control when employees are dependent on these devices to control when employees are dependent on these devices to control when employees are dependent on these devices to control when employees are dependent on these devices to control when employees are dependent on these devices to control when employees are dependent on these devices to control when employees are dependent on these devices to control when employees are dependent on these</li></ul>
4.1.3	Workers	<ul> <li>Follows this LOTO procedure and/or client procedures.</li> <li>Never tamper with or remove a LOTO without specific authorization.</li> </ul>
		<ul> <li>Ensures removal of any energy isolation device will not cause any uncontrolled energy release that may cause injury, damage to equipment or the environment.</li> <li>Signs out a lock at the beginning of the day and maintains sole care, custody, and control of lock until signing it back in at the end of the day.</li> <li>Ensures to check for zero energy prior to working on isolated equipment.</li> <li>Ensures key for their personal lock is always in their possession.</li> </ul>

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Step	Responsibility	Action
4.2	Isolation Requir	<ul> <li>Reports any discrepancies of this procedure to their immediate supervisor immediately.</li> <li>Removes locks or tags when work is completed and at end of each workday (each shift). All worker locks shall be removed at the end of each shift (day). Only the Lockout Authority may leave a lock in place beyond each shift.</li> <li>Apply personal lock and tag to any system when performing work where energy must be safely controlled e.g., block valves, breakers, and lock boxes.</li> <li>Never install a lock on an energy-isolating device unless the Lockout Authority's lock is present.</li> </ul>
7.2		emento
4.2.1	<ul> <li>work where energy must be safely controlled e.g., block valves, breakers, and lock boxes.</li> <li>Never install a lock on an energy-isolating device unless the Lockout Authority's lock is present.</li> <li>Isolation Requirements</li> <li>Electrical</li> <li>Violation of LOTO procedure will result in serious disciplinary actions up to and including immediate dismissal.</li> <li>Prior to work commencing, every worker shall ensure all known energy sources are safely isolated and check to ensure a zero-energy state exists.</li> <li>Part 15 of the Alberta Occupational Health and Safety Code sets forth specific requirements for the <i>Control of Hazardous Energy</i>.</li> <li>Should the Energy Isolation Procedure belonging to a client or Prime Contractor exceed the requirements of this procedure belonging to a client or Prime Contractor will be followed.</li> <li>No workers shall work on equipment or machinery that is not locked and tagged out, isolated/disconnected, and tested to ensure safe working conditions, if such equipment/machinery could release energy that would cause harm to worker equipment or environment.</li> <li>Where it is not practical to isolate/disconnect machinery or equipment, specific Safe Work Procedures will be developed and implemented prior to commencing work.</li> <li>No worker may apply or remove any personal lock that does not belong to them. You cannot put on or remove your partner's lock even if they give you permission.</li> <li>Before carrying out the work, all energy-isolating devices that control an energy source and will be involved in the isolation must be located.</li> <li>To ensure that there is no inadvertent release of energy, the energy isolating device must be physically secured in the isolating position in such a fashion that it cannot fall off or allow the energy-isolating device to move from its off or safe position.</li> <li>The securing device must be strong enough to withstand inadvertent opening, opening with</li></ul>	
4.2.2	Mechanical	



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Step	Responsibility	Action
	<ul> <li>Blanking, blinding and/or double-block-and-bleed systems must be in place and used to isolate pipes containing harmful substances under pressure.</li> <li>Before opening any process piping system, all client and company procedures must be met.</li> <li>At no time will workers open or close client process valves, without written consent/direction from the client and applicable job safety analysis and/or written procedures for the specific task.</li> <li>Opening process piping systems has a high potential for release of uncontrolled energy that can cause significant injuries, equipment damages, and environmental impact. No worker will open, service, test, or repair a process system that is not properly isolated and made safe from the hazardous energy.</li> </ul>	
4.3	Isolation Materi	al and Hardware
4.3.1	Electrical	
	Locks shall:	
	<ul> <li>Be identifiable</li> <li>Be used for</li> <li>Be durable to</li> <li>Be standardi</li> <li>Be construct</li> <li>Be assigned</li> <li>Be engraved</li> <li>Have only a is in the clos</li> <li>Be used in construct</li> </ul>	no other purpose. to the environment that they are to be used in. ized in colour, shape, and size. ed of appropriate material for the application intended. to each worker daily. I with a single, unique, serial number. single key, that cannot be taken out of the lock cylinder until the lock ed position. onjunction with a TAG.
4.3.2	Mechanical	
	If a cable, bar, or position, then the personal lock, ar	chain is used to secure an energy-isolating device in a safe or off e cable, bar, or chain must be secured against removal with a nd must, as a minimum:
	Be of sufficie     in the safe of	ent strength, diameter, and routing to keep the energy-isolating device
	<ul> <li>The construct prevent their</li> </ul>	ction and strength of the securing devices must be sufficient to removal without tools.
4.3.3	Energy Isolation Tags	
	Energy isolation	tags shall, at a minimum:
	Be affixed as is immediate	s close as possible to the device being isolated and in a position that ly obvious to anyone attempting to operate the device.



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Step	Responsibility		Action
	<ul> <li>Be securely recommende</li> <li>Be designed</li> <li>State, "Dang</li> <li>Explain the r</li> <li>Date of isola</li> <li>Contact num</li> <li>Printed name</li> <li>Signature of</li> </ul>	affixed so as not to come ed. for the work environmen jer - Do Not Operate", or eason for the isolation. tion. ber of supervisor and/or of supervisor and/or loc lock assignee.	e off due to working conditions. Ties are t in which they exist. equally effective warning. lock assignee. k assignee.
	Da	nger Do Not Op	perate Tag (Sample)
		$\bigcirc$	
		DANGER	DANGER
		DO NOT	This energy source has been LOCKED OUT!
		OPERATE	Unauthorized removal of this LOTO may result in immediate discharge
		This LOTO may only be removed by:	Remarks:
		Name: Dept.: Expected Completion:	
		Front of Tag	Rear of Tag



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7.7	Isolation Procedure (Electrical)
4.4.1	General
4.4.1	<ul> <li>The employees shall be notified that an isolation system is going to be used. The notification shall include, as a minimum: <ul> <li>Identification of the full scope of work and the energy to be controlled to safely perform work.</li> <li>Completion of a job safety analysis, where required.</li> <li>A complete knowledge of the type, magnitude, and hazards of the energy to be controlled and the methods required.</li> </ul> </li> <li>The Client or Employer requesting the lockout shall know the location of all sources of stored energy and shall take the first steps to de-energize and disconnect the electrical supply and relieve all stored energy and secure the energy-isolating device. This is referred to as the "first on" and is usually completed by the Lock Out Authority.</li> <li>The Lock Out Authority will then perform a "bump test" to verify a zero-energy isolation. A voltage-detecting instrument shall be used when testing for the absence of voltage.</li> <li>Where required, install grounding equipment on the phase conductors or circuit parts, to eliminate induced voltage or stored energy, before touching them.</li> <li>Where it has been determined that contact with other exposed energized conductors or circuit parts is possible, apply ground-connecting devices rated for the available fault duty.</li> <li>The Lock Out Authority will place his isolation device on the equipment once they have confirmed a zero-energy state.</li> <li>The lock that belongs to the Lock Out Authority will remain on the isolation device until the equipment is returned to service and/or control is given back to the Client.</li> </ul>
	individual worker will actually assume these responsibilities.
4.4.2	Securing By Individual
	<ul> <li>An individual worker will sign out his or her own personal lock and will remain in the possession of the key at all times when their lock is applied.</li> <li>It is the responsibility of each affected worker to verify and ensure a state of zero-energy before applying their personal lock.</li> <li>The individual worker will place their lock on the isolation device that has been secured by the Lock Out Authority or designate.</li> </ul>

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	• When working with a Temporary Power Crew, the individual worker may not be locking on to the Lock Out Authority's isolation device and therefore has to apply their own isolation device and complete a zero-energy check.		
4.4.3	Securing by Group		
	<ul> <li>The supervisor responsible for the group that will be involved in the isolation will sign out their own personal lock and a group lock box.</li> <li>Upon verifying and ensuring a state of zero-isolation, the supervisor will place his lock on the isolation device installed by the Lock Out Authority or designate at the point of isolation.</li> <li>The supervisor will place the key belonging to their individual lock in a group lock box.</li> <li>Each individual worker affected by the isolation will sign out their own personal lock.</li> <li>Each worker will then place their personal lock on the group lock box that contains their supervisor's key and check for zero energy prior to starting work.</li> <li>The individual worker must be in possession of their key at all times.</li> <li>Each individual lock may only remain secured to the isolation device for the duration of one shift (i.e., 10 hrs). At the end of every shift, the lock will be returned to the Lock Out Authority and its return will be documented.</li> <li>The equipment being protected by the group isolation can only be put back into service;</li> <li>All work has been completed or it has been made safe to put back into service;</li> <li>All workers have removed their personal locks and tags off the lock box; and</li> <li>The person starting the equipment has made a thorough inspection of the area and equipment and it's safe to start up.</li> </ul>		
4.5	Isolation Procedure (Mechanical)		
	Before any process piping system is opened, the workers will be protected by one or more of the following:		
4.5.1	<ul> <li>Installing of a blank or blind upstream of the work.</li> <li>A double block and bleed.</li> <li>If options (a) and (b) are not available, then a procedure approved by a professional engineer, must be obtained.</li> </ul>		
	All block valves will be:		
	<ul> <li>Locked in the safe position e.g., open or closed; and</li> <li>Tagged with an appropriate "Do Not Operate" tag or equivalent.</li> </ul>		



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4.5.1	NOTE: Blank or blinds will be clearly tagged/identified.		
	When using a double-block-and-bleed system, the following conditions must apply:		
	<ul> <li>Must be situated directly upstream of the work area.</li> <li>If the flow in the pipe can come from more than direction, a double-block-and-bleed setup is required on each upstream side.</li> <li>The valves must be secured by a positive mechanical means that is either: <ul> <li>Lockable and attached or integral with the securing device; or</li> <li>Not lockable but of sufficient strength to withstand inadvertent or unauthorized opening without the use of excessive force, unusual measures, or destructive techniques.</li> </ul> </li> <li>Green Field Construction: When green field construction piping systems are connected to live process equipment their piping systems will be considered live.</li> <li>No Priestly Demolition Inc. Operations employee shall be in the immediate area of exposed piping during a pigging operation.</li> </ul>		
4.6	Transfer of Isolation Ownership		
4.6.1	A transfer of ownership form must be filled out when the Client requests control of the isolation and/or the system/equipment which has been isolated by Priestly Demolition Inc. Operations.		
4.7	Restoring Equipment to Service		
4.7.1	<ul> <li>Before the Lock Out Authority removes their lock, it must be visually verified that the job/task is complete.</li> <li>All tools, equipment, and unused materials must be removed.</li> <li>All grounding equipment/conductor/devices must be removed.</li> <li>Notify all personnel involved with the job/task that the LOTO is complete, and the electrical supply is being restored.</li> </ul>		
	<ul> <li>Perform any quality control tests/checks on the repaired/replaced/installed equipment and/or electrical supply.</li> <li>Notify the equipment and or electrical supply owner that the equipment and/or electrical supply is ready to be returned to normal operation.</li> </ul>		
	<ul> <li>Perform any quality control tests/checks on the repaired/replaced/installed equipment and/or electrical supply.</li> <li>Notify the equipment and or electrical supply owner that the equipment and/or electrical supply is ready to be returned to normal operation.</li> <li>When servicing or maintenance is complete, the equipment may be returned to service. Returning the equipment to service shall include, but is not limited to:</li> </ul>		



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4.8	Lock Removal	
4.8.1	<ul> <li>There may a situation where an individual worker lock cannot be removed by the key to which it belongs. This may arise because the key has been lost or the worker is not physically present at the work site and cannot be contacted.</li> <li>In this situation, Priestly Demolition Inc. Operations authorizes ONLY the Lock Out Authority to remove this lock.</li> <li>The Lock Out Authority must ensure that no worker will be in danger due to the removal of the lock.</li> <li>All other persons who have an individual lock secured to the isolation device must be notified of the situation.</li> <li>The Lock Out Authority must walk down the equipment and visually confirm that there are no workers in danger. The Lock Out Authority may be required to make personal contact with all affected workers who might be at risk of injury.</li> <li>All work shall cease on the equipment until the lock has been removed and the safety of all individuals is confirmed and verified.</li> <li>The removed lock must be removed from service and the accompanying Removal from Service Form must be filled out.</li> <li>A Priestly Demolition Inc. Operations Manager can authorize removal of a LOTO:</li> <li>If it is an emergency;</li> <li>The worker or workers who applied the device are not available on site. All reasonable attempts to contact the worker and immediate notification of the employee that their device was removed upon their return must be completed;</li> <li>After notification of all workers who were affected by the work (Group LOTO) sign off;</li> <li>After notification of Management and Supervision;</li> <li>After notification and approval of the client when on a client site, and;</li> </ul>	
	After completing the Lock Removal Form.	
4.9	Remove from Service	
4.9.1	<ul> <li>If any lock is found to be damaged, lost, missing its key, or in any other way deficient, it shall be removed from service.</li> <li>This act must be accompanied by a "Remove from Service Form" (RFS).</li> <li>This form must accompany the identified lock back to the Corporate Office and a copy of this form must be kept on file at site.</li> </ul>	

# TRAINING REQUIREMENTS

Initial and ongoing training will be provided to:

• All Managers, Supervision, Lockout Authority, and workers involved in Energy Isolation Procedures.

Training content will cover:

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- Review of HS&E Energy Isolation procedure. Identifications of common energy sources. Review of forms, equipment, and techniques. •
- •
- •
- Group LOTO. •
- Selection of proper equipment. •

# 27 SJP - ERGONOMICS, MATERIAL HANDLING, AND OFFICE SAFETY

Generally, an office environment is a relatively safe working area. However, there are hazards that exist even in an office. All office workers should be aware of the hazards they may encounter and be able to control or eliminate the hazards. As in all workplace situations, workers must be trained and competent to safely perform their jobs and use the equipment or materials they are required to work with. The following are practices that a worker in an office would be responsible for:

- Ensure you are familiar with emergency response and evacuation procedures as developed by the building management or the company. It would be the responsibility of the worker to cooperate with the employer in practicing or maintaining competency in emergency response.
- Ensure emergency phone numbers are posted and that all workers know how to contact emergency response.
- Ensure that all electrical cords and equipment are in good condition and that electrical cords and outlets are not overloaded. Do not run cords in such a way as to create a tripping hazard.
- Ensure that computer monitors are adjusted to correct height and kept clean. Those working on computers must protect themselves from excessive glare and from repetitive strain injuries from prolonged keyboard usage.
- If allowed in the office, fans and space heaters should be used to manufacturers' recommendations and should be unplugged when not in use. They should never be left unattended.
- Ensure floors, aisles, stairways, and doorways are kept clear and uncluttered.
- Ensure that only one drawer of filing cabinets is open at one time and that drawers are closed when not in use.
- Ensure that fire extinguishers of the proper type are available in the office, as required by code.
- When transporting materials of a heavy nature, ensure that handcarts and trolleys are used properly. Use proper lifting practices for handling heavy boxes.
- Ensure microwave ovens and coffee machines are used according to manufacturer's specifications.
- Ensure that photocopiers and other business machines are used to manufacturers' specifications. Ensure that SDS sheets are available for toners and that they are consulted prior to replacing toner cartridges.
- Ensure chairs and table legs are in good repair.
- Use ladders to reach higher shelves or levels. Never use a chair, table, or countertop in place of a ladder.
- Ensure rugs are kept clean and in good repair, free of tripping hazards.
- Ensure paper cutter blades are placed in closed lock position.
- Ensure all loose clothing, jewellery, and long hair is tied back when using paper shredder.
- Ensure all cleaning supplies are stored properly. Refer to SDS sheets for proper storage and handling requirements. Always use the proper PPE as per SDS when handling any hazardous chemicals.
- Flammable chemicals should not be stored in an office.



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- Adequate first aid kits should be located conveniently for all office workers. A list of all workers qualified in First Aid and CPR should be posted and primary responders identified. If an electro-defibrillator unit is available in the office, personnel must be trained to use the unit properly.
- All workers should be familiar with violence and harassment policies and procedures.
- Use handrails and do not run when using stairways.
- Be aware of surface conditions in parking areas, sidewalks, and doorways. Report any slippery or icy conditions to building maintenance.

#### Ergonomics

When necessary, workers will be provided with ergonomic training to eliminate or reduce musculoskeletal injury. Activities will be periodically reviewed to identify ergonomic hazards.

Training will include identifying factors that may lead to musculoskeletal injury and its' early signs and symptoms. An ergonomics specialist will be brought in to help establish proper work procedures if required. To help reduce risk of MSI injury, control measures will be implemented when practicable.

#### What Are Musculoskeletal Disorders?

Musculoskeletal Disorders (MSDs) are injuries and disorders of the musculoskeletal system. They may be caused or aggravated by various hazards or risk factors in the workplace. MSD can occur in:

- Muscles
- Tendons and tendon sheathes
- Nerves
- Bursa
- Blood vessels
- Joints/spinal discs
- Ligaments

MSDs do not include musculoskeletal injuries or disorders that are the direct result of a fall, being struck by or against, caught in or on, vehicle collision, violence, etc. They are caused by overuse of the musculoskeletal system, whether it be during a single forceful exertion, or through repeated use of the same joint over time. They are often known as "sprains and strains".

Many body parts can be affected by MSDs. The back is the most common, but the shoulders, neck, elbows, hands, and wrists are also frequently impacted. MSD-related pain and discomfort can also occur in the hips, knees, legs, and feet. The incidence of tendinitis increases with age as muscles and tendons lose some of their elasticity.

While different body parts can be affected by these disorders, the symptoms of MSDs are similar, regardless of where they occur.

The symptoms generally include:

• Pain with or without movement.



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- Swelling and tenderness.
- Reduced range of motion and/or stiffness.
- Tingling and/or numbness in nerve-related injuries or disorders.

#### Understanding the Hazards

There are 3 main risk factors that can contribute to MSDs in material handling tasks. They are:

#### Force

- Refers to the amount of effort made by the muscles and the amount of pressure on a body part.
- All work tasks require some level of force. If the required force is higher than the capability of the muscle, the action can cause damage to muscles or associated tendons, ligaments, and joints.
- Injury can occur from a single action that requires a very high level of force. More commonly, it occurs due to moderate/high forces generated over long durations and is more likely when the body is in an awkward posture.

#### Fixed or Awkward Postures

- Is the position of the body's joints awkward during an activity?
- "Neutral posture" is when the joints are working near the middle of their normal range of motion.
- MSD injuries can occur when the joint is not in "neutral posture", when the joint moves toward the end of the normal range of motion.
- The more awkward the posture, the more strain on the joints, ligaments, discs (in the spine) and muscles and the higher the risk of injury.
- A "fixed posture" refers to staying in the same position for a long period of time, and injuries occur as the tissue fatigues while exerting effort to maintain the posture.

#### Repetition

- The risk of MSD increases when the same body parts are used repeatedly with few breaks or chances for rest.
- High repetition can lead to fatigue and microscopic tissue damage. If no recuperation of the tissues is allowed through rest or task rotation, injury can occur.
- Rest allows specific body parts to recuperate.
- If the posture is awkward, fatigue occurs much more quickly.

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Combining the risk factors of force, awkward posture, repetition, and duration increases the risk of injury.



# **General Ergonomic Tips**

Musculoskeletal Disorders (MSD) in the workplace are commonly caused by repetitive or awkward movements. Below are some basic tips for identifying ergonomic risks. Look for these characteristics of work that may be causing concerns in your workplace.

- Frequent bending or twisting of the back or neck.
- Heavy, awkward, or repetitive lifting, pushing, or pulling.
- Tasks requiring lifting either below the knees or above the shoulder.
- Static postures spending long periods without movement of a particular body part. This could include sitting, standing, bending, crouching, etc.
- Working with arms above shoulder height, elbows away from the body, or reaching behind the body.
- Repetitive or prolonged grasping and holding of objects, gripping with the wrist or elbow in an awkward position, or repetitive bending or twisting of the wrists or elbows.
- Frequent exposure to whole-body or hand-arm vibration that has not been controlled.
- Work surfaces that require elevation of the shoulders or stooping of the back for long periods.
- Contact stress, where force is concentrated on a small area of the body.
- Using any part of the body, especially your hand, as a hammer or mallet.
- Inadequate or excessive light or glare.

Often, low-cost simple solutions can be used to correct these risk factors. For example, you can re-arrange storage shelves, change the height of work surfaces, or re-organize tasks to reduce unnecessary manual material handling. The most effective ergonomic solutions involve input from both the workers and the supervisors.

# Musculoskeletal Disorders in Material Handling

The amount of material handling in a task should be minimized by the way the job is engineered using ergonomic principles. However, lifting and moving of materials is still a big part of some jobs. Training on proper lifting procedures is key in preventing musculoskeletal injuries.

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#### HOW YOU LIFT IS IMPORTANT!

Proper lifting reduces risk factors, particularly by minimizing awkward postures, which in turn reduce the amount of strain experienced by certain parts of the body. The body is capable of performing heavy tasks without injury if it is in neutral posture if forces are reasonable and if appropriate rest periods are given to prevent fatigue.

\* Fatigue, inattention, and rushing are common factors in the causes of MSDs.

#### **General Material Handling Precautions:**

- Inspect materials for surface hazards (slivers, jagged edges, slippery surfaces).
- Wipe off greasy or slippery surfaces before attempting to handle them.
- Grasp the object with a firm grip.
- Avoid gripping near catch or shear points.
- Keep hands away from the end of long objects (lumber, pipe) to prevent being pinched.
- Use gloves, safety shoes, eye protection and other PPE when appropriate.
- Store frequently lifted objects between knuckle and chest height.
- Avoid lifting above shoulder height as much as possible.
- Push rather than pull.
- Use mechanical assistance if the load is above the head or below the feet.
- Ask for help if a load appears too heavy. Don't try to lift it.
- Use mechanical lifting aids when possible.
- Take extra care with awkwardly shaped objects, liquids, and contents that may shift.

#### Lifting a Load:

#### Two-Handed Lift

- *Position feet correctly*; Correct positioning of the feet increases balance. One foot should be placed alongside the object to be lifted and one behind it. Feet should be shoulder width apart and stable. The rear foot will provide the upward power.
- *Straight back and bent knees;* A straight back is not necessarily a vertical back. The spine should be in its natural curvature, about a 15-degree angle from the hips. Knees should be unlocked and bent. Straightening the knees will give rise to the lift.
- Load close to the body; The closer the center of gravity of the load is to the body the smaller the force on the lower back and arms will be. Keep elbows close to the body.
- Correct grasp; A full palm grip will reduce muscle stress and decrease the possibility of the load slipping. Gripping with the ends of the fingers increases the risk of muscle strain and slipping.
- *Chin in;* Tucking the chin in and raising the top of the head straightens the entire spine and provides the arms with a more efficient position for grasping.
- *Body weight;* Centre body weight over the feet. This position increases balance and provides a powerful line of thrust.



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# As You Lift, Remember To:

- Tighten your stomach muscles as the lift begins. Start a lift by pushing through the rear foot and continue it with the straightening of the knees.
- Use leg muscles to straighten, the back should remain straight.
- Lifting should be a smooth motion, do not jerk-lift as it increases the stress on the lower back.
- Never twist your body while lifting. Instead, pivot with your feet.
- Keep your head up and keep the natural curve in your back.
- When transferring loads laterally, shift your weight from one leg to another, keeping the curve in your lower back and elbows close to the body.

# Assisted One-Handed Lift (Golfer's Lift)

This technique can be used when the worker is lifting something out of a container. One hand should be placed on the upper rim of the container, while the person leans in to grip the object. Push off with the non-lifting hand to raise the upper body, make sure the back muscles are not doing the work.

The assisted one-hand lift should be used **only** if the object to be lifted is not too heavy or awkward to be lifted by one hand. If there is no container, the non-lifting hand can be placed on the thigh for extra power.



# Carrying a Load:

- Get help if the object is too bulky or heavy to be handled by one person.
- Inspect the route over which the load is to be carried. Plan a spot to set the load down and rest.
- To change directions; lift the object to the carrying position and turn the entire body, including the feet. Avoid twisting the body, especially the back.
- Carry the load close to the body, preferably resting against the trunk.
- Carry the load at its balance point.
- To set down a load; set the edge of the load on a bench, table, etc. Adjust hand position and push the object until it is secure.

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# **Team Lifting and Carrying:**

When lifting is done by two or more people, the load should be adjusted so it rides at the same level and the load is distributed evenly. Team lifting and carrying should be synchronized. A team leader can help by calling out commands ("lift", "walk", etc.).



# **Special Precautions:**

- Check the weight of barrels and drums as it may change or shift constantly. •
- Take extra care with sheet metal and glass, as it can be sharp. •
- If the load contains hazardous material, take protective measures accordingly. •
- Beware of 'floppy' loads like sacs or bags.







knee against bag





of your other leg



e) Stand upright

b) Put one

c) Pull bag up the leg

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# **28 SJP - EROSION AND SEDIMENT CONTROLS**

Priestly Demolition Inc. Ltd. implements proactive preplanning in taking measures to prevent against harm to the environment. Worksite applications left uncontrolled could lead to adverse effects on water quality (fish habitat and freshwater ecosystems), air quality (windblown dust reducing air quality), and/or damage to properties by clogging drainage systems. Erosion and sediment control installation and removal procedures, equipment, maintenance will have documented inspections performed at a regularly established interval dependent on site risk.

# **Regulatory Compliance for Erosion and Sediment Control Planning**

# Requirements for working with the City of Calgary

The City of Calgary requires all sites with an overall size of 2.0 hectares or greater to have an Erosion and Sediment report and drawings. This report will be generated by a certified Professional in Erosion and Sediment Controls (CPESC) or P.Eng., P.Ag. or R.P. Bio specializing in erosion and sediment control. Where smaller sites are subject to risk factors such as adjacent environmentally sensitive areas, soil erodibility, a report and/ or drawing will be requested. At this time, Priestly Demolition Inc. Ltd. will subcontract an approved author for this task, as specified in the above criteria.

All sites, regardless of size, will have prior notification to the City of Calgary, Erosion Control Coordinator (403) 268- 2655, Water Quality Services Division, Water Resources.

Additional Regulatory Governing Bodies (including but not limited to)

- Municipal (Calgary), Street bylaw 20M88 (sections 16/19), Tree Bylaw 23M002
- Navigational Water Protection Act (sections 21/22)
- Fisheries Act (section 35/36)
- Environmental Protection and Enhancement Act (part 4), release reporting standards, wastewater, and storm drainage (section 7)
- Alberta Environment
- Section 36 of the Water Act

#### **Erosion and Sediment Control Devices**

Efforts to control water runoff and stabilize soil at the source are primary lines of defense.

- Where storm inlet sediment controls are required to be installed, authorization by approved erosion and sediment control plan and a valid Drainage or Dewatering Permit from City of Calgary, Water Resources is required.
- Client approved equipment used (socks, donuts, sediment boxes) will be utilized as directed by manufacturer's specifications
- Workers will be trained on these current install and removal procedures including routine, documented inspection (checklist) of safe operational order and removal procedures.



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• Silt fencing equipment, as with all sediment and erosion control procedures, must meet the standards of the City of Calgary Erosion Control Coordinator.

## **Erosion and Sediment Control Devices**

- Perimeter protections (ex. wattle, mulch berm, v ditch) can detain or filter run off. Housekeeping and regular inspection of erosion and sediment control devices and minimizing mud tracking are practices that will protect City infrastructure and the environment.
- The most effective means of preventing erosion is to keep vegetation in place or to leave buffer strips that act as sediment controls. Other temporary soil stabilization includes blankets and mulch used in combination with water storage and perimeter controls.
- All erosion and sediment control devices will be routinely inspected (checklist) ensuring they have not slipped flattened, are in proper working condition as per current site-specific procedures and all areas of runoff are being protected against excessive silt.
- All temporary erosion prevention and sediment control devices, under advisement from the City of Calgary Erosion Control Coordinator will be removed from the project. Site Supervisor will sign acknowledgement of this itemized process on the project end (ESC Checklist 5.4F- Inspections).
- It is the responsibility of the Priestly Demolition Inc. Ltd. Supervisor to provide signed acknowledgement on end of project inspection that all temporary devices have been removed in accordance with approved procedures from the City of Calgary Erosion Control Coordinator.

#### Soil Stabilization

Soil must be stabilized in an excavation by shoring or cutting back or in a tunnel, underground shaft, or open pit mine by shoring. The company may stabilize soil in an excavation, tunnel or underground shaft or open pit mine using an artificial soil stabilization technique, including freezing soil by artificial means or grouting technique if the process is designed by an engineer to control soil conditions and performed in accordance with the professional engineer's specifications.

NOT permitted – Natural freezing of the soil as an alternative or partial alternative to a temporary protective structure, or to stabilize the soil in an excavation, tunnel or underground shaft is not allowed.

#### Soil Classifications (AB OHS)

Classified as "Hard and Compact" if it exhibits most of the following characteristics:

- It is hard in consistency and can be penetrated only with difficulty by a small, sharp object.
- It is very dense
- It has no signs of water seepage
- It is extremely difficult to excavate with hand tools
- If it has not been excavated before
- Classified as "likely to crack or crumble" if:



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It has been excavated before but does not exhibit any of the characteristics of 'soft, sandy or loose' soil or if it closely exhibits most of the following characteristics:

- It is stiff in consistency and compacted
- It can be penetrated with moderate difficulty with a small, sharp object
- It is moderately difficult to excavate with hand tools
- It has low to medium natural moisture content and a damp appearance after it is excavated
- It exhibits signs of surface cracking
- It exhibits signs of localized water seepage

Classified as "soft, sandy or loose" if it closely exhibits most of the following characteristics:

- It is firm to very soft in consistency, loose to very loose
- It is easy to excavate with hand tools
- It is solid in appearance but flows or becomes unstable when distributed
- It runs easily into a well-defined conical pile when dry
- It appears to be wet.
- It is granular below the water table, unless water has been removed from it
- It exerts substantial hydraulic pressure when a support system is used

Where an excavation contains soil of more than one soil type, operate as it is the soil type with the least stability.

#### **Methods of Protection**

Before a worker begins working in an excavation that is more than 5 ft. deep or closer to the wall or bank than the depth of the excavation, it must be ensured that the worker is protected from cave-ins or sliding or rolling material by:

- cutting back the walls of the excavation to reduce the height of the remaining vertical walls, if any, to no more than 5 ft. for "hard and compact soil" and "likely to crack or crumble soil".
- Installing protective structures, or
- Using a combination of the methods of (i) and (ii).

This does not apply if a trench is constructed in solid rock throughout the entire trench.

# **Cutbacks/ Sloping**

Materials such as rocks or stumps are to be removed from slopes where there is a danger of them becoming dislodged.

In 'Hard and compact soil' – the walls are sloped to within 5 ft. of the bottom of the excavation an angle of not less than 30 degrees from the vertical.

In 'Likely to crack or crumble soil' – the walls are sloped within 5 ft. of the bottom of the excavation at an angle of not less than 45 degrees measured from the vertical.



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In 'soft, sandy or loose soil' – the walls are sloped from the bottom of the excavation at an angle of not less than 45 degrees measured from the vertical.

## **Temporary Protective Structures**

### Excavations

Temporary protective structures in an excavation 3 m deep or less will be of sufficient strength to prevent excavation walls from caving in or otherwise moving into the excavation.

Temporary protective structures in an excavation more than 3 m deep will be designed, constructed, and installed in accordance with the specifications of a professional engineer. The engineer's instructions must include, at minimum, the size, and specifications of the structure, including the type and grade of materials used in its construction and the loads for which the structure is designed.

Engineers design, construction and install plan is also required where a foundation may be affected by the excavation is supported by a temporary protective structure.

## **Temporary Protective Structures**

## Trenches

Reference the criteria outlined in AB OHS Code 2009 – Part 29, Sections 457 – 458 for specifications on constructing shoring and installing bracing requirements.

All trench boxes will arrive to site with a copy of certification and be installed, utilized, maintained, and inspected according to the manufacturer's specifications (to be issued by the supplier for review and training.

- Trench support systems must be inspected daily and maintained in effective condition.
- Shoring uprights must extend from at least 1 foot above ground level to within 2 feet from the bottom of the trench. Exception: Shoring extensions are not required where traffic crossing plates are to be used provided that measures are taken to prevent material from falling into the excavation.
- Work procedures for installation or removal of shoring must ensure that workers are not exposed to undue risk. In general, shoring must be installed from the top down and removed in reverse order.
- Workers must have a safe means of escape from the trench box at all times.



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# **29 SJP - EQUIPMENT GUARDS**

### Purpose

Equipment guards are a key part of worksite safety efforts. Guards help to prevent many types of accidents and injuries. Please refer to OH&S Act, Regulation and Code Part 22-Safeguards for more information regarding equipment guards.

Machinery must have proper guards for moving parts and all guards must be in place before being operated. Moving machinery and equipment connected to any power source must be shut down or disconnected before repairs are made. If this is not possible, an approved safe operating procedure must be followed. Equipment must be tagged and locked out before any work is performed on the machinery.

Priestly Demolition Inc. Operations will ensure that an alarm system is installed where an operator does not have a clear view of the machine or parts of it from the control panel or operators' station and moving machine parts may endanger workers when the machine is started. The alarm system gives an effective warning before the machine starts so that workers are made aware of the imminent start up. Before starting the machine, an operator must ensure that its starting will not endanger the operator or any other worker.

Removing guards from reciprocating or rotating machinery, except for temporary removal for maintenance or repairs, is strictly prohibited. Violation of this is grounds for disciplinary action up to and including termination.

#### Procedure

- No "slip-ups". The purpose of a machine guard is to keep your clothes or body from contacting any dangerous moving parts of the machine. A proper guard prevents injuries and keeps many "slip-ups" from becoming more serious.
- Removing guards from machinery, except for temporary removal for maintenance and repairs, is strictly prohibited.
- A guard should be easy to operate with minimum effort. It should also be suitable for the job and the machine. Guards with rough edges can be a safety hazard on their own.
- Always wear proper personal protective equipment. Face shields, helmets, gloves, and other gear that add to personal protection should be worn. Proper signage should always be posted to warn about equipment hazards.

# Working In or Under a Vehicle or Machinery

All power sources for machinery must be made inoperable before starting any maintenance or repair work. When working on all vehicles, the key will be removed and secured, and a warning sign must be placed on the steering wheel or driver's door.



# **Grinding Wheels and Accessory**

The following section is the safe work practices to be followed in the installation and removal of grinding wheels and accessories. The following will comply with OH&S Safety Regulations and Code, General Safety Requirements.

Ensure that a grinder is operated in accordance with the manufacturers' specification and equipped with a grinder guard. The maximum safe operating speed of the grinder accessory in revolutions per minute is equal to or less than the maximum speed of the grinder shaft in revolutions per minute.

In addition to mechanical guarding, the operator must wear safety glasses or goggles and a face shield at all times in case of wheel disintegration.

The portability of grinding wheels exposes them to more abuse than a stationary grinder. The wheel should be kept away from water and oil, which might affect its balance. The wheel should be protected against blows from other tools, and care should be taken not to strike the sides of a wheel against objects or to drop the wheel. Proper storage will help protect the wheel against damage.

Only a trained employee should complete the mounting of grinding wheels, with the wheels and safety guards conforming to proper standards. The grinder should be marked to show maximum wheel size and speed. Wheels should be checked for cracks before being mounted.

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# 30 SJP - EXPLOSIVE / POWDER ACTUATED TOOLS

Explosive-actuated tools use an explosive cartridge or gas discharge to fire a fastener into hard materials such as concrete, mild steel, and masonry. Used improperly, explosive-actuated (or powder-actuated) tools pose obvious hazards. The tools should be treated with the same respect as a firearm. Most jurisdictions—including Ontario— require that operators be trained before using the tools and carry proof of training on the job.

# Explosive Actuated Tool



## Hazards

Flying Particles - This is the major hazard. On impact, materials may break up, blow apart, or spall off. This often happens when fasteners are fired too close to a corner of masonry or concrete or when they strike materials such as glazed tile, hollow tile, or thin marble tile.

- Ricochets- These usually result when the tool is not held at right angles to the base material, or the fastener hits a particularly hard material such as stone or hardened steel. Always check the type of material to ensure that it can safely accept the fastening device.
- Noise Explosive-actuated tools create an extreme pulse of sound when fired. This can create a noise hazard. The new Noise regulation (381/16) requires employers to assess the risk to workers of noise exposure and provide adequate controls to protect them. Hearing protection devices such as earplugs or earmuffs may be used if no other controls are appropriate. Operators of the explosive-actuated tool must be protected from noise as well as other workers in the area—especially when the tool is operated in a confined space.
- Sprains and Strains These injuries usually result from using the tool repeatedly in awkward, cramped, or unbalanced positions. Operators should try to work from a balanced position on a solid surface.
- Explosions There is always the risk of explosion or fire when the tools are used in atmospheres contaminated by flammable vapour, mist, or dust. The work area must be ventilated—mechanically if necessary.
- Blow-Through When the base material does not offer enough resistance, the fastener may pass completely through and fly out the other side. This is particularly dangerous when fasteners penetrate walls, floors, or ceilings where others may be working. If necessary, keep areas behind, around, and under material clear of people. Fencing or barriers should be erected to prevent people from entering these areas.

#### **Tool Types**

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- High-Velocity Tools High-velocity explosive actuated tools use the expanding gases from the exploding cartridge to propel the fastener. The gases push directly against the fastener. These tools are rarely used in construction, except in special cases to penetrate thick steel or very hard material—they are usually used in military, salvage, or underwater applications. No one should operate high-velocity tools without special training.
- Low-Velocity Tools Most explosive-actuated tools used in construction are low-velocity. The expanding gases from the exploding cartridge push against a piston, which in turn drives the fastener into the base material. Many different low-velocity tools are available, from single-shot models to semi-automatic models using multiple cartridges in strip or disk holders. Some tools are specific to one size of fastener or type of cartridge. Most can be fitted with various pistons, base plates, spall stops, and protective shields for different jobs.

# Low-Velocity Explosive Actuated Tool Diagram



# **Tool Components**

## Pistons

Specialized pistons are available for different fasteners. Such pistons are designed for the fastener and should not be used with other types. Misusing a tool with a specialized piston can result in under- or over-driven fasteners or fasteners that leave the barrel misaligned, leading to ricochets. Some general-purpose tools can take various types of pistons.

#### Fasteners

Fasteners used with explosive-actuated tools are made of special steel to penetrate materials without breaking or bending. Never use any kind of substitute for a properly manufactured fastener. Generally, pins and studs should not be used on hard, brittle, or glazed materials such as cast iron, marble, tiles, and most stone.

The fastener will either fail to penetrate and ricochet or the base material will shatter. Materials whose hardness or ductility is unknown should be tested first. Try to drive a pin into the material with a normal hammer. If the pinpoint is blunted or fails to penetrate at least 2 mm (1/16"), an explosive-actuated tool should not be used.

Fasteners are invariably fitted with a plastic guide device. Its purpose is twofold. When the fastener is inserted into the barrel, the guide keeps the fastener from dropping out. It also aligns the fastener inside the barrel, so it will penetrate the base material at right angles.

There are two basic types of fasteners: Pins and Studs.



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1. **Pins**– These are fasteners designed to attach one material to another, such as wood to concrete. They resemble nails, but there the similarity stops. Ordinary nails cannot be used as fasteners in explosive-actuated tools. Head diameters for pins are available between 7 mm (1/4") and 9 mm (3/8").

Lengths vary from 12 mm (1/2") to 76 mm (3"). Washers of various types and diameters are available for different applications. Pins should be selected for appropriate length, head size, and application. As a general rule, pins need not be driven into concrete more than 25 mm (1").

Using a longer pin is generally unnecessary and also requires a stronger cartridge. Follow the manufacturer's directions on length, penetration, and appropriate material for example, one cut-nail fastener is available for fastening drywall to relatively soft base materials but is recommended for virtually no other application. Testing may be necessary on some masonry materials that vary widely in hardness and durability.

2. **Studs** – These are fasteners consisting of a shank that is driven into the base material and an exposed portion to which a fitting or other object can be attached. The exposed portion may be threaded for attachments made with a nut. Studs are also available in an eye-pin configuration for running wire through the eye.

# Type of Studs Diagram



**Clip Assemblies** – Fastening to the base material is done by a pin, but the pin is attached to a clip assembly configured to secure a uniquely shaped item. Clip assemblies are available, for instance, to hold conduit. One ceiling configuration comes with pre-tied 12-gauge wire.

# Type of Clip Assemblies Diagram





Maintenance

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Tools in regular use should be cleaned daily. Tools used intermittently should be cleaned after firing. All parts of the tool exposed to detonation gases from the cartridge should be cleaned and lightly oiled according to the manufacturer's instructions.



# **31 SJP - EQUIPMENT DAILY MAINTENANCE**

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Equipment failure	Steel toed safety boots	Fire extinguisher training
Collision	Safety glasses	First aid
Pinch points	Gloves	
Noise	Hard hat	
	Reflective vest	
	Hearing protection	

## Safe Work Procedure:

- 1. Walk around machine/vehicle to check for tire damage, vandalism, any loose parts, or any other damage.
- 2. Check engine for:
  - Any frayed or damaged belts.
  - Any damaged or leaking hoses.
  - Engine mounting bolts are in place, tight and not damaged.
- 3. Check all fluid levels (some fluids may require engine to be on, check manufacturer's recommendations).
- 4. Get into vehicle using three-point contact method. Check for fire extinguisher and turn on engine.
- 5. Check all gauges. Ensure that:
  - Oil pressure is normal.
  - Temperature is normal.
  - Hydraulic pressure is normal (if gauge is applicable).
- 6. Put machine in reverse to ensure back up alarm is working.
- 7. Do another walk around to check all lights.
- 8. Check and make sure brakes are working when pulling away to drive.
- 9. Proceed to task.

#### Report any hazardous situations to your supervisor

#### **Guidance Documents/Standards:**

Alberta OH&S regulations and guidelines: This SJP will be reviewed any time the task, equipment or materials change and at a minimum of once a year.



# 32 SJP - EXCAVATOR TASKS

## Preparation

- Before work begins, discuss the job to be done with all individuals involved.
- Secure the work area.
- Wear the appropriate PPE.
- Survey the work area to check for hazards.

# Starting

- Do a walk around and inspect the equipment for vandalism, lost track, oil leaks, etc.
- Transmission controls in neutral.
- Check for free movement of controls and set to starting position.
- Check all fluid levels, gauges, lights, and back-up alarm.
- Start engine using cold start procedures.
- Check all gauges, instruments, and warning lights to ensure that they are operable and their readings are within the normal operating range.
- Warm up engine.
- Test steering right to left while moving slowly.
- Test brakes.
- Test engine speed control.
- Test clutch or neutral position on power shift transmission.
- Test back-up alarm.
- Be sure engine is operating in a normal manner in every respect before starting work.
- Have a tailgate meeting before starting work.
- Go through the ground disturbance checklist before digging.
- Check the operation of the bucket and boom swing by tilting, raising, and lowering.
- Ensure sufficient operating room and swing room (i.e. overhead power lines, etc.).
- Depending on soil quality and depth of excavation, stay as far back as possible do not dig blind. Use proper spotter.
- Slope banks according to regulations.
- Do not allow anyone near your bucket dumping area.
- Read, understand, and memorize emergency procedures so that you are prepared to act immediately in the event of an emergency.
- Do not allow any person near the place you are excavating unless absolutely necessary.
- Do not allow the spotter to stand on the sides of the bucket within the swing arc.

# Shut Down Procedure

- Move machine away from excavation area.
- Allow enough cool down time and ensure the machine is on level ground before shutting off.



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- Park and use hot engine shut-down procedure.
- Lower the bucket and boom to the ground, engage safety lever, close the door, and lock machine.
- Do circle check; secure your machine, service as necessary.
- Clean the tracks and check for damages.
- Remove your PPE and do your paperwork.

#### Changing Bucket Teeth on a Hoe

- Park hoe on level ground with brake applied.
- Be sure machine is shut off before beginning.
- Put on safety glasses.
- Bucket must be blocked and secured.
- Hammer out pins using driving pin. Always hammer left to right.
- Remove the teeth with the hammer.
- The shank is to be cleaned with the wire brush.
- Check pin retainer. Put on new retainer if needed.
- Put tooth on shank.
- Drive pin in. Always drive pins in from left to right.
- Remove blocks and clean up your work area.

#### Changing a Quick-Attach Bucket Hoe

- Park the hoe on level ground in front of a Quick-Attach Bucket.
- Lower the bucket and apply the brake.
- Remove the nuts and bolts from wedge.
- Hammer out the wedge.
- Raise the boom stick and remove the bucket.
- Clean dirt from the attaching area.
- Place stick on the next Quick-Attach Bucket.
- Hammer the wedge back into place.
- Put nuts and bolts in place and tighten, alternating between the bolts.
- Use Quick-Attach Buckets a few times then retighten the bolts again.

#### **Tightening Hoe Tracks**

- Park hoe on level ground.
- Place bucket on left side of hoe and raise the track.
- Apply park brake.
- Grease track adjuster nipple to required tension.
- Spin the track to ensure the dirt is cleared off of the rails.
- Add more grease if needed.



- Lower track.
- Repeat procedure for the other side.

## **Excavator Demolition**

- 1. Ensure the proper permits have been obtained.
- 2. Ensure all applicable utilities/services are disconnected.
- 3. Perform a thorough inspection of the demolition site with the supervisor.
- 4. If possible, enter the building to check for: people, Freon-containing appliances, and hazardous substances.
- 5. Barricade demolition areas to restrict pedestrian traffic
- 6. Begin demolition starting at top of structure and working downward.
- 7. Keep materials (wood, brick, insulation, etc.) separated.
- 8. When completed demolition ensure that backfill is compacted.
- 9. Ensure site is cleaned up of all debris.
- 10. Remove barricades.

#### Report any hazardous situations to your supervisor

#### **Guidance Documents/Standards:**

Alberta OH&S regulations and guidelines: This SJP will be reviewed any time the task, equipment or materials change and at a minimum of once a year.



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# **33 SJP – EXCAVATIONS AND TRENCHES**

## Standard

Excavations and trenches are found on nearly every construction Project. Excavations can be wide, narrow, deep, or shallow. A trench is an excavation but it's narrow and typically not more than 15 feet wide at the bottom. If forms or other structures are installed in an excavation which reduce its width to less than 15 feet, measured at the bottom, the excavation is also considered a trench.

The depth and length of an excavation or trench can vary significantly, yet all contain the same types of risk. Excavations or trenches which are not properly protected against collapse are susceptible to an unexpected cave-in which can trap and kill workers. Excavations and trenches are considered Immediately Dangerous to Life of Health situations and are closely regulated by the prevailing OH&S legislation. Understanding the risks and implementing the correct control measures will ensure this type of work can be performed safely and efficiently.

## **General Requirements**

The following general requirements are typically prescribed by prevailing OH&S legislation and should be observed for all excavations and trenches;

- 7. All excavations over 20 feet in depth must be designed and approved by a Professional Engineer or Geotechnical Engineer,
  - .1 Design drawings and written instructions must be available at or near the excavation location for any excavations designed by the aforementioned,
- 8. All excavations exceeding 4 feet in depth need to be sloped or shored in accordance with the prevailing legislation, unless otherwise approved by a Geotechnical Engineer,
  - .1 Geotechnical Engineers should be requested to provide a written report for any deviations from OH&S legislation, and copies of the reports should be kept at or near the work area.
- All reasonable efforts should be taken to identify, locate and mark underground utilities prior to excavating. As-built drawings should be sought; underground utility locating devices and services and/or hydrovac test holes should be considered as options to assist with identifying the location of underground utilities,
  - .1 Excavating around known or suspected underground utilities should be undertaken with extreme caution. OH&S legislation typically prescribe the requirement to hand excavate when approaching within 1 foot of known or suspected utilities,
- 10. All loose material should be moved sufficiently far enough away from the sides of the excavation to prevent over-weighting to the sides of the excavation and/or to prevent the loose materials from falling into the excavation,



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- 11. All excavated materials should be kept a minimum of 3 feet away from the edge of the excavation. Spoils piles kept closer than 3 feet may be considered by the Regulator to be part of the excavation and require changes to the sloping/benching,
- 12. All reasonable precautions should be taken to evaluate the risk to objects near the excavations, including items such as utility poles, trees, sign poles, rocks, and rocky outcrops etc. The removal of the soil may cause these objects to shift and move,
- 13. Structures near the excavations should be evaluated to determine whether the removal of the soil will cause settlement and/or movement of the structure foundation. A Geotechnical Engineer should be consulted if movement issues are suspected,
- 14. Work near public roadways should consider the potential impact of ongoing vibration on the sloping or shoring in the excavation,
- 15. Road plates should be used to cover any excavations in close proximity to vehicle traffic and/or where pedestrians may be walking. Use appropriate signage and barriers to keep the public out of the work area,
- 16. Trenches over 20 feet in length typically require two points of access/egress for workers. These access/egress points should be located at either end of the trench,
- 17. Overhead lines should be identified and protected as necessary to prevent contact from excavation and/or delivery equipment.

# **Cave-ins**

Undisturbed soil stays in place because of opposing horizontal and vertical forces. When an excavation is created, it removes the soil that provides horizontal support, and the remaining soil will eventually move downward into the excavation. The longer the face (a side of the excavation) remains unsupported, the more likely it is to cave in.

# When you create an excavation, you remove the soil that provides horizontal support.



Cave-ins can trap people within seconds and kill within minutes. Two cubic yards of soil weighs about 6,000 pounds, or the equivalent of a full-size SUV. Persons buried in cave ins typically will suffocate in less than three minutes, and if they survive will have life threatening internal injuries from the crushing weight of the materials.

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Two cubic yards of soil weigh as much as a full size SUV - about 6,000 pounds!

#### Exavation

**Open-face excavation** 

A man-made cut, cavity, or depression in the earth's surface. **Open-face Trench** Trench • Deeper than wide Forms or • No more than other structures 15 feet wide at installed in the bottom an excavation that reduce its width to less than 15 feet, measured at the bottom.

**Stability and Soil** 



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The type of soil is one of the factors which helps determine the stability of an excavation and the chance that it will cave in. There are many different types of soils which the prevailing OH&S legislation typically classifies under the following categories;

**Type A** soil is very stable and is classified as "hard and solid". Clay is an example.

**Type B** soil is less stable than type A soil and is classified as "likely to crack or crumble". Crushed rock, silt, and soils that contain an equal mixture of sand and silt are examples.

**Type C** soil is less stable than type B soil and is classified as "soft, sandy, filled or loose". Gravel and sand are examples.

Soil has other qualities which affect its' stability. These may include granularity, cohesiveness, saturation, and unconfined compressive strength. Granularity refers to the size of the soil grains; the larger the grains, the less stable the soil. Cohesiveness means how well soil holds together; clay is a cohesive soil. Saturation means how much water the soil will absorb Unconfined compressive strength is determined by a test that shows how much pressure it takes to collapse a soil sample. For example, type A soil must have an unconfined compressive strength of at least 1.5 tons per square foot.

# **Soil Testing**

There are a number of means to test soil conditions to determine the type and properties of the soil. The following should be considered general education material and untrained personnel should not attempt to make decisions based solely on these tests. OH&S legislation typically prescribe that only trained and qualified persons may make decisions regarding soil properties based on these tests.

#### **Visual Testing**

Visual testing involves looking at the soil and the area around the excavation site for signs of instability and for other hazards. A person qualified to evaluate soils may conduct visual tests such as the following;

Observe the soil as it is excavated. Soil that remains in large clumps when excavated may be cohesive. Soil that breaks up easily is granular,

Examine the particle sizes of excavated soil to determine how they hold together,

Look for cracks or fissures in the faces of the excavation,

Look for layers of different soil types and the angle of the layers in the face of the excavation that may indicate instability,

Look for water seeping from the sides of the excavation,

Look for signs of previously disturbed soil from other construction or excavation work,



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Consider vibration from construction/traffic that may affect the stability of the excavation.

## Manual tests

Manual testing involves evaluating a sample of soil from the excavation to determine qualities such as cohesiveness, granularity, and unconfined compressive strength. Soil can be tested either on site or off site but should be tested as soon as possible to preserve its natural moisture. Examples of manual tests:

<u>Plasticity test.</u> Shape a sample of moist soil into a ball and try to roll it into threads about 1/8-inch in diameter. Cohesive soil will roll into 1/8-inch threads without crumbling.

<u>Dry strength test.</u> Hold a dry soil sample in your hand. If the soil is dry and crumbles on its own or with moderate pressure into individual grains or fine powder, it's granular. If the soil breaks into clumps that are hard to break into smaller clumps, it may be clay combined with gravel, sand, or silt.

<u>Thumb penetration test.</u> This test roughly estimates the unconfined compressive strength of a sample. Press your thumb into the soil sample. If the sample resists hard pressure, it may be Type A soil. If it's easy to penetrate, the sample may be type C.

<u>Pocket penetrometers</u> offer more accurate estimates of unconfined compressive strength. These instruments estimate the unconfined compressive strength of saturated cohesive soils. When pushed into the sample, an indicator sleeve displays an estimate in tons per square foot or kilograms per square centimeter.12

#### **Excavation and Trench Planning Guidelines**

The following factors should be considered when planning for excavations or trenches. Proper planning provides the opportunity to evaluate potential hazards and risks and have the required controls in place. Consider the following before excavation starts;

1. Surface debris and materials near the excavation site.

Clear all unnecessary materials away from the area of the excavation and provide sufficient room for placement of removed materials, walking routes for the workers and travel/delivery routes for the equipment. Materials near the excavation may become unstable during the removal of soil and result in movement or collapse.

## 2. Weather conditions.

Heavy rains can cause soils piles to collapse, sloped banks to slough and excavations to fill rapidly with water. Evaluate expected weather conditions and plan the type of excavation accordingly. Shoring may be more appropriate than sloping if slopes are prone to sloughing.

3. Soil stability at the excavation site.

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The soil conditions may be a composition of various materials or densities and could have been disturbed by earlier work i.e.; previously installed underground utilities. The type of shoring may need to be altered if sub strata soils are loose and susceptible to collapse and/or if there's evidence that previous installations have left the soil with various densities and compaction.

## 4. Location, depth, and direction of underground utility lines.

Underground utilities can represent a significant hazard if contacted during excavation. Electrical, gas and pressurized waterline contacts are considered Immediately Dangerous to Life or Health situations and all reasonable efforts should be undertaken to identify the underground utilities prior to excavating.

OH&S legislation typically require that hand excavating be performed when approaching within 1 foot of a known or suspected underground utility. Prudent business practices dictate that hand excavating should be performed to minimize the potential for damage to the utility.

# 5. Overhead power lines.

Overhead lines can represent an Immediately Dangerous to Life or Health situation and should be treated as energized until confirmed otherwise. Planning should also consider the equipment needed for delivery and placement of materials into the excavations, particularly if cranes are required to swing and place the materials into position. If an encroachment within the OH&S legislated Limits of Approach is expected, the Utility Owner should be consulted to determine any required measures to protect the overhead utility.

#### 6. Vehicle traffic near the excavation site.

Heavy vehicle traffic may cause ongoing vibration which could undermine the stability of the soils/slopes. Motorists also represent a significant hazard to the workers and proper barrier protection should be in place to prevent a motorist from accidentally driving into the excavation. Never rely on the expectation that motorists will drive appropriately.

#### 7. Stability of structures adjacent to the excavation site.

Removal of soil near buildings or structures may have an impact on the stability of the structures' foundation. Temporary measures may be required to maintain the strength of the unexcavated soil while the excavation is being created and/or while the excavation is open. It's recommended a Geotechnical Engineer review any excavations close to structures.

#### 8. How workers will get in and out of the excavation.

Evaluate how the workers are expected to get in and out. It's not acceptable to permit the workers to enter unshored/unsloped areas and walk to the work area. Identify how to create a properly shored/sloped entry location or use ladders to gain point access to the protected areas of the excavation. Excavations which are over 20 feet in length require a minimum of two access/egress points, typically at each end of the excavation,

#### 9. <u>Vehicles and other mobile equipment which will operate near the excavation.</u>

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Equipment will be needed to excavate and remove soil and other equipment will be needed to deliver the materials being placed into the excavation. If there isn't sufficient room this equipment may approach too close to the edge and cause a collapse. Consider, as well, any other equipment working in the area, particularly equipment such as pile drivers and ride on rollers which may cause vibration and disturb the soil conditions.

As a rule of thumb, equipment should be kept back a distance to depth ratio of one to one. If the excavation is 6' deep the equipment should be 6' away. Consider that cranes will need additional space to put out their outriggers.

## 10. Spoils Piles

Spoils piles should also be kept a safe distance away from the edge of the excavation. The face of an unsloped/unshored excavation will be susceptible to collapse if any materials are placed within the 1:1 ratio. Remember when placing the spoils piles that equipment will also need the travel route and won't be able to drive between the spoil's piles and excavation unless the walls are adequately shored to withstand the expected side loading forces.



#### 11. Possibility of atmospheric hazards in the excavation.

Excavations may be susceptible to accumulating heavier than air gases such as emissions from internal combustion equipment [vehicles, site equipment and tools], contaminants from leaking underground pipelines, tanks or sewage, and off-gassing from naturally occurring products like hydrogen sulphide or methane. It's prudent to consider the air quality of the excavation and keep any internal combustion equipment out of the excavation if practicable. Flagging may be helpful to act as a wind indicator to determine whether air movement is occurring.

If the space is accumulating, or is reasonably expected to accumulate atmospheric hazards, it should be evaluated, and the appropriate ventilation and control measures should be implemented.

#### 12. Possibility of water accumulation in the excavation.

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Water in the excavation represents a hazard to the workers and may be a significant production issue. Monitor seepage from the face of the excavation as this may be indicative of deteriorating conditions and may lead to collapse of the face. Evaluate the composition of the soil and saturation levels when considered the appropriate type of sloping/shoring. Consider berms around the excavation and pumps to remove water before it causes safety or productivity issues.

# 13. How to respond to emergencies.

Consider how someone will be removed in case of injury. Ladders may not be sufficient if the person is injured and needs to be placed on a stretcher or basket. Can the injured worker be lifted out of the excavation using site equipment? If this is an option, consider what equipment would be needed to lift the worker out.

If the workers are required to wear fall protection, try to use the type of harness which has D-rings on the shoulders as this harness permits a person to be lifted in case an emergency extraction is needed.

## 14. How to protect people from falling into the excavation.

Perimeter protection will typically be required for any excavation more than six feet in depth. Guardrails, snow fencing, or barrier tapes may be appropriate to prevent persons from falling into the excavation. Guardrails are generally recommended as they provide a greater level of protection that

snow fence or barrier tape. As a rule of thumb, the greater the depth of the excavation, the stronger the barrier protection should be.

If shoring is being placed into the excavation, try to have the uprights extend 42 inches above the surface of the excavation so the uprights will serve as the perimeter guardrails.

# **Protective Systems**

The systems for protecting persons from cave-ins are sloping, benching, shoring, and shielding. The appropriate system to use will depend on factors such as soil type and water content, excavation depth and width, the nature of the work, and nearby activities that could increase the risk of a cave-in. The persons planning the work should consider these factors to determine the appropriate protective system. A Geotechnical Engineer will be required if the depth of the excavation exceeds 20 feet. It's recommended that the prevailing OH&S legislation should be reviewed to identify any specific requirements stipulated by the Regulator.

# **Sloping and Benching**

Sloping and benching provide protection by removing material from the faces of an excavation at an angle to its floor. The flatter the angle, the greater the protection. A slope not steeper than 1½ feet back for every foot of depth is safe for any soil type. This is typically called the ¾:1 rule



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which is usually stipulated by the prevailing legislation. PRIESTLY DEMOLITION INC. LTD. recommends a 1:1 slope for type B & C soils and prefers a 1:1 slope for all soil types.

Benching is the action of making cuts in the slope which give it a stair-step appearance. There are two basic types of benches as illustrated below.



Rain, vibration, and pressure from heavy equipment can make soil unstable and increase the risk of a cave-in. Sloped or benched excavations that show signs of cracks, bulges, or clumps of soil which fall away from the faces should be inspected by a competent person. Workers should immediately get out of the excavation and/or keep away from the affected area until the competent person determines it is safe.

#### **Shoring Systems**

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Shoring systems can prevent cave-ins without the need to cut slopes or benches. There are a number of benefits to shoring systems including; less excavating required to create the slope and/or bench; less spoils piles and materials to haul away; the excavation may have a smaller footprint which may be a deciding factor when working near roadways and/or in constricted work areas, and shoring systems provide engineered protection for the workers in the excavation. Prefabricated shoring systems have the secondary advantage of being easily installed and removed, which can save set up time if the work in the excavation is only short duration.

Shores are vertical or horizontal supports which prevent the faces of an excavation from collapsing.

Uprights are the vertical members. Typically, uprights are made of dimensional lumber although steel plates can be used for convenience and strength.

Walers are the members which go horizontally along the length of the excavation and provide additional strength to the uprights.

Cross braces [struts] are the members which span across the width of the excavation and hold the uprights and walers tight against the faces of the excavation.

# Size and Spacing of Shoring Members

The table below is intended to assist in determining the requirements for custom built shoring systems. The prevailing OH&S legislation should be consulted to confirm the requirements for shoring systems.

Upright			Walers		Cross Braces			
Trenc h depth (feet)	Minimum dimensio n	Max spacing (feet)	Min dimensio n (inches)	Max vertical spacing (feet)	Width of trench [feet]		Maximum Spacing	
(1001)	(incres)		(incres)		≤ 6	6 – 12	Vertical	Horizont al
Туре А	Type A: Hard and solid soil							
4 – 10	2 x 10	6	4 x 6	4	4 x 4	6 x 6	4	6
10 - 15	2 x 10	4	6 x 6	4	4 x 6	6 x 8	4	6





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15 – 20	2 x 10	Close tight	6 x 6	4	6 x 8	8 x 8	4	6
Туре Е	B: Soil likely	y to crack or	crumble		-			
4 – 10	2 x 10	4	4 x 6	4	4 x 6	6 x 6	4	6
10 - 15	2 x 10	3	6 x 8	4	6 x 6	6 x 8	4	6
15 – 20	2 x 10	Close tight	6 x 8	4	6 x 8	8 x 8	4	6
Туре С	C: Sandy, fi	lled or loose	soil					
4 – 10	2 x 10	Close tight	6 x 8	4	6 x 6	6 x 8	4	6
10 - 15	2 x 10	Close tight	8 x 8	4	6 x 8	8 x 8	4	6
15 – 20	3 x 10	Close tight	8 x 10	4	6 x 8	8 x 10	4	6

#### Installation of Custom-Built Shoring Systems

The safest way to install shoring systems is to construct the systems outside of the excavation and lift them into place. Where it's not practicable to construct the shoring system outside of the excavation, the following general guidelines should be observed.

# Installing the Shoring System

- 1. Always work from the top down when installing the shoring system. Install the uprights along a pre-determined length then install and secure the first row of walers near the top of the excavation. The workers may not enter the excavation at this time as the shoring system is not yet capable of withstanding the side loading from the excavation faces.
- 2. Install the first set of cross braces between the walers and secure them in place. Once the cross braces are secured the workers can enter into the excavation only to the depth where the second row of walers are to be installed. Use ladders to provide the workers with the means to enter to the depth required.
- 3. Install and secure the second row of walers and cross braces.
- 4. Repeat the process until the bottom row of whalers and cross braces have been installed and secured.

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# Removing the shoring system

- Removal of the shoring system is the exact reverse of the installation procedures. Start by removing the bottom row of walers and cross braces and work upwards, but do not remove the top row of walers and cross braces while there are workers still inside the excavation. The workers can use a ladder to gain access to the bottom of the excavation and to work upwards removing the intermediate walers and cross braces.
- 2. The workers should exit the excavation and remove the final row of walers and cross braces. Once removed, the uprights can be removed, and the excavation backfilled.

# **Prefabricated Shoring Systems**

Prefabricated shoring systems [cages] are manufactured units which can be quickly placed into the excavation. The advantages of this system are speed of installation and removal. Cages are useful when installing materials along the length of a trench as they can be moved along as the work progresses. Shoring cages are typically made with steel panels in place of the uprights and walers and come with either manual or hydraulic cross braces which permits the shoring cage to be used in varying widths of excavations.



Workers may not work outside the cage in any unshored sections of the excavation

# **Sheet Piling**

Sheet piles are interlocking steel sections which are driven into the ground before excavating. The sheet piles are designed to lock together and form a continuous wall or enclosure around the intended excavation. Depending on the depth of the excavation and the soil conditions, no further reinforcing may be necessary. Sheet pile installation is typically designed and approved by an Engineer. Sheet piling may offer advantages in time for construction of the shoring system although it can be an expensive and equipment intensive process.

# Access and Egress

Prevailing OH&S legislation typically stipulates that an excavation with a depth of 4 feet or more must have a means for entering and exiting within 25 feet of the work area. This access may be stairs, ramps or ladders and the type of access should take into consideration the frequency of access; the number of persons entering and the depth of the excavation.

In shallow excavation it may be practical to cut a ramp into the end of the excavation which permits the workers to walk safely into the work area. A ramp however may not be practical on a

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trench if the distance is beyond the OH&S requirements and/or it reduces productivity significantly due to the time spent traveling back and forth.

Wooden ramps are another means of providing access into shallow excavations. The ramp needs to be a minimum of 20 inches wide to meet OH&S requirements and will need to have guardrails if the fall distance off the edge of the ramp exceeds 4 feet. Wooden ramps should have a non-slip surface or cleats to provide traction.

Deep excavations should use stairs or ladders. Stairs offer the advantage of providing a means for removal of injured workers [emergency response measures] as well as a means for workers to carry materials and tools in and out of the excavation. The decision whether to use stairs or ladders should consider the intended emergency response measures; the duration of the excavation; the numbers of workers and the depth of the excavation.

# **Excavation Permit**

Priestly Demolition Inc. Ltd. Project Management may stipulate the requirement to have an excavation permit if the conditions of the area warrant issuance of a permit. Those conditions may include areas known to contain hazardous/sensitive underground utilities; in proximity to structures which may be influenced by the excavation; in areas with high operational requirements, i.e., roadways, railways, and airports where the work must be completed, and the area restored within a specified timeframe, or as a means to coordinate/schedule various work activities.

Project Subcontractors may also require excavation permits be completed to protect their respective work areas and/or schedule/coordinate work with other Subcontractors. Project Subcontractors may elect to use their own permitting systems, or the permit contained in this program.

Priestly Demolition Inc. Ltd. and/or Subcontractor Project management will advise when excavation permits are required.



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# 34 SJP - FATIGUE MANAGEMENT

Long work hours and/or many consecutive days of work can fatigue workers and leave them feeling tired, sleepy, irritable, depressed, or giddy. Fatigue is often the cause of vehicle accidents and is a contributory cause of on-the-job accidents. This safe work practice will highlight the symptoms of fatigue and suggest some methods of controlling this hazard.

## Procedure

Fatigue can be caused by long hours of work, long hours of physical or mental activity, inadequate rest, excessive stress, and combinations of these factors – both on the job and off the job. Although signs of fatigue vary from worker to worker, typical physical signs and symptoms are:

- Sleepiness, including falling asleep against the individual's will (micro sleeps)
- Irritability
- Depression
- Giddiness
- Loss of appetite
- Digestive problems
- An increased susceptibility to illness

In addition to physical signs and symptoms, fatigued workers may have their ability to perform mental and physical tasks impaired. These impairments can take many forms, such as the following:

- Slowed reactions physical reaction speed and speed of thought.
- Incorrect actions either physical or mental.
- Flawed logic and judgment and an inability to concentrate.
- Increases in memory errors, including forgetfulness.
- Decrease in vigilance.
- Reduced motivation.
- Increased tendency for risk-taking.

Incidents or injuries can be the result of a combination of these factors. Although difficult to measure, fatigue has been identified as having played a significant role in a number of recent transportation and power utility disasters.

#### **Sleep Loss and Sleep Disturbance**

Most of us have personal experience with some degree of sleep loss and its effects on our ability to function. Research indicates that, on average, workers require 7.5 to 8.5 hours of sleep per day. Workers obtaining less than their required amount of sleep develop a sleep debt that is cumulative.

A single night's shortened sleep period may not have a negative or noticeable effect upon performance the next day. This single night's lost sleep is quite easy to make up during the next sleep period. However, cutting sleep periods short for an extended period of time, such as weeks or months, leads to a condition of chronic sleep deprivation and results in performance defects.



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Heavy meals, warm rooms, and long periods of driving reveal the presence of sleepiness. In contrast, the behaviors associated with sleepiness – yawning, eye rubbing and head nodding, can be reduced under conditions of high motivation, excitement, and exercise.

Studies have shown that extensive sleep loss can be overcome if short-duration tasks are performed, e.g., tasks usually less than two minutes in length and no more than five minutes in length. Workers are able to "hype" themselves up and perform the task. The ability to sustain such performance decreases significantly, however, as the physical or mental demands of the task increase.

Quality of sleep is as important as quantity. Sleep may be disrupted by the use of prescription drugs, stimulants (such as caffeine), and sleep-related illnesses (such as sleep apnea). Alcohol may help a person fall asleep quickly; however, sleep will be light and disturbed, not deep, and steady. Sleep can also be disrupted by conditions such as noise, light, temperature, or uncomfortable sleep surfaces.

## Time of Day and Incidents

The poorest job performance consistently occurs on the night shift and the highest rate of industrial incidents is usually found among shift workers. Catastrophic incidents do not happen at random throughout the day – they are more likely at times when workers are most prone to sleep, between midnight and 6 a.m. and between 1 and 3 p.m.

#### Health and Safety Issues

Employers must recognize that work outside of the "normal" workday and extended hours of work can lead to fatigue. It is a problem that cannot be dismissed on the basis that it is a "personal problem" – one that the worker will simply learn to deal with. A worker completing a 16-hour work shift may have only 4 or 5 hours for sleep once travel, eating, and social time is taken into account.

#### Danger Signs

If a worker experience any of these symptoms while driving, the worker should take them as a warning that he/she could fall asleep unintentionally. These symptoms include:

- Eyes close or go out of focus by themselves.
- Difficulty keeping one's head up.
- Non-stop yawning.
- Wandering, disconnected thoughts.
- Cannot remember driving the last few miles.
- Drifting between lanes, tailgating, or missing traffic signs.
- Jerking the car back into the lane.
- Drifting off the road and narrowly missing crashing.

If you have even one of these symptoms, you may be in danger of falling asleep. Pull off the road and take a nap.

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# 35 SJP – FIRE AND EXPLOSION PREVENTION

The best way to fight fires is to prevent them; this is the primary aim of this safe work practice. There are also strategies which, if effectively implemented, can minimize the effects of any uncontrolled or "hostile fire" that might occur. This safe work practice will follow the National Fire Protection Association (NFPA) guidelines.

The NFPA system approach to fire safety is based on six strategies. Any fire plan presented for facilities must reflect the following strategies:

- Prevention (control) of ignition;
- Design / plan to slow early fire growth;
- Detection and alarm;
- Suppression (removal of heat, air, fuel, interruption of chain reaction);
- Confinement of fire; and
- Evacuation.

The conditions and requirements of this safe work practice will be applied and enforced at all facilities and properties owned or operated by the company.

## **General Fire Safety Requirements**

All personnel working at field locations are required to meet the following fire safety requirements:

- All fires, regardless of size, must be attended, investigated, documented, and reported to the corporate office.
- Good housekeeping practices must be followed as they are considered one of the primary deterrents to fires.
- The areas inside and on firewalls around tanks, buildings, and well heads shall be kept free of weeds and combustible materials for a sufficient distance to prevent damage from fire and to prevent the spread of fire between production facilities.
- Iron Sulfide removed from the inside of a vessel must be kept wet until it can be disposed of properly.
- Smoking is prohibited on company leases or in production facilities, except in designated areas.
- Oily rags and oil-soaked clothing must not be left inside production buildings.
- Clothing and hydrocarbon-contaminated materials must be removed from the building on a regular basis. Oily rags and materials must be disposed of by placing them into a metal container located at least seven (7) meters (23 ft) from production buildings. The rags must then be cleaned, or permanently disposed of, in an approved manner.
- When high gravity, high vapor pressure hydrocarbons (such as condensate and some crude oils) are drained into open metal containers, the open container must be appropriately grounded and / or bonded to the vessel or piping to prevent possible ignition from static electricity.
- Only approved safety cans are to be used to store or transport gasoline and similar volatile liquids. The cans must be colored red with the contents identified as per Workplace Hazardous Material Information System (WHMIS) and / or Transportation of Dangerous Goods (TDG) regulations.



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- Gas detection equipment must be checked and calibrated on a regular basis (monthly, or as per the manufacturer's specifications). Inspection and calibration information must be documented.
- Emergency Shutdown Devices (ESDs) must be checked periodically (normally during planned shutdowns) to ensure that they are functioning properly. Ensure inspection dates and results are documented.
- Ultraviolet fire detection systems must be checked and calibrated on a regular basis. Inspection and calibration information must be documented.
- Electrical equipment installed in Class 1, Division 1 and Class 1, Division 2 areas must be classified "explosion proof" and shall be installed and maintained in that condition.
- In hazardous areas, electrical heat tracing for the classified area must be protected by ground fault interrupters.
- Electrical power outlets in production facilities must be of the "explosion proof" variety.
- Electrical extension cords used in production buildings must be equipped with "explosion proof" connectors and should be checked regularly for integrity.
- Drivers of petroleum product transports must connect the provided ground cable (located at the transfer station) to their vehicle prior to conducting loading / unloading activities.

# Fire, Safety, and Emergency Equipment

All personnel shall proceed as follows when procuring or handling fire, safety, and emergency equipment:

- Install appropriate class and size of fire suppressant equipment at all facilities.
- Locate fire extinguishers in accordance with local fire regulations, NFPA guidelines, and the guidelines detailed in this practice. All other equipment, such as first aid, eye wash stations, etc., shall be placed in areas where the highest hazards may exist.
- Once a fire extinguisher has been used (entirely exhausted or otherwise), the unit must be recharged or replaced before being returned to service.
- Upgrade or replace any equipment that does not meet the company's or the manufacturer's standards, as soon as is reasonably practicable.
- All personnel must know the location of fire and safety equipment and be trained in its use.
- Check all equipment regularly (monthly intervals) and note such inspections in the facility activity log. Inspections must be performed as per the manufacturer's specifications and applicable government regulations.
- Fire Resistant Workwear (FRW) shall be worn by field workers as they go about their workrelated activities. Personnel are reminded that FRW is designed to provide protection to the wearer in the event of a flash fire. It does not serve the same purpose or function as industrial "bunker gear".

**Note:** The company does not provide workers with industrial type clothing (bunker gear) for the protection of the workers. This form of clothing has special application and goes beyond the scope of this fire prevention and protection practice.



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# **Fire Fighting Guidelines**

If a fire is detected on a work site, personnel shall proceed as follows:

- Raise the alarm call for assistance;
- Call the appropriate numbers listed in the Emergency Response Plan and report the fire;
- Check the type and size of the fire, and determine if it can be extinguished safely;
- If possible, isolate the fuel source of the fire (i.e., facility shut down or isolated, line depressured if possible);
- Fight the fire using the appropriate class of fire suppressant; do not put yourself at risk;
- Be absolutely sure the fire is out and that there are no "hot spots" remaining before you leave the site;
- Complete and submit the required incident report; and
- Notify applicable regulatory agencies.

#### Fires and Explosions Overview

Fires and explosions represent a frequent cause of serious and fatal injuries in the oil and gas production business. With proper equipment and facility design, sound maintenance practices, knowledge of risks, adherence to operating rules, and a common-sense approach to working with highly volatile substances, these risks may be reduced and kept to a minimum.

**Note:** In the event that a serious fire or explosion occurs at a company location, the occurrence must be reported to both management and Workplace Health and Safety by the fastest possible means.

# **Explosive Limits**

	EXPLOSIVE LIMIT	S
	(% by volume in air)	
	Lower Limit	Upper Limit
Hydrogen Sulfide (H <sub>2</sub> S)	4.0%	46%
Acetylene	2.5%	100%
Butane	1.8%	8.5%
Carbon Monoxide (CO)	12.5%	74.2%
Gasoline	1.4%	7.6%
Methane	5.0%	15.4%
Propane	2.2%	9.5%

The explosive limits of some common substances found at many production facilities are as follows:

Under no circumstances shall any hot or cold work be permitted to proceed when the atmosphere is found to exceed 20% of the lower explosive limit (LEL) for Methane gas.

**Important:** Gasoline has one purpose - to provide an explosion within an internal combustion engine. The use of gasoline as a cleaning agent is strictly prohibited.

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# Low Flash Point of Chemicals

The following table lists some of the most common organic chemicals found within the industry with low flash points (below 32°C), as measured by the Closed Cup method. Clearly, these chemicals present a particularly serious risk which should be taken into account when planning work involving them.

Chemical	Flash Point (°C)
Acetone	- 18
Benzene	11
Dioxan	12
Ethanol	12
Ethyl Acetate	-4
Hexane	-23
Methanol	10
Toluene	4
Triethylamine	-7

# **Classification of Fires**

Fires are classified into four distinct and separate classes. The classes have been identified in the table below, with some general information regarding the type of material best suited to the class of fire extinguisher.

Class A	Occurs in ordinary combustible materials such as wood, cloth, and paper. Extinguishing agents most commonly used are water and dry chemical agent.		
Class B	Occurs in vapor - air mixture over the surface of a flammable liquid such as grease, gasoline, or oil. BC type dry chemical (Purple K) foam, Carbon Dioxide, and water- fog may be used as an extinguishing agent.		
Class C	Occurs in electrical equipment - non-conducting extinguishing agents must be used. Carbon Dioxide is the most suitable. Dry chemicals may be used but will require extensive cleanup of equipment after use.		
Class D	Occurs in combustible materials such as Magnesium, Titanium, Zirconium, and Sodium. Specialized technologies and agents have been developed to control and extinguish such fires. The most common agent is MET-L-X.		



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## Location and Placement of Fire Extinguishers

In an effort to provide some general guidelines regarding the number and type of fire extinguishers that may be required at a typical facility or property, the following table should be consulted:

Class "A" Locations				
Agent	UL Rating	Locations		
	2 - A: 10 BC	Offices, warehouses, and motor vehicles		
Dry Chemical	4 - A: 40 BC	other than field trucks.		
Water	N/A	Offices		
Class "B" Locations				
Agent	UL Rating	Locations		
Durolo K	120 BC	Field trucks, plants, loading, shipping, and		
ruipie K	480 BC	field facilities handling Class B materials.		
	30 BC	Local management decision at major		
Purple K and Foam		facilities where spill and pressure fire		
		potential exist		
Class "C" Locations				
Agent	UL Rating	Locations		
Carbon Dioxide	10 BC	Electrical, MCC building.		

#### **Inspection and Maintenance**

In accordance with the manufacturer's specifications, a competent person shall perform inspection and maintenance activities. Noted beneath are the minimum requirements. Details of the inspection and maintenance activities shall be documented and retained on file at each work site location.

#### **Monthly Inspections**

- All units must be in their designated location, correctly installed, visible, and allow for easy access.
- All units must be visually inspected to ensure operational reliability (i.e., fully charged, undamaged, and not tampered with).
- The results of the inspection must be recorded for historical purposes.

#### **Annual Inspections and Maintenance**

• Inspections must be performed by a qualified agency as per the manufacturer's specifications and applicable government regulations.



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## Hydrostatic Testing

- All testing must be documented and retained on file at each work site location.
- All units must be inspected, maintained, and serviced in accordance with the manufacturer's specifications and NFPA requirements, in order to ensure compliance with applicable hydrostatic testing requirements.
- All testing shall be performed by a certified / approved agency.

## Responsibilities

#### **Operations Personnel**

The senior company employee / contractor operator is responsible for ensuring that the provided fire extinguishers and protection devices are suitably inspected, maintained, and serviced, and that appropriate records are available for review and audit purposes.

#### Work Site Supervisor

The work site supervisor is responsible for ensuring an adequate supply of fire extinguishers and / or fire suppression devices are available, strategically located, appropriately installed, or mounted, and identified. The supervisor will also ensure that related training is identified, provided, and maintained.

#### Management

Management is responsible for the provision of funds necessary to accommodate all requirements of the fire and explosion safe work practice.



# 36 SJP - FLAMMABLE AND COMBUSTIBLE SUBSTANCES

### Purpose

The purpose of this document is to define Priestly Demolition Inc. practice relating to safe handling and use, storage, dispensing, and disposal of flammable and combustible substances. This practice applies to all Priestly Demolition Inc. employees, contract personnel, and field staff working at client site locations with flammable and combustible substances.

#### Responsibilities

#### Supervisor

- Maintain list of flammable substances at the work location;
- Ensure employees are trained in the safe handling, use, and storage of flammable or combustible substances;
- Ensure adequate storage facilities for flammable and combustible substances;
- Be familiar with the requirements for storage under the OH&S Code; and
- Ensure SDS are available to workers.

#### Worker

- Follow practices for storage of flammable and combustible substances; and
- Review SDS.

#### Procedure

All Priestly Demolition Inc. employees and contract personnel must follow correct flammable and combustible substances practices as they relate to safe handling and use, storage, dispensing, and disposal. Priestly Demolition Inc. will ensure that compressed gas containers are used, handled, stored, and transported in accordance with the manufacturer's specifications.

For further information, see the appropriate current OH&S Regulations.

#### Storage

Storage of combustible and flammable substances shall conform to the National Fire Code of Canada.

- Flammable and combustible substances must be stored in areas away from substances that may cause a reaction (i.e., oxygen tanks).
- Compressed gas containers are used, handled, stored, and transported in accordance with the manufacturer's specifications.
- A cylinder of compressed flammable gas is not stored in the same room as a cylinder of compressed oxygen unless the storage arrangements are in accordance with Part 3 of the Alberta Fire Code (1997).
- Compressed gas cylinders, piping, and fittings are protected from damage during handling, filling, transportation, and storage.
- Compressed gas cylinders are equipped with a valve protection cap if manufactured with a means of attachment.


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- Oxygen cylinders or valves, regulators, or other fittings of the oxygen using apparatus or oxygen distributing system are kept free of oil and grease.
- Flammable substances in quantities of five liters or greater shall be contained in approved safety containers.
- Where the quantity of flammable substances being used in any one area exceeds 50 liters, they shall be stored in an approved fire-rated storage cabinet. Not more than 250 liters in 20 liter or smaller containers may be stored in each cabinet. No other materials may be stored in the cabinet.
- Not more than three storage cabinets may be located within a room. Flammables in quantities greater than 200 liters must be stored in a Physical Plant Department approved chemical storage room designed for that purpose. Flammable substances must be stored separately from reactive, oxidizing, or corrosive substances.
- When dispensing flammable substances, all containers constructed from conducting material shall be grounded. All containers of flammable substances shall be WHMIS labeled with the chemical name, "FLAMMABLE", and reference made to the availability of a Safety Data Sheet (SDS).
- Flammable substances shall not be stored in refrigerators, other than those of the safety type, nor shall they be transported on passenger elevators.
- Approved disposal containers shall be required for the collection of waste flammable substances.
- Smoking is prohibited in areas where flammable substances are used or stored.
- Positive air shut off must be present in all company vehicles when working near flammable or combustible materials.

**NOTE**: A Class B (or ABC) fire extinguisher must be readily available when working with or near flammable and combustible liquids. All users of flammable and combustible materials must follow this section.

#### **Ignition Sources**

- When a flammable gas or a flammable liquid is handled, used, or stored, all sources of ignition must be eliminated or adequately controlled.
- All internal combustion engines must have positive air shut off in hazardous locations.
- Sources of ignition include open flame, spark-producing mechanical equipment, welding and cutting processes, smoking, static discharge, and any electrical equipment or installation that is not approved for hazardous locations, as specified by the Electrical Safety Act.
- If the work involves more than one employer, the Principal Contractor or, if there is no Principal Contractor, the owner, must ensure that sources of ignition resulting from the work of one employer are eliminated or adequately controlled in any work area where a flammable gas or a flammable liquid is handled, used, or stored by any other employer.
- Any source of ignition is prohibited in areas where flammable and combustible sources are stored. This includes cigarette smoking, sparks from welding or grinding, open flames, etc.



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#### Grounding and / or Bonding

Metallic or conductive containers used to transfer flammable liquids must be electrically bonded to each other or electrically grounded while their contents are being transferred from one container to the other.

#### **Electro-Static Charge**

If glass, plastic, or other non-conductive container with a capacity of 23 liters (5 imp gal) or more is used to transfer a flammable liquid, the accumulation of electrostatic charge near the surface of the liquid must be eliminated or controlled by:

- Limiting the flow velocity of the liquid to less than 1 m/s (200 fpm);
- Using a grounded lance or nozzle extending to the bottom of the container;
- Limiting free fall;
- Using anti-static additives; or
- Other effective means.

#### Dispensing

If a flammable liquid is dispensed or transferred inside a flammable liquids' storage room:

- The storage room must be mechanically ventilated at a rate of at least 18 m3/hr. per square meter of floor area (1 cfm/sq. ft.), but not less than 250 m3/hr. (150 cfm);
- Exhaust air must be discharged to the outdoors and makeup air provided; and
- Any makeup air duct passing through a fire separation must be equipped with an approved fire damper, and doors must be self-closing.

#### Flammable Gas or Vapor

Where work or manufacturing processes involve the use of a flammable liquid, vapor, or gas, the concentration of the liquid, vapor, or gas in the work area shall be maintained at a minimum of 10% below the lower explosive limit (LEL) of the substance involved.

Where it is not practicable to maintain the airborne concentration of a flammable gas or vapor below the applicable exposure limit, for example, in a temporary situation or an emergency, Priestly Demolition Inc. requires:

- Only the minimum number of workers necessary for the work may be exposed;
- Every worker exposed must be adequately trained and equipped to safely perform the required duties;
- The concentration of the flammable gas or vapor must not exceed 20% of the lower explosive limit (LEL); and
- In a life-threatening emergency only, exposure of emergency response workers is permitted above 20% of the LEL, provided that only those qualified and properly trained and equipped workers necessary to correct the unsafe condition are exposed to the hazard and every possible effort is made to control the hazard while this is being done.

#### **Manual Cleaning**

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A flammable liquid must not be used as a manual cleaning solvent unless:

- A thorough review of alternative solvents by the employer indicates that a suitable nonflammable substitute is not available;
- Appropriate written safe job procedures are implemented to effectively control flammability and health hazards;
- The quantity of liquid used is minimized; and
- The worker is instructed and trained in the safe job procedures.



# **33** SJP - FORKLIFT OPERATION

### Purpose

This procedure was developed to ensure all Priestly Demolition Inc. Company employees have the skills and knowledge to identify, understand and safely manage the hazards associated while working with forklifts. This policy was developed in accordance with OH&S safety code Part XIII section 204 (Saskatchewan) and Section 64 (1, 2, 3) (Alberta).

#### Scope

This Code of Practice sets forth the requirements to protect employees from the hazards associated with forklift use. This code of practice applies to all employees, sub-contractors and contractors who will use a forklift in the course of work.

#### Responsibilities

#### Management

- Ensure the use of administrative and engineering controls to ensure the safety of Priestly Demolition Inc. Company's employees, sub- contractors, and contractors.
- Provide adequate training for all employees
- Ensure all employees working with a forklift are aware of the risks concerning the use and handling of a forklift and all procedures to be followed in the event of an emergency involving a forklift

#### Supervisors

- Ensure that all employees under their direction who are designated to operate a forklift are trained, evaluated, and certified prior to operation of the equipment and is renewed at least every three years
- Ensure that certification is kept current (e.g., re-evaluation/driving test and refresher training, as applicable) and notify your immediate supervisor and / or HSE representative of employees whose certification has expired, or the expiry date is within a month's time.
- Notify your immediate supervisor and / or HSE representative of when new equipment or attachments are put into service or retired, and when changes occur to information documented in the Hazard Assessment which may trigger the need for refresher training.
- Notify your immediate supervisor and / or HSE representative of accidents and nearmisses involving forklift operation.
- To the extent feasible, reduce operational hazards presented by the use location and loads.
- Ensure all records of certification are kept on file in the main office

#### Employees

• Complete all required training at the required intervals.



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- Conduct pre-operational inspections prior to the use of a forklift. Do not operate a forklift that does not successfully pass the pre-operational checklist.
- Immediately stop operating a defective forklift and report the situation to the supervisor.
- Observe all precautions discussed in training and the recommendations of the manufacturer of the PIT.

# Safe Operating Procedures

- It is the responsibility of the operator to ensure that no person stands or passes under elevated forks, whether empty or loaded.
- Only designated operators (authorized and qualified) may operate forklifts. As required by prevailing legislation, Operators need to be certified to operate forklifts.
- Perform pre-equipment inspection of the forklift and a hazard assessment prior to operating the machine. Do not operate a forklift if you have not been trained by qualified personnel.
- Consult the manufacturer's handbook and follow its specific instructions.
- Forklift operators are to follow vehicle and mobile equipment safety rules.
- Do not exceed the load capacity of the forklift.
- Wherever practicable, forklifts should be equipped with a fire extinguisher, rotating beacon, back-up alarm and seat belts. The operator will wear the seatbelts at all times.
- Inspect the forklift thoroughly before starting the shift or before using the equipment. Check the fuel, water, oil, brakes, steering, hydraulics, warning devices and lifting components.
- Never work under a forklift unless it is securely blocked.
- Never place any part of your body between the frame and mast.
- Have any defect which affects the safe operation of the forklift corrected immediately.
- Follow the proper recharging or refueling safety procedures.
- Never stand or pass under an elevated load or permit others to do so.
- Carry forks at the lowest possible position.
- Materials and equipment should be loaded on the forklift in a manner that prevents any movement of the load which could create a hazard to workers.
- All loads which could be subject to shifting during transportation or lifting are to be restrained if such shifting/lifting could result in the forklift becoming unstable and/or create a risk of losing the load.
- Keep load low at all times when not stacking.
- Move only when you are sure the load is stable. Re-stack the load if necessary.
- Operate the forklift in reverse if the load obstructs your forward view.
- Keep the mast tilted back to ensure the load stability. When tiering high loads, tilt the mast forward only when you are ready to place the pallet on a stack.
- Keep steering wheels aligned with the running lines of the forklift when lifting or lowering a load.
- Avoid driving with arms, head, or legs outside the confines of the forklift.



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- Never elevate workers on forks, pallets, or loads.
- Wherever practicable, back down grades when loaded.
- Avoid making turns on sloped surfaces (inclines, declines).
- Operate at a speed that will permit a safe stop.
- Never make sudden turns or turns at high speed. The high centre of gravity can cause it to tip easily.
- Operators will follow the refuelling safety procedures.
- Obey all speed limits and be alert to adverse roadway conditions.
- Yield the right-of-way to pedestrians. Come to a full stop before crossing streets, alleyways, and interior traffic ways.
- Any operator who cannot clearly see the load or off-load points and the full path of travel should use a signal person. Ask for assistance if you're unable to see the travel route or load/off-load points.
- Sound horn and slow down when approaching pedestrians, ramps and other forklifts or vehicles.
- Be aware of headroom and clearance for the mast when traveling under pipes, through doorways, and in other obstructed areas.
- Before driving into a parked trailer, determine whether the trailer's wheels are chocked, the front end is properly supported, and dock plates have stop bolts installed to prevent them from being dislodged. Be cautious when entering short trailers. The weight of your forklift may make the trailer unstable and cause the trailer to tip on its end.
- Do not leave the forklift attended unless the equipment has been secured against inadvertent movement. If you are leaving a forklift unattended, turn off the motor, lower the forks to the ground, set the brakes, put the controls in low gear (or the "park" position if it has an automatic transmission), and remove the key. If the forklift is parked on an incline, chock or block the wheels.
- Forklifts used in enclosed spaces must be shut down when not in use.
- Horseplay is prohibited.
- No load should be moved unless it is absolutely safe and secure.

#### Fueling Safety

- Fuel tanks may not be filled while the engine is running. Avoid spillage.
- Spillage of oil or fuel must be carefully washed away or completely evaporated and the fuel tank cap replaced before restarting engine.
- No truck can be operated with a leak in the fuel system until the leak has been corrected.
- Do not use open flames for checking fuel level in fuel tanks.

#### Maintenance

• Any forklift not in safe operating condition must be removed from service. Authorized personnel must make all repairs.

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- Those repairs to the fuel and ignition systems of industrial trucks that involve fire hazards must be conducted only in locations designated for such repairs.
- Trucks in need of repairs to the electrical system must have the battery disconnected before such repairs.
- Only parts equivalent as to safety with those used in the original design must replace all parts of any forklift requiring replacement.
- Forklifts must not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer. They also cannot be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts. Additional counterweighting of fork trucks must not be done unless approved by the truck manufacturer.
- Forklifts must be examined before being placed in service and must not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Such examination must be made at least daily.
- Industrial trucks must be kept in a clean condition, free of lint, excess oil, and grease. Noncombustible agents should be used for cleaning trucks. Low flash point (below 100 degrees F) solvents must not be used. High flash point (at or above 100 degrees F) solvents may be used.

# Procedures for changing propane cylinders:

- Wear eye protection and thermal gloves.
- Close the valve on the cylinder.
- Run the engine until it stops. This ensures that the connection hose is empty.
- Shut off the engine. Engage the parking brake.
- Open the connecting nut. **DO NOT** use metal tools.
- Disconnect the hose.
- Disconnect the holding straps.
- Remove the empty cylinder.
- Replace with a full cylinder in the proper position.
- Connect the holding straps.
- Tighten the connecting nut (wiggle hose).
- Open the valve on the cylinder slowly and check for leaks. Use solution of soap and water. Smell – listen – look.
- Slowly open the valve to its fully open position.
- Secure the hose in an inward and downward direction.
- Secure the cylinder.
- Start the engine and resume operation.

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# 34 SJP - FUEL AND REFUELING

• Fueling and fuel storage will be in a designated area in NO proximity (minimum 30 m) of waterways, drainage systems/ channels/ storm/ sanitary, low-lying areas where rain or snow melt may accumulate and where no impact to people, plant life, animals, air, water, and soil.

- This refueling area will be free of all potential ignition sources (ex. no engines running) and not near a hot work area.
- All transferring of fuel will be attended for the duration of the operation.
- Spill kits and fire extinguishers appropriate to emergency response will be readily accessible and inspected as part of the site inspection process on a regularly scheduled basis to ensure they are ready for use.
- All containers (jerry cans and portable tanks) will meet or exceed current regulatory standards and be in proper condition.
- Pre-job Hazard assessment process will eliminate the use of onsite fuel storage wherever possible. Approved subcontract refueling companies will be utilized upon completion of Priestly Demolition Inc. Ltd. Subcontractor prequalification process. Where portable fuel tanks (slip tanks) are used they will have been certified to current regulatory standard and the transport worker will hold a valid TDG certificate. Where an aboveground fuel storage tank may be required prior client approval must be obtained upon review of a completed site/ task specific JSA (Job Safety Analysis). This JSA will include procedural steps, tank specifications to current regulatory standards, double wall containment, liner, and berm etc.

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# **35 SJP - GAS CYLINDER SAFETY**

Various gases contained in pressurized cylinders can be used in our operations. Generally, these are process gases for use in welding operations, however, fire extinguishers and self-contained breathing apparatus also employ pressurized gas cylinders. Mishandled cylinders may rupture violently, release their hazardous contents, or become dangerous projectiles.

If a neck of a pressurized cylinder should be accidentally broken off, the energy releases would be sufficient to propel the cylinder to over three quarters of a mile in height. A standard 250 cubic foot cylinder pressurized to 2,500 PSIG can become a rocket attaining speeds in excess of 30 miles per hour in a fraction of a second after venting from the broken cylinder connection.

# **Basic Safety**

- When receiving gas cylinders, visually inspect the cylinders for damages and leaks. Ensure the valve cover or shipping cap is on. Check for proper labelling.
- If a cylinder is damaged, leaking, or the contents are unknown, contact the cylinder vendor and have them return the cylinder to the manufacturer.
- Wear proper PPE including steel toed boots when moving or handling cylinders.
- Always have the appropriate SDS available and be familiar with the health, flammability, and reactivity hazards of the particular gas.

# **Cylinder Markings**

Cylinders must be properly labelled, including gas identity and appropriate hazards. They must also have several stamped markings including DOT certification marks, serial number, retest dates, manufacturer, user or purchaser marks and indication of whether they may be overcharged by 10% (+).

#### Cylinder Storage

- Cylinders should be stored in compatible groups i.e., flammables away from oxidizers, full cylinders away from empties. Empty cylinders should be clearly marked and handled exactly as if they were full as they may still contain pressure and residual gases.
- All cylinders should be stored in an upright position and fastened securely. This is particularly important with acetylene. Because of its instability, it is shipped dissolved in acetone in a cylinder with a porous filling. Acetylene used on its side will cause raw acetone to escape into the hose and torch, creating a flame thrower effect. Acetone leakage may also cause voids within the porous cylinder filling which could lead to a potentially explosive condition within the cylinder. Dropping, rolling, or jarring of the cylinder may also cause these voids to occur. If a cylinder has been shipped on its side, it should be kept upright for at least two hours prior to use to enable the acetone to evenly redistribute within the cylinder.
- Oxygen should be stored at least 20 feet from fuel gases. If this cannot be done, they should be separated by a non-combustible barrier at least 5 feet high and having a fire rating of at least ½ hour.
- Keep valve protection caps in place when cylinder is not being used.
- Keep valves closed on empty cylinders.



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- Cylinders must be stored away from sources of heat in a well-ventilated area designated and marked for this purpose.
- Cylinders must be kept away from electrical wiring where the cylinder could become part of the circuit.

### **Moving Cylinders**

- Use a cylinder cart and secure cylinders with a chain.
- If a cylinder needs to be lifted to a height, use a certified lifting device designed to lift cylinders. Do not sling the cylinder or attempt to lift the bottle cart containing cylinders.
- Do not use the protective cap for moving or lifting cylinders.
- Do not drop a cylinder or permit them to strike each other violently or to be handled roughly.
- Unless cylinders are secured on a special cart, regulators shall be removed, valves closed, and protective caps in place before cylinders are moved.

# Cylinder Usage

- Be sure all connections are tight. Use soapy water to locate leaks.
- Keep cylinders, valves, regulators, couplings, hose, and apparatus free of oil and grease.
- Keep cylinders away from open flame and sources of heat.
- Safety devices and valves should not be tampered with, nor repairs attempted.
- Use flashback arrestors and reverse flow check valves to prevent flashback on oxy-fuel cutting systems.
- Regulators shall be removed when moving cylinders, when work is completed, and when cylinders are empty.
- Cylinders shall be used and stored in an upright position.
- The cylinder valve should always be opened slowly. Always stand away from the face and back of a gauge when opening the cylinder valve.
- When a cylinder wrench is used to open a cylinder, it must remain on the valve stem when in use to facilitate quick closing if required.
- Fire extinguishers should be readily available when combustible materials can be exposed to welding or cutting operations using compressed gases.

#### Oxyacetylene Station Start Up & Shut Down

- Always refer to oxygen as oxygen.
- Always refer to acetylene as acetylene.
- Remember and memorize acetylene is always "First on, first off".
- Open acetylene bottle valve ½ turn (3/4 turn maximum).
- Open torch needle valve 1/2 turn.
- Adjust acetylene regulator to desired pressure (14lb. Maximum Over 14 psi acetylene becomes very unstable and explosive). Allow 1lb. for gauge discrepancy. This will allow for a measure of safety. The draw rate on an acetylene cylinder must never exceed 1/7 of the cylinder capacity per hour.
- Turn off acetylene torch valve.
- Open oxygen cylinder valve to the open position.
- Open oxygen torch needle valve 3/4 turn.
- Adjust oxygen regulator to the desired pressure.



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- Shut off oxygen torch valve.
- Open acetylene torch valve and using a striker start the flame. Do not use a lighter and/ or slag or another torch to light torch.
- Adjust acetylene flame.
- Slowly open torch oxygen valve and begin introducing oxygen to the flame until you have the desired flame required.
- To shut off, first close acetylene torch valve then oxygen torch valve. Remember, acetylene is "First on, first off".
- Shut off acetylene cylinder valve.
- Shut off oxygen cylinder valve.
- Open acetylene torch needle valve and drain the acetylene from the hose and regulator.
- Close acetylene regulator.
- Close acetylene torch needle valve.
- Shut off oxygen cylinder valve.
- Open oxygen torch needle valve and drain the oxygen from the hose and regulator.
- When oxygen is drained completely, close the regulator valve.
- Close the oxygen torch needle valve.
- Wind up the hose and if the torch-cutting tip is hot, do not let it rest on the oxygen acetylene hose.

#### Removing and Replacing a Cylinder

- Oxygen acetylene station must be shut down as mentioned in the oxyacetylene station start up and shut down procedures.
- Using an adjustable open-end wrench or open-end combination wrench, break loose the regulator to cylinder nut and remove from the cylinder. Oxygen is right hand thread; acetylene is left hand thread.
- Remove securing chain and cylinder, install the new cylinder, and install the securing chain.
- Always "crack" the cylinder before installing the regulator to clean away any dirt or debris in the valve opening. Cracking the cylinder means you momentarily open and close the cylinder valve.
- After installing the regulator, always check for leaks. Use water or a soap solution to check for leaks. Do not use a petroleum-based product.

#### Summary

- Acetylene hose is red in color.
- Acetylene fittings are always left-hand thread.
- Acetylene fittings have a cut mark in the center of the nuts. This means left hand thread.
- Oxygen hose is always green in color.
- Oxygen hose has right hand threads.
- Acetylene is always "First on, first off".
- Keep oil away from an oxygen acetylene station.
- Never leave a cylinder free standing; it is to be secured by a safety chain or bar at all times.
- Cylinders not in use should always have the safety caps on them.

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- When transporting pressure vessels, the regulators should always be removed, the safety caps installed, and the cylinders secured.
- Acetylene cylinders must always be used, handled, and stored in the vertical position. This prevents the acetone contained in the cylinder from entering the regulator, hose, and torch or causing voids within the cylinder.

# 36 SJP - GRINDERS

# PURPOSE

Safety procedures need to be followed when using grinders and grinding wheels. Proper maintenance and operation of the grinders in the work area will contribute to a safe worksite. Please refer to OH&S Act, Regulation and Code Part 25 Tools, Equipment, and Machinery for more information on grinders.

# Procedure

There are many factors to consider in the safe operation of grinders, such as:

- Always wear the proper PPE including safety glasses, goggles, gloves, and respiratory protection as required.
- Perform Hazard Assessment before commencement of operations.
- Regular maintenance and inspection including cleaning and servicing, inspecting wheels for cracks and defects, a ring test on all new wheels, and checking for clan and flat flange surfaces on wheels before installing.
- Proper and well-adjusted equipment guards.
- Set up protective barriers to contain sparks.
- Stand away from the wheel when starting the grinder.
- Choose the correct wheel for the job.
- Do not exceed the maximum rpms indicated on the wheel by the manufacturer.
- Store portable grinders on racks or hooks.
- Store wheels where they won't have other objects piled on top of them.
- Don't store wheels near heat and avoid contact with oil or moisture.
- Check the tool rest for the correct distance from the abrasive wheel, maximum 1/8" or 3 mm.
- Replace the grindstone when adjustment of the rest cannot provide 1/8" or 3 mm clearance.
- If the wheel has been abused and ground to an angle or grooved, reface the wheel with the appropriate surfacing tool or replace the wheel.
- Protect your eyes with goggles or a face shield at all times when grinding.
- Each time a grinding wheel is replaced, check the maximum approved speed (stamped on the wheel bladder) against the shaft rotation speed of the machine to ensure the safe speed is not exceeded.
- The flanges supporting the grinding wheel should be a maximum of 1/3 the diameter of the wheel and must fit the shaft rotating speed according to the manufacturer's recommendation.
- Bench grinders are designed for peripheral grinding. Do not grind on the side of the wheel.



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- Do not stand directly in front of the grinding wheel when it is first started.
- Wear CSA-approved hearing protection.
- Severe injury may occur if proper personal protective equipment is not used and maintained.

#### **Potential Hazards**

- Sparks from the grinder can cause a fire or explosion if used too close to flammable materials.
- The wheel may break and send pieces flying at high velocities, endangering yourself as well as others in the near vicinity.
- Loose clothing can get caught in the grinder.

#### Use of Angle Grinder

DO NOT use this machine unless you have been trained in its safe use and operation

Description o	f Work:	Using an Angle Grinder				
Potential Hazards: Exposed moving parts and electrical hazard with the potential to cause harm through entanglement, impact and cutting, exposure to heat, noise, projectiles, sharp objects, friction, and sparks.						
Personal Prot	ective Equ	ipment (PPE) Requi	red (Check the bo	ox for required PPE)	:	
3 Gloves	4 Face Mas	sks 5 6 Eye 7 Protecti	8 Welding Mask	9 Appropriate Footwear	10 Hearing Protection	11 Protective Clothing
	•	•	•	• 🖂	•	•
Safe Job Pra	Safe Job Practice Checklist:					



- 1. PRE-Operation:
  - Task (e.g., Drawings, instructions, specifications etc.) is clearly understood.
  - Ensure the appropriate disk is correctly in place.
  - Ensure work piece is securely clamped.
  - Ensure appropriate guarding is in place on grinder.
  - Identify ON/OFF switch.

#### 2. Operation:

- Check that the disk runs 'true' and does not wobble.
- Keep hands clear of work piece and away from disk.
- Turn off grinder at power point before changing the disk.
- Ensure guarding is in place before re-starting grinder.
- Ensure machines have been isolated from power sources before being cleaned, adjusted, maintained, or repaired.

#### 3. POST-Operation:

- Switch off grinder before removing waste material from the bench.
- Ensure disk is still in good condition before putting away.

Competent Persons (The following persons are authorised to operate, supervise, and test students on the equipment/process).			
Name:	Title:	Contact Details:	



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# **37 SJP – GAS DETECTORS**

To establish a guideline for the selection and maintenance of gas detectors and monitors utilized by workers to monitor potentially hazardous environments for unacceptable levels of risk. Regulations require employers to do hazard assessments of work sites and individual tasks. Any work site or building that may contain explosive gas vapors will require the employer to create safe operating procedures and site-specific procedures to minimize the risks to the worker.

#### Definitions

**Personal Single Sensor Gas Monitor:** Capable of detecting hydrogen sulfide (H2S) or combustible gas (LEL). These monitors only report the average atmosphere conditions in which they are placed and have a response time of 6 to 10 seconds.

**Personal Multi-Sensor Gas Monitors:** Capable of detecting hydrogen sulfide (H2S), combustible gas (LEL), oxygen (O2), and/or carbon monoxide (CO). These gas monitors may be worn as personal protective equipment or utilized as a point sampling gas detector if equipped with a pump and evacuation hose, which will shorten the response time to between 1 to 2 seconds and remove the operator from the immediately hazardous environment.

**Portable Multi-Sensor Gas Detectors:** Capable of measuring hydrogen sulfide (H2S), combustible gas (LEL), oxygen (O2), carbon monoxide (CO). These gas detectors have a builtin pump and are equipped with a wand or tube for point sampling of potentially hazardous atmospheres from a safer distance. Due to their increased sensitivity and speed of processing, they should be used for measuring atmospheres prior to and during hot work and confined space operations, or for pinpointing process leaks.

# Application

The type of gas detector used will be determined by the following scenarios.

- Dual sensor LEL and O2 gas detectors are required when:
- Entering work sites or buildings that may contain sweet hydrocarbons (i.e., booster compressors buildings, dehydrator buildings, inlet building, or well site buildings), and
- Entering any confined space that may contain oxygen consuming equipment or noncombustible gases like nitrogen or carbon dioxide. Examples include buildings with catalytic heaters, nitrogen purges, or chemical vapors.
- Dual sensor H2S and O2 gas detectors are required when:
- Entering work sites or buildings that may contain sour hydrocarbons (10 ppm of H2S or greater);
- Sour work sites that are operating with sour fuel gas; and
- Entering any confined space that may contain oxygen consuming equipment or noncombustible gases like nitrogen or carbon dioxide. Examples include buildings with catalytic heaters, Nitrogen purges, or chemical vapors.
- Multi-sensor gas detectors with H2S, LEL, and O2 are required when:
- Entering work sites or buildings that may contain sour and/or sweet hydrocarbons;
- Sour work sites with sweet fuel gas systems; and



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- Entering any confined space that may contain oxygen consuming equipment or noncombustible gases like carbon dioxide. Examples include buildings with catalytic heaters, Nitrogen purges, or chemical vapors.
- Multi-sensor gas detectors with specialized sensors, such as carbon dioxide, sulfide dioxide, or ammonia, should be used where there is a "known" risk of a particular hazardous product.

#### **Potential Hazards**

- Improperly calibrated gas monitors.
- Wrong gas monitor for the atmosphere being monitored.
- Utilizing the gas monitor for functions not suited to the equipment.

#### **Training Requirements**

Prior to the use of any personal monitor or portable detector, employees, and contractors responsible for the operation of this equipment must attend a training session facilitated by the manufacturer, supplier, and/or competent trained employee. Training must be documented, and proof of training must be carried by the equipment user. Training will include:

- Usage of equipment;
- Limitations of equipment;
- Calibration procedures; and
- Bump testing procedures.

#### Equipment Maintenance and Settings

Equipment settings for all personal detector/portable monitor alarm points are:

- LEL low alarm set at 10% LEL, high alarm set at 20% LEL;
- H2S low alarm set at 10 ppm, high alarm set at 15 ppm in AB (10 ppm in BC);
- O2 low alarm set at 19.5%, high alarm set at 23%; and
- CO Low alarm set at 25 ppm; high alarm set at 50 ppm.

#### Practice:

Calibration and bump testing – The manufacturer and the Canadian Standards Association determine requirements for calibration and bump testing. Provincial legislation requires equipment to be operated and maintained according to these requirements.

- Calibration frequency must be conducted as outlined in the manufacturer's specifications or a minimum of three months, whichever is the shorter time period.
- Calibrations must be conducted by trained personnel. Company staff may conduct calibrations on personal monitors if trained and certified by the manufacturer or manufacturer's representative.
- Bump testing (introducing the instrument sensor to a known standard, and ensuring the standard is accurately reflected on the instrument display) must be conducted as outlined in the manufacturer's operation manual:



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- All personal gas detection monitors that are operating with a combustible gas sensor (LEL) shall be bump tested prior to use (after it is turned on) or at the next available opportunity, and
- All portable monitors that are operating with a combustible gas sensor (LEL) shall be bump tested prior to use (after it is turned on).
- Appropriate equipment must be purchased to conduct bump testing in field conditions.
- Calibrations and bump testing must be documented. Documentation must be filed locally and retained for a minimum of two years.



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# 38 SJP - GRADER OPERATOR

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Other workers and equipment Vehicle damage Slip/trip Pinch points	Steel toed safety boots Safety glasses/ shield Gloves Hard hat Reflective vest	Operator training

#### Safe Work Procedure:

- 1. Do pre-trip inspection on machine and start using Cold Start Procedure.
- 2. Check all gauges and ensure blade functions and back up alarms are working properly.
- 3. When proceeding to the work location, check the brakes.
- 4. Turn on beacon light.
- 5. While traveling, allow faster traffic to pass if safe to do so.
- 6. At job site, inspect area for any hazards.
- 7. Avoid grading on sloped ground unless it is safe to do so.
- 8. Stop work if conditions become too muddy.
- 9. Always be aware of other workers and equipment in work area.

#### Report any hazardous situations to your supervisor

#### **Guidance Documents/Standards:**

Alberta OH&S regulations and guidelines: This SJP will be reviewed any time the task, equipment or materials change and at a minimum of once a year.



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# **39 SJP - GROUND DISTURBANCE**

#### Purpose

To identify the procedures required for excavating or ground disturbance; ensure compliance with regulatory, facility owner, and client requirements and identify training requirements for workers.

#### Scope

This procedure applies to all Priestly Demolition Inc. Operations employees, visitors, and subcontractors while performing work for Priestly Demolition Inc. Operations. Where higher standards exist, the Client's procedure will take precedence.

#### Definitions

Ground Disturbance	Work that involves a manmade cut, cavity, trench, or depression 30 cm (12 inches) in the earth's surface.
Utilities	High voltage cables, gas lines, pipelines, sewer/water lines, communication lines, etc.
Classification of Soil Type	Soil classification is used to determine the type of procedures used when excavating. The three classifications are:
	• <b>Stable</b> – Soil is classified as " <b>Stable</b> " if it closely exhibits most of the following characteristics:
	<ul> <li>It is hard in consistency and can be penetrated only with difficulty by a small sharp object; it is very dense;</li> <li>It appears to be dry;</li> <li>It has no signs of water seepage; and</li> <li>It is extremely difficult to excavate with hand tools.</li> <li>Semi Stable - Soil is classified as "Semi Stable" if it has been excavated before but does not exhibit any of the characteristics of "soft, sandy or loose" soil, or it closely exhibits most of the following characteristics:</li> </ul>
	<ul> <li>It is stiff in consistency and compacted;</li> <li>It can be penetrated with moderate difficulty with a small, sharp object;</li> <li>It is moderately difficult to excavate with hand tools;</li> <li>It has low to medium natural moisture content and a damp appearance after it is excavated;</li> <li>It exhibits sighs of surface cracking; and</li> <li>It exhibits signs of localized water seepage.</li> </ul>

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		• <b>Unstable</b> – Soil is classified as " <b>Unstable</b> " if it closely exhibits most of the following characteristics:		
Crossing A	.greement,	<ul> <li>It is firm to very soft in consistency, loose to very loose;</li> <li>It is easy to excavate with hand tools;</li> <li>It is solid in appearance but flows or becomes unstable when disturbed;</li> <li>It runs easily into a well-defined conical pile when dry;</li> <li>It appears to be wet;</li> <li>It is granular below the water table, unless water has been removed from it; and</li> <li>It exerts substantial hydraulic pressure when a support system is used.</li> </ul> A written agreement issued in advance of any ground disturbance to be undertaken by a third party within a right-of-way or within 5m (16.4 feet) of a pipeline where there is no right-of-way.		
Stabilizatio	n	An effective means to stabilize the soil in an excavation by shoring or cutting back, or other approved methods, i.e., artificial freezing.		
Marking and Excavation		Marking excavation through flagging, barricading, safeguards, or other appropriate and effective means.		
Water Haza	ard	Kept free of any accumulation of water that may pose a hazard to the worker.		
Controlled	Area	Can also be referred to as " <b>Safety Zone</b> ". A strip of land 30m (98.5 feet) wide on each side of a pipeline or the distance from the pipeline to the edge of the right-of-way, whichever is wider. Federal Regulations define the "Safety Zone" as 30m (98.5 feet) from the edge of right-of-way, regardless of the width of the right-of-way.		
Hand Expo	se Zone	The hand expose zone for a buried facility is the horizontal distance from the locate marks within which mechanical excavation equipment <u>may not</u> be used until the buried facility has been hand exposed. The following hand exposure zones apply:		
		<ul> <li>Alberta Pipeline Act and Regulation – 5m (16.5 feet) for pipelines</li> <li>For federally regulated pipelines – 3m (9.8 feet)</li> <li>For direct bury trunk and toll fibre optic cables – 5m (16.5 feet)</li> <li>For all other types of buried facilities or any utility – 1m (3.28 feet)</li> </ul>		



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### Procedure

Step	Responsibility	Action	
4.1	Pre - Planning Ground Disturbance		
	WARNING	i – The life span of a line locate is 14 calendar days.	
4.1.1	Management / Supervision	<ul> <li>Make contact with the appropriate service to determine the location of underground utilities. Only after receiving clearances from the utility owner(s) and completion of an excavation permit from the site/client representative can work commence.</li> <li>Completion of Priestly Demolition Inc. Operations Ground Disturbance Checklist.</li> </ul>	
		<ul> <li>Ground Disturber must notify buried facility owners.</li> <li>"First Call" completed, and approvals received from owner. Coordinate with said owners, the locating and exposing of all existing buried utilities.</li> <li>The names and addresses of the representatives of all known utility owners are provided in the line list. Specific requirements pertaining to buried utility crossings are detailed in the contract documents and the utility crossing agreements.</li> </ul>	
4.1.2	Management / Supervision	Ensure supervisor and personnel actively engaged in the activities of ground disturbance have received specific ground disturbance training.	
4.1.3	Management / Supervision	<ul> <li>training.</li> <li>The following steps must be completed prior to ground disturbance activities commencing: <ul> <li>Providing at least 2 full working days notices to potentially affected owners of buried facilities of the intent to disturb the ground and requesting that the owners of the buried facilities identify and mark the location of their facilities.</li> <li>Ensuring that copies of any written approvals such as crossing agreements, ground disturbance permits, and ground disturbance checklists are present at the location where ground disturbance activities will take place at all times.</li> <li>Ensuring that all conditions outlined in the crossing agreements, ground disturbance permits, or checklists and regulations are met at all times during the ground disturbance activities.</li> <li>Ensuring all owners of buried facilities identified in the search have identified and marked the locations of their buried facilities prior to commencing the ground disturbance.</li> </ul> </li> </ul>	



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4.2	Ground Disturbance		
4.2.1	Management / Supervision / Workers	<ul> <li>Conduct Pre-Job Safety meeting with all personnel involved in ground disturbance activities, review any pertinent documentation such as crossing agreements, ground disturbance permit, ground disturbance checklist, emergency response plan, and site-specific hazard assessment.</li> <li>Maintaining the facility locate marks for the duration of their life. (14 days)</li> <li>Stop activities to request relocates when extent of the ground disturbance increases beyond its initial size and shape.</li> <li>Stop activities and request relocates when the duration of the ground disturbance increases beyond the life of the locates. (14 days)</li> <li>Hand exposing all buried facilities before using mechanical excavation within the hand expose zone.</li> <li>Maintaining the specific distances from the buried facilities with mechanical excavation equipment after hand exposure.</li> <li>Stop all work immediately in the event of unwanted contact with a pipe or buried facility. Contact the owner of the buried facility if required (outlined in crossing agreement), 24 hours prior to backfilling and exposed facilities as per regulations, instructions, or as outlined in the crossing agreement.</li> <li>Restoring the ground disturbance site to the specifications of the client/owner, the crossing agreement (i.e., environmental regulations).</li> </ul>	
4.3	Additional Grou	nd Disturbance / Trenching and Excavating Practices	
4.3.1	Management / Supervision / Workers	<ul> <li>Mechanical excavation equipment is <u>not</u> permitted within the hand exposure zone of a buried utility.</li> <li>CAUTION: The hand expose zone applies to all buried facilities except pipelines and some buried electrical facilities.</li> <li>The hand expose zone for pipelines and fibre optics is 5m (16.5 feet).</li> <li>Some operators of buried high voltage electrical facilities have implemented hand expose zones greater than 1m (3.28 feet). This information will be outlined on the Crossing Agreement, and / or the Excavation Permit.</li> <li>Do not allow the use of mechanical excavation equipment within 60cm (1.97 feet) of a buried utility unless the use of the</li> </ul>	

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		<ul> <li>equipment is under the direct supervision of a representative of the owner of the utility and has been identified on the hazard assessment.</li> <li>Barriers shall be erected around an excavation to warn others.</li> <li>Reflective signage and warning lights will be deployed during low light conditions to warn workers and public of applicable hazards.</li> <li>Any holes drilled from pilling operations that are not filled with rebar and concrete shall be covered with a ¼" plywood cover, secured from movement, and marked "OPEN HOLE".</li> <li>Adequate access and egress is available to workers in a trench or excavation 1.0m (3.28 feet) deep and that access and egress of (2) locations is not more than 8m (26.25 feet) from the worker.</li> <li>The open side of an excavation or a route used by powered mobile equipment to gain access to an excavation has a barrier high enough to stop the equipment from sliding or rolling into the excavation.</li> <li>The barrier can be of any construction that is suitable for the purpose intended, common practices include; concrete blocks, large pieces of timber, or even a pile of excavated material as a berm.</li> <li>The walls will be sloped within 1.5m (5 feet) of the bottom of the excavation at an angle of not less than 45 degrees measured from the vertical.</li> <li>If an excavation cannot be adequately sloped, a trench box or shoring cage shall be used, inspected, repaired, and maintained in accordance with the manufacturer and/or the instructions of a professional engineer.</li> <li>Equipment operators must have current training and proof of certification in ground disturbance and excavation training. The</li> </ul>
		certification in ground disturbance and excavation training. The excavation is deemed safe, prior to permitting personnel into a trench / excavation.
4.4	Loose Materials	and Spoil Piles
4.4.1	Management / Supervision / Workers	<ul> <li>Loose materials are to be scaled and trimmed from the sides of an excavation.</li> <li>The leading edge of the pile is at least 1m (3.28 feet) away from the edge of the excavation.</li> <li>The slope of a spoil pile adjacent to the excavation is at an angle of not less than 45 degrees from the vertical and loose materials are scaled and trimmed from the spoil pile.</li> </ul>
4.5	Pipelines Contai	ning H₂S (Hydrogen Sulphide)

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4.5.1	Management / Supervision	<ul> <li>Place warning signs and windsocks at the point of crossing.</li> <li>Ensure H<sub>2</sub>S monitors are used while conducting any ground disturbance activities.</li> <li>Ensure the utility owner representative is onsite at all times during performance of any work.</li> <li>Ensure all personnel exposing, excavating, and backfilling are trained in H<sub>2</sub>S Alive, proper safe work procedures, the use of all related safety equipment, emergency response and evacuation procedures.</li> <li>Specific Emergency Response Plan, including a public warnin system.</li> </ul>	
4.0			
4.6.1	Management / Supervision	<ul> <li>The site-specific rescue plan must address the following topic areas:</li> <li>Hazard assessment</li> <li>Hazard elimination and control</li> <li>Emergency preparedness and response for damage or contact with buried facilities</li> <li>Worker training</li> <li>Incident investigation</li> <li>Rescue equipment</li> <li>911 resources</li> <li>Mechanical equipment</li> </ul>	
4.6.2	Management / Supervision / Workers	All personnel involved in the work shall be trained in the site- specific emergency response plan prior to any work commencing.	
4.7	Procedure Rev	view	
4.7.1	Management	The ground disturbance written program must be reviewed on a regular basis and updated as necessary when changes to regulations or company policy and/or procedures occur.	

# Utility contacts

One Call Centres Locate Request Form		
One-call-centres	Website	
BC One-Call	www.bconecall.bc.ca	
Alberta One Call	www.alberta1call.com	

Website Locate request Rural locate requests Other locate request

**Notice required** 3 full working days 2 full working days

#### **Contact Information for One Call Centres**

One-call-centres	Phone numbers	Fax numbers	Website	Notice required
BC One-Call	800-474-6886	604-451-0344	www.bconecall.bc.ca	3 full working days

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Alberta One Call 800-242-3447 800-940-3447 www.alberta1call.com 2 full working days

# **Regulations or codes**

- Alberta OH&S Code Part 32 Excavating and Tunnelling
- Alberta Regulation 91/2005 Pipeline Act Part 5 Ground Disturbance
- British Columbia OH&S Regulations Part 20

# Appendix 1: Hand Exposure Zone and Temporary Locate Markings



FACILITIES MUST BE HAND EXPOSED AND VISIBLE BEFORE MECHANICAL EQUIPMENT IS USED WITHIN THE HAND EXPOSE ZONE.



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# 40 SJP – GROUNDING

#### Purpose

This procedure was developed to ensure all Priestly Demolition Inc. employees have the skills and knowledge to identify, understand and safely manage the hazards associated with grounding to effectively eliminate sources of ignition in the area where flammable liquids are used or dispensed, protecting drums from sources of ignition. Metal parts of equipment enclosures, racks, raceways, and equipment grounding conductors susceptible of being energized by electrical currents (due to circuit faults, electrostatic discharge, and lightning), must be effectively grounded for reasons of personnel safety, fire hazard reduction, equipment protection and equipment performance.

#### Safe Operating Procedures

#### **Pre-requisites**

- Have knowledge of local regulations.
- Location layout showing equipment, vehicles routes and supply/disposal water places.
- Equipment layout.
- Inspection of all the electrical equipment to be working properly in the yard and also with the earth connections in a good shape.
- Be sure the drilling company has a lightning surge protection and grounding.
- All grounding shall comply with the National Electric Code (NEC) Article 250, unless preempted by other government regulations.

#### Definitions

**Bonding:** The interconnecting of two objects by means of a clamp and bare wire. Its purpose is to equalize the electrical potential between the objects to prevent a static discharge.



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Fig 1. Charged and Uncharged Bodies Insulated from Ground

**Grounding:** The procedure used to carry an electrical charge to ground through a conductive path. A typical ground may be connected directly to a conductive water pipe or to a grounding bus and ground rod. Grounding is a matter of bringing the bonded equipment mass to the potential of the surface of the earth, which it occupies.



Fig. 2. Both Insulated Bodies Share the Same Charge

**Grounded:** Connected to earth or to some extended conducting body that serves instead of the earth, whether the connection is intentional or accidental.



Fig. 3. Both Bodies Are Grounded and Have No Charge

**Grounded:** Connected to earth or to some extended conducting body that serves instead of the earth, whether the connection is intentional or accidental.

**Static charge:** The electricity generated when two dissimilar substances come into contact. Windy and dry conditions can generate static electricity. Static electricity is usually generated by the following:

• Pulverized materials passing through chutes or pneumatic conveyors.



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- Belt drives when belts are of nonconductive material.
- Gas, steam, or air flowing through an opening motion that involves changes in the relative position of contacting surfaces, usually of unlike materials, liquid or solid, at least one of which usually is a poor conductor of electricity.
- The human body in a low-humidity area may accumulate a dangerous static charge of several thousand volts by contact of shoes with floor coverings or by working close to machinery that generates static electricity.

#### Procedure

No.	Procedure	Responsible Person(s)	Supervisor
1	Use your corresponding PPE	All personnel	Supervisor
2	A site survey shall be conducted for all sites and considering the equipment layout to determine the characteristics to design the bounding and grounding	Supervisor	Supervisor
3	The design, selection and installation of the grounding systems shall be such as will ensure: (a) Protection against indirect contact; (b) Proper functioning of electrical protective devices; (c) That the protective and functional requirements are complied with under the expected conditions; (d) Earth fault currents and earth-leakage currents can be carried without danger including thermal, thermo mechanical and electromechanical stresses; (e) Adequate strength or additional mechanical protection appropriate to the assessed external influences; (f) The value of grounding resistance is in accordance with the protective and functional requirements of the installation and is continuously effective.		
4	After landing the equipment, make a general visual inspection.	Supervisor	Supervisor
5	Check electrical cables and batteries for poor connections and corrosion. All the electrical equipment must have an earth connection in a good shape	Operator	Supervisor
6	Be sure all the circuits are de-energized before working on them	Operators	Supervisor
7	<ul> <li>Choose the types of earth electrodes that are going to be used:</li> <li>(a) Vertical driven rods or pipes into the ground;</li> <li>(b) Electrodes embedded in foundations;</li> <li>(c) Metallic reinforcement of concrete.</li> </ul>		



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No.	Procedure	Responsible Person(s)	Supervisor
8	To grounding equipment, install a line underground or imbed a copper rod of ¾" diameter not less than 1.2 m of length. Use a 2 AWG nude cable for the bounding cable. The equipment that must be permanently ground is: • Electrical equipment. • Tanks and vessels, • Towers and metal buildings, • Air coolers Any equipment subject to electrical short circuits, static charge buildup and lightning. Pay special attention in dry locations		Supervisor
9	Pay special attention in dry locations.         It is important that the surface of any connection be         cleaned of any insulating medium, such as insulation,         grease, paint, dirt, or corrosion before making the         connection.		
10	Connections to electrodes are usually made by one of several means: 1) Use of mechanical fittings, which are readily available, simple to install, and disconnect for measurements of resistance to earth; and they have a long history of satisfactory usage. 2) Exothermic or weld-type process of connecting to the electrode. Used mainly offshore. This method provides a permanent connection, eliminates contact resistance, and is relatively corrosion free. 3) Compression connections are easy to install, provide low contact resistance and minimizes possibility of poor connections. These connectors, however, cannot be disconnected for measurements of resistance to earth. Other methods of jointing, such as brazing, are satisfactory if properly done.		
11	Each generator frame/skid shall be grounded to the earth with two earth bonds. The frame of a portable generator shall not be required to be grounded per NEC provided that the generator supplies only equipment mounted on the generator or equipment connected via cord/plug through receptacles mounted on the generator. In addition, non-current-carrying metal parts of the equipment and the equipment grounding conductor terminals of the receptacles shall be bonded to the generator frame.	Operator	Supervisor
12	All electrical-equipped buildings or skids, including living quarters and lab trailers, shall be grounded to the earth, or bonded to equipment that is grounded.	Operator	Supervisor



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No.	Procedure	Responsible Person(s)	Supervisor
13	All electric equipment (including motor switches) shall be externally bonded to a skid that is grounded or bonded.	Operator	Supervisor
14	In both workshop and locations, before transferring flammable liquids between containers. Ground the equipment by bonding the containers to a common ground. Containers - Only metal buckets (handles should also be metal) shall be used for collecting hydrocarbons or other flammable/combustible liquids. The metal bucket must have direct metal contact using a bonding cable to the nozzle or fill pipe from which the liquid is discharged. The nozzle and fill pipe shall also be metal. The liquid shall be discharged slowly into the bucket to maintain a low velocity and minimize amount of static electricity generated. Note: Do not use cellular phones, radios or electronic devices while transferring flammable liquids.	Operator	Supervisor
15	<ul> <li>To prevent sparks if filling a nonconductive container</li> <li>(e.g., plastic, glass), then use a sash chain to ground the container. The chain should extend to the bottom of the container.</li> <li>Exemption: 55-gallon drums do not require grounding or bonding unless they contain liquids that are susceptible to static electricity, is if the contents are unknown, then use grounding and bounding</li> </ul>		Supervisor
16	In both workshop and locations, before transferring flammable liquids from a permanent storage tank to a truck mounted transport or truck to truck, ground the equipment by bonding the transport to the tank.	Operator Supervisor	
17	Tanks - Metal storage tanks shall be grounded. All personnel shall ground their bodies by taking hold of a grounded metal surface, such as a steel walkway, etc. before opening a gauge hatch on a tank	Operator	Supervisor
18	Before using air movers during confined space entry, ground the equipment by bonding the air mover to the vessel or tank	Operator	Supervisor
19	Before using a foam unit on location, ground the equipment by bonding the foam unit to the well head and the frac tank using a #4 welding cable with clamps	Operator	Supervisor
20	Tests should be made periodically after the original installation, in other to determine whether the resistance is remaining constant or is increasing		



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No.	Procedure	Responsible Person(s)	Supervisor
21	If later tests show that the resistance is increasing to an undesirable value, steps should be taken to reduce the resistance either by remaking corroded connections, by adding electrodes, by increasing the moisture content, or by chemical treatment.		

#### **Typical Assembly**

#### **Ground Clamp Assembly**

#### GROUND CONNECTION OF BUILDING GROUND BUS - TYPICAL ASSEMBLY



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# SMALL GROUND CLAMP





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#### Metal Transfer Chute Grounding Assembly

# GROUNDING OF PORTABLE "MATERIAL TRANSFER CHUTE" TYPICAL ASSEMBLY



Solvent Handling Grounding Assembly

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#### GROUNDING SYSTEM FOR SMALL VOLUME SOLVENT HANDLING – TYPICAL ASSEMBLY



#### **Drum Rack Grounding Assembly**

#### STATIC GROUNDING OF 55 GALLON DRUMS IN STORAGE RACK – TYPICAL ASSEMBLY





# 41 SJP – HAMMER DRILLING

Perform a hazard assessment prior to commencement of work.

#### HAZARDS

- Lacerations, abrasions, cuts, amputations
- Foreign materials in concrete
- Dust/debris irritation
- Musculoskeletal Injuries
- Noise
- Electrical Shock

	PERSONAL PROTECTION EQUIPMENT (PPE)					
	Safety glasses or face shield must be worn at all times while operating equipment.		Approved N95 dust mask required.			
	Appropriate footwear must be worn. Shoes must be fully enclosed. No open-toed shoes.	4 E	Close fitting/protective clothing must be worn. Remove strings hanging from pullovers/sweaters.			
$\oslash$	Rings and jewelry (long necklaces/bracelets, etc.) must not be worn. Long and loose hair must be tied back	0	Hearing protection must be worn when using this machine.			

#### PRE-OPERATIONAL SAFETY CHECKS

- 1. Inspect required personal protective equipment and replace if required.
- 2. Ensure no slip/trip hazards are present in workspaces and walkways.
- 3. Ensure guards, if present, are installed and are working properly.
- 4. Faulty equipment must not be used. Immediately report suspect machinery.
- 5. Locate and ensure you are familiar with the operation of the ON/OFF starter. Disconnect power supply before changing or adjusting bits.
- 6. Ensure auxiliary handle is securely attached.
- 7. Use the correct drill bits for the work material.
- 8. Ensure insulated gripping surfaces are in working condition
- 9. Do not leave this equipment running while unattended.
- 10. Do not use machine if it is damaged or guards and covers have been removed. Immediately report any damages to the instructor/supervisor.

#### **OPERATING THE MACHINE**:


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- 1. Inspect and don all personal protective equipment: safety glasses/ ace shield, hearing protection, proper footwear (closed toe/heel shoes). Remove all jewelry, loose clothing, and tie back hair.
- 2. Make all adjustments with battery unplugged.
- 3. Ensure that attachments (example: drill bits and auxiliary) are securely attached.
- 4. Ensure power switch is on OFF position before plugging in. Check that cord is away from path of tool.
- 5. Remove any wrenches and adjusting tools before turning on a tool.
- 6. Before drilling, clamp down material securely.
- 7. Hold hammer drill by insulated gripping surfaces and auxiliary handles.
- 8. Turn power ON and allow motor to come to full speed before using. (Anticipate torque on start-up.) Perform operation safely and at a moderate pace.
- 9. Do not touch the work piece immediately after operation; it may be extremely hot and could burn your skin
- 10. Turn power OFF and allow machine to stop before setting down.
- 11. Switch off the machine and reset all guards to a fully closed position. Leave the machine in a safe, clean, and tidy state.
- 12. Clean up debris with power OFF.
- 13. Return tools to proper storage location after use.
- 14. When servicing equipment (e.g., changing a bit), power must be disconnected.

# NOTE: If an emergency situation occurs while conducting this task or there is an equipment malfunction, shut the equipment off immediately and unplug the power tool.









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# 42 SJP - H<sub>2</sub>S GAS PROCEDURES

Hydrogen Sulfide ( $H_2S$  or Sour Gas) is a chemical substance listed in Schedule 1, Table 1 & 2 of the Alberta OH&S code. It requires a code of practice if it is present in concentrations greater than 0.1% on a jobsite. Many of our jobsites contain  $H_2S$  at concentrations greater than this level and certain procedures must be followed to safely work at these locations.

## **Properties**

 $H_2S$  is normally encountered as a colorless gas with a rotten egg or sulphurous odor. As it impairs the sense of smell in low concentrations, it may also be present without a noticeable odor. In a pure state or in high concentrations in mixtures, it is slightly heavier than air and may settle in low lying areas.

During very cold ambient air temperatures, warmer  $H_2S$  may actually rise to higher locations. It may also rise if contained in mixtures that are lighter than air.  $H_2S$  is very flammable and explosive.  $H_2S$  is also soluble, so may be present in water, oil, sludge, emulsions well fluids, molten Sulphur, and organic wastes.  $H_2S$  is a highly toxic gas at low concentrations.

## Exposure Locations

You can expect to find  $H_2S$  anywhere in oil and gas, petrochemical, or waste treatment areas. It could be found in:

- Wellheads
- Piping systems
- Vessels
- Pipelines
- Tanks
- Production equipment or facilities
- Pits and low spots
- Excavations
- Confined or enclosed spaces
- Shacks or buildings
- Bermed or dyked areas
- Spills and puddles
- Sludges or scales

#### Measurement of H<sub>2</sub>S

H<sub>2</sub>S concentration is normally measured in both percentage and in Parts per Million (P.P.M.). 1% is equal to 10,000 PPM.

#### Worker Exposure Limits

The eight-hour Occupational Exposure Limit for  $H_2S$  is 10 PPM. The ceiling limit is 15 PPM. This limit should never be exceeded without the use of respiratory protection. The concentration of  $H_2S$  that is considered immediately dangerous to life and health is 100 PPM.



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Good work practices should aim for zero exposure to  $H_2S$ . Individual sensitivity to  $H_2S$  exposure may vary from person to person.

H <sub>2</sub> S Exposure	Possible Health Effects
Less than 1 ppm	You can smell it.
10 ppm	<ul> <li>No known adverse health effects for most people with normal health.</li> <li>Respiratory protection is required beyond this level.</li> </ul>
20-200 ppm	<ul><li>Eye and respiratory tract irritation and loss of smell.</li><li>Headache and nausea.</li></ul>
200-500 ppm	<ul><li>Above effects but sooner and more severe.</li><li>Loss of breathing and death within hours.</li></ul>
500-700 ppm	<ul> <li>Affects the central nervous system.</li> <li>Loss of reasoning, loss of balance, unconsciousness, and breathing stops within minutes.</li> </ul>
over 700 ppm	<ul><li>Immediate loss of consciousness.</li><li>Permanent brain damage and death if not rescued immediately.</li></ul>

#### Initial Response Strategy

There are seven steps you should take if you encounter an  $H_2S$  release.

- 1. **Evacuate -** Get to a safe area immediately. Move upwind if release is downwind of you. Move crosswind if release is upwind of you. Move to higher ground if possible.
- 2. Alarm Call for help, sound bell, horn, whistle, or call by radio.
- 3. Assess Do a head count. Consider other hazards.
- 4. **Protect -** Put on breathing apparatus before attempting rescue.
- 5. **Rescue -** Remove victim to a safe area.
- 6. **First Aid -** Apply CPR, if necessary.
- 7. **Medical Aid -** Arrange transport of victim to medical aid. Provide information to emergency responders.

Remember that you must always protect yourself first in any emergency. Do not perform any rescue that would endanger you as a rescuer. Be aware of other hazards such as fire and explosion.

#### Training

Before any worker will be permitted to work on any site where  $H_2S$  is present, they are required to be certified in the  $H_2S$  Alive training program. This training must be renewed every three years. Training will include use of respiratory protection equipment, gas detection equipment, and basic rescue techniques.

#### **Respiratory Protection**

Where  $H_2S$  is present on a worksite, suitable respiratory protection must be available and used as required. Only positive pressure breathing apparatus (SCBA or SABA) is approved for protection from  $H_2S$ . Before putting on the breathing apparatus, ensure that it is in good



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working order. Always follow manufacturer's instructions for use and maintenance of the equipment. All workers required to wear respiratory protection are required to be fit tested.

#### H<sub>2</sub>S Detection

On all work sites where  $H_2S$  is known to be present, workers will be required to wear personal  $H_2S$  monitors or use area monitors. There must also be an  $H_2S$  detector available on site to check for concentrations of  $H_2S$  in areas such as confined spaces or where hot work is to be performed. All workers must be trained to use, inspect, and care for the equipment. All personal monitors must be bump tested each day before use and these tests must be recorded in the Bump Test Log.

#### Reference H<sub>2</sub>S Alive

Hydrogen Sulfide Safety Training 6th Edition Enform Canada, 2007



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# 43 SJP - HAND TOOLS

Hand tools, such as wrenches, hammers, screwdrivers, electrical drills, pipe cutters, grinders, etc., are considered tools of the trade as they are used extensively in the majority of field and plant maintenance activities conducted within the oil and gas industry.

In the past twenty years, considerable effort by respective manufacturers of these tools has been applied to improving design features, increasing horsepower, ergonomics, and safety features, and seeking related safety standards approval.

In spite of the many and varied improvements to existing hand tools, injuries resulting from the inappropriate and uninformed use of these sometimes-simple tools/instruments continue to occur at an alarming rate and with severe consequences.

When performing activities that require the use of hand tools and with prevention of injuries to workers in mind, the following guidelines are provided in anticipation that user awareness may be increased so as to reduce the potential for bodily injury and/or damage to company equipment.

#### Procedure

The following are general safety points that need to be considered when using, or intending to use, some of the more frequently used hand tools:

- Keep tools in an orderly fashion on the tool bench or in the tool chest, so that they are easily located when needed.
- Inspect all tools and equipment before use. Do not use defective tools. If defects are identified, tag and remove the item from service. The item must not be returned to service until the deficiency has been corrected.
- Never leave tools lying on moving machinery or equipment.
- Sharpen or replace dull cutting tools immediately.
- Store tools, such as crowbars, chain tongs, pipe cutters, and other similar tools in their proper racks.
- Select the appropriate size wrench for the nut to be adjusted. Use care in applying force. Where possible, pull; do not push or jar the wrench.
- Adjust pipe and crescent type wrenches to take a full snug grip on a pipe or nut. Make the pull toward the hook jaw of the wrench to tighten the grip. Avoid undue strain on the tool.
- Never step or jump on wrenches or tongs when additional force is needed.
- When two people are using driving tools, ensure the worker holding the tool being struck uses a tool holder and stands to the side.
- Ensure handles of all hammers, axes, picks, and other similar tools are securely wedged into the head.
- Do not use files without appropriate handles covering the tang.
- Ensure chisels, sledgehammers and other impact tools are kept free of mushrooming by proper filing of the head surface. Discard brass hammers after they have mushroomed beyond safe use. Weighted plastic hammers now appear to be the hammer of choice.
- Do not use extensions, "cheaters" or "snipes" on wrench handles until all other efforts to make or break a connection have failed. Extensions are recommended to be no longer



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than  $1\frac{1}{2}$  times the length of the wrench handle. Never use a "cheater" on a crescent wrench.

- Use screwdrivers only for the purpose for which they were designed. Do not use a screwdriver as a pry tool, drift punch, or chisel.
- Use hand or power tools only for the work for which they were designed and intended. Do not use hand or power tools beyond their rated capacity.
- Ensure power tools are suitably grounded and that the electrical extension cable is in serviceable condition.
- Ensure revolution rated capacity on fixtures, such as buffing or grinding wheels, is not exceeded.
- When moving from one level to another, whether on a ladder or scaffold, place and carry tools in a tool belt or tool bag. Do not carry them in your hand.
- When working on elevated platforms or machinery, ensure all tools are secured in such a manner that they do not become a falling hazard to other workers.

# 44 SJP - HANTAVIRUS AND BIOHAZARD PROTECTION

Most buildings, cabinets, and enclosed areas may have rodent contamination and may contain Hantavirus. If work is required in these areas, de-contamination may be necessary.

This procedure may also be used for cleanup of bodily fluids that may contain biohazards. All workers performing first aid should wear latex gloves to protect from blood contact.

#### Setup Location

- Ribbon off area and clear all unnecessary workers. Ventilate the area by opening windows, doors, and if available, start exhaust fans.
- Move away from contaminated area to a set up location, preferably outdoors.
- Gather three plastic garbage bags and keep them folded until ready for use.
- Gear up. Put on disposable coveralls with hood, disposable boot covers, goggles, latex gloves, and a properly fitted particulate respirator.
- Mix water and bleach (50/50) in a 5-liter bucket, fill spray bottle, and soak a few rags with the mixture.

#### Clean Up of Infested Area

- Do not stir up dust by sweeping. Use a vacuum cleaner only if it is equipped with a HEPA filter.
- Put rubber gloves over the latex gloves you are wearing.
- Using soaked rags and spray bottle, thoroughly wet contaminated area, including any dead rodents and rodent droppings.
- Once everything is wet, pick-up contaminated materials with the damp rag and dispose of material in garbage bag "A".
- Re-spray the area and wipe with a dry rag. Dispose of all rags in garbage bag "A".
- Close and dispose of bag "A" into bag "B" and return to set up area taking the spray bottle with you. Do not let the bag rip or tear.

#### Decontamination

- Put spray bottle in bucket of water/bleach mixture.
- Remove rubber gloves (leaving on latex gloves) and place in bucket.
- Remove disposable boot covers and coveralls (inside out) and place them in bag "B", leaving eye and respiratory protection and latex gloves in place. Seal bag "B" and place in bag "C".
- Remove goggles and place in bucket.
- Remove respirator and dispose of filter cartridges in bag "C". Place respirator in bucket.
- Remove latex gloves (inside out) and place in bag "C".
- Seal bag "C" and dispose of bag in dumpster.
- Clean and rinse all PPE in the bucket. Set out to dry.
- Wash exposed skin surfaces thoroughly with soap and water.
- Put away all PPE and tools. Remove all flagging and close all doors and windows.



# **45 SJP - HEAVY EQUIPMENT OPERATORS**

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Slip/trip hazard Vehicle/machine damage Pinch points Other workers and equipment	Reflective vest Steel toed safety boots Safety glasses/ shield Gloves Hard hat/if overhead hazard	Operator training
	exists Respirator	

#### Safe Work Procedure:

- 1. Ensure operator has received company orientation and trained in the safe operation of equipment.
- 2. Do pre-trip inspection and record in pre-trip book on machine.
- 3. Enter and exit the cab by grasping the handhold or handrail, and step on stairs or track provided. Maintain three-point contact.
- 4. Use extra caution whenever entering or exiting the cab on sloped ground or in windy conditions. The door is heavy. Serious injury may result if gravity or wind causes door to slam shut and pinch hand or arm.
- 5. Prior to starting the engine, adjust seat and fasten seatbelt, adjust mirrors, and ensure good visibility for operation.
- 6. Start using cold start procedure; observe all gauges and warning lights for normal operation.
- 7. Conduct operational checks, testing the functions associated with pedals, levers, and switches.
- 8. Secure the door in either the open or closed position, ensuring the latch is fastened.
- 9. Move to work area. While travelling, allow faster traffic to pass if safe to do so.
- 10. At job site, inspect area for all hazards and document.
- 11. Operation on sloped or inclined surfaces increases tipping and rollover hazard.
- 12. Never allow anyone to remain downhill of the loader on a sloped surface.
- 13. Park on level ground with the bucket resting on the ground.

#### Report any hazardous situations to your supervisor

#### **Guidance Documents/Standards:**

Alberta OH&S regulations and guidelines: This SJP will be reviewed any time the task, equipment or materials change and at a minimum of once a year.



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# **46 SJP - HOT ENGINE STOPPING**

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Vehicle or property damage Serious injury Engine failure Slip/trip	Reflective vest Steel toed safety boots Safety glasses/ shield Gloves Hard hat/if overhead hazard exists	Operator training

#### Safe Work Procedure:

- 1. Park the machine on stable, level ground.
- 2. Place machine in neutral or park and set parking brake.
- 3. Slow motor to idle.
- 4. Dismount machine using three-point contact method.
- 5. Do walk around inspection to check for leaks and repairs.
- 6. Do not idle for longer than 15 minutes.
- 7. Mount machine using three-point contact and turn engine off.
- 8. Dismount using three-point contact and perform post trip inspection and record.

#### Report any hazardous situations to your supervisor

#### **Guidance Documents/Standards:**

Alberta OH&S regulations and guidelines: This SJP will be reviewed any time the task, equipment or materials change and at a minimum of once a year.

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# 47 SJP - HOT WORK (CUTTING TORCHES)

**<u>DO NOT</u>** use this equipment unless you have been instructed

#### in its safe use and operation and have been given permission

#### PERSONAL PROTECTIVE EQUIPMENT

Sturdy·footwear·must·be· worn·at·all·times·in·work¶ Close·fitting/protective· clothing·must·be·worn.¤ Nings·and·jewelry·must· clothing·must·be·worn.¤	Welding·goggles·must·be· worn·at·all·times·in·work¶ areas.¤	Long·and·loose·hair·must· be·contained.¤	Oil·free·leather·gloves· must·be·worn.¤	ğ
	Sturdy·footwear·must·be· worn·at·all·times·in·work¶ areas.¤	Close-fitting/protective- clothing·must·be·worn.¤	Rings·and·jewelry·must· not·be·worn.¤	¤

## PRE-OPERATIONAL SAFETY CHECKS

Locate and ensure you are familiar with all machine operations and controls. Check workspaces and walkways to ensure no slip/trip hazards are present. Keep area clean and free of grease, oil, and any flammable materials.

Ensure gas hoses are in good condition and do not create a tripping hazard. Before lighting up, check all equipment for damage.

Check that the area is well ventilated. Start the fume extraction unit before beginning to weld. Ensure the unit is fitted with working flashback arresters.

Ensure work return earth cables make firm contact to provide a good electrical connection.

#### PRESSURE SETTING

Check that the oxygen and acetylene regulator adjusting knobs are loose. Check that both blowpipe valves are closed.

Slowly open the cylinder valves on each cylinder for half a turn only.

Screw in the regulator adjusting knobs slowly until the delivery pressure gauges register 70kPa. Purge and check for constant oxygen gas flow:

- Open the oxygen blowpipe valve for 2 seconds and check the delivery gauge.
- If necessary, re-adjust the oxygen regulator to achieve a 70kPa pressure.
- Close the oxygen blowpipe valve.

Purge and check for constant acetylene gas flow:



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- Open the acetylene blowpipe valve for 2 seconds and check the delivery gauge.
- If necessary, re-adjust the acetylene regulator to achieve a 70kPa pressure.
- Close the acetylene blowpipe valve.

## LIGHTING UP

Open the acetylene blowpipe valve slightly and light the blowpipe with a flint lighter. Continue to slowly open the acetylene valve until the flame no longer produces soot. Slowly open the oxygen blowpipe valve until a neutral flame is produced.

#### SHUTTING OFF BLOWPIPE

Close the acetylene blowpipe valve first. Then close the oxygen blowpipe valve.

#### **ENDING OPERATIONS**

Close down both cylinder valves.

Open oxygen blowpipe valve to allow the gas to drain out.

When oxygen gauges read zero, unscrew regulator-adjusting knob. Close oxygen blowpipe valve.

Turn off acetylene cylinder valve.

Open acetylene blowpipe valve and release gas.

When acetylene gauges read zero, release regulator adjusting knob. Close acetylene blowpipe valve.

# **CLEANING UP**

Hang up welding blowpipe and hoses. Switch off the fume extraction unit. Leave the work area in a safe, clean, and tidy state.

#### POTENTIAL HAZARDS

□ Burns. □ Radiation damage to eyes.

□ Flying sparks. □ Combustible materials.

□ Fumes. □ Explosion by gas leakage.

□ Flashbacks. □ Oil and grease.

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Do not use faulty equipment. Immediately report suspect equipment. Do not light the blowpipe with matches or lighters.

Do not use oil, grease, or other hydrocarbons.

Do not use oxygen as a substitute for compressed air.

This SJP does not necessarily cover all possible hazards associated with this equipment and should be used in conjunction with other references. It is designed as a guide to be used to compliment training and as a reminder to users prior to equipment use.



# 48 SJP - IDLH AND RIGHT TO REFUSE UNSAFE WORK

#### Purpose

To establish and identify the procedures required to identify work that is immediately dangerous to life and health (IDLH) and implement safety controls to eliminate or control the risk.

#### Scope

This procedure applies to all Priestly Demolition Inc. Operations workers, visitors, and subcontractors while performing work for Priestly Demolition Inc. Operations.

#### WARNING

No worker shall carry out any work if they believe that an IDLH condition exists. No worker will operate any tool, appliance, or equipment if they believe it will cause an IDLH condition to himself/herself or another worker present at the work site.

#### All workers have the right to refuse unsafe work.

#### Immediately Dangerous to Life and Health (IDLH)

Circumstances in which the atmosphere is deficient in oxygen, or the concentration of a harmful substance is in the atmosphere:

- May be an immediate threat to life.
- May affect health irreversibly.
- May have future adverse affects on health (i.e., exposure to asbestos, lead, or PCBs).
- May interfere with a worker's ability to escape from a hazardous situation.

Other examples of immediate danger may include, but not limited to:

- Working around live energy.
- A danger which is not normal for that occupation.
- A danger under which a person engaged in that occupation would not normally carry out his/her work.



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# Procedure

Step	Responsibility	Action
14.1	Right to Refuse	IDLH Work
14.1.1	Management / Supervision	<ul> <li>Ensure all workers and sub-contractors are trained in IDLH and right to refuse prior to commencing work for Priestly Demolition Inc. Operations. Ongoing training will happen through procedural reviews and health and safety meetings.</li> <li>Notify workers of their right to refuse unsafe work.</li> <li>Final approval for any IDLH work, if work can be completed safely based on hazard and risk assessment and mitigation control methods.</li> <li>Ensure management, supervision, and workers carefully develop and review all Health, Safety, and Environmental practices and procedures including specific hazard assessments for any work which may involve an IDLH condition.</li> <li>Ensure all workers and supervision have the appropriate training to complete any IDLH work safely.</li> <li>Participate in any work refusals and investigation of any concerns brought forth by workers.</li> <li>If work refusal occurs, work related to work refusal must stop immediately and investigation into refusal must commence. Work will not continue until concerns have been investigated and risks and hazards have been mitigated or controlled.</li> <li>Ensure no other worker is assigned to use or operate the tool, appliance, or equipment or to perform the work until an investigation is completed and the imminent danger to life and health is eliminated or effectively controlled.</li> <li>All work refusals shall be documented; investigation into concerns shall be shared with the person(s) who initiated the work refusal.</li> <li>No person exercising his/her right to refuse unsafe work shall be reprimanded.</li> <li>All work ichusit, experience, and training to safely perform the work in which they are assigned to perform.</li> <li>Any work identified as being imminently dangerous will not proceed without a specific hazard assessment and approval from management.</li> <li>Can temporarily assign worker who has refused work to other work assignments that the worker is capable of performin</li></ul>
		- Have the fight to relade alloale work.



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Step	Responsibility	Action
		<ul> <li>Refuse any work where dangers cannot be safely controlled or eliminated by engineering, administration, or PPE controls.</li> <li>Follow all Health, Safety, and Environmental policies, procedures, practices, and specific hazard assessments.</li> <li>Immediately report any work refusal to supervisor.</li> <li>Participate in work refusal investigation and review.</li> <li>Work on other assigned tasks temporarily while investigation of work refusal is ongoing.</li> <li>Once investigation has been shared, if worker is of the opinion that immediate danger to life and health still exists, the worker may file a complaint with a Workplace Health and Safety Officer.</li> </ul>
14.1.3	Sub- Contractors	<ul> <li>Have the right to refuse unsafe work.</li> <li>Shall immediately notify Priestly Demolition Inc. Operations supervision and/or management of any refusal of work.</li> <li>Will identify and safely control IDLH conditions.</li> </ul>
14.1.4	Visitors / Suppliers	<ul> <li>Shall communicate any observation of an IDLH condition to their escort immediately.</li> </ul>
		DISCIPLINARY ACTION IS PROHIBITED
No w	orker can be dis	missed, nor can any other disciplinary action be taken against a
	worker for refusing work that has been identified as IDLH.	



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# 49 SJP - IMPACT WRENCH TIRE REMOVAL

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Slip/Trip Lacerations and abrasions Muscle strain Pinch points Airborne particles	Reflective vest Steel toed safety boots Safety glasses/ shield Gloves Hard hat/if overhead hazard exists	

#### Safe Work Procedure:

- 1. Inspect work area to ensure area is clear of potential hazards.
- 2. Inspect impact wrench components.
- 3. Ensure socket is properly secured.
- 4. Uncoil air hose and check for holes and tangles.
- 5. Supply air to impact wrench.
- 6. Place socket over wheel nut, ensuring tight fit.
- 7. Supply steady even pressure.
- 8. Remove first bolt, then cross over to bolt across, keeping this pattern until all bolts are removed.
- 9. Stop impact wrench.
- 10. Remove tire from vehicle using proper lifting techniques.

#### Report any hazardous situations to your supervisor

#### **Guidance Documents/Standards:**

Alberta OH&S regulations and guidelines: This SJP will be reviewed any time the task, equipment or materials change and at a minimum of once a year.

Safe Job Procedures (SJPs) Manual		
Section:	SJP - JUMPING JACK TAMPER	
Document ID#:	PDI-SJPM-2024	
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# **50 SJP - JUMPING JACK TAMPER**

This procedure will apply to all employees or subcontractors carrying out or assisting with the use of jumping jack tampers.

The supervisor is charged with the direct responsibility for ensuring that this policy is known to and complied with by employees and persons subcontracted.

#### Personal Protective Equipment

There are two specific hazards involved with using this equipment. There are always the inherent dangers of refueling and lifting the unit incorrectly.

The two specific hazards are:

- Noise created by the unit white it is running,
- The danger of injuring your feet from the motion made by the unit while it is running.

In addition to the P.P.E. already required, special attention is to be paid to the hearing protection and the foot protection needed when the unit is used.

#### Procedure:

When the Jumping Jack has been brought to the jobsite, it will have to be handled by two workers while unloading and placing in position at the jobsite.

- To move the unit on the jobsite, this is normally a two-worker task, but can be accomplished by one person with certain models and the use of proper lifting procedures.
- When laying the unit on one side, lay it down so that the gas filler cap is on the high side (upper side) to prevent gas from leaking out of the filler cap.
- Ensure that a charged ABC or BC type fire extinguisher is in the work area.

#### **Refueling:**

- The unit is to be checked for fuel and if found to need fuel, the following steps will be taken:
- Mixed gas has to be used, so ensure the gasoline put into the fuel tank is in the proper proportions.
- To prevent spillage during operation, ensure that the tank is never more than three quarters (3/4) full after fueling.

Prior to starting the refueling operation, ensure that the unit is not still hot enough to ignite any spilled fuel.



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- Ensure that the fuel cock is in the off position before starting the procedure.
- Ensure the unit is sitting on level ground and stable before starting to re-fuel.

#### Starting:

- Again, make sure the unit is standing stable and turn on the fuel cock.
- Turn on the fuel cock and set the choke if the unit is cold.
- Hold the unit-operating handle firmly in the left hand and pull the starting cord with the right hand.

When the unit starts, let it run for approximately 10 seconds with the choke on, release the choke and allow the unit to run.

#### Unit Operation:

- Let the unit warm up for about one (1) minute or whatever is necessary to ensure smooth operation.
- Use the unit at full throttle to ensure that proper" jumping" motion is achieved,
- Level larger dirt lumps and big mounds so that the machine moves forward more easily,
- Where necessary, use the two-worker system if the ground is very soft. Whenever possible another worker should be used to level the ground ahead or behind the unit until the unit is running smooth and is easily maneuverable.

#### Shutting Off the Unit:

- Move the throttle to the idle,
- Push the "kill" switch and hold until the engine has completely stopped running,
- Turn off the gas cock and ensure the unit is completely stopped and in a stable upright position before leaving it



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Section:	SJP - LADDER SAFETY
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# **51 SJP - LADDER SAFETY**

The three types of ladders that workers are likely to encounter at the work site include constructed, fixed, and portable step / extension ladders.

Constructed ladders are those that have been fabricated or manufactured from materials available at the respective work site. Typically, wood is the preferred material. The Occupational Health & Safety Code, Section 134(1), identifies the specific requirements with respect to construction, quality, and grade of wood to be used.

Fixed ladders are those that typically are attached to buildings, structures, storage tanks, etc., in a vertical position or at an angle between vertical to 25 degrees from the vertical.

Portable ladders are those ladders that are not secured in place. They may be constructed from a variety of materials (wood, plastic, reinforced fiberglass, aluminum, etc.) and include both step ladders and extension ladders of varying lengths.

The conditions and requirements of this safe work procedure shall be applied to all facilities and properties owned or operated by Priestly Demolition Inc. where workers are required to utilize ladders of any description to gain access to higher or lower levels of elevation.

#### **General Requirements**

Workers must be made aware of and implement the following requirements when using ladders of any description in terms of gaining access to higher or lower levels of elevation:

- An employer must ensure that workers do not use a ladder to enter or to leave an elevated or sub-level work area if the area has another safe and recognizable way to enter or leave;
- Ensure every ladder is designed, constructed, used, and maintained to perform its function safely;
- Ladders must be CSA Standard CAN3-Z11-M81 certified (portable ladders);
- Check the condition of the ladder before use. Do not use broken or damaged ladders. Ladders to be repaired must be tagged "Do Not Use" and taken out of service;
- Wooden ladders or stepladders must not be painted other than by being preserved with transparent protective coating;
- Within the construction industry, and as identified within the Occupational Health & Safety Code, a worker must not perform work from either of the top two rungs, steps, or cleats of a portable ladder unless the manufacturer's specifications allow the worker to do so;
- Ladders used during the servicing of energized or potentially energized electrical equipment must be made of non-conducting materials;



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- If a ladder is a permanent part of an extending boom on powered mobile equipment, then no worker shall be on the ladder during the articulation, extension, or retraction of the boom; and
- If outriggers are incorporated in the equipment to provide stability, then no worker shall climb the ladder until the outriggers are deployed.

## **Constructed Portable Ladders**

Constructed portable ladders are typically built at the work site. Regardless of purpose or time that the ladder is to be in service, the following requirements are to be observed:

- Work from the top two rungs of the portable ladder is strictly prohibited;
- Ladders must not be constructed by fastening cleats across a single rail or post;
- The ladder is constructed of lumber that is free of loose knots or knot holes;
- With a length of five (5) meters (16.5 feet) or less, the ladder has side rails constructed of lumber measuring not less than 38 millimeters by 89 millimeters (1.5 inches by 3.5 inches);
- With a length of more than five (5) meters (16.5 feet), the ladder has side rails constructed of lumber measuring not less than 38 millimeters by 140 millimeters (1.5 inches by 5.5 inches); and
- The ladder must have side rails that are parallel, not notched, and rungs that are:
  - Constructed of lumber measuring not less than 21 millimeters by 89 millimeters (0.8 inches by 3.5 inches);
  - Held by filler blocks or secured by a single continuous wire; and
  - Uniformly spaced at a center-to-center distance of 250 millimeters to 300 millimeters (9.8 inches by 12 inches).

#### **Fixed Ladders**

As previously identified, fixed ladders are those that typically are attached to buildings, structures, storage tanks, etc., in a vertical position or at an angle between vertical to 25 degrees from the vertical. In constructing and using fixed ladders, the following requirements must be met:

- Cages are required on fixed ladders of more than six (6) meters (20 feet) to a maximum unbroken length of nine (9) meters (30 feet), where the length of ladder refers to the vertical distance between landings. Cages are also required on fixed ladders less than six (6) meters (20 feet) in length where the ladder is located at an elevated platform that does not provide adequate fall protection. Ladder safety devices may be used in lieu of the required cage protection;
- If a fixed ladder is made of a material other than steel, then the employer must ensure that the design is certified by a professional engineer as being as strong as or stronger than that required by PIP Standard STF05501;



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- The employer must ensure a self-locking double bar safety gate, or an equally effective means is provided at ladder way floor openings and platforms of fixed ladders. **Note:** The above does not apply at landings.
- If each worker working on a drilling rig or service rig on a fixed ladder is equipped with, and wears, a climb assist device that complies with the manufacturer's specifications, or specifications certified by a professional engineer, an employer is not required to:
  - Provide the ladder with rest platforms; or
  - Have the side rails extended not less than 1050 millimeters (41 inches) above the point at which the worker gets on or off.

# Portable Ladders

A portable ladder is any ladder that is not permanently secured in place at the time of use. When using a portable ladder, workers will observe the following requirements:

- A worker must not perform work from either of the top two (2) rungs, steps, or cleats of a portable ladder unless the manufacturer's specifications allow the worker to do so. Despite the aforementioned, a worker may work from either of the top two (2) rungs, steps, or treads of a stepladder:
  - If the step ladder has a raised platform at the top; or
  - If the manufacturer's specifications for the stepladder permit it.
- Portable ladders must be secured against movement and placed on a base that is stable. Physically secure the ladder or have it held by another person so that it does not move, slip, or fall;
- Portable ladders must be placed against a top support at a minimum 4:1 incline;
- The side rails of portable ladders must extend at least one (1) meter (39 inches) above any platform;
- The base of an inclined portable ladder is no further from the base of the wall or structure than one quarter the length of the ladder, measured from the point at which the ladder contacts the wall or structure;
- When climbing or descending a ladder, workers must face the ladder and have free use of both hands. A handline shall be used to raise or lower objects;
- While working on a ladder, workers are required to use a tool belt and pouch for holding small tools;
- Unless designed and constructed for the purpose, no more than one worker should use a portable ladder at one time;
- An employer must ensure that when a worker is working from a portable ladder from which the worker may fall three (3) meters (10 feet) or more, the worker uses a personal fall arrest system;
- The above does not apply while the worker is moving up or down the ladder;



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- Despite the above, if it is not reasonably practical to use a personal fall arrest system, a worker may work from a portable ladder without fall protection if:
  - The work is a light duty task of short duration at each location;
  - The worker's center of balance is at the center of the ladder at all times even with an arm extended beyond the side rails of the ladder; and
  - The worker generally has one hand available to hold on to the ladder or other support.

#### Non-Regulated Recommendations for Portable Ladders

Based upon observations made during conformance and compliance inspections conducted at work sites, the following are some recommendations specific to the use of portable ladders:

- Do not leave ladders laying around the work site so as to become a hazard themselves;
- Do not splice short ladders together to make a longer ladder;
- Do not use ladders as scaffolding boards, or to bridge gaps and use as walkways between equipment;
- Do not place ladders in front of doors, especially those that open towards the ladder; and
- Do not make local repairs to portable ladders.

As with all ladders, make sure that the step ladder is in good condition and is right for the job to be done.

Step ladders are to be used only on clean and even surfaces.

- No work is to be done from the top two rungs of a step ladder, counting the top platform as a rung;
- The step ladder is only to be used in the fully opened position with the spreader bars locked;
- Tops of step ladders are not to be used as support for scaffolds;
- Don't overreach while on the ladder. Climb down and move the ladder over to a new position; and
- Only CSA-approved ladders will be used.

#### Inspection and Maintenance

Defective ladders should be taken out of service and either tagged for repair or scrapped. Personnel that are competent in this type of work should repair ladders.

- Inspect ladders for structural rigidity;
- Inspect non-skid feet for wear, imbedded material, and proper pivot action on swivel feet;



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- Replace frayed or worn ropes on extension ladders with type and size equal to manufacturer's original rope;
- Check aluminum ladder for dents and bends inside rails, steps, and rungs. Do not use metal pipe to replace a rung;
- Check wooden ladders for cracks, splits, and rot; and
- Check all ladders for grease, oil, caulking, imbedded stone, and metal or other materials that could make them unsafe.



# 52 SJP - LOADERS

- Complete a walk-around check prior to moving the machine.
- Ensure NO ONE is in the area prior to moving your equipment.
- This is a one-person machine, NO RIDERS ALLOWED.
- Know the pinch points and wrap points on the loader.
- Operate at a speed consistent with working conditions, visibility, and terrain.
- Do not overload bucket/lifting forks, this may cause the loader to become unstable.

• When crossing exposed railroad tracks, ditches, ridges, or curbs reduce speed and cross at an angle.

• Carry loaded buckets as close to the ground as possible. The further a loaded bucket is from the ground the more unstable the loader becomes.

• Use extreme caution when operating a loader on a side slope. Slow down and carry the bucket, loaded or empty, as close to the ground as possible.

- Stay in gear when traveling downhill this will help control speed.
- Never move a load above the heads of other workers.

• When back filling, use extreme caution. The weight of the material plus the weight of the machine could cause the new construction to collapse.

• Keep work area level; avoid developing ruts by occasionally back dragging the bucket to smooth the surface



# **53 SJP - MACHINE MAINTENANCE**

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Pinch points	Steel toe boots	
Injury from cuts	Safety glasses	
Projectiles	Gloves	
Bodily/ muscle strains	Hard hat	
Noise	High visibility vest	
Crush by machine	Hearing protection	
Other workers		

#### Safe Work Procedure:

1. Lubricate all moving parts (daily).

- Work gloves should be worn when working around machinery to protect hands from pinch points, sharp edges, and hot motor parts.
- Safety glasses must be worn to protect eyes from splashing fluids and other airborne particles.
- Refer to the owners' manual regarding the proper lubrication points, the type of lubrication required, and the proper access to lubrication points.
- 2. Change fluids as per manual requirements.
  - Refer to the owners' manual for the proper frequency of oil and hydraulic changes.
  - Failure to replace these on a regular basis could result in motor failure.
- 3. Inspect machine for worn or damaged parts (daily).
  - Inspect the machine on a daily basis for worn or damaged parts. Install a lockout tag on any damaged equipment and do not operate until it has been repaired.
  - Failure to do so could result in machine malfunction causing personal injury or property damage.

4. Inspect machine safety features.

#### Report any hazardous situations to your supervisor

#### **Guidance Documents/Standards:**

Alberta OH&S regulations and guidelines: This SJP will be reviewed any time the task, equipment or materials change and at a minimum of once a year.



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Section:	SJP – MANEUVERING LOADS (LOADER)
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# 54 SJP – MANEUVERING LOADS (LOADER)

#### PURPOSE

Eliminate the risk of Injury, harm to the environment and equipment damage.

#### **OPERATOR RESPONSIBILITIES**

An operator, prior to Maneuvering with a Loader, must review the following procedure, review JSA and conduct a Hazard Assessment to determine if the task can be completed safely, with zero impact to the environment and/or equipment damage.

#### ASSESSING HAZARDS

Before an operator Maneuvers a Loader with a Load, a Hazard Assessment must be performed that considers the following.

- the location where task is to be performed
- the environmental conditions
- overhead obstructions
- clear line of site
- swing area
- congested work area

If the hazard assessment determines that there is a potential for injury, environmental damage, and/or equipment damage all reasonable measures are to be used to eliminate or reduce the potential

#### METHOD/PROCEDURE

#### Maneuvering Loader with Load

- 1. Enter cab using 3-point contact
- 2. Ensure locking pins are in locking position
- 3. Put in neutral
- 4. Engage lock switch for gear selector
- 5. Set Park brake
- 6. Turn off Loader
- 7. Exit cab using 3-point contact
- 8. Visually check attachment
- 9. When loading the attachment make sure it is parallel with the ground or loading surface
- 10. Know the capacity of the attachment as well as the loading limits for each attachment
- 11. Keep load on attachment well balanced
- 12. Travel with loaded attachment at slow speeds
- 13. Avoid travelling downhill with heavy load in front- keep heavy load in back



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- 14. Travel with loads 12"-18" off the ground or as close to the ground as terrain will permit
- 15. If you are unable to see over the load, operators must travel in reverse
- 16. Do not allow anyone to walk under attachment while load is raised
- 17. Do not try to load and turn at the same time
- 18. Be aware of swing radius when turning with wide loads
  - If in a congested area use a spotter to guide you
- 19. Always drive at a safe speed and slow down when going around corners and taking Turns
- 20. Continually scan all directions for pedestrians and moving equipment
- 21. Use spotter when loading and unloading pallets on/ off trailers
  - Confirm hand signals

#### Report any hazardous situations to your supervisor

#### **Guidance Documents/Standards:**

Alberta OH&S regulations and guidelines: This SJP will be reviewed any time the task, equipment or materials change and at a minimum of once a year.



# 55 SJP - MOBILE CRANES, OVERHEAD CRANES, HOISTING, AND LIFTING DEVICES

#### Purpose

The purpose of this procedure is to provide a guideline for all Priestly Demolition Inc. employees, contractors, and sub-contractors to be used for the operation and maintenance of any gantry or bridge type cranes, mobile cranes, hoisting, and lifting devices used on worksites.

## Scope

This Mobile Cranes, Overhead Cranes, Hoisting and Lifting Devices Procedure covers all aspects of Priestly Demolition Inc. operations associated with performing business activities or processes and applies to employees at all levels of the organization, whether full time or part time, as well as suppliers (contractors and sub-contractors) and on the job trainees.

If the client or facility owner has a procedure for mobile cranes, hoisting, and lifting devices, the most stringent shall be followed.

#### Responsibilities

- The President and CEO, Managers / Supervisors, and the HSE Representative have direct responsibility to ensure that the outlines of this Overhead Cranes Procedure are implemented and followed.
- All employees, contractors, and sub-contractors are equally responsible for complying with the requirements of this Overhead Cranes Procedure.

#### Definitions

Crane	Equipment that is designed to lift loads, lower loads, and move loads horizontally when they are lifted.
Rigging	Includes, but is not limited to, wire rope, chain, polyester slings, twin-path slings, come-along, chain-falls, shackles, hooks, turn-buckles, spreader bars, spreader beams, and other load bearing hoisting attachments. Comments of cranes and hoisting are not included in this definition.
Crane/Hoisting	The person who is in control of the crane/hoisting equipment and
Equipment	responsible for its movements.
Operator	

**Competent Crane/** Is a person that is adequately qualified, suitably trained, and with **Hoisting Equipment** sufficient experience to safely operate the crane/hoisting equipment

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**Operator** without supervision or with only a minimal degree of supervision.

**Rigger**A competent worker designated as the rigger by their supervisor. The<br/>degree of competency and responsibilities for the rigger must meet and be<br/>consistent with the requirements of the lift to be performed.

**Signal Person** A person who is competent in crane/hoisting equipment hand/voice signals, who will transmit the lifting requirements by voice communication of hand signals to the crane/hoisting equipment operator. This person must also have an understanding of crane/hoisting equipment operations, limitations, and rigging.

#### Practice for Operating Overhead Cranes

- Determine the need for a Safe Work Permit.
- Before operating the crane, ensure the operator:
  - Conducts a pre-operation inspection of the crane.
  - Inspects the rigging to ensure it is safe and padded at the sling pinch points.
- Maintain a logbook for each crane to record:
  - Each use of the crane.
  - All maintenance performed on the crane.
  - Identify the safe working load for each overhead crane and ensure it is painted or stamped in a visible area on the unit.
- Ensure all loads are within the capacity range of the crane.
- Perform all lifts slowly and ensure that a tag line is always used.

#### **Guidelines for Inspecting and Maintaining Overhead Cranes**

- Conduct a pre-operational inspection on the Visual In-House Inspection of Overhead Crane form, which includes:
  - Inspection of the hook for defects, cracks, or deformities.
  - Inspection of the wire rope and bridge components.
  - Test of the bridge and trolley for drift and braking.
  - Check of the rails for end stops.
  - A visual inspection by the operator from the floor.
- Ensure periodic inspections are conducted as per manufacturer recommendations.
- Conduct annual inspections and testing of the structural components of the crane.
- Record all inspections and maintenance performed on the crane in the logbook for the crane.

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# Procedure

Step	Responsibility	Action
15.1	Responsibilities	
15.1.1	Crane and Hoisting Equipment Owner	<ul> <li>Assigning appropriate equipment and personnel to do the job.</li> <li>Ensure all cranes are certified and all operators are trained and certified to operate.</li> <li>Implementing and maintaining Priestly Demolition Inc. Operations Crane and Hoisting Equipment Operator Competency Evaluation program.</li> <li>Providing crane/hoisting equipment in safe, operable condition and in compliance with manufacturers and client requirements and in compliance with all applicable regulations.</li> <li>Provide support system to operator for consultation regarding safety issues prior and during crane and hoisting operations.</li> <li>Informing crane and hoisting operator of any known hazards or specific requirements in the work area. (i.e., maximum swing radius, shoring locations, ground elevations, slopes, trenches, cellars, overhead high voltage power, process piping, etc.)</li> <li>Maintaining, for examination purposes, the most recent inspection/certification record for each piece of crane and hoisting equipment.</li> <li>Ensuring all maintenance, services, and repairs of crane and hoisting equipment by competent personnel.</li> <li>Ensuring that all contractor's crane and hoisting standards meet or exceed those of Priestly Demolition Inc. Operations, and that they are in compliance will all applicable legislation and regulations, including facility owner's standards.</li> <li>Audit compliance to this procedure to ensure rigging and crane operations are carried out in a safe manner.</li> <li>Audit compliance of operator and equipment certifications.</li> </ul>
15.1.2	Crane and Hoisting Equipment Operator	<ul> <li>Certified and trained in the operation of the particular crane and hoisting equipment.</li> <li>Operate the crane in a safe, controlled, and smooth manner.</li> <li>Maintain the equipment logbook and other required documentation.</li> <li>Knowing the machine functional capability, limitations, and its particular operating characteristics.</li> <li>Participation in appropriate hazard assessment prior to conducting the lift.</li> <li>Being aware of site conditions that could affect crane operation such as ground conditions, weather, overhead power lines, and buried underground utilities.</li> </ul>

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Step	Responsibility	Action
		<ul> <li>Checking, understanding, and applying the information in the load chart to ensure that the crane has sufficient capacity to lift the load. Reviewing the lift plan with riggers, signal person, safety, and supervision.</li> <li>Operator must remain at the crane at all times when there is a suspended load. Man-baskets are included in this.</li> <li>Informing the crane owner of any maintenance issues or mechanical problems in writing, utilizing the equipment logbook or inspection report.</li> <li>Ensure that the boom is not side loaded.</li> <li>Assess weather conditions at time of lift to confirm if it is safe to proceed. (i.e., wind, electrical storms, and extreme temperatures).</li> <li>Only take signals from designated signaller who shall be identified by a florescent reflective signal gauntlet or ANY person giving an emergency stop signal.</li> <li>Cease operations if an unsafe situation or condition is present.</li> <li>If there is a reason to believe that a lift may be dangerous or unsafe, the operator must refuse the lift until the hazard has been rectified and safe conditions assured.</li> <li>Ensuring loads are not lifted over workers at any time.</li> <li>Zero tolerance for modification to any rigging or hoisting equipment.</li> </ul>
15.1.3	Supervisor	<ul> <li>Ensure cranes are currently certified with all known deficiencies corrected.</li> <li>Verify that crane operator is properly certified and competent to safely perform the lift and use the designated equipment.</li> <li>Inform the crane operator of any hazardous site conditions (i.e., underground utilities, overhead power lines).</li> <li>Confirming area is adequately prepared to support lifting operations.</li> <li>Ensuring suitable pads are utilized under outriggers.</li> <li>Ensuring that operating locations are far enough away from shoring, excavations, trenches, buried utilities, foundations, etc., to eliminate risk of collapse.</li> <li>Ensure area is adequately marked to keep non-essential personnel outside of work area.</li> <li>Ensuring that all required safety precautions are taken when the lift is the vicinity.</li> <li>Ensuring all personnel in the vicinity are aware and understand their roles and responsibilities during the operation.</li> <li>Assess weather conditions at the time of lift to confirm lift can proceed safely (i.e., wind, precipitation, cold weather, lightning).</li> </ul>



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Step	Responsibility	Action					
15.1.4	Signal Persons / Riggers	<ul> <li>Physically verifying the lift radius. Note that using a Load Moment Indicator (LMI) is not sufficient as this is an operator aid and not meant to be used as a measurement tool.</li> <li>Conduct pre-lift meetings to go over the sequence and hazards of the lift.</li> <li>Review and verify load weight and lift calculations if required.</li> <li>Ensure zero tolerance for modification to any rigging or hoisting equipment.</li> <li>Rigging loads and equipment using industry standard best practices.</li> <li>Interpreting sling charts and lift plans.</li> <li>Selecting and applying the proper rigging components for the load to be lifted.</li> <li>Visually inspect rigging components on a regular/daily basis and remove from service rigging components that are worn or damaged.</li> <li>Knowing and understanding the general operating parameters of lifting equipment.</li> <li>Knowing and understanding how to apply different sling rigging configurations, and which are most appropriate for certain applications.</li> <li>Being aware of overhead hazards, proximity to other workers, proximity of other cranes, and other construction equipment. Loads are not to be swung over any workers.</li> <li>Keeping the swing path of the load and the tail swing of the crane counterweight/super lift carrier/tray clear of obstructions, hazards, vehicular, and pedestrian traffic.</li> <li>Communicating with crane operator throughout all stages of the rigging and lifting process.</li> <li>Being capable and knowledgeable of using the hand signal chart for hoisting loads.</li> </ul>					
15.2	Safe Crane Oper	ation					
15.2.1	<ul> <li>Cranes ar</li> <li>Cranes ar</li> <li>manufactu</li> <li>Load secu surface.</li> <li>Hoisting s restrictions</li> </ul>	re to be operated in such a manner that impact loading does not occur. re to be operated, tested, certified, and maintained in accordance with the urer's procedures. urity and balance/levelness is to be confirmed while the load is just off the shall not commence if wind speed exceeds crane manufacturer's wind as for the specific crane configuration, or the maximum wind speed					

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Step	Responsibility	Action		
Step	<ul> <li>Responsibility</li> <li>Cranes an specification</li> <li>Cranes are specification</li> <li>Cranes are the boom directly be permitted, operation.</li> <li>All cranes</li> <li>All cranes are to be suspect, the Load weig information or a bill manufacture against an area to a bill manufacture against an area to be suspect. The control the controlling or exposed</li> <li>No hoistin communic</li> <li>All outrigg arano and</li> </ul>	Action re to be de-rated for cold weather operation as per manufacturer's ons. e to be operated so that no side loading or horizontal pull is exerted on or jib. Load lines are to remain plumb at all times, with the load block blow the boom point; in-haul and out-haul on the load block/ball is not Piling cranes will follow industry standard lifting procedures used during are to be equipped with functioning anti-two block devices. are to be equipped with functioning load moment indicators (LMI), which calibrated when the crane is certified. If readings from the LMI are hen the LMI shall be re-calibrated before continuing use. ht must be traceable, either through calculations, manufacturer supplied n, load cells and/or from a documented source such as shipping records of lading. For loads classified as heavy lifts, detailed calculations, urer's information and/or load cells are required, which shall be checked by other available information. shall be used to control loads unless their use increases the risk to the Tag lines must be of sufficient length (recommend a minimum of 3m) to a load and used in a way that prevents the load from striking the worker the tag line, and to distance the worker from being underneath the load d to other hazards associated with the lift. g shall be performed during hours of darkness without proper lighting, ration, and signalling arrangements. ers must be extended in line with the operating charts for that specific relaced and used in a line with the operating charts for that specific placed and used prior to appreciate the operating charts for that specific		
	<ul> <li>all loads.</li> <li>irrespectiv</li> <li>appropriat</li> <li>Crane ope</li> <li>shall be lethook if it is</li> <li>the same</li> <li>Anyone hat</li> <li>time if the</li> <li>continue u</li> <li>No lifting s</li> <li>reasonable</li> <li>lifting into</li> </ul>	This includes all mobile cranes (including all truck mounted booms) re of size. Outrigger pads shall be used and are to be re-sized ely for the ground conditions. erators shall remain in control of suspended loads at all times. No crane eff unattended with a suspended load. Rigging cab be left on the crane is adequately secured from swinging/rotation at the end of each shift and rigging is to be used for the next shift. as the right and responsibility to halt the operations of any work at any ey see an unsafe act or situation developing. The operations will not intil the condition is corrected. shall be permitted over live operating facilities unless there is no other e option. Lifting over live operating facilities automatically delegates the the Heavy (Critical) classification.		
15.3	Personnel Lifting			
15.3.1	Personnel lifting u access would cre carried out in com 21.	using suspended work baskets shall only be used when other methods of ate a greater hazard or other methods are not possible. The lift shall be apliance with CSA Z150-98, section 5.4.7 as well as OH&S, Parts 6 and		

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Step	Responsibility Action				
	<ul> <li>All rigging hardware, primary and secondary, shall have a minimum safety factor of 10:1.</li> <li>The crane used shall not exceed 50% of the capacity charts for configuration used and a test lift, as outlined in CSA Z150-98, section 5.4.7.2.4, shall be performed to ensure this is not exceeded.</li> <li>The test lift shall be carried out in the sequence outlined in CSA Z150-98.</li> <li>All man baskets shall receive certification once a year to the specifications for</li> </ul>				
15.4	inspection Rigging	and repair of a professional engineer.			
15.4.1	All slings and rigging hardware shall be manufactured and use in compliance with applicable Federal and Provincial Legislation. The safe working loads of rigging shall be based on a 5 to 1 design factor on ultimate strength. All rigging components used for hoisting personnel shall be based on a 10 to 1 design factor on ultimate strength.				
	All rigging components must be visually inspected prior to everyday use by a competent rigger or competent crane operator. Any rigging component that is suspected of being damaged, overloaded, shock loaded, abused, or modified shall be clearly identified to eliminate potential use and immediately removed from service. If the component cannot be repaired, then it is to be destroyed and discarded. Any rigging component that is capable of being repaired shall be repaired according to the manufacturer's procedures and specifications, or under the directions of a professional engineer.				
	Rigging is to b uncertainties in w loads in the riggin according to appr and rigging hard mechanical dama slings, when stor consideration sho	e sized appropriately for the loads expected, taking into account reight, the location center of gravity, and any other likely variables. If the ng system cannot be determined statically then the rigging is to be sized roved simplifications and/or with the input of a rigging engineer. All slings ware shall be stored in an area where they will not be subjected to age, corrosive action, moisture, extreme temperatures, or kinking. Some red inappropriately, may experience reduced performance and further build be made with regard to this.			

**Rigging Reference Card** 



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s	Sling Capacities MECHANICAL SPLICE IN POUNDS DESIGN FACTOR 5:1 1									
	Size in inches	1.00	CHOKER	2 - Legs or Basket 90° 2.00	60° 1.73	45°	30° 1.00	607 2.60 3 - Legs Only if 1/3 each leg	Size in mm	
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>	1	19,600	14,400	39,200	34,000	28,000	19,600	51,000	25.4	8
	1-1/8	24,000	18,000	48,000	42,000	34,000	24,000	62,000	28.5	
	1-1/4	30,000	22,500	60,000	52,000	42,000	30,000	76,000	32.0	
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Fo	rmula to	o find sling	g length To	otal distar	nce betwe	en pick p	oints x M	ultiplier = Slin	ng Leng	gth

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# 56 SJP - NOISE

To reduce noise in areas of a work site where workers may be required to work, the company ensures that every reasonable, practicable measure will be used to reduce the noise in these areas. A noise survey may be conducted to identify high noise areas and ensure that signs are posted to indicate high noise and the requirement of PPE. These measures will be accomplished through the following controls:

## **Engineering Controls**

Engineering controls may include, but are not limited to:

- Substitution replacing noisy equipment, machinery, or processes with quieter ones.
- Modification modifying the way equipment operates so that it generates less noise.
- Isolation isolating workers from a noisy area by having them work in an enclosed room.
- Maintenance maintaining equipment in good working order to reduce noise.

**Note:** Hearing protectors are used where engineering controls are not practicable to ensure workers are not exposed to noise levels that exceed 85 dBA.

#### Administrative Controls

Administrative controls may include, but are not limited to:

- Rotating work schedules; or
- Changing production schedules to limit the amount of time workers are exposed to noise.

#### **Protective Equipment**

When engineering and administrative controls cannot reduce noise exposure sufficiently, or where they are not reasonably practicable, workers will be provided with hearing protection in the form of:

- Earmuffs, or
- Earplugs

#### Worker Exposure to Noise

An employer must ensure that a worker's exposure to noise does not exceed:

- The noise exposure limits identified in Schedule 3, Table 1 of OH&S Code, Part 16; and
- 85 dBA Lex (average noise exposure adjusted to an 8-hour workday).
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Sound Level (dBA)	Maximum Permitted Duration (Hours per day)
82	16 hours
83	12 hours and 41 minutes
84	10 hours and 4 minutes
85	8 hours
88	4 hours
91	2 hours
94	1 hour
97	30 minutes
100	15 minutes
103	8 minutes
106	4 minutes
109	2 minutes
112	56 seconds
115 and greater	0

Note: Exposure levels and exposure durations to be prorated if not specified above.

Hearing protection devices should be selected according to CSA Standard Z94.2–02, Hearing Protection Devices – Performance, Selection, Care, and Use. Factors influencing the selection of protection to be considered by the audiometric technician or service provider are:

- The daily noise exposure of the worker;
- The worker's hearing ability;
- Communication demands of the worker;
- Use of other personal protective equipment;
- Temperature and climate; and
- Physical constraints of the worker or work activity.

### Training

As the majority of oil and gas field workers are exposed to noise sources greater than 85 dBA Lex in the course of their work-related activities, the employer must provide education for all employees and dedicated contractors. The education may be provided via in-house training programs or during the course of conducting the annual hearing test program (audiometric testing). The training program will include the coverage of the hearing protection program of Priestly Demolition Inc. Operations and training on hearing protection devices. Priestly Demolition Inc. Operations workers will be provided training on the hearing conservation program.

#### Noise Exposure Assessments

A Noise Exposure Assessment shall determine the level of noise workers are exposed to on a work site. A competent worker shall perform the assessment and will measure noise levels in accordance with CSA Standard Z107.56-94 (R1999), *Procedures for the Measurement of Occupational Noise Exposure.* 

Measurements will be taken through the use of one of the following ANSI approved devices:



- **Sound Level Meter** meeting the requirements for a Type 2 instrument as specified by ANSI Standard S1.4-1983 (R2006), *Specification for Sound Level Meters*.
- **Noise Dosimeter** meeting the requirements for a Type 2 instrument as specified by ANSI Standard S1.25-1991 (R1997), *Specification for Personal Noise Dosimeters*, and set at:
  - A criterion level of 85 dBA with a 3-dB exchange rate;
  - A threshold no higher than 75 dBA (preferably zero).
  - Slow response.
- Integrating Sound Level Meter meeting the requirements as specified by ANSI Standard S1.43-1997, Specifications for Integrating-Averaging Sound Level Meters, or IEC Standard 61672-1 (2002), Electroacoustics Sound Level Meters Part 1: Specifications and IEC Standard 61672-2 (2003), Electroacoustics Sound Level Meters Part 2: Pattern evaluation tests.
- Equipment approved by a Director of Occupational Hygiene.

The competent worker shall record the results including:

- The dates of measurements;
- The workers or occupations evaluated;
- The type of measuring equipment used;
- The sound level readings measured; and
- The work location evaluated.

A copy of the results will be available upon request by any affected worker or officer and will be retained indefinitely. Assessments will be updated if a change in equipment or process affects the noise level or the length of time a worker is exposed to noise.

**Note:** On work sites where the company has no control over the source of the noise, workers shall abide by the Client's instructions (signage).

#### Hearing Protection Equipment

All hearing protection equipment provided for workers shall meet the requirements of CSA Standard Z94.2-02, *Hearing Protection Devices – Performance, Selection, Care, and Use.* 

Hearing protection equipment shall also be of the appropriate class and grade described in Schedule 3; Table 2 of the Alberta OHS Code.

#### Worker Training

- All workers shall wear hearing protection equipment when required.
- Hearing protection equipment shall be used in accordance with manufacturer's specifications.
- All workers who may be exposed to noise will be trained in the selection, use, and maintenance of their hearing protection equipment.

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### **Noise Exposure Chart**

Refer to the following chart for noise exposure levels:



#### **Noise Management Program**

If an assessment confirms that noise levels exceed 85 dBA Lex, a *Noise Management Program* will be implemented. The program will be in written form and available to all workers. The program elements will include, but are not limited to, the following:

- Worker education;
- Measuring or monitoring worker exposure to noise;
- Posting warning signs in any work area where the noise level exceeds 85 dBA;
- Use of noise control methods;
- Selection, use, and maintenance of hearing protection devices;
- Audiometric testing; and
- Annual program review.



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### 57 SJP - PERSONAL PROTECTIVE EQUIPMENT (PPE)

The purpose of this procedure is to ensure that all employees, contractors, sub-contractors, stakeholders, and visitors to Priestly Demolition Inc. Operations are aware of hazards and risks involved with tasks whilst at work, either in their office environment or out in the field. These individuals must be aware of the need and provisions made for personal protective equipment (PPE).

The procedure is aimed at protecting all workers of Priestly Demolition Inc. Operations and will assist in minimizing injuries and impairments as a result of exposure to chemical, biological, mechanical, or physical hazards and irritants, as well as to ensure legal compliance. Personal protective equipment legislation is contained within the Alberta OH&S Code – Part 18.

All PPE shall meet the Canadian Standard Association (CSA), Canadian General Standards Board (CGSB), American National Standards Institute (ANSI) and the American Standard Test Method (ASTM) standards or any other standards deemed necessary as per legal requirements. The PPE sections below outline the requirements for PPE in the workplace.

The company shall supply the necessary PPE and ensure that the employee is trained in the use of the equipment. In addition, these sections state that the employee is obligated to use the PPE provided when a hazard exists or may exist. All reports of defective PPE due to an accident or near miss shall be reported to the respective supervisor / manager and HSE representative for investigation.

PPE ITEM	STANDARD
Eye and Face Protection	ANSI Z87.1-1989 and CSA Standard Z94.3-99
Head Protection	ANSI/ISEA Z89.1-2009 and CSA Standard Z94.1-92
Foot Protection	ASTM F2413, CSA Z195-M92
Ear Protection	ANSI NZS 1270:2002, ANSI NZS 1269.3:2005 and CSA Z94.2-94
	Hearing Protectors
Respiratory Protection	NIOSH N95
Fall Protection	ANSI Z359 (R1999)
Hand Protection	Selection must be based on the performance characteristics of the
	glove in relation to the tasks being performed.
Clothing	CGSB-155.20 Workwear for Protection against Hydrocarbon Flash
	Fire

The table below describes a summary of the respective PPE items and its associated standards:



### Hard Hats:

CSA standard CAN/CSA-Z94.1-92 ANSI standard Z89.1-1986

Safety headgear must be worn by a worker in any work area where there is a danger of head injury from:

- Falling objects;
- Flying or thrown objects; or
- Other harmful contact.

Hard hats must meet the requirements of Canada Standards Association (CSA).

Hard hats will be worn when:

- Travelling up or down a ladder where there is a possibility of a head injury.
- Walking, working, or taking a work break below upper roofs, decks, or work platforms.
- When any moving overhead hazard is present.
- When there is a danger of side impacts to or from tools, materials, or equipment.
- Site specific requirement.



INSPECT	The hard hat must be inspected prior to each use. Look for any signs of damage, defects, worn or missing parts. Check the liner for proper connection to the shell and for compatibility. Replace any parts or the entire hat if anything appears questionable.
USE	Use the hard hat in accordance with the manufacturer's instructions. Do not alter the composition of a hat or use it for purposes for which it was not intended.
MAINTAIN	Keep headgear clean and refrain from applying items that may cover cracks or other defects.



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### **Chinstraps:**

Chinstraps are used to keep a hard hat on a worker's head. By using chinstraps when required, employees are protected by ensuring the hard hat doesn't fall into unsafe conditions.

Use chinstraps when:

- Working in windy conditions where hard hat rules apply.
- Working at elevations where hard hats could fall onto workers below or fall and create unsafe conditions (i.e., hard hats falling into cutting areas).

### **Clothing:**

Employees will provide and wear clothing that protects them from the elements and general hazards in the industry. The minimum clothing requirements are a t-shirt with 4" sleeves and

pants or coveralls without tears. These must not be so loose that they cause snagging, and they must cover the ankle. The preferred fabric for clothing is cotton, unless working in the oil and gas industry where your outer clothing must be fire retardant.

• Polyester, nylon, or rayon fabrics are not permitted to be worn if working near open flame due to high flammability and lack of protection. However, they can be worn to provide sun exposure protection.



### Footwear:

CSA standards CAN/CSA-Z1 95-M92 ANSI standard Z41-1991

All footwear must meet the standards listed. Footwear must cover and provide protection above the ankle when on uneven terrain and on all worksites. It is the responsibility of the employee to supply steel-toed boots that cover the ankle bone and give support to the ankle as per CSA standards.



Footwear will be worn when:

- Walking to and from, or working on, any residential, commercial, or industrial construction site.
- Loading and unloading materials or equipment on a jobsite or workplace.

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INSPECT	Inspect footwear before each use and check for signs of wear, damage, or deterioration. Check to see that the steel toes are not loose, and laces are not broken. Make sure the sole has not separated along the seam.
USE	Use the appropriate footwear to protect against expected exposures. Additional protection may be required against certain controlled products or abrasive materials.
MAINTAIN	Maintain your footwear in good working condition. The ankle must be supported and the material they are made of must be kept clean and free of chemicals or other items that can break down the material.

### Work Gloves:

Work gloves should be used all the time when danger to the hands exists. Not one specific glove does all the jobs. Pick the right glove for the job.

If you don't know, ask your supervisor.

- Do not wear gloves when working near rotating shafts or other moving machinery parts.
- Make sure the glove fits your hand.

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INSPECT	Inspect gloves for wear, defects, or damage. Replace gloves that do not provide the protection needed.
USE	Use the right type of hand protection appropriate to the hazards. Specialized gloves are required for controlled product use. Refer to the material safety data sheet for specific information on the type of gloves you need to use for certain chemicals.
MAINTAIN	Maintain hand protection as well as you can. Do not leave gloves lying about, exposed to wet weather. Workers are less inclined to wear wet clothing, so efforts must be made to keep gloves dry.

### Eye and Face Protection:

CSA standard CAN/CSA-Z94.3-92 ANSI standard Z87.1-1989



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Employees are not required to wear eye or face protection at all times. However, it is mandatory to wear eye and face protection when there is a hazard to the eyes.



Conditions where eye protection is mandatory are:

- Exposure to liquid controlled products, such as when priming, painting, rolling, brushing, or spraying.
- Exposure to flying objects or materials.
- When installing fasteners into or through material with powder actuated tools.
- When operating sweepers, cutters, cut-off saws, chain saws, skill saws, reciprocating saws, or nail guns.
- When drilling into materials overhead or when drilling project materials.
- Exposure to bright sunlight.
- On client sites.

Conditions when a face shield is mandatory:

- Using portable angle grinders or cutting wheels.
- Trimming.
- When using certain controlled products.
- When using a chain saw.

### Hearing Protection:

Hearing protection reduces exposure to noise. Select hearing protection by class and grade based on noise exposure, communication demands, hearing ability, use with other personal protective equipment, climate, and physical characteristics of the job or worker.

Employees exposed to sound levels of 85 dBA or greater are required to wear hearing protection. The hearing protection may be disposable or fitted ear plugs or earmuffs. The company will provide hearing protection at all times for its employees.

Training will be provided on how to use and apply hearing protection when the worker is orientated.



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### Typical noise levels in everyday situations:

Ambulance Siren	120 dBA	Car Stereo	154 dBA
Rifle	156 dBA	Balloon Popping	157 dBA
Chainsaw	125 dBA	Circular Saw	113 dBA
Lawn Mower	95 dBA	Electric Drill	94 dBA
ATV, Quad	110 dBA	Grader Operator	90 dBA
Snowmobile	100 dBA	Labour	93 dBA

#### **Respirators:**

CSA standard CAN/CSA-Z94.4.93

Respirators are worn to protect employees from hazardous solids as well as unseen liquids or gases. Half mask air-purifying respirators provide a protection factor of 10, and full-face respirators provide a protection factor of 50. Self-contained Breathing Apparatus (SCBA) provide a protection factor of 100. Respirators being used must meet the CSA standard.

Conditions when wearing respirators is mandatory:

- When cutting, grinding, or drilling concrete and concrete dust is visible in the employee's breathing area.
- When removing or cutting any asbestos containing materials (ACM).
- When use of primers, adhesives, and cleaners creates a hazardous condition, especially when you are in a confined area. Most of the time, you are not required to wear a respirator because you are working outside and there is plenty of fresh air. However, this depends on the amount and type of chemicals you are using or are exposed to.
- When welding or soldering if ventilation is not adequate.



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There are many different types of respirators, cartridges, and filters for different conditions and applications.

Supervisors will consult with the OSH Manager if respirators are required, to ensure the correct respirator is worn with the correct filter or cartridge and that a fit test is completed before the worker wears the mask.



### **Dust Masks:**

Dust masks are required to be worn at all times when exposed to nuisance airborne particulate dusts.



### High Visibility Safety Apparel:

CSA standard CSA Z96-02

High-visibility safety apparel (HVSA) is clothing (i.e., vests, bibs, or coveralls) that workers can wear to improve how well other people see them (their visibility). Most often, high-visibility clothing is worn to alert drivers and other vehicle operators of a worker's presence, especially in low light and dark conditions. High-visibility headwear can also be worn to increase the visibility of the wearer in situations where part or all of the wearer's body could be obscured (i.e., leaves / trees, traffic barriers, construction materials, etc.). The safety apparel specifications will improve the visibility of workers on all Priestly Demolition Inc. Operations sites.



Conditions where wearing a high visibility vest or coverall is mandatory are:

- Traffic control;
- Construction sites;
- Oil and gas sites;
- Shops;
- Fuel center employees working outside;
- Loading and unloading equipment;
- Acting as a spotter; and
- When our clients request it.

To comply with the CSA Standard, the HVSA should meet the following criteria:

- Stripes / bands are to be in a distinctive, standardized pattern:
  - A symmetric "X" on the back, extending from the shoulders to the waist;
  - Two vertical stripes on the front passing over the shoulders and down to the waist;
  - A waist-level horizontal stripe extending entirely around the back to the bottom of the vertical stripes on the front. This horizontal stripe may continue between the front vertical stripes (optional). For Class 3 apparel, stripes / bands encircling both arms and both legs are added.
- The stripes / bands are to be displayed in a way to ensure that some part of them is visible from all angles around the body (i.e., 360° visibility).
- For all classes, the total width of stripes / bands must be at least 50 mm (1.96") throughout. Stripes / bands near the bottom edge of a garment, sleeve, or pant leg must be at least 50 mm (1.96") away from the edge.
- Stripes / bands may be made up entirely of combined-performance or retro reflective material.

### Colour

- **Background material:** should be fluorescent yellow-green, fluorescent orange-red, fluorescent red, bright yellow-green, bright orange-red, or bright red.
- **Combined-performance retro reflective material** (i.e., the stripes): should be fluorescent yellow-green, fluorescent orange-red, or fluorescent red and must be in contrast (that is, have a distinct colour difference) to the background material.

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### Personal Gas Detectors / Monitors:

- Personal gas detectors and monitors will be utilized by company employees, contractors, and workers where the possibility of exposure to a toxic, explosive, or oxygen deficient atmosphere exists.
- Bump testing is part of the regular maintenance program as per the manufacturer's recommendation.
- Training in the use and maintenance of personal gas detectors is mandatory and proof of such training shall be documented.

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### **58 SJP – PICKER TRUCK OPERATIONS**

The operator is responsible for being aware of conditions that may affect safety at the lift site. This can include site conditions, equipment conditions, or any other aspect of the lift. If the operator has any doubt as to the safety of the lift, the operator must cease operations until the condition is made safe.

### **Picker Inspection**

Regular structural inspections must be performed by competent, qualified personnel and necessary structural repairs must be adequately supervised by a professional engineer. Structural repairs or modifications must be certified by a professional engineer. All inspections must be noted in the picker logbook.

Daily - All cranes must be visually inspected daily.

Annual Picker Certification –An annual inspection must be performed by an outside inspection agency.

#### **Picker Maintenance & Repairs**

Any defects must be repaired. Structural or welding repairs must be done under the direction and control of a professional engineer. All maintenance must be documented and kept on file.

Picker Mounting All trucks to which cranes are mounted must meet or exceed the crane manufacture's minimum chassis requirements or be certified by a professional engineer that the chassis is adequate and will safely allow the crane to operate to its rated load capacity.

#### Inspection and Maintenance Guidelines:

- Operators shall check for any irregularities or power losses.
- Gauges must be operational and legible.
- All hydraulic and fluid lines shall be free of nicks, bulges, abrasions, or leaks.
- All exposed gears, drive belts, pulleys, clutches, and brakes shall be adequately guarded.
- Outriggers shall extend and contract completely with pin end retainers in good operational condition.
- All cables (boom, hoist, and pendant) shall be checked for excessive wear or damage.
- Slings should never be knotted or kinked to prevent wearing.

#### Tag Lines

Tag lines must be used by swampers or other helpers. The position of the person with the tag line will not be in the line of fire in the event that there is a failure of the rigging equipment of lifting equipment. (e.g.: when a double sling is used on piping, the tag line person will not be in direct line with the end of the pipe. If a sling or cable breaks, the pipe would move towards the end with the broken sling).



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### Hand Signals

It is common in many hoisting operations to use portable two-way radios when directing the motion of a suspended load. Where this is not possible, hand signals by a designated signaler may be required. All signals should be continuous and there should be no response to unclear signals.

### Personnel Requirements:

- Only personnel approved by manager or supervisor may operate the picker.
- Operator will take the necessary safety precautions to ensure the safety of fellow employees.
- All persons must be in view of operator before lifting.
- Swamper should watch load and operator at all times.
- No standing directly underneath load.

### Procedures:

- Outriggers should be extended before lifting and fully retracted before moving.
- Do not jerk the boom with a lifted load.
- Always move boom smoothly and steadily to prevent loss of control or loss of load.
- Always boom in when lifting a heavy load.
- Load shall remain as close to the ground as possible when boom is in motion.
- When moving a load on a hook use tag line.
- No part of a load must pass over any worker;
- A lift truck left unattended must be immobilized and secured against accidental movement and forks, buckets or other attachments must be in the lowered position or firmly supported;
- No load may exceed the maximum rated load and loads must be handled in accordance with the height and weight restrictions on the vehicle's load chart;
- When a load is in the raised position, the controls must be attended by an operator;
- If an operator does not have a clear view, a signaler who has been instructed in a code of signals for managing traffic in the workplace must be used;
- Loads must be carried as close to the ground or floor as the situation permits;
- Loads that may tip or fall and endanger a worker must be secured;
- Where a lift truck is required to enter or exit a vehicle to load or unload, that vehicle must be immobilized and secured against accidental movement;
- Barriers, warning signs, designated walkways or other safeguards must be provided where pedestrians are exposed to the risk of collision.

#### Report any hazardous situations to your supervisor

#### **Guidance Documents/Standards:**

Alberta OH&S regulations and guidelines: This SJP will be reviewed any time the task, equipment or materials change and at a minimum of once a year.



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### 59 SJP - PORTABLE GENERATOR

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Inhalation of carbon	Reflective vest	Manufacture's manual
monoxide	Steel toed safety boots	
Fire/explosion	Safety glasses/ shield	
Burns	Gloves	
Electrocution	Hard hat/if overhead hazard	
Slip/trip	exists	
Lifting	Respirator	

#### Safe Work Procedure:

- 1. Pull generator to well ventilated work area.
- 2. Ensure generator is fueled and inspect it before starting.
- 3. Place cord out of way of workers walk path, when possible.
- 4. If work area becomes wet, stop work with generator immediately.
- 5. Ensure machine is turned off and unplugged when not in use.

#### **Pre-Operational Check:**

- Fuel and oil levels (top up before staring, if required).
- Fan belts, air filter, guarding.
- Check unit for loose bolts, leaks, etc.

#### To Start a Gasoline Generator:

- Turn switch/breaker to OFF position.
- Unplug cords.
- Position throttle to  $\frac{1}{2}$  or  $\frac{3}{4}$ .
- Pull choke to ON position (cold start).
- Push start button/pull starter cord.

#### To Start a Diesel Generator:

- Disconnect load/switch OFF/breaker OFF/unplug cords.
- Push glow plug button.
- Push START button/turn on key.
- Allow unit to run until engine reaches operating temperature (10-15 minutes). Check for abnormal noises or vibration.
- Slowly add load (example: breaker, one switch at a time, one cord at a time).

Check generator rpm and output levels, volts, and amps – compared to recommendations on product manufacturer's rating plate (located on unit).



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### Report any hazardous situations to your supervisor

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Safe Job Procedures (SJPs) Manual	
Section:	SJP - POWER TOOLS
Document ID#:	PDI-SJPM-2024
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### 60 SJP - POWER TOOLS

In the past twenty years, considerable effort by respective manufacturers of electrically and pneumatically driven tools has been applied to improving design features, increasing horsepower, ergonomics, appearance, and safety features, and seeking related safety standards approval.

In spite of the many and varied improvements to existing power tools, injuries resulting from the inappropriate and uninformed use of these tools and instruments continue to occur at an alarming rate and have severe consequences.

Given the wide and varied application of power tools within the industry and considering the increasing and alarming rate of incidents involving these tools, Priestly Demolition Inc. Operations has developed an SJP to provide some general safety tips for workers and users of power tools.

All power tools and equipment provided by third party service companies shall be suited to the task, in serviceable condition, and otherwise free of any defect that has the potential to cause injury to personnel or damage to equipment. This provision shall also cover the unacceptable removal of the full guard from power tools, such as hand-held grinders used extensively in the welding discipline.

### Procedure

When performing activities that require the use of power tools, and with prevention of injuries to workers in mind, the following safety tips are provided in anticipation that user awareness may be increased so as to reduce the potential for bodily injury and/or damage to equipment:

- Inspect all power tools, electrical extension cords, or high-pressure hoses before use. Power tools must have appropriate guards in place at all times;
- Do not operate power tools and equipment unless the constant hand or finger pressure control is operative;
- Ensure you have a general understanding of how to operate the power tool prior to using it;
- Ensure all electrical tools are grounded by means of a third wire or are CSA listed as a double-insulated tool;
- Remove electric power tools, extension cords, and equipment showing worn, deteriorated, or inadequate insulation from service until suitably repaired;
- Never use electric tools on storage or volume tanks, high pressure lines, etc., until the tanks or lines are depressurized and confirmed to be free of explosive, toxic, or hazardous materials, or other suitable safety measures have been taken;
- Pay particular attention to the following abrasive wheel recommendations:
  - Use safety locking washers on all power tool abrasive wheels;
  - Before work is started, ensure abrasive wheels have a protective shield;



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- For a bench mounted tool incorporating an abrasive or buffing wheel, a rest should be in place and adjusted to maintain a clearance from the wheel no greater than three (3) millimeters (1/8 inch);
- Do not mount grinding wheels on any grinding appliance where the spindle speed is greater than the wheel's rated speed capacity;
- The operator must wear appropriate eye protection and stand to one side of the plane of rotation whenever possible; and
- Never connect a wheel grinder to a power source without ensuring that the power tool switch is in the "off" position. Never use a wheel grinder without a serviceable safety guard and tool rest. It is recognized under most provincial statute that a modified guard/tool rest may be used in certain applications;
- Ensure all electrical outlets are equipped with ground fault interruption protection;
- Remove pneumatic driven tools, high pressure hose, and equipment showing worn, deteriorated, or unserviceable connections from service until suitably repaired;
- Where there is a danger of explosion or fire, the use of pneumatic power tools is preferred. Regardless, continuous atmospheric monitoring along with hot work permit procedures (if applicable) must be in place;
- Personnel using pneumatic tools must ensure that the source of air supply pressure does not exceed the working pressure or operating capacity of the respective tool;
- Ensure adequate air supply requirements to effectively operate the tool are available;
- Ensure that power tools are not left around the immediate work area where they can become a hazard to the user, or where they may be inadvertently damaged;
- Ensure power tools are suitably protected from excessive heat, extreme cold, or moisture, or any environmental condition identified by the manufacturer;
- Only use power tools for the purpose for which they were designed; and
- Ensure all appropriate safety equipment and PPE is being worn with respect to the tool being used.



### 56 SJP – RATCHET CABLE CUTTER

(Greenlee 45206, 45207, 452061, 452071 Ratchet Cable Cutters)

Perform a hazard assessment prior to commencement of work.

- Put on all required PPE.
- Before starting, ensure work area is clean and well lit.
- Ensure power is disconnected to the cable that is being cut. Lock out source and tag opposite end of cable, if not within sight. Always test the cable for power with a multimeter.
- The insulated tool (only models 452061 and 452071) provide added protection against injury by electrical shock from voltages up to 1000 volts AC. Insulated cutters must have a 1000 v symbol.
- Inspect the cable cutter prior to use. Ensure the ratcheting and release mechanisms are working.
- The blade is very sharp. Always pay attention when using tool. Keep hands and fingers away from blades. Laceration and amputation can occur.
- Only use the cable cutter on recommended materials and sizes.
  - Copper Cable (Maximum 600 MCM) (Frequent 500 MCM)
  - Aluminum Cable (Maximum 600 MCM) (Frequent 500 MCM)
  - Communications Cable (Maximum 1-3/8" diameter}
- NEVER cut ACSR or steel with ratcheting cable cutters.
- Open the jaws. Insert the workpiece squarely between the upper and lower blades. Ensure the material is only cut straight. It is not recommended to make angled cuts.
- Hold the cable cutter firmly on the grip provided and support the workpiece.
- Begin ratcheting the cutters. When the cut is complete, the cutters can be set down, or the jaws can be opened again to prepare for the next cut.
- When storing the cable cutter, always keep the blades in the fully closed position.
- Clean work area of scrap cable, material and/or dust.

Figure 1: Using the Cable Cutter -









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Figure 2: Insulated Cable Cutter (Model 452061) -





### 57 SJP - RECIPROCATING SAW (SAWZALL)

Perform a Hazard Assessment prior to commencement of work

- Put on all required PPE. Consider also using hearing protection. Ensure loose clothing and hair is tied back. Be aware at all times while saw blade is moving. Keep gloves and fingers away from blade.
- Inspect the reciprocating saw prior to use. Ensure cord, guard, and blade are all mechanically sound. For optimal use, the blade must be straight and sharp, with no teeth missing.
- Choose the type of blade needed, based on the task and material. Blades that are bent or have missing teeth should be replaced.
- When changing the blade, remove the power source (battery or power cord)
- Ensure work area is clean and well lit. Use caution in wet or rainy conditions.
- Brace materials safely while cutting. Consider using clamps or a tripod to hold material.
- Ensure the reciprocating saw has a guard on it. The guard will keep the workpiece away from the moving cylinder.
- Only hold power tool by insulated gripping surfaces. Ensure you have a good, secure grip on tool. Keep both hands on the saw while in use.
- Pull and hold the trigger of the reciprocating saw. Keep the blade off the workpiece until the motor has reached the selected speed. Remember to use light, but constant pressure. Don't exert too much pressure on the saw.
- When the saw is through the material, release the trigger and pull away the saw. Wait for the saw blade to completely stop before placing down the saw.
- Loosen the clamps to release the material. The cut edge of the material will be sharp and hot.
- Clean up dust/ metal/ wood debris from the work area.



### **58 SJP - RIGGING AND HOISTING**

Rigging

- Establish who has responsibility and authority for rigging.
- Identify and describe different types of rigging and the load capacity rating for slings, shackles, clamps, spreader bars and hooks.
- Describe the need for load ratings prior to using non-standard rigging and below-the- hook devices.
- Determine the manufacturer's inspection and rejection criteria.
- Demonstrate correct rigging procedures by:
  - selecting appropriate rigging equipment
  - interpreting loads with calculations and rigging charts
  - visually inspecting rigging hardware for wear and damage
  - describing the proper use of tag lines
  - demonstrating how to properly store rigging equipment
- Demonstrate understanding of consequences of shock loading and how to avoid it.

### Tagging and Hoisting Lines (reference AB OHS Code 2009 Part 6)

If workers are in danger because of a moment of a load being lifted, lowered, or moved by a lifting device, the employer must ensure that:

- a worker uses a tag line of sufficient length to control the load,
- the tagline is used in a way that prevents the load from striking the worker controlling the tagline, and
- a tagline is used when it allows worker separation from the load.

### Evaluating the Load

• Determine the weight of the object or load prior to a lift to ensure the lifting equipment can operate within its capabilities.

### **Balance the Load**

• 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.
- Select only alloy chain and slings and never exceed the working load limits.
- Make sure the hoist or crane is directly over the load.

• Use slings of proper reach. Never shorten a line by twisting or knotting. With chain slings, never use bolts or nuts.

- Never permit anyone to ride the lifting hook or load.
- Make sure all personnel stand clear from the load being lifted.
- Never work under a suspended load being lifted.
- Never leave a load suspended when the hoist or crane is unattended.
- Inspect all slings thoroughly at specified intervals and maintain them in good condition.
- Inspect each chain or sling for cuts, nicks, bent links, bent hooks, etc., before each use. If in doubt, don't use it.
- Ensure that safety latches on hooks are in good working condition.

• Ensure that the signaler is properly identified and understands techniques of proper signaling.

• Make sure a tagline is used to control the load.

### **Operating Near Electrical Lines**

• Any boomed equipment (cranes, backhoe, side boom) operating within the boom length of the minimum safe distance of any electrical line shall have a competent signal person.

• When operating, no part of any lifting device or its load is permitted to approach any closer to any power line than the distance specified unless the electrical authority has been notified and the line de-energized or insulated.



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### 59 SJP – PRESSURE TESTING SAFETY PROCEDURE

The purpose of this Pressure Testing Safety Procedure is to provide a safe guideline for all Priestly Demolition Inc. employees, contractors, and sub-contractors and to assist operations personnel in identifying and managing the risks associated with pressure testing operations to ensure worker's health and safety and environmental protection.

This Pressure Testing Safety Procedure covers all aspects of Priestly Demolition Inc. operations associated with performing business activities or processes and applies to employees at all levels of the organization, whether full time or part time, as well as suppliers (contractors and subcontractors) and on the job trainees.

### Responsibilities

- The President and CEO, Managers / Supervisors and the HSE Representative have direct responsibility to ensure that the outlines of this Non-Routine Draining and Depressurizing Procedure are implemented and followed.
- All employees, contractors and subcontractors are equally responsible for complying with the requirements of this Non-Routine Draining and Depressurizing Procedure.

### **HSE Requirements**

Potential hazards associated with pressure testing operations include:

- Flammable and explosive atmosphere.
- Poisonous gases.
- Hydrocarbon narcosis.
- Chemical vapors from Methanol, emulsifiers.
- Carbon Dioxide or Carbon Monoxide.
- Pressure.
- Skin and eye irritation.
- Environmental spills.
- Pinch points.
- Manual handling injuries.

The following HSE requirements are recommended to prevent accidents and incidents:

- 1. Ensure that all HSE Requirements are identified, and all associated hazards are assessed, and suitable and sufficient control measures are in place prior to commencement of operations.
- 2. Ensure all necessary HSE approvals and licenses are obtained prior to commencement of operations.
- 3. Ensure that the Safe work permit and Site-Specific Work Procedures are conducted and discussed in the tailgate / toolbox meeting prior to commencement of operations.
- 4. Ensure all equipment, machinery and tools are inspected and certified. Valid certification shall be readily available upon request.
- 5. Ensure competent and certified personnel are utilized for job tasks.
- 6. Ensure proper supervision at all times.



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- 7. Ensure that all accidents and incidents are reported to the Company Representatives / HSE Department as soon as possible.
- 8. Ensure suitable and sufficient personal protective equipment (PPE) are utilized for the job.
- 9. If the proper procedures are followed you will avoid injury. If a spill occurs ensure proper clean up is done.
- 10. Leave all non-intrinsically safe equipment (i.e., cellphones, flashlights, cameras, lighters, etc.) in your vehicle. Park in designated areas.
- 11. Discuss emergency response protocols with team.
- 12. Ensure the Material Safety Data Sheet (MSDS) is available and easily accessible at all times.
- 13. Ensure all personnel undergo HSE orientation prior to commencement of operations.
- 14. Use of Personal Gas Monitors and Portable Gas Detector. Portable gas monitors may be used with an atmospheric pump to draw a sample from the interior of the structure for analysis prior to building entry. Any worker using a Personal Gas Detection Monitor, or a Portable Gas Detector must be trained in the use of and maintenance of that piece of equipment.
- 15. Ensure only employees familiar with the SOP are involved in the performance of the task.
- 16. Ensure proper bonding and grounding practices to prevent static electricity.
- 17. Smoking is not permitted.

**Note:** Under routine operating conditions, following this SJP will ensure that the task is performed safely and will minimize hazards and risks to operators and operations

#### Procedure

- Ensure the most recent Job Safety Analysis (JSA) and process Risk Assessment are available.
- All persons involved in the operations must review, update (if needed), and sign-off on the JSA prior to beginning the job.
- Visually inspect the hose and its fittings to ensure the following conditions do NOT exist.
  - Fittings slippage on hose
  - Damaged, cracked, cut, or abraded cover (any reinforcement exposed)
  - Hard, stiff, heat-cracked, or charred hose
  - Cracked, damaged or badly corroded fittings
  - Leaking at fitting or hose
  - Kinked, crushed, flattened, or twisted hose
  - Blistered, soft, degraded, or loose cover

# NOTE: If any of these conditions are found, the pressure testing system is to be shut down and the hose assembly replaced or corrected.

- Visually inspect all other pressure testing components to ensure they are tightened, repaired, corrected, or replaced as necessary.
- Check to ensure that the hose is certified for the pressure to be used.
- Ensure that no worn clamps, guards, or shielding are used.
- Check to ensure there are no leaking port connections.
- Ensure the correct fluid types are being used.



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- Check that the system's fluid level is between the required minimum and maximum as applicable.
- Ensure all equipment is rated for the pressure of the test.
- Test pump should have its own pressure gauge or relief valve to ensure pump is not over pressured.
- No unauthorized personnel are to enter the cordoned test area.
- Check to ensure there is no fluid contamination or trapped air within the system.
- Ensure there is no excess dirt build-up.
- Function test the system at its maximum operating pressure and ensure there are no malfunctions or leaks.
- Fill the line from the lowest point to the highest point to avoid trapping air in the system.
- If there are significant elevation changes in topography, position the recorder at the lowest feasible point in the line to eliminate any adverse effect on the line.
- Pressurize the system to the desired test pressure. **Caution**: Do not pressure the line above the maximum operating pressure of its valves and fittings.
- Once required pressure is meet, monitor, and depressurize accordingly.
- Clean up work after pressure testing operations are completed.

## 60 SJP - SAFE DRIVING AND OPERATION

The following rules, policies, and guidelines apply to any and all motorized vehicles provided by Priestly Demolition as well as any vehicle used by company employees for work related purposes. This includes all general duty trucks, service trucks, delivery trucks, forklifts, loaders, excavators, shuttle wagons / track mobiles, cranes, aerial devices, etc.

The rules, polices, and guidelines for safe driving apply to all employees and authorized drivers. Each employee of the company will be aware and understand these practices. They will further understand that contravention of any of these rules or policies will lead to disciplinary action.

Operating company vehicles or equipment is a worker privilege, not a right. Management reserves the right to suspend, postpone, or withdraw an individual's company vehicle or equipment operating authorization at any time.

### Legal Requirements

- Company vehicles and equipment will be operated in a safe manner at all times and in accordance with federal, provincial, territorial, and municipal laws, rules, or regulations.
- Individuals operating company vehicles or equipment must do so in a safe and responsible manner at all times. Speeding, careless, or reckless driving, or any form of driving, which needlessly puts the driver, passengers, the vehicle, or the general public at risk, is strictly prohibited.
- Individuals operating company vehicles or equipment must stop after an accident. Failing to stop after an accident is strictly prohibited and is a violation of the Highway Traffic Act.
- All occupants of any company owned, leased, or rented vehicle, or any vehicle used for company purpose, must wear seat belts when the vehicle is in motion. Occupants of equipment will use seat belts where applicable and aerial devices such as man lifts will be operated only with proper personal restraints.
- Drivers of company vehicles will be responsible for any violations or fines that are incurred as a direct result of that person's action while they are operating the unit.
- Driver's licenses and certifications:
  - Anyone who operates a motorized vehicle for the purpose of work for Priestly Demolition Inc. MUST possess a current / valid driver's license and must be qualified to operate any specialized equipment (e.g., cranes) as per government regulations.
  - All employees are responsible to immediately report to their direct supervisor or manager any changes to their driving status (i.e., suspension).
  - All equipment operators must possess proper qualifications as per applicable government regulations.
- No employee will operate a vehicle or a piece of equipment without the permission of their direct supervisor or manager.



### **Drugs and Alcohol**

- Consumption, possession, or use of alcohol or illegal drugs in any vehicle or piece of equipment is strictly prohibited.
- Individuals under the influence of alcohol or illegal drugs are prohibited from operating any company vehicle or equipment.
- Any employee of Priestly Demolition Inc. found operating a company vehicle, piece of equipment, or any vehicle for the purposes of work while intoxicated or under the influence of alcohol or drugs, shall be immediately removed from the vehicle. Management will be notified, and the incident will be documented and investigated. In order to ensure the safety of the employee and public, arrangements for the safe transportation of the employee to his /her home or accommodations will be made.
- In the event that an intoxicated or impaired worker refuses assistance to transport them to a safe place, the nearest police department shall be notified. A description of the person's vehicle and license plate will be given. Individuals in this condition must not be allowed to drive any vehicle, both for their own safety and the safety of the public.

### Disability or Impairment Due to Medical Condition

- All drivers must be physically and mentally alert while operating any vehicle for work purposes. Where this is not possible, the driver shall be responsible to report to his immediate supervisor and make other arrangements, including engaging another driver or postponing the trip.
- Prior to operating any company vehicle or piece of equipment, all employees who suffer from a medical condition must report their condition to their supervisor, manager, or safety coordinator. These conditions can include, but are not limited to, epilepsy, seizures, heart problems, diabetes, or any other condition which may cause sudden loss of consciousness. As with all personal information of this nature, this information will be strictly confidential.
- Any employee who, under doctor's orders, is taking medication which may or can impair their ability to safety operate a vehicle or piece of equipment, MUST request from their immediate supervisor, manager, or the safety coordinator, permission to operate any company vehicle. As with all personal information of this nature, this information will be strictly confidential.
- The management of Priestly Demolition Inc. has the right to request a medical driving clearance at any time where an individual's health and competence to operate a vehicle safely is in question. If this request is made, the individual's driving or operating privileges will be suspended pending the clearance.



### Automatic Suspension of Company Driving or Operating Privileges

Management reserves the right to automatically suspend any individual's driving or operating privileges due to the violation of certain rules. They are:

- Suspension or loss of driver's license;
- Medical conditions which make it unsafe for the individual to drive or operate machinery;
- Taking prescribed medication, which may or can affect or impair the driver's ability to safely operate a vehicle or piece of equipment;
- Being under the influence of alcohol or drugs; and
- Upon termination.

Further disciplinary action may be required depending on the offense, the frequency, and the severity. Once driving privileges have been suspended for any of the above reasons, only senior management can reinstate them.

### General Safe Driving and Operating Rules

- Only authorized personnel are allowed to operate company vehicles and equipment. Nonemployees may only operate vehicles or equipment of Priestly Demolition Inc. under emergency conditions or with prior authorization of senior management.
- Unauthorized use of any company vehicle is strictly prohibited.
- A visual walk around inspection of each vehicle will take place before each use. Report all problems found and do not use the vehicle if you are unsure of its soundness.
- Client site rules and regulations for vehicle and equipment use are to be adhered to at all times. It is the driver's responsibility to be aware of the rules of a site (i.e., site speed limits).
- Riding in truck boxes, on fenders, tailgates, etc. is prohibited by law and will not be tolerated in any company unit. All passengers must be properly secured in the vehicle.
- In some instances, company vehicles which are assigned to employees are taken home. The operation of these vehicles while away from work is still subject to the same rules as when at work. When driving a Priestly Demolition Inc. vehicle, you are representing the company; don't embarrass the company or yourself.
- Picking up hitchhikers is strictly forbidden.
- The maximum speed limit is for good, dry roads. Drivers are required to adjust their speed to suit changing road conditions. The maximum speed limit is a guide, not a requirement.
- Cruise control is not to be used in adverse weather or road conditions or when towing a trailer.
- The use of the 4X4 feature is encouraged in adverse road and weather conditions, whenever necessary, to safely reach your destination. Remember, the 4X4 feature will help your traction but does little to assist in stopping on icy roads.

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• The transportation of firearms in any company vehicle is strictly forbidden.

### Vehicle and Equipment Use and Care

- Under no circumstances is a company vehicle to be used unless it is in safe operating condition.
- The person assigned to a vehicle or piece of equipment is automatically responsible to ensure that all inspections to maintain the safety of a unit are completed as per the inspections policy.
- Daily walk around inspections will be done on all vehicles.
- Operators of cranes and forklifts will be responsible to maintain the service and maintenance requirements for their units. They must maintain the daily logbooks.
- The person assigned to a vehicle is responsible to ensure that all items found on the inspection report is flagged and required maintenance is completed in a timely manner.
- Maintenance of equipment (i.e., cranes, forklifts, etc.) is the responsibility of the supervisor or manager of the site. Necessary repairs or corrections identified in the inspections are the responsibility of the site supervisor or management.
- Unauthorized alterations or the removal of factory installed equipment on any company vehicle or equipment is not permitted.
- Theft, vandalism, abuse, reckless use, or wilful damage of any company vehicle or equipment is forbidden.

### **Required Documentation**

It is the responsibility of the person assigned to a vehicle to ensure that proper and necessary documentation is in place, as per federal or provincial laws:

- Current certificate of insurance; and
- Valid registration.

### Vehicle Security

- Parked vehicles must be left secured with the windows rolled up, doors locked, and keys removed. Vehicles should not be left running if unattended.
- When parking overnight, every effort should be made to park in well-lit areas to discourage theft and vandalism.
- It is the responsibility of the person assigned to a vehicle to ensure all tools and materials are properly secured from theft.



### **Incident and Injury Reporting**

- All motor vehicle incidents, damages, injuries, hazards, unsafe acts, or hazards must be reported immediately to your supervisor or manager. (See Investigation Policy and Procedure for details).
- Proper documentation must be completed for all motor vehicle accidents and incidents. These reports must be completed promptly and submitted to your supervisor or manager. Copies of all these reports should be forwarded to the HSE Manager.
- Operators of company vehicles or equipment who cause damage due to their carelessness, inattention, or reckless actions may be liable for accident penalties as set out by corporate management.

### Working Alone

If the operator of a company vehicle or any vehicle that is being used for company business is traveling in remote areas or will be traveling for extended periods, they will be required to follow all corporate working alone policies:

- Travel logs with check in times must be prepared.
- See Working Alone Policy for more details.

### Maintenance and Inspections

- Daily walk around or visual inspections are required on all company vehicles. These must be recorded on the weekly inspection reports for each vehicle.
- Full weekly inspections must be performed on all company vehicles.
- It is the responsibility of the person assigned to the vehicle to ensure that all proper maintenance is performed as per manufacturer's requirements.
- All maintenance and inspections need to be reported to your supervisor and the appropriate division manager and / or fleet manager.

### Loads

- Workers are forbidden from riding on equipment or vehicles in areas not designed for personal transportation (i.e., fenders, running boards, crane hooks, tail gates, boxes of trucks, etc.).
- Make sure that you are not overloading the equipment or vehicle you are operating. Drivers or operators are responsible to know the load limits of their units and the amount of weight being loaded.
- As per legal requirements, all loads must be properly signed and secured when being transported.
- Loads of over-size will be transported as per legislation.



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- All hazardous or controlled products being transported in company vehicles or in any vehicles for company purposes will be transported in accordance with applicable government regulations and industry standards. Workers must ensure proper handling and markings, and that all products are transported properly, securely, and in appropriate containers.
- Any toxic or highly flammable material (i.e., gasoline) will not be carried in the passenger compartment or cab.
- Any employee transporting hazardous material or any product that may spill, must ensure that the containers are properly secured in a position where they will not spill or come in to contact with the driver or passengers.

### Vehicle Safe Operating Practices

The following practices and guidelines have been developed to promote safe and responsible operation of all company vehicles and equipment by company employees.

### **Client Sites**

- Any employee operating a company vehicle or a vehicle for company purpose on a client's site must obey all rules, regulations, and permit requirements.
- Operators of vehicles or equipment will ensure that they are parked, driven, and operated in a manner as to minimize hazards within the work site. Maintain safe clearances from facilities and other equipment at all times (i.e., parking in blind spot of cranes or behind excavators).
- Operators of vehicles or equipment will ensure that:
  - All fire lanes, roads, and access ways are kept clear for other vehicles and equipment to pass safely; and
  - Equipment and vehicles are kept at least 20 ft. from fire hydrants or any emergency stations.
- If a company vehicle is required to enter into a restricted or hazardous area, only do so if absolutely necessary and as per client site rules. Follow these guidelines:
  - If client rules call for work permits, they must obtain prior to entering;
  - Only enter site which may have H<sub>2</sub>S or other flammable or explosive mixtures if safe to do so. This will require gas monitoring and testing;
  - Park vehicles at least 15 ft. from surface equipment; and
  - Under no circumstances will a vehicle be left running in a hazardous area. Vehicles can be an ignition source in explosive areas.
- The driver or operator will ensure that all vehicles or equipment have been parked in areas away from or as unobtrusive to:
  - High traffic areas;
  - High risk areas (i.e., blind corners); and



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• Roads, lease roads, and site areas.

If it is not possible to do this, proper signage, cones, and barricades will be used to identify the hazardous area.

### Refuelling

- Proper and safe refuelling practices must be used at all times.
- Gasoline fumes and other fuels are highly explosive. There will be no tolerance with regards to ignition sources in the immediate area of refuelling or fuel storage areas.
- Smoking is strictly prohibited around or near fuel storage or while refuelling.
- Vehicles or equipment should not be left running while refuelling.
- Adjacent vehicles or equipment, which may cause an ignition source, should be shut down.
- Cell phones are a potential source of ignition and will not be used while refuelling or while in a fuel storage area.
- Cell phones should be left in the closed cab of a vehicle while refuelling.
- Vehicles must not be left unattended during refuelling.
- To prevent spillage, fuel tanks should not be overfilled.
- Ground out any static electricity by briefly touching any metal part on the vehicle before removing the gas nozzle from the unit.

### Inclement Weather / Bad Road Conditions

Weather conditions can cause good roads to become hazardous in no time. Rain, sleet, snow, and ice can cause road surfaces to become slippery, or they can reduce visibility to zero. Drivers must be aware of changing conditions which may cause changes to the hazards of the road.

The posted speed limit is for ideal conditions. Drivers must be aware of the condition of the road and drive accordingly, adjusting driving techniques to these conditions. Slow down, it's better to get there later than not at all.

Road conditions or bad weather must be addressed, and drivers should be alert at all times.

- Sudden changes in direction or speed can cause skidding or sliding.
- Poor road conditions can cause stopping distances to be dramatically increased. Leave extra room between other vehicles and allow more distance for stopping.
- Clear all snow and ice from vehicle, including hood and truck roof (if safe to do so) and make sure all windows are clear. Snow ice or ice flying off while you are driving can be a hazard to you and other vehicles.
- Make sure all windows are clear and you have good visibility before driving.



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- Be aware of areas which may develop or are likely to have slippery areas (i.e., intersections, bridges, windswept areas, etc.).
- Be aware of the vehicle you are operating and its factors, which may affect how you drive (i.e., brake or slide control, front or rear wheel drive, 4-wheel drive, abs brakes, etc.).

### Safe Practice Towing

- Only properly rated and approved tow ropes designed for that function will be used to tow a vehicle out of a stuck position. Splicing of tow ropes is unsafe due to the potential failure at the connection point.
- When towing a vehicle, the tow rope should be hooked on the recovery hooks, if they are present. If tow hooks are not in place, hook the tow rope to a solid piece of the undercarriage which should not break or bend under the stress of towing. Do not hook the tow rope to the bumper, fender, etc.
- When towing, be aware of the following:
  - Pull straight out, avoid pulling at side angles;
  - Pull slow and steady and avoid jerking or sudden acceleration as this increases the risk of injury and vehicle damages;
  - Tow ropes, hooks, and tow chains can break keep area clear;
  - Ensure the road is clear before proceeding with tow; and
  - If a unit is excessively stuck, call a proper towing company for assistance.

### Jacking the Vehicle

- Manufacturers supply each vehicle with a jack. This jack is designed to safely lift the vehicle if the unit must be jacked. The supplied jack should be used whenever possible.
- If using another type of jack, make sure the jack is rated to lift the vehicle.
- Prior to jacking full or loaded vehicles, make sure that the weight capacity of the jack is not being exceeded due to the load. If this is the case, make other arrangements or reduce the load.
- Prior to jacking, visually inspect the jack to ensure its good working order.
- Block the wheels.
- Set the emergency brake.
- Ensure the vehicle and jack are on a flat, solid surface prior to jacking.
- If using a jack, stay clear of the jack lever action.
- It is recommended that all employees familiarize themselves with the manufacturer's jacking procedures prior to proceeding.



### **Boosting Batteries / Using Jumper Cables**

Boosting a battery on another vehicle can be hazardous due to the potential for battery failure, acid spillage, or electrical arc.

Use care and caution when performing this task:

- Familiarize yourself with the manufacturer's recommendation for boosting both vehicles prior to proceeding.
- Before setting up for boosting a battery, employees must make sure that it is safe to move the vehicle in to position. Ensure that both vehicles are safe from traffic. Hazard lights, flares, or signage may be necessary to ensure the employees' protection.
- KEEP OUT of between the vehicles while boosting. Another vehicle may collide with yours and you can be seriously injured in the pinch point.
- Anyone not necessary or directly involved in the boosting is to keep clear and off the road.

### **Cellular Phones**

It is the responsibility of any driver of a company vehicle, or a vehicle being used for Priestly Demolition Inc. business or any equipment operator, to be aware of their responsibilities in driving or operating the unit in a safe manner at all times. Each person must be conscious of the legal, corporate, and personal moral responsibilities they have to drive safely. Use of cell phones while driving is prohibited. If you need to use your cell phone, pull over when it is safe to do so.

### **General Guidelines for Safe Driving**

- Be well rested; do not attempt long trips or driving in hazardous conditions if you have not had sufficient rest. It is best to arrange for another driver or postpone the trip.
- Keep the interior temperature of the driver's area at a cool, comfortable temperature; too warm can cause fatigue.
- Focus on the most important task at hand DRIVING stay alert!
- While driving, keep your eyes moving; watch for wildlife or other unexpected hazards.
- Check mirror frequently.
- Watch instruments for vehicle problems.
- Drowsiness while driving can be extremely dangerous and must be dealt with seriously. If you feel yourself getting sleepy, pull off the road into a safe area, either a designated rest area, parking area, or side approach and never on the shoulder of the road. Once safely off the road, do something to wake yourself up - stretch, walk around, etc. If this does not work, take a nap; it is better to arrive late than not at all.
- Avoid large meals just prior to or during long trips as this tends to make the driver drowsy.
- Wear comfortable shoes and clothing while driving. Make sure you have appropriate clothing for the conditions you are driving in.


# **Trailer and Towing Guidelines**

It is the responsibility of the driver to ensure that any trailer he / she is going to tow is in good condition, prior to being hooked up. As with the vehicle, a visual walk around must be done to ensure the safety and good operating condition of the trailer.

# Towing

- When pulling a trailer with any company vehicle, the manufacturer's recommendations must be followed (i.e., overdrive should not be used).
- Proper hitch / ball combinations, lights, safety chains, and brake connections must be in place and in proper operational order.
- Drivers pulling trailers must allow additional room when driving and stopping in order to compensate for the extra weight and length compared to a single vehicle.

Before backing up, drivers should:

- Walk to the rear of the trailer to ensure it is free and clear of obstructions.
- Back up slowly and be aware of how the vehicle will steer when going backwards right to go left, left to go right.
- Avoid turning the wheels sharply and quickly or holding them in a turned position for too long.
- Always attempt to have turns done to the passenger side of the vehicle as this allows the driver to look over his shoulder.

# Responsibilities

# Workers

- Ensure they hold a current driving licence.
- Immediately notify their site supervisor if their driver's licence has been suspended, cancelled, or has limitations placed on it.
- Be responsible and accountable for their actions when driving on business.
- Assess driving hazards and anticipate "what if scenarios".
- Wear safety belts.
- Drive within legal speed limits.
- Report vehicle defects in rental cars to your supervisor before the start of your journey (unless journey starts prior to the working day, then as soon as reasonably practicable).
- Comply with traffic legislation.
- Do not use a mobile phone, unless absolutely necessary. Use a hands-free kit when driving.



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- Check all vehicles prior to the journey to ensure that vehicles are within safe operating conditions. Checks should include proper inflation of tires, clean windows, mirrors properly adjusted, brakes, lights in working order, and windshield wipers and wash in working order (see vehicle pre-use check list).
- Report any accident or near miss incident, including those that do not result in damage or injury, to your supervisor.
- Take an incident report form on all journeys.
- Complete an accident report form on all accidents and report to the police and your supervisor immediately (where reasonably practicable).
- Take regular and adequate rest breaks:
  - At least 15 minutes for each 5 hours of driving time; and
  - Stop when tired.
- Plan your journey ahead, taking into consideration pre-journey work duties, the length of the trip, and post journey commitments.
- Stay overnight if other than under exceptional circumstances driving time and non-driving duties exceed 13 hours or 1300 kilometres in one day. If, for unavoidable reasons, you have to drive over these limits on an occasional day, considerable care must be taken to have regular breaks and avoid any risks of driving while tired.
- Take a taxi, train, or car with a driver when returning from long haul flights.
- Ensure that you are familiar with the vehicle that you are about to drive; if you are unsure, report to your supervisor immediately.

# Employer

Priestly Demolition Inc. will not require employees to drive under conditions which are considered unsafe and / or likely to create an unsafe environment, physical distress, fatigue, etc. This will be done by:

- Ensuring that a rental car company is used which provides rental cars that meet high standards of safety and are well maintained;
- Ensuring that employees are aware of their responsibility to check the vehicle prior to use;
- Ensuring that employees are comfortable driving the vehicle that they are provided with, if not driving their own;
- Ensuring that where additional training is required, through Risk Assessment, this will be provided on request;
- Take into account individual driving needs and experience; and
- Regular review of policy and procedures to ensure the development and quality of the driving policy.

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## **Collision and Damage Procedures**

Any motor vehicle incident or accident that involves a company vehicle where there is damage to the vehicle, company property, property of others, injury to employees, or injury to others, must be promptly reported to your supervisor or the company's HSE Manager. Time of day or night is not an issue, the incident must be reported. Failure to report incidents in a timely manner can result in termination. Where necessary, the client's representative should be informed of the situation.

Vehicle or equipment accidents resulting in injuries or damages valued over \$1,000 must be reported to the Royal Canadian Mounted Police (RCMP) or other local police departments in the area of the accident and a formal report filed. All third party or multi-vehicle collisions must be reported in the same manner.

Reporting of an incident or collision to the police must be done in a prompt manner without unnecessary delay. Leaving the scene of an accident without taking proper steps to notify the owner of the vehicle or property involved can be considered a criminal offense subject to criminal charges.

If a third party is involved, company personnel must obtain the following necessary information:

- The other driver's name, address, and phone number;
- Make, model, color, and license plate number of vehicles involved in the incident;
- Insurance information; and
- Passenger and witnesses' information names, address, and phone numbers.

Drivers of company vehicles or vehicles being used for company purposes are directed to make no statements to anyone except to an officer of the law, a company representative, or a representative of Priestly Demolition Inc. insurance company. Direct all inquiries and calls to senior manager or your HSE Manager.

Any driver or operator of a Priestly Demolition Inc. vehicle or equipment will make no attempt to settle a collision themselves, nor will they admit any personal responsibility for either the cost of repairs, medical treatment, or for any injuries sustained. Provincial highway traffic laws and insurance standards will dictate the liability and costs. If you are involved in an accident with an unattended vehicle, it is your responsibility to take all reasonable steps to locate the owner. Once you have exhausted all reasonable steps, it is your responsibility to leave a note identifying yourself along with company contact information.

Any vehicle accident must have a vehicle accident report completed and submitted to the supervisor or HSE Manager within 24 hrs.

## **Motor Vehicle Collision Procedures**



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- Stop, safely, as close to the scene as possible without obstructing traffic. Turn on the vehicle four-way emergency flashers and set vehicle flares as needed.
- If physically able and safe to do so, give first aid as required to any injured persons.
- If any medical assistance is required, contact authorities as soon as possible.
- If in a multi-vehicle collision where injuries are involved, or damages exceed \$1,000 notify police promptly and comply with instructions.
- Notify your supervisor, who will, if he deems it necessary, contact Senior Management or the HSE Manager.
- If the accident was on client property or involved the client in some direct manner, contact them and report the incident.
- Obtain all relevant information of other drivers involved if you feel that the other driver is impaired or if they cannot produce proper insurance information. Regardless of the severity of the incident, contact police immediately.
- Obtain names and contact information of any and all relevant witnesses.
- Ensure all personal materials and company tools have been recovered from the accident site.
- If the vehicle is unfit to drive, coordinate towing with your direct supervisor to either a storage area or repair site.
- Assist in investigation of the incident. Complete all necessary documentation.



# 61 SJP - SCAFFOLDING PROCEDURES

## Purpose

To ensure all PDI and subcontractor personnel is engaged in scaffold and/or temporary work, platform erection, maintenance or dismantling understand their roles and responsibilities and perform safe scaffold practices in compliance with Alberta OH&S code June 2009 Part 23 (323 to regarding but not limited to:

- scaffold material or components
- PPE (fall arrest)
- scaffold erection including ladder access/exit and dismantling
- scaffold maintenance and modification
- scaffold inspection and tagging
- general scaffold safe work practices

## Scaffold Materials and Components

In the event wooden scaffold planks are used, they shall be:

- specifically, laminated veneer lumber manufactured for use as scaffold planking
- cleated at each end and securely fastened to the scaffold frame
- if cleats are removed for bridging purposes, planks shall be firmly secured

Scaffold materials and components:

- Shall only be used for the purpose for which they were designed. This includes any stage of erection, final assembly, or dismantling.
- Shall be checked for excessive wear and material integrity prior to issue from the scaffold yard and at the time of erection and dismantling.
- That have been stored, erected and/or used in a corrosive environment, shall be identified by the user at the time of use and upon return to the scaffold yard.
- Trailers and wagons will have proper hitches in addition to ensuring load security, safe axle weight limits and general safe towing procedures.

# Personal Protective Equipment – Fall Arrest

All persons engaged in the erection, maintenance, dismantling, or modification of scaffold shall be:

- Competent in the use of safety harness and fall protection systems and equipment.
- Protected from falling by a safety harness securely attached to an overhead anchor point capable of 5000 lbs. when working where the potential exists for a worker to fall a vertical distance greater than a) 3 m (10ft) from a temporary work area or, b) 1.2m (4ft) from a



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permanent work area. Workers will ensure the lanyard length is appropriate for the work platform height (lower platforms will require shorter lanyards), and the danger of swing fall has been minimized.

4.8 Scaffolding Procedures Continued

# Scaffold Erection, Dismantling and Modification

Scaffold erection, dismantling or modification shall be performed in accordance with the requirements of the OH&S code, CSA specifications and manufacturer's specifications and recommendations without limiting the generality of the foregoing: scaffold components must be CSA approved materials. Scaffold erection must be done by competent workers.

All scaffolds erected on any client construction sites are deemed as **light duty** scaffold unless otherwise stated on the scaffold tag.

- 1. The load to which scaffolding is subjected is to never exceed the equivalent of one quarter of the load for which it was designed.
- A light duty scaffold means a scaffold designed to support the equivalent of an evenly distributed load of not more than 122 kg per square meter (25lbs /sq. ft)
- 3. A heavy-duty scaffold means a scaffold designed to support the equivalent of an evenly distributed load of more than 122 kg per square meter but not more than 367 kg per square meter (75 lbs./sq. ft)
- 4. Where a scaffold may be required to carry the equivalent of an evenly distributed load of more than 367 kg per square meter, or does not comply with CSA material requirements, manufacturer's specifications, or OH&S regulations:
  - a) The scaffold will be designed and certified by a professional engineer.
- b) The scaffold will be constructed, maintained, and used in accordance with the certified specifications.
- c) All workers working on the scaffold or temporary work platform are informed of the maximum load that said scaffold or platform is permitted to carry.
- 5. During the erection and dismantling of scaffolds, the immediate surrounding area (including "deflection zone") shall be flagged off to alert personnel to the adjacent and/or overhead activity.
- 6. All scaffolds erected in or near a vehicular thoroughfare shall be properly flagged or barricaded and illuminated.
- 7. Scaffold shall be set plumb on a base plate, jack screw or other safe load dispersing device, on a stable surface which can adequately support all loads applied to the scaffold. Special precautions will be applied to ice- and snow-covered terrain.
- 8. Scaffold shall be supported against lateral movement by adequate bracing and anchored by one tie in for each 4.6m (15ft) vertical interval, and one tie in for each 4.6m (20ft) horizontal interval.



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- 9. Scaffolds, if hoarded or sheeted in, must be anchored by one tie in for each 3m (10ft) vertical interval and one tie in for each 3m (10ft) horizontal.
- 10. All scaffolds with a deck height in excess of 4 feet shall have toe boards. Toe boards shall not be less than 140mm (5.5 in) in height and be installed around the outer edges of the work platform.
- 4.8 Scaffolding Procedures Continued
  - 11. Scaffold erected below or near electrical lines or distribution equipment, shall have prior approval of overhead power distributor to ensure that the required safe limits of approach are maintained. Must maintain 7m rule (no closer) until the operating authority determines the line voltage.

# Safe Limit of Approach Distances from Overhead Power Lines for Persons and Equipment

Operating Voltage of Overhead Power Line Between Conductors	Safe Limit of Approach Distance for Persons and Equipment		
(2) – 750 V Insulated or polyethylene covered conductors (note 1)	300 mm		
Above 750 V insulated conductors (note 1, 2)	1.0 m		
0-40 kV	3.0 m		
69 kV, 72 kV	3.5 m		
138 kV, 144 kV	4.0 m		
230 kV, 240 kV	5.0 m		
500 kV	7.0 m		

**Note:** (1) Conductors must be insulated or covered throughout the entire length to comply with these groups

(2) Conductors must be manufactured to rated and tested insulation levels.

12. All scaffolds shall have guard rails. A guard rail shall consist of:

a.) A horizontal top member that is not less than 0.92m (3 ft) nor more than 1.07m (3.5 ft) above the base of the guard rail.

b.) A horizontal intermediate member spaced mid-way between the top member and the base.

c.) Vertical members at both ends of the horizontal members with intermediate vertical supports that are not more than 3m (10 ft) apart at their centers.

d.) 38mm by 89 mm (2" x 4" nominal) lumber or material that possesses equal or greater strength properties than those of lumber.

- 13. The guard rail must be secured in such a manner as to prevent dislodgement in any direction when struck or contacted at any point on the guard rail.
- Scaffold access and exit points shall be provided by fixed ladders extending not less than

(3.3 ft) above a point at which a worker gets on or off the ladder.

15. All scaffold vertical access ladders from which a fall of 3m (10 ft) or more may occur, shall be equipped with ladder cages or a fall arresting system.



- 16. Scaffold ladders in excess of 6.5m (20 ft) in height must have rest platforms at intervals not exceeding 6.5m (20 ft) with a width and length of at least 760 mm (30 in)
- 17. Ladders shall be provided for access/egress every 6m (20 ft) of horizontal run of the scaffold.
- 18. Fixed ladder access to rest and work platforms shall have entrance and exit gate bars.
- 19. No work is to be performed from a scaffold ladder and all workers must maintain 3point contact with the ladder at all times.
- 20. Scaffold work platforms shall be fully decked over at all working levels.
- 4.8 Scaffolding Procedures Continued
  - 21. Scaffold components shall be safely dismantled and removed from the work area immediately after job completion.

# Scaffold Maintenance or Modification

Scaffold maintenance or modification shall be done in accordance with OH&S and PDI regulations. In the event that the scaffold is modified or repaired in any way, the date of the modification shall be entered on the tag.

# Scaffold Tagging and Inspection

- 1. Inspection and tagging of the scaffold are to be performed by a competent worker, experienced in the erection of scaffold. All workers shall read the tag before using scaffolding. A worker must not use a scaffold if it has a red tag, a green or yellow tag that has expired or no tag at all.
- All scaffolds shall be inspected after the erection is complete and bear an approved scaffold identification tag and inspection is to be recorded on PDI form (SF-02-02) Scaffold Inspection Checklist.
- 3. All scaffold identification tags will be of a solid red, yellow or green color with black lettering.
  - 4. Plastic tie wraps are the preferred method of affixing the tags to the scaffold.
  - 5. All scaffold identification tags will have the front information completed as follows:
    - work order or project number
    - purpose / work specified
    - duty rating
    - date erected / tagged
    - inspected by name (print and signature)
    - inspected by date
- 6. Green tags will be hung on scaffolds that have been inspected and safe for use. A green



"Safe for Use" tag will be attached to the scaffold at each access point after the initial inspection is complete.

- 7. Yellow "Caution: Potential or Unusual Hazard" tag(s) will replace all green "Safe for Use" tags whenever the scaffold has been modified to meet work requirements and could present a hazard. The tag as a minimum will have:
  - THE REASON FOR THE CAUTION written in the front purpose section; and
  - THE UNUSUAL OR POTENTIAL HAZARD marked on the reverse.
- 8. **Red "DANGER UNSAFE USE"** tag will be used during erection or dismantling when the scaffold is left unattended and replace all green "Safe for Use" tags in the event a scaffold has been deemed unfit for use. The tag(s) as a minimum will include:
  - THE REASON FOR THE UNSAFE DESIGNATION written on the front purpose section; and
  - UNDER ERECTION, BEING DISMANTLED, REPAIRS REQUIRED, OR OVERHEAD PROTECTION ONLY marked on the reverse.
- 9. Red tags shall also be affixed to scaffolds specifically erected for overhead protection. Overhead scaffold must be adequately planked to ensure it will withstand anticipated stresses and the red tag purpose/work statement shall include:

NOT TO BE USED AS A WORK PLATFORM, and

OVERHEAD PROTECTION ONLY marked on the reverse.

- 10. To ensure scaffolds remain within inspection guidelines, the following items will be checked each time a work platform is inspected:
  - braces and ledgers
  - clamps
  - planking
  - toe boards
  - guard rails
  - mid rail
  - ladders, ladder cage and swing gate
  - base plates and mud sills (where required)
  - accumulation of debris
  - signs of stress or shock



# 62 SJP – SELF-PROPELLED COMPACTOR

# Start Up Procedures

- Determine type and size.
- Read operator manual.
- Check all fluid manuals.
- Check all fluid levels, belts, and hoses. Document this on a Daily Equipment Inspection Report.
- Check tires for cuts, cracks, loose bolts, and defect on frame.
- Locate all safety functions and know the proper operating procedure before starting.
  - Emergency brake
  - Seat belt
  - On/off switch
  - o Battery disconnects
  - o Throttle
  - Emergency shut down
  - Shifter 8.

Before starting, ensure that proper PPE is worn, hearing protection will need to be worn in addition to the company minimum requirements

- Start engine and immediately look at the oil gauge to ensure oil pressure is positive.
- Listen for any unusual sounds while warming the engine up.
- Let engine run at half throttle for 2-3 minutes prior to working. During cold weather operations this timeframe will increase.
- When mounting the equipment, use the Look, Hold, Step method to ensure no personal injury occurs.
- Ensure the seat belt is properly fastened before moving the machine up.
- Before moving the equipment, ensure all personnel are aware the equipment is to be moved and are clear of the machine.
- Take the emergency brake off and slowly idle the machine up.
- Always have the vibration "OFF" when loading or transporting the unit.
- Stay clear of soft spots (mud, water).

# Shut Down Procedures

- Turn the vibrator off, ensure the unit is out of gear and emergency brake is on.
- Idle engine to half throttle for 3-5 minutes before shutting engine off.
- Turn packer off.
- Remove all dirt from the machine prior to transportation.



# 63 SJP - SEVERE WEATHER

# Exposure to Heat and Cold

The human body works best when it has an internal "core" temperature of 37°C. 37°C might seem warm, but this is your internal temperature (not the air temperature). This temperature is necessary for your vital organs to function normally. During a regular day, your body temperature may vary by about 1°C depending on the time of day, your level of physical activity, and how you are feeling (emotional reactions). The body's metabolic processes produce the right amount of heat you need when you digest your food and when you perform physical activity.

When you work in extreme temperatures, your body needs to adapt. To maintain a constant inner body temperature, the body must continually keep or gain heat in cold environments and lose heat in hot environments.

To stay warm in cold environments, the body shivers. Moving muscles helps to increase heat production and reduces blood flow to the skin extremities (hands and feet) to reduce heat loss from the surface.

To stay cool in hot environments, the body increases blood flow to the skin which speeds up the loss of heat from the skin (radiates away the excess heat).

By sweating, shivering, and changing the rate of blood flow, the body can adapt to a fairly wide range of temperatures. However, there are limits to what the body can adapt to and its' ability to maintain its core temperature can fail.

# Factors Affecting How You Feel

How "hot" or "cold" you feel depends on these six factors:

- 1. *Air temperature* Air temperature is what can be measured with a thermometer. However, in situations where there is a lot of radiant heat (see below for examples), it is not always an accurate indication of how hot or cold you feel.
- 2. Other sources of heat (*radiant heat*). These sources can include direct sunlight, machinery that generates heat, hot water, heaters or open flames, asphalt, etc. Over time on a hot day, these sources can radiate heat into the air and add to the amount of heat you "feel".
- 3. *Relative humidity* is the amount of moisture (water) in the air. The warmer the air, the more moisture it can hold. High humidity makes people feel hotter because sweat does not evaporate off the skin (it is the evaporation of sweat that makes you feel cooler).

Cold air with high relative humidity "feels" colder than dry air at the same temperature. Why? High humidity in cold weather increases the conduction (loss) of heat from the body to the surrounding air.

4. *Moving air* (speed) usually cools a person. This cooling provides relief in a hot environment as long as the moving air is cooler than the person. In cold situations, air movement can create wind chill and make you feel much colder than the temperature may indicate.



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- 5. *Physical exertion* (how hard you are working) also influences how hot or cold you feel. Moving around or working generates heat. When working on a very hot day, this movement increases your heat stress.
- 6. *Clothing* can help you stay warmer. However, when mist, rain or sweat is heavy enough to make your clothing wet, you feel colder as wet clothing loses its' insulating properties.

## Heat

Heat stress is the overall heat load on the body, including environmental heat and inner body heat production (due to working hard). Mild or moderate heat stress may be uncomfortable and may affect performance and safety, but it is not usually harmful to your health. When heat stress is more extreme, the possible health effects include:

- *Heat edema* is swelling, which generally occurs among people who are not acclimatized to working in hot conditions. Swelling is often most noticeable in the ankles.
- *Heat rashes* are tiny red spots on the skin, which cause a prickling sensation. The spots are the result of inflammation caused when sweat glands become plugged.
- *Heat cramps* are sharp pains in the muscles that may occur alone or be combined with one of the other heat stress disorders. The cause is salt imbalance resulting from failure to replace salt lost with sweat. Cramps most often occur when people drink large amounts of water without sufficient salt (electrolyte) replacement.
- *Heat exhaustion* is caused by excessive loss of water and salt. Symptoms include heavy sweating, weakness, dizziness, nausea, headache, diarrhea, muscle cramps, and more.
- *Heat syncope* is heat-induced giddiness and fainting induced by temporarily insufficient flow of blood to the brain while a person is standing. It occurs mostly among unacclimatized people. It is caused by the loss of body fluids through sweating, and by lowered blood pressure due to pooling of blood in the legs.
- Heat stroke and hyperpyrexia (elevated body temperature) are the most serious types of heat illnesses. Signs of heat stroke include body temperature often greater than 41°C and complete or partial loss of consciousness. The signs of heat hyperpyrexia are similar, except that the skin remains moist. Sweating is not a good symptom of heat stress as there are two types of heat stroke "classical" where there is little or no sweating (usually occurs in children, persons who are chronically ill and the elderly), and "exertion" where the body's temperature rises because of strenuous exercise or work.

# TIP!

Intense thirst is not a good warning sign of heat stress, as un-acclimatized workers may not experience thirst.

# Signs and Symptoms of Heat Exposure - Early Warning Signs

- Headache
- Dizziness / faintness



- Irritability / anger / mood change
- Fatigue
- Heavy sweating
- Prickly heat (heat rash)
- Muscle cramps (especially after several days of exposure)
- Changes to breathing and pulse rate
- Dehydration

# As Heat Stress Worsens...

- Breathlessness (having trouble catching your breath)
- A strong rapid pulse changes to a weak rapid pulse
- Severe headache
- Severe muscle cramps
- Confusion
- Skin goes from feeling cold and clammy to hot and dry
- Severe dehydration
- Sweating may stop
- Exhaustion
- Coma and possible death

# **Treatment and Prevention**

Being aware of the signs of heat stress is the first step for prevention. Remember that lack of acclimatization, poor levels of physical fitness, and conditions such as diarrhea or fever increase susceptibility to heat stress because the body is already in a weakened state. Certain drugs, such as tranquilizers and diuretics, can also increase susceptibility. Heat stroke occurs more easily when the body has suffered a previous heat disorder.

Heat stroke and hyperpyrexia require **immediate** first aid and medical attention. Delayed treatment may result in damage to the brain, kidneys, and heart.

A heat stroke victim is usually unable to recognize heat stroke signs and symptoms. His or her survival depends on a co-worker's ability to recognize the symptoms and seek immediate medical help.

If one person is showing signs of heat stress, take it as a sign that other workers may also be affected. Workers should report to a cool area and be assessed individually before work continues.

# First Aid for Heat Exposure

- Get medical help or bring the person to a medical facility.
- Move the person to a cooler area where they can rest (such as an air-conditioned building or vehicle, or into the shade).



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- Take off excess clothing (hard hat, boots, shirt, coveralls, etc.).
- Give the person water to drink (only if they are able to drink it on their own).
- Cool the person with cold compresses and rapid fanning.
- For *heat cramps/heat exhaustion*, take the person to a cooler place and have them rest in a comfortable position. Give a half glass of cool water every 15 minutes. Do not let the person drink too quickly. Do not give liquids with alcohol or caffeine, as these ingredients can make conditions worse. Remove or loosen tight clothing and apply cool, wet cloths such as towels or wet sheets.

# While Getting Help, You Can:

- If the person is conscious, have them drink cool water slowly but regularly.
- If possible, help the person's body cool faster by wrapping wet sheets around the body and then fanning the body.
- If ice packs or cold packs are available, wrap the packs in a cloth and place them on each of the victim's wrists and ankles, in the armpits, and on the neck to cool the large blood vessels.
- NOTE: Immersing the victim in cold water more efficiently cools the body, but it can result in harmful overcooling. This can interfere with vital brain functions. It must only be done under close medical supervision. Do not use rubbing alcohol because it closes the skin's pores and prevents heat loss.
- Watch for signs of breathing problems and make sure the person's airway is clear.

# What and When to Drink

Being dehydrated is a serious issue. Since you cannot rely on "feeling thirsty", watch for signs of fatigue, irritability, headaches, nausea, and giddiness. Clinical (medical) signs are not passing urine and changes to a person's personality or mental state. When dehydrated, urine will be dark yellow to orange in color and there will be far less of it.

Un-acclimatized workers can lose up to 5 or 6 liters of fluid in an 8-hour shift. While working, drink about 250 ml (1 cup) of water every 15-20 minutes. Workers should be well hydrated before work in the heat begins. Potable water is provided to workers to prevent heat stress. Water is available in all Priestly Demolition Inc. Operations site trailers.

A person working in a hot environment loses water and salt through sweat. On average, about one liter of water each hour must be consumed to replace lost fluid. Workers in hot environments should be encouraged to drink water **even if they do not feel thirsty**.

A person is adequately hydrated when the person has to urinate slightly more often than usual. Ensure plenty of cool (10-15°C) or room temperature (20°C) drinking water is available at the worksite.



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Table 1 Guideline Criteria for Heat Stress Exposure (Values in °C) for 8-hour workday, five days per week with conventional breaks								
Allocation of Work in a Work/Rest	Acclimatized				Action Limit (Un-acclimatized)			
Cycle	Light	Moderate	Heavy	Very Heavy	Light	Moderate	Heavy	Very Heavy
75-100%	31.0	28.0			28.0	25.0		
50-75%	31.0	29.0	27.5		28.5	26.0	24.0	
25-50%	32.0	30.0	29.0	28.0	29.5	27.0	25.5	24.5
0-25%	32.5	31.5	30.5	30.0	30.0	29.0	28.0	27.0

#### Notes:

Assumes 8-hour workday, in a 5-day workweek with conventional breaks.

TLVs assume that workers exposed to these conditions are adequately hydrated, are not taking medication, are wearing lightweight clothing, and are in generally good health.

#### Examples of workloads:

**Rest** - sitting (quietly or with moderate arm movements).

**Light work** - sitting or standing to control machines; performing light hand or arm work (e.g., using a table saw); occasional walking; driving.

**Moderate work** - walking about with moderate lifting and pushing or pulling; walking at moderate pace; e.g., scrubbing in a standing position.

**Heavy work** - pick and shovel work, digging, carrying, pushing/pulling heavy loads; walking at fast pace; e.g., carpenter sawing by hand.

Very Heavy - very intense activity at fast to maximum pace; e.g., shoveling wet sand.

## Cold

Health problems associated with cold exposure include:

**Frostnip** is the mildest form of a freezing cold injury. It occurs when ear lobes, noses, cheeks, fingers, or toes are exposed to the cold and the top layers of the skin freeze. The skin of the affected area turns white, and it may feel numb. The top layer of skin feels hard, but the deeper tissue still feels normal (soft). The top layer of skin sometimes peels off the affected area.

**Frostbite** is caused by exposure to extreme cold or by contact with extremely cold objects (e.g., metal). It may also occur at normal temperatures from contact with cooled or compressed gases. Frostbite occurs when tissue temperature falls below freezing (0°C) or when blood flow is obstructed under cold conditions.

Blood vessels may be severely, and permanently damaged and blood circulation may stop in the affected tissue. In mild cases, the symptoms include inflammation (redness and swelling) of the skin in patches accompanied by slight pain. In severe cases, tissue damage without pain or

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burning/prickling sensations and blistering can happen. Frostbitten skin is highly susceptible to infection and gangrene (local death of soft tissues due to loss of blood supply) may develop.

**Hypothermia** occurs when the body is unable to compensate for its' heat loss and the body's core temperature starts to fall. You first feel cold, followed by pain in exposed parts of the body. As the body's core temperature continues to drop, the feeling of cold and pain starts to diminish because of increasing numbness (loss of sensation). If no pain can be felt, serious injury can occur without the victim realizing it.

As the body continues to cool, muscular weakness, an inability to think clearly, and drowsiness are experienced. This condition usually occurs when the body's internal or core temperature falls below 33°C. Additional symptoms include shivering coming to a stop, diminished consciousness, and dilated pupils. When the core temperature reaches 27°C, coma (profound unconsciousness) sets in.

**Chilblains** are a mild cold injury caused by prolonged and repeated exposure for several hours to air temperatures from the freezing point (0°C) to as high as 16°C. Where the skin is affected, there will be redness, swelling, tingling and pain.

**Immersion foot** occurs in individuals whose feet have been wet, but not freezing cold, for days or weeks. It can occur at temperatures up to 10°C. The primary injury is to nerve and muscle tissue. Symptoms include tingling and numbness, itching, pain, swelling of the legs, feet, or hands, or blisters may develop. The skin may be red initially and turn to blue or purple as the injury progresses. In severe cases, gangrene may develop.

**Trench foot (or hand)** is "wet cold disease" resulting from prolonged exposure in a damp or wet environment from the freezing point to about 10°C. Depending on the temperature, symptoms may begin within several hours to several days. The average is three days.

## Heat loss depends on:

- **Quality of clothing** good quality clothing with high insulating properties will trap air, creating a thicker boundary layer.
- *Wet clothing or footwear* Wet items lose their insulating value and cause heat loss nearly equal to that of exposed skin.
- **Body type** While everyone is different, people with a tall and slim build tend to become cold much faster than those who are shorter and heavier.
- *Metabolism* Physical activity (e.g., walking) increases your body's metabolism and generates more body heat.
- **Exposure to the sun** Bright sunshine may reduce the effect of wind chill (make it feel warmer) by 6 to 10 units. (Wind chill index does *not* take into account the effect of sunshine.)
- **Age and physical condition** For example, elderly people and children have less muscle mass so they generate less body heat.
- **Adaptation** Over time, the body can adapt to the cold. People who live in a cold climate are often able to withstand cold better than those from warmer climates.



# Warning Signs of Cold Stress

- Physical discomfort (feeling cold).
- Possible injuries, such as pulled muscles.
- Loss of feeling and dexterity in fingers, hands, and toes.
- Frost nip (outermost layers of skin turns white).

## Early Warning Signs as Cold Stress Worsens

- Extreme discomfort.
- Extreme shivering (core temperature down to 35°C) and then shivering stops.
- Severe hypothermia (core temperature about 33°C).
- Frost bite (skin freezes deeply).
- Loss of consciousness (core temperature 30°C).
- Heart stops.

## Signs and Symptoms of Cold Exposure (Hypothermia)

## Mild Hypothermia:

- 37.2-36.1°C Normal, shivering may begin.
- 36.1-35°C "Feeling cold", goose bumps, unable to perform complex tasks with hands, shivering can be mild to severe, hands numb.
- 35-33.9°C Shivering, intense loss of muscular coordination, movements slow and labored, stumbling pace, mild confusion but may appear alert. Use a sobriety-like test - if unable to walk a 9-meter straight line, the person is likely hypothermic.

## Moderate Hypothermia:

- 33.9-32.2°C Violent shivering continues, difficulty speaking, sluggish thinking, amnesia starts to appear, gross muscle movements sluggish, unable to use hands, stumbles frequently, signs of depression or withdrawn.
- 32.2-30°C Shivering stops, exposed skin is blue or puffy, muscle coordination very poor, inability to walk, confusion, incoherent/irrational behavior, but may be able to maintain posture and appearance of awareness.
- 30-27.8°C Muscle rigidity, semi-conscious, stupor, loss of awareness of others, pulse and respiration rate decrease, possible heart fibrillation.
- 27.8-25.6°C Unconscious, heartbeat and breathing is erratic, a pulse may not be obvious.

## Severe Hypothermia:

• 25.6-23.9°C - Pulmonary edema, heart and breathing failure, death. Death may occur before this temperature is reached.

## First Aid for Cold Exposures

Prevent frostnip by covering exposed skin surfaces. Cover the cheeks, chin, nose, ear lobes and forehead. A thin layer of a product such as Vaseline® may help.

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Treat frostnip or frostbite by gentle re-warming (e.g., holding the affected tissue next to unaffected skin of the victim or of another person). For cold-induced injuries, never rub the affected parts. Ice crystals in the tissue could cause damage if the skin is rubbed. Do not use hot objects such as hot water bottles or electric blankets to re-warm the area or person.

# First Aid for Frostbite (Including Immersion or Trench Foot):

- Get medical help.
- If possible, move the victim to a warm area.
- Gently loosen or remove constricting clothing or jewellery that may restrict blood circulation.
- Loosely cover the affected area with a sterile dressing, such as gauze. Place some gauze between fingers and toes to absorb moisture and prevent them from sticking together.
- Quickly transport the victim to an emergency care facility.
- DO NOT attempt to re-warm the affected area on site. Do stop the person from getting any colder. If there is a chance that the affected area will get cold again, do not re-warm the skin. If the skin is re-warmed and then freezes again, severe tissue damage can result.
- DO NOT rub the area or apply dry heat.
- DO NOT allow the victim to drink alcohol or smoke.
- DO NOT rub the area with snow or ice.

# First Aid for Hypothermia:

- Get medical help immediately. Hypothermia is a medical emergency.
- Remove any wet clothing.
- Place the victim between blankets (or towels, newspapers, etc.) so the body temperature can rise gradually. Be sure to cover the person's head. If medical help is not available immediately, body-to-body contact can help re-warm the victim slowly. Do not use hot water bottles or electric blankets, as these can heat the victim too quickly.
- Give warm, sweet (caffeine-free, non-alcoholic) drinks unless the victim is rapidly losing consciousness, is unconscious, or is convulsing.
- Quickly transport the victim to an emergency medical facility.
- Perform CPR (cardiopulmonary resuscitation) if the victim stops breathing. Continue to provide CPR until medical aid is available.
- The body slows when it is very cold. In some cases, hypothermia victims that appear "dead", have been successfully resuscitated.

# TIP!

Staying hydrated is important when you are working in the cold. Don't forget to drink regularly – warm fluids can include caffeine-free drinks, soup, and water.



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	Table 2 TLVs Work/Warm-Up Schedule for Outside Workers Based on a Four-Hour Shift*										
Air Temperature - Sunny Sky		No Noticeable Wind		Wind 8 km/h (5 mph)		Wind 16 km/h (10 mph)		Wind 24 km/h (15 mph)		Wind 32 km/h (20 mph)	
°C (approx.)	°F (approx.)	Max. work Period	No. of Breaks**	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks
-26° to -28°	-15° to -19°	(Norm b	oreaks) 1	(Norm b	oreaks) 1	75 min.	2	55 min.	3	40 min.	4
-29° to -31°	-20° to -24°	(Norm b	oreaks) 1	75 min.	2	55 min.	3	40 min.	4	30 min.	5
-32° to -34°	-25° to -29°	75 min.	2	55 min.	3	40 min.	4	30 min.	5	Non-eme work sl	ergency hould
-35° to -37°	-30° to -34°	55 min.	3	40 min.	4	30 min.	5	Non-en work	nergency should	Cea	50
-38° to -39°	-35° to -39°	40 min.	4	30 min.	5	Non-en work	nergency should				
-40° to -42°	-40° to -44°	30 min.	5	Non-er work	nergency should		ase				
-43° & below	-45° & below	Non-e worł c	mergency < should ease		000						

## Tip!

Whether it's hot or cold, watch for signs of "**unusual -umbles**" in yourself and your co-workers...stumbles, mumbles, fumbles, and grumbles.

These warning signs, along with the other signs discussed, show that the individual is not coping well with the temperature and their condition should be investigated further.

## Wind Chill

Wind chill is based on a mathematical calculation and represents how, on a windy day, the temperature would feel on your skin if the wind were reduced to a walking pace of 4.8 km/h (3 mph). Like humidex, wind chill is expressed in temperature-like units, but it is not an actual temperature. For example, the weather report will state that the outside temperature is -15°C with a wind chill of -30°C. This wind chill means that your face will feel as cold as it would on a calm day when the temperature is -30°C. Wind chill only affects objects that are warmer than the air temperature.

Why does wind speed matter? On a calm day, your body is insulated because it warms up a thin layer of air very close to your skin (called the "boundary layer"). Wind removes this protective layer. Warming up a new boundary layer takes energy. As the wind blows away each new

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boundary layer, you feel colder. The wind also contributes to evaporation of moisture from your skin or from damp clothing against the skin. This makes you feel colder by drawing more heat away from the body. In addition, wet skin loses heat much faster than dry skin (a fact that helps you stay cool in the summer, but also makes you colder in the winter).

## Wind Chill Hazards and Risk of Frostbite

In most of Canada, wind chill is included in the forecast when it reaches –25°C, as this is the point where frostbite becomes a risk. A *wind chill warning* is issued by Environment Canada when conditions become hazardous. See Table 3 for a list of wind chills and relative health risks.

		Table 3 Wind Chill Hazards and What to Do	
Wind Chill °C	Risk of Frostbite	Other Health Concerns	What to Do
0 to -9	Low Risk	Slight increase in discomfort.	<ul><li>Dress warmly.</li><li>Stay dry.</li></ul>
-10 to -27	Low Risk	<ul> <li>Uncomfortable.</li> <li>Risk of hypothermia if outside for long periods without adequate protection.</li> </ul>	<ul> <li>Dress in layers of warm clothing, with an outer layer that is wind resistant.</li> <li>Wear a hat, mittens or insulated gloves, a scarf and insulated, waterproof footwear.</li> <li>Stay dry.</li> <li>Keep active.</li> </ul>
-28 to -39	Low Risk: Exposed skin can freeze in 10 to 30 minutes.	<ul> <li>Risk of frostnip or frostbite. Check face and extremities for numbness or whiteness.</li> <li>Risk of hypothermia if outside for long periods without adequate clothing or shelter from wind and cold.</li> </ul>	<ul> <li>Dress in layers of warm clothing, with an outer layer that is wind resistant.</li> <li>Cover exposed skin.</li> <li>Wear a hat, mittens or insulated gloves, a scarf, neck tube, or face mask and insulated, waterproof footwear.</li> <li>Stay dry.</li> <li>Keep active.</li> </ul>
-40 to -47	High Risk: Exposed skin can freeze in 5 to 10 minutes.	<ul> <li>High risk of frostbite. Check face and extremities for numbness or whiteness.</li> <li>Risk of hypothermia if outside for long periods without adequate clothing or shelter from wind and cold.</li> </ul>	<ul> <li>Dress in layers of warm clothing, with an outer layer that is wind resistant.</li> <li>Cover all exposed skin.</li> <li>Wear a hat, mittens or insulated gloves, a scarf, neck tube, or face mask and insulated, waterproof footwear.</li> <li>Stay dry.</li> <li>Keep active.</li> </ul>
-48 to -54	Very High Risk: Exposed skin can freeze in 2 to 5 minutes.	<ul> <li>Very high risk of frostbite. Check face and extremities frequently for numbness or whiteness.</li> <li>Serious risk of hypothermia if outside for long periods without adequate clothing or shelter from wind and cold.</li> </ul>	<ul> <li>Be careful. Dress very warmly in layers of clothing, with an outer layer that is wind resistant.</li> <li>Cover all exposed skin.</li> <li>Wear a hat, mittens or insulated gloves, a scarf, neck tube, or face mask and insulated, waterproof footwear.</li> <li>Be ready to cut short or cancel outdoor activities.</li> <li>Stay dry.</li> <li>Keep active.</li> </ul>

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-55 and colder	Extremely High Risk: Exposed skin can freeze in less than 2 minutes.	DANGER!     Outdoor conditions are hazardous.	Stay indoors.
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# 64 SJP - DUST SILICA

# What are the hazards?

There are two kinds of hazardous dust common in construction. These include:

- Fibrous dust from insulation materials (such as asbestos, mineral wool, and glass fiber); and
- Non-fibrous silica dust from sandblasting, concrete cutting, or rock drilling.

## Where does construction dust come from?

Dusts are particles which are usually many times larger than fume particles. Dusts are generated by crushing, grinding, sanding, or cutting and by work such as demolition.

Priestly Demolition Inc. Ltd. shall ensure that a worker's exposure to silica is kept as low as reasonably achievable. An employer must ensure that a worker's exposure to silica does not exceed its occupational exposure limit of 0.025 mg/cubic meter over an 8-hour time period.

## **Preventative Measures**

- <u>Natural dilution ventilation</u> Welding outside in a light breeze or inside with doors and windows open provides large volumes of fresh air which should disperse airborne contaminants sufficiently in most cases. However, it is important for the welder to stay to one side of the plume.
- <u>Mechanical dilution ventilation</u> Fans such as roof exhaust fans and wall fans force outside air into and out of the building. General mechanical ventilation, in most cases, will deflect the plume out of the welder's breathing zone.
- Local exhaust ventilation Consists of an exhaust fan, air cleaner, and ducted system dedicated to removing airborne contaminants at the source and exhausting them outdoors. Local exhaust ventilation is preferred over dilution ventilation because it is better able to prevent airborne contaminants from entering the welder's breathing zone.

## **Respiratory Protection**

If you are in doubt about choosing the correct respiratory protection or if you are not sure to the source of the dust, stop work and advise your supervisor. Refer to Respiratory Protection Procedures.

# Training

Priestly Demolition Inc. Ltd. shall ensure that workers who is or may be exposed to any type of dust, including silica dust receives adequate instruction and training in all of the following:



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- the hazards and health effects of inhaling silica dust;
- safe work practices and procedures;
- the correct operation and use of any required equipment and engineering controls;
- the purpose and limitations of personal protective equipment, and
- the correct selection, fitting, use, care, and maintenance of that equipment; and housekeeping practices.

If it is not practicable to eliminate the risk of worker exposure to silica dust, Priestly Demolition Inc. Ltd. shall control the risk below the applicable exposure by applying control measures that are appropriate to the work activity, are consistent with the risk assessment, include, in order of priority:

- 1. the design and use of engineering controls, including appropriate dust reduction systems, containment of silica processes, and the provision and use of suitable work equipment and materials,
- 2. the control of silica dust exposure through administrative controls, including work practice controls, and
- 3. if the control measures are not adequate to control exposure, the provision and use of suitable personal protective equipment including the use of suitable personal respiratory protective equipment should be used in addition to these control measures. Priestly Demolition Inc. Ltd. shall provide workers in a restricted area with protective clothing that protects other clothing worn by the worker from silica contamination.

Priestly Demolition Inc. Ltd. shall ensure that no work is permitted for workers to engage in a work activity or a silica process that may expose workers to silica dust unless a risk assessment has first been completed by a qualified person.

An exposed worker is defined as a worker who may reasonably be expected to work in an area where he/she may be exposed to concentrations of silica exceeding the OEL at least 30 workdays in a 12-month period. A health assessment must comply with the requirements outlined in Part 4, Section 40 (2) of the OHS Code. The person with custody of the health assessment record must ensure that no person, other than the worker or health professional who conducts the health assessment, has access to the exposed worker's health assessment unless:

- the record is in a form that does not identify the worker, or
- the worker gives written permission for access by another person. A

Priestly Demolition Inc. Ltd. shall ensure that a worker undergoes a health assessment:

- not more than 30 calendar days after the worker becomes an exposed worker, and
- every two years after the first health assessment.

Exposed workers may refuse to undergo part or all of a health assessment by giving the employer a written statement refusing it. Priestly Demolition Inc. Ltd. shall pay the cost of the health assessment and ensure that, if it is reasonably practicable, a health assessment is performed during normal work hours.



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# 65 SJP – SITE SECURITY

The length and layout of a construction project presents unique challenges to provide secure sites. Every effort shall be made to protect the general public from the hazards associated with the project.

Priestly Demolition Inc. Ltd. field offices will establish and maintain security measures as necessary. Access to field offices will be controlled, and all field offices are to be secured and locked while unattended.

The Site Superintendent is primarily responsible for the following:

• Ensuring the site is secured against trespassing and that the general public is protected from inadvertent harm during the course of the contract. Where possible, place effective signage on all construction sites indicating "authorized personnel only, all visitors must report to site office."

• Erecting and maintaining temporary site perimeter fencing or hoarding to secure work areas and remediation sites.

- Using all available means including fencing, barricades, hoarding, signs, signals, and effective lighting to secure the site.
- Assigning keys for field offices; duplication of keys is not permitted.
- Taking all necessary precautions for warning signage, security and protecting the public.



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# 66 SJP – SKID STEER LOADER

## Purpose

The purpose of this Skid Steer Loader Procedure is to provide a safe guideline for all PDI employees, contractors, sub-contractors, and visitors to assist operations personnel in identifying and managing the risks associated with operation of the Skid Steer Loader.

## Scope

This Skid Steer Loader Procedure covers all aspects of PDI operations associated with performing business activities or processes and applies to employees at all levels of the organization, whether full time or part time, as well as suppliers (contractors and subcontractors) visitors and on the job trainees.

## Responsibilities

- The President and CEO, Managers / Supervisors and the HSE Representative have direct responsibility to ensure that the outlines of this Skid Steer Loader Procedure are implemented and followed.
- All employees, contractors and subcontractors are equally responsible for complying with the requirements of this Skid Steer Loader Procedure.

## Overview

Skid steer loaders can be dangerous if you do not observe certain safety precautions. Injuries and death are preventable. The most commonly reported causes of serious injury and death using skid steer loaders are:

- 1. Crushed by moving parts and
- 2. Roll-over accidents.

Safe work habits are important. Here are three actions you can take to be safe on the job site:

- To prevent accidents with skid steer loaders, read and follow directions in the equipment operator's manual. Pay attention to safety instructions in the manual and to warning labels you see on the equipment. If you have questions, stop, and ask your supervisor before you continue.
- Concentrate on working safely Sometimes you may be tempted to take risky shortcuts. Remember that an accident can leave you permanently injured or cut your life short. For your safety and the safety of those around you, do not take unnecessary risks. No deadline is so pressing you can't take the time to do your work safely.
- Do not operate machinery if you are tired or have taken drugs or alcohol. If you are on medication, discuss with your doctor or pharmacist if you are capable of safely operating machinery.



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• Training is essential to prevent workplace accidents. All workers operating the loader are required to be trained and certified to do so.

# Safety Symbols You May See on a Skid Steer Loader



Burn Hazard



High pressure fluid can cause an Injection injury.

Keep hands away from moving machine parts.



Equipment Can drop and crush you.



Avoid getting caught in rotating parts.

# Safety Messages and Signs

Manufacturers put important safety messages on equipment and in the operator's manual. It is critical to read, understand and follow all safety messages. The triangle shape is the symbol for caution. The exclamation mark in the center means Pay Attention. In some instances, the triangle shaped sign will show a picture. Other times, words explain why the sign is used. Many safety messages use the words Caution, Warning and Danger to get your attention.

Following are safety messages and their meanings. Each of these signs will have a written message, and perhaps a picture, about an unsafe condition.

CAUTION means you need to be careful. Follow the directions on the sign or you could get hurt.



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**WARNING** is more serious and means you need to follow the directions on the sign, or you could be badly hurt or killed.



**DANGER** is the most serious safety message. If you don't follow the directions, you will be seriously injured or killed.



# Safe Operating Procedure

# **Pre-Start Inspection**

Safety starts before the engine. Every day, you should walk around the loader to see that it is ready for safe operation. We've provided a sample checklist for visual, pre-operation inspection. Alert your supervisor before starting the loader if you find anything wrong during your daily check.

# Tires

Proper maintenance is important because good tires allow a skid steer loader to perform well on different types of surfaces. Proper tire inflation information will be printed on the sidewall of the tire.

## Cab

Some loaders are factory-equipped with side screens, to keep you from getting crushed by moving parts outside the cab. Some cabs are also designed to protect you if the loader rolls over or if material falls onto the cab. If the cab frame or side screens are damaged or appear to have been altered, tell your supervisor, and do not operate the loader until a qualified person has determined it is safe.

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## Safety Belt & Bar

Safety belt and safety bar work together to keep you securely in the driver's seat during operation. Damage to either of these safety devices can lead to serious injury.



## **Grab Handles**

Your hands can easily slip off worn-out grips causing you to fall or lose control of the loader.

## Steps

Slips and falls on steps are common and can cause you to engage controls inside the cab if you fall on them. Keep the steps free of ice, mud, and debris. When the non-slip step surface becomes worn, it can become slick and should be replaced.

## Attachments--Front and/or Rear

Many different attachments are used on skid steer loaders, including buckets, backhoes, augers, chippers, trenchers, and pallet forks. Make sure attachments are mounted and fastened correctly. Sudden release of an attachment can cause a load to drop, making the loader unstable and possibly injuring bystanders.

## Fluid Leaks

Leaks can cause the loader to break down. Fluids can also be a fire hazard. Puddles of fluid under the loader indicate something is leaking. Report signs of leaking fluid to your supervisor immediately.



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# Entering

Workers are crushed and killed by moving parts when they do not climb into the skid steer loader safely. To prevent accidents, enter according to the manufacturer's instructions.

- 1. Enter only with the engine off, lift arms down and attachments on the ground.
- 2. Face the seat with both hands on the grab bars.
- 3. Never use the control levers as grab bars.
- 4. Use the steps made for entering.



# Safe Start Up Practices

- 1. Fasten your safety belt.
- 2. Lower the safety/restraining bar (if so equipped).
- 3. Make sure controls are in neutral and the parking brake is set.
- 4. Clear the area of people.
- 5. Start the engine.
- 6. Test all controls.
  - Steering
  - Forward
  - Reverse
  - Raise and lower lift arms
  - Attachment controls



- 7. Check the brakes.
- 8. Check the horn and backup alarm (if so equipped).

#### Don'ts

- Never place any part of your body outside the cab where you could be crushed.
- Never try to start a loader from outside the cab.
- Never operate the machine if any safety device is missing or damaged.
- Never climb out of a loader with the engine running.
- Never start the engine by shorting across the starter terminals.

Note: Refer to the operator's manual for instructions on jump-starting if necessary.

#### Safe Shut Down and Exit

Many operators are killed trying to climb out of the cab without observing safe shut down procedures. Protect yourself by always following these precautions.

- 1. Park on a level surface.
- 2. Lower the lift arms and attachments to the ground.
- 3. Place the controls in neutral.
- 4. Set the parking brake.
- 5. Turn the engine off.
- 6. Cycle the controls to relieve hydraulic pressure.
- 7. Make sure the controls are locked (if so equipped).
- 8. Remove the ignition key.
- 9. Unbuckle the safety belt and raise the safety bar.
- 10. Exit according to manufacturer's instructions using the steps on the loader and the grab handles for support.
- 11. Block the wheels if there is a chance the loader will roll.

#### How to avoid being crushed

- 1. Never enter or exit under a raised attachment because it could fall on you.
- 2. Never start the engine or operate controls from outside of the cab. Loader or lift arm attachments can move and crush you when the controls are engaged.
- 3. Always fasten your safety belt and lower the safety bar when you are in the operator's seat, so you stay securely in the cab, protected from being crushed.



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- 4. Never climb into or out of the cab while the engine is running. You can be crushed if you bump the controls.
- 5. Never lean out of the cab while the engine is running. Keep your head, arms, and legs inside or you can be crushed by moving lift arms or attachments.
- 6. Never lift an attachment above a person. Loads can shift or fall out, or the attachment can drop unexpectedly, crushing anyone under it.
- 7. Never lift loads so high or roll attachments back so far that material dumps into the cab, landing on you.
- 8. Never work under a raised attachment, unless the lift arms are secured in the "up" position using approved lift arm supports. Contact the manufacturer for information if your loader does not have lift arm supports.
- Whenever possible, perform maintenance work with the engine off, key removed, parking brake set, wheels blocked, and attachments lowered or supported by an approved lift arm support.

# **Prevent Roll-over Accidents**

When a skid steer loader becomes unstable or out of balance, it tips over. Overloading, carrying loads too high, operating on rough or uneven surfaces, adding attachments, or driving too fast for conditions cause the loader to become unstable. Human reaction time is too slow to stop a rollover once it starts. You can avoid rollovers by recognizing dangerous situations and taking action to avoid them.

Prevent Roll-Over Accidents by:

1. Don't overload the attachment. Check the capacity label, data plate, or operator's manual for the maximum load limit. Exceeding that limit may cause the loader to become unstable and roll over.

## Sample Date Plate



- 2. Evenly distribute the load on the attachment so the loader doesn't tip over.
- 3. Secure unstable loads so they won't shift or fall. When securing is necessary, lower the lift arms, shut off the engine, climb out, chain the load in place, climb back in the cab, start the loader, and proceed with the job.

- 4. Lift loads slowly and evenly to keep the loader stable.
- 5. Carry loads close to the ground, yet high enough to clear obstacles. When a load is carried too high, skid steer loaders are more likely to tip. It is especially important to carry the load as low as possible when turning, carrying a heavy load, travelling on a slope, or operating on rough surfaces.
- 6. Keep the attachment level while moving lift arms or driving up and down hills, otherwise the load could shift and make the loader out of balance.
- 7. Operate at a speed that is appropriate for conditions, so you don't lose control of the loader.
- 8. Operate the controls smoothly to prevent jerking or bucking.
- 9. Operate on level, stable surfaces. Load, unload and turn on solid, level ground.
- 10. Drive up and down hills, not across them. Drive slowly on slopes.
- 11. Keep the heavy end of the loader pointed uphill. When fully loaded, skid steer loaders should be driven with the load uphill.
- 12. When unloaded, the rear of the loader is heavier, so the back of an empty loader should be pointed up hill. If you are not sure of which end is heaviest because of added attachments, check the operator's manual.
- 13. Do not make sharp turns on hills or the loader may roll over. Stay away from steep hills entirely. The operator's manual defines the maximum slope for your loader.
- 14. Avoid holes, large bumps, soft spots, and weak floors. All can make the loader unstable.
- 15. If you must cross railroad tracks, ditches, curbs, or similar rough surfaces, cross at an angle and drive slowly.
- 16. Stay away from steep edges on loading docks, ramps, ditches, retaining walls and near trenches; otherwise, you could fall over the edge, or the bank could cave in.

## **Steer Clear of Runover Accidents**

- Wear your safety belt and use the safety bar so you stay safely inside the cab.
- Know where your coworkers are. Check all around before moving the loader. Keep other people away while you are operating and never let anyone get close enough to be crushed by unexpected loader movements.
- Drive forward when you are on level ground unless the load blocks your view, or the attachment is designed to be used with the loader in reverse. When a load blocks your view, either drive in reverse (if the loader is designed so you can see behind) or have a co-worker guide you. Work out hand signals in advance. Make sure your co-worker stays a safe distance from the loader.



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- Watch for traffic and pedestrians when crossing or working near roads, driveways, parking lots, building corners, shrubs, trees, and other blind spots. People, animals, and traffic move quickly and may not realize they are in the path of danger. Be aware of your surroundings at all times.
- A co-worker can help you move loads that are too high and wide to safely see over and around.
- A co-worker can help you move loads that are too high and wide to safely see over and around.



- Look in the direction you are kiving.
- Operate the loader smoothly to maintain control so you don't injure yourself or others nearby.
- Don't ram the attachment into materials. You might:
  - Run into an object hidden by the material.
  - Run through the pile and hit someone or something on the other side.
  - Lose control of the loader.
- Never allow riders. The cab is built for one person and attachments are not for carrying people.
- Prevent the loader from moving unexpectedly during maintenance.
  - Park on a level surface.
  - Lower the attachment(s).
  - Place the controls in neutral.
  - Set the parking brake.
  - Turn the engine off.
  - Cycle through the controls to relieve hydraulic pressure.
  - Follow safe shut down procedures so controls are locked.
  - Block the wheels so that loader will not roll.

## Stay Away from Obstacles



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- Check the work area before you start. Note all potential obstacles tree branches, pipes or any object that could come through the cab. Make sure you have adequate clearance through aisles, doorways, and other openings.
- Maintain a clear line of sight. Keep the windshield and the back window clean if the loader has them.
- Keep attachments and loads as close to the ground as possible so they don't block your view.
- Use extra caution in doors. Loaders respond quickly to their controls. It's easy to run into walls, overhead doors, or pipes.

## Fill Fuel Containers Correctly

To reduce the chance of static sparks, do not fill containers (plastic or metal) in a car or the bed of a pickup.

- 1. Always shut off the engine before refuelling.
- 2. Touch the fuel nozzle to the container before removing the container lid.
- 3. Keep the nozzle in contact with the container while filling.
- 4. Don't fill to the brim. Leave room for expansion. Containers and gas tanks should be filled 3/4 full.

## Beware of Undercutting

Digging into the bottom of a material pile is called undercutting. The overhang created by an undercut can collapse.

- Do not work with material piles that are taller than your raised attachment.
- Work from the top down, shaving material from the front of the pile so it will not collapse.

# Dangers of High-Pressure Hydraulic Fluid

Hydraulic fluid flows through hoses under very high pressure. Leaks from a thin, high-pressure stream that quickly cuts through skin causing serious injury. Never use your hand to check for a hydraulic fluid leak. If you think there is a leak, have it checked by someone who is qualified to check for hydraulic fluid leaks.

## Carbon Monoxide Kills!

Indoor work sites require fresh air ventilation. Gasoline-, diesel and LP gas-powered loaders produce carbon monoxide

(CO), a deadly, odorless, colorless gas. CO can poison you before you realize it. Symptoms of CO poisoning include headache, nausea, weakness, dizziness, and loss of consciousness. When working indoors, if anyone has these symptoms, shut down the loader, get everyone out of the building and call 911.

## **Use Caution Near Gasoline and Fuels**

Gasoline and other fuels are flammable.

- Always shut off the engine before refueling.
- Never smoke or allow open flames near fuel.



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- Check the operator's manual for correct fueling guidelines.
- Touch the fuel nozzle to the loader before opening the fuel cap to reduce the chance that a static spark will ignite the fuel.
- Keep the nozzle in contact with the filler neck while fueling. Replace the cap as soon as you are finished.
- Use only approved fuel containers.
- Never clean your hands or machine parts with gasoline. Use a non-flammable solvent instead.

#### **Guard Against Electrocution**

High voltage electricity can jump several feet away from a power line and travel through metal, wood, vegetation, and many other materials. Talk with your supervisor before starting on a job that requires work near any electric power source.

- Call your province's one-call utility location hotline to identify buried lines before digging. The phone number will be in the information pages in the front of the phone book.
- Don't carry tall loads near power lines.
- Keep the attachment as low as possible when working near overhead lines.
- Don't drive over downed or exposed power lines.

## Prevent Accidents Near Traffic

A skid steer loader is not made for street or highway travel. To be safe, load it onto a trailer and pull it to job sites. When the loader must be moved short distances on a public roadway, keep the following safety tips in mind.

- Lock attachments in the transport position.
- Observe all traffic signals, signs, and rules.
- Mount a Slow-Moving Vehicle (SMV) emblem on the back to indicate the loader is moving at a speed less than 25 m.p.h.
- Use caution at intersections. Allow faster moving vehicles to go first. Make sure you have enough time to get through safely, without interrupting traffic flow.
- Do not drive at night unless the loader is equipped with lights as required by state law.
- Use a flagger and highly visible warning cones to alert oncoming traffic when working near a public roadway. Locate flaggers and cones far enough ahead of the work site so drivers have time to slow down.
- The skid steer operator and the flagger should wear highly visible, reflective clothing.
- Do not park the loader on a public roadway. It creates a hazard for you and motorists. Park away from the road on a level surface if the loader must be left at a job site.
- Check the operator's manual for instructions before hauling the loader on a trailer.



# 67 SJP - SPOTTING – BACKING IN EQUIPMENT

## Purpose

Eliminate the risk of injury, harm to the environment, and equipment damage.

## **Operator Responsibilities**

An operator, prior to backing with a spotter, must review all relevant procedures, review JSA, and conduct a Hazard Assessment to determine if the task can be completed safely, with zero impact to the environment and/or equipment damage.

## **Assessing Hazards**

Before an operator backs up with a spotter, a Hazard Assessment must be performed that considers the following.

- The location where task is to be performed;
- The environmental conditions;
- The reference point of spotter; and
- The amount of people and equipment in the area.

If the Hazard Assessment determines that there is a potential for injury, environmental damage, and/or equipment damage all reasonably practical measures are to be used to eliminate or reduce the potential.

## Method/Procedure

An assessment for hazards is required prior to starting a task. The operator must ensure that:

- There is a clear line of sight; this includes ensuring windows and mirrors are clean, mirrors are adjusted in a manner to eliminate as many potential blind spots as possible, and weather conditions must also be taken into consideration i.e., rain, snow, fog, dust, etc.
- Other work in the area; this includes personnel and equipment. How close is the adjacent work to be completed and will the work being conducted have a direct or indirect impact on task and/or vis versa?
- Obstructions; this includes personnel, equipment, and debris.
- Spotter; is one required and is there one available. If one not available, can backing up be completed safely?

## Operator

When backing up, operators will:

- Use a guide whenever possible.
- Sound the horn before starting to move the vehicle.
- Stop backing up immediately under any of these conditions:
  - The guide is not fully visible;
  - Visual contact with other workers is lost; or
  - An emergency stop signal is received from anyone in the area.


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- Resume backing up only after visual contact with the guide or workers on foot is restored and acknowledged.
- Stop all vehicle movement while the guide is repositioning.

#### Spotter

While guiding equipment, the spotter will:

- Wear high-visibility clothing.
- Position themselves to maintain as clear a view as possible of the intended path of the equipment.
- Stay clear of the equipment's path.
- Never stand behind a reversing piece of equipment.
- Establish and maintain eye contact with the operator.
- Remain visible to the driver at all times.
- Use standard hand signals to communicate with the driver;
- Be sure that no one is riding on the outside of the equipment before signaling to the operator to begin moving.
- Signal the operator to stop if spotter must change position/reposition and when ready the spotter will signal to the operator to continue.
- Immediately signal the operator to stop if any person or object enters the equipment's intended path.
- Use distinct and deliberate body movements.
- Be aware of blind spots.
- Spotter must protect themselves and be aware of crush points.
- Spotter must avoid walking backwards at all times.



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# 68 SJP - TRAFFIC CONTROLLERS (FLAGGER)

#### Flagger

A flagger may be necessary to alert traffic, or to stop traffic intermittently, as required by the progress of work in a work zone. The flagging operation provides protection for other workers and the public. A flagger should be alert, neat appearing, and act responsibly. The flagger's only job is work zone protection and traffic control. The flagger must never assist the crew with work activities, or engage in any distraction, and must remain on duty until properly relieved. Use stop-slow paddles, where feasible. Flags may be used at intersections or where the back-side message is inappropriate for opposing traffic and where conditions such as high wind make the use of a paddle impractical.

#### Flaggers should be used in the following situations:

- One lane is alternately used for both directions of traffic.
- The roadway is closed for a brief period of time.
- Traffic speeds need to be substantially reduced.
- Inadequate sight distance hinders advance warning.
- Information, such as changing conditions, needs to be conveyed to motorists.
- Opposing traffic needs to be controlled at an intersection.
- Installing and removing other traffic control devices.
- Where conditions require unusual precautions

#### General

No employee is to be utilized as a flagger until the employee has shown conclusively to their supervisor that they realize fully the importance of the job, and understands the duties and responsibilities associated with it.

#### Flaggers must:

- Always face oncoming traffic.
- Never leave their position until relieved.
- Know where crew members and equipment are, be aware of changes, and never stand among workers and equipment.
- Be courteous, yet authoritative.
- Minimize conversations with motorist and pedestrians.
- Be positioned to compensate for limited sight distance, to provide maximum advance warning, and remain clearly visible to traffic at all times.
- Maintain continuous communication with any other flaggers.
- Try to maintain color contrast with background; consider sun glare on motorist.
- Establish eye contact with drivers to whom they must give direction.

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A flagger's activities bring them into continuous contact with the public. As they are the ones the public sees in most cases, it is important that the flaggers conduct themselves in a manner which will bring credit both to themselves and the Department. Courtesy should be exercised at all times. Even under trying conditions, a flagger should be courteous, though firm.

The flagger's supervisor shall determine when flaggers are to be used, how many are needed, where they are to be stationed for a specific operation, and the methods of communication between multiple flaggers

#### Traffic controllers must use the following equipment and personal protective gear:

Hard hat.

- High Visibility Apparel (Vest, T-Shirt or 3 Season Jacket): Must meet approved ANSI/ISEA 107-2004, Performance Class II standards. They can wear a vest, jacket, or shirt in colors of orange, strong yellow-green or fluorescent versions of these. These garments must be worn rain or shine. If it's dark, the flagger should be wearing reflectorized garments, visible from a minimum distance of 1,000 feet.
- The flagger's station should be lit so the flagger will be clearly visible to approaching traffic.
- 24-inch stop/slow paddle, red flag (24in by 24in). The paddle is the preferred device, but the flag may be used at intersections where the stop/slow paddle would offer contradicting information to drivers traveling in opposite directions/legs of the intersection or during emergency situations.
- A red wand flashlight, if working at night, and portable lighting is unavailable.
- Before being assigned as a flagger, the individual must be trained in the proper fundamentals of flagging moving traffic. Training, instruction, and signaling directions used by flaggers should conform to the "Manual of Traffic Controls for Construction and Maintenance Work Zones," published by the State Department of Transportation.

According to the OHS Code of Regulations, flaggers are required at locations on a construction site where barricades and warning signs can't control the moving traffic. In these required situations, flaggers must be placed in relation to the equipment or operation, so they can give effective warning

Training should take into account the particular worksite condition and include the following:

- flagger equipment which must be used
- the layout of the work zone and flagging station
- methods to signal traffic to stop, proceed or slow down
- methods of one-way control
- trainee demonstration of proper flagging methods
- how to respond to emergency vehicles traveling through the work zone
- how to handle emergency situations
- methods of dealing with hostile drivers
- flagging procedures when only a single flagger is used

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Flaggers must be trained by someone with the qualifications and experience necessary to effectively instruct the employee in the proper fundamentals of flagging moving traffic. And, as with all employee training, it should be documented and kept on file in accordance with the company safety manual.



#### Use of Hand-Signaling Devices by Flaggers

TO LET TRAFFIC PROCEED



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# **69 SJP - TRAFFIC CONTROL PLANS**

Construction work zones present motorists, cyclists, and pedestrians with unexpected and unusual situations as far as traffic operations are concerned. Whenever unregulated movement of vehicular traffic creates a hazard to workers, appropriate traffic control measures must be implemented. The appropriateness of measures can be determined by monitoring their effectiveness. Effective traffic control measures for work locations can include vehicles, traffic lights, signs, barricades, cones, barriers, delineator posts, flashing message and arrow boards, detours, and flag persons. Traffic control procedures and equipment must be in conformity with applicable authorities. These include the following:

- Public Highways Ministry of Transportation and Highways' publication, "Traffic Control Manual for Work on Roadways"
- Municipal laws (ex. City of Calgary, Roads Temporary Traffic Control Manual
- Provincial Occupational Health and Safety Regulations

#### **Traffic Management Plans**

Traffic Management Plans are developed where there is a potential for prolonged traffic disruption. The plans:

- Ensure the safety of road users and workers at all times.
- Establish the basic principles and prescribe the standards for the installation of various types of traffic control measures through construction work zones.
- Identify issues such as lane closures, channelization, hours and duration of closures, signs, signals, lighting devices, markings, barricades, and traffic control persons.

Prior to implementation, the plan is forwarded to the owner's representative and the city/municipality having jurisdiction for review and approval of the Traffic Management Plan

Traffic Control - Responsibilities of the Traffic Control Person (TCP)

• Stands in a safe position, preferably on the driver's side of the lane under the control and is clearly visible. He/she has an unobstructed view of approaching traffic.

NOTE: Do not assume that drivers and pedestrians will see or recognize the workers or hazards in a work zone. Remember that the visibility of hazards/ workers can be greatly diminished in darkness and/or poor weather conditions.

- Has successfully completed a recognized "Flagging" course.
- Remains at the point of duty until work is completed or is relieved from Shift.
- Avoids turning his/her back to the traffic.
- Avoids confrontation with vehicle occupants or pedestrians. Where hostility Is imminent, radios for assistance and/or moves toward fellow workers.

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Is provided with and uses:

- a STOP/SLOW paddle having a reflective finish on both sides,
- a high visibility vest, jacket, coat, coverall, or other approved garment with a reflective stripe on either side on the front and a "X" pattern on the back of the garment, reflective wrist/upper arm band circling the limb,
- a hard hat of a high visibility color with a reflective strip about the crown, and
- a flashlight fitted with a red signaling baton during hours of darkness or obscured visibility.

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# 70 SJP - THUNDERSTORMS AND LIGHTNING

Thunderstorms can produce five basic kinds of severe weather hazards: tornadoes, strong straight-line winds, lightning, heavy rain, and large damaging hail. Environment Canada issues advisories for two types of severe weather events. A watch is issued if severe thunderstorms or tornadoes are possible in the area.

A warning is issued if severe thunderstorms or tornadoes are reported or are occurring. Severe thunderstorms are usually classified as having hail stones  $\frac{3}{4}$ " or more in diameter and/or straightline wind gusts of 58 mph (93 km/hr.) or higher. If severe weather is reported for your area, all outside work will be temporarily halted until it is safe to resume.

All thunderstorms produce lightning and are dangerous. Lightning can occur in any season of the year. Most lightning deaths occur when people are caught outdoors. Lightning often strikes as far as 10 miles away from any rainfall; however, high winds, rainfall, and a darkening cloud cover are the warning signs for possible cloud to ground lightning strikes.

If lightning is a possibility, go inside a building or all-metal vehicle. Avoid water, beaches, and boats. Stay away from doors, windows, metal indoor fixtures, electrical devices, and telephones. Avoid open high ground and isolated large trees. Do not lean on vehicles or equipment. All crane booms should be lowered, and crane operations shut down. Use the 30-30 rule for outdoor activities.

<u>30 seconds</u>: Count the seconds between seeing the lightning and hearing the thunder. If this time is 30 seconds or less, then the lightning is close enough to be a threat. Seek immediate shelter.

<u>30 minutes</u>: After seeing the last lightning flash, wait 30 minutes before leaving shelter. More than half of lightning deaths occur after the thunderstorm has passed. Stay in a safe area until you are sure the threat has passed.



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# 71 SJP - TRANSPORTATION OF DANGEROUS GOODS – TDG

Note: Placarding and safety marks for the Transportation of Dangerous Goods are covered in the Workplace Hazardous Materials Information System section. Please note that Canada is moving to the Globally Harmonized System (in Canada called WHMIS 2015) and all changes must be implemented by December 2018. Additionally, TDG regulations are subject to periodic change; please see the regulations on the TDG website at <a href="https://www.tc.gc.ca/eng/tdg/safety-menu.htm">https://www.tc.gc.ca/eng/tdg/safety-menu.htm</a> for the most current information.

The Transportation of Dangerous Goods Act and Regulations were enacted to promote public safety when dangerous goods are handled, offered for transport, or transported in Canada. The regulations prescribe safety standards and requirements and provide a mechanism for communicating the relative degree and nature of the hazard. Similarly, this procedure is intended to ensure all Priestly Demolition Inc. Operations employees are provided with the information needed to handle, offer for transport, or transport dangerous goods safely. Within the Regulations, three main areas of responsibility are defined.

- 1. **Manufacturer or Producer**: responsible to properly classify, package, and mark regulated dangerous goods.
- 2. **Consignor** (Shipper): responsible to ensure that all dangerous goods shipments are documented in accordance with the regulations and that all required safety marks are in place (labels, placards, etc.).
- 3. **Carrier:** responsible to ensure that dangerous goods are transported safely, that all necessary documentation is available, and that required safety marks are in place.

While it is not the business of Priestly Demolition Inc. Operations to be engaged in the manufacture or production of dangerous goods, there will be occasions where Priestly Demolition Inc. Operations or a subcontractor will be engaged in shipping, carrying, or receiving these goods. To address this and the safety requirements of Part VII, VIII and IX of the regulation, Priestly Demolition Inc. Operations' policy regarding the application of this program, corporate responsibilities, and record keeping requirements are presented below.

#### Scope

The scope of the transportation of dangerous good (hereinafter "TDG") program applies only to dangerous goods listed in Schedule II or otherwise regulated under the Transportation of Dangerous Goods Act and Regulations. These goods include those falling under one of the nine hazard classes:

- Class 1: Explosives
- Class 2: Compressed gases
- Class 3: Flammable liquids
- Class 4: Flammable solids, spontaneously combustible, dangerous when wet
- Class 5: Oxidizers and organic peroxides
- Class 6: Poisonous and infectious substances
- Class 7: Radioactive
- Class 8: Corrosives



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Class 9: Miscellaneous dangerous goods

#### Discussion

Priestly Demolition Inc. Operations requires that any employee involved with the receiving, consigning, or transporting of dangerous goods participate in the TDG Program. Priestly Demolition Inc. Operations employees shall gain their understanding of TDG requirements via the following training experiences:

- Priestly Demolition Inc. Operations Health and Safety Management Training courses and Operations Management Training.
- Health and safety briefing/training which address the site-specific hazards identified at each site; and
- TDG training as part of the Priestly Demolition Inc. Operations health and safety program.

#### Elements of the TDG Program

#### **TDG Training**

Any Priestly Demolition Inc. Operations employee involved with the receiving, consigning, or transporting of dangerous goods or supervising such work, will be provided with TDG training. The Priestly Demolition Inc. Operations TDG training program will include the following:

- Definition of the classes of dangerous goods and their associated hazards.
- Names, classes, product identification numbers. and packing groups of dangerous goods normally encountered on the job.
- How to identify dangerous goods by safety marks on a shipping document.
- Retention and delivery of the shipping documents.
- The implications of mixed loads and the need for segregation of incompatible dangerous goods.
- What to do if the shipping documents, placards, labels, other safety marks, or packaging seem inadequate or incorrect.
- What to do if radioactive materials, explosives, and infectious substances are lost, stolen or misplaced.
- What constitutes a dangerous occurrence and what to do if one arises.
- Appropriate safety equipment and procedures for the use of the equipment.

In addition to the above, TDG training will be provided on a site-specific basis to address the respective dangerous goods during site-specific health and safety briefings/training.

#### Documentation

When acting as a consignor, carrier, or consignee, Priestly Demolition Inc. Operations employees must ensure appropriate shipping documents in accordance with Part IV of the TDG Regulations have been prepared and maintained throughout the process. The documents must be legible, prepared by the consignor, dated, have a unique identification number, signed by the consignor, copied to the initial carrier, and maintained for two years.



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In addition, the document must include the following minimum information:

- Name and address of the consignor.
- Name and address of the consignee.
- Name of the initial carrier.
- A description of the dangerous goods in the following order:
  - Proper shipping name (as per lists I and II of Schedule II).
  - Primary classification (followed by the compatibility group letter for explosives).
  - Any subsidiary classification in parentheses.
  - Product identification number (UN PIN).
  - Packing group.
  - Total mass or volume of each dangerous good; and
  - Number and type of packages.
- 24-hour telephone number for consignor or manufacturer in case of damaged or defective packaging.
- Number and type of placards and orange panels that are required for the shipment.

In addition, in accordance with Part IV of the TDG Regulations, any additional information requirements for dangerous goods will be reviewed and included.

#### Responsibility

#### **Operations Manager**

Priestly Demolition Inc. Operations management shall monitor the TDG Program and:

- Maintain the program and course of instruction to be current.
- Provide guidance and support to all Priestly Demolition Inc. Operations offices to aid their compliance with the implementation of the TDG Program.
- Ensure that all employees are receiving training as required.
- Monitor program implemented at the local level.
- Ensure that the Priestly Demolition Inc. Operations TDG Program is consistent with, and as effective as, any provincially or federally regulated program required within the region.
- Audit local projects to ensure the required elements of the program have been implemented.

#### Site Employee

The site employee shall be responsible for ensuring proper manifesting and documentation on their respective projects. The employee shall also be responsible for ensuring that all label and placard requirements are met on the respective project site. The employee shall consult management, as needed, to ensure complete implementation of this program on the project.



#### **Consignor** (Shipper)

It is the responsibility of the person shipping any dangerous good to ensure that the goods being packaged and handled are:

- Classified
- Packaged
- Marked
- Labelled
- Manifested (documented)
- In accordance and compliance with the regulations prior to being loaded.

In addition, if the consignor loads the truck and transport vehicle, he or she must make sure that they are properly stowed and secured. The consignor must also ensure that any required placards are placed on the truck prior to the dangerous goods being loaded. The consignor must provide:

- A copy of a properly completed document.
- Placards, if such are required.
- Any additional permits or documents that may be needed for the type of dangerous goods being consigned; and
- A special waste manifest if hazardous waste is being shipped.

#### Consignee (Receiver)

It is the responsibility of the person accepting any dangerous good (consignee) from a transporter or consignor to ensure that the goods handled and received are:

- Classified
- Packaged
- Marked
- Labelled
- Manifested (documented)
- In accordance and compliance with the regulations prior to being off-loaded.

#### Carrier (Driver)

It is the responsibility of the person carrying any dangerous good (driver) from a consignor to a consignee to:

- Check the shipment for labels and damage before accepting it.
- Check the documentation to make sure it is accurate.
- Ensure that the load is securely stowed.
- Determine if placards are required for the load
- Affix any required placards to both sides, front and rear of the transport unit.
- Carry the shipping document in the regulated location(s).
- Maintain and/or replace any damaged or lost placards en route.
- Ensure that a copy of the documentation is retained for two (2) years.
- Deliver a copy of the document to the consignee.



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- Report any dangerous occurrence.
- Assist in containing a dangerous goods spill.
- Provide reasonable assistance to a designated inspector or peace officer when requested to do so.
- Be able to produce a valid certificate of training.

#### Records

#### Training

Training records will consist of the employee's TDG awareness training, all health and safety program sign-off forms, and site health and safety attendance records. Copies of all training certificates will be maintained at each site as well as in the corporate health and safety files.

#### Documentation

All transport documentation and manifests will be made part of the official project file and maintained by the site employee at the respective office for a minimum of two years.

#### **Sub-contractors and Clients**

Priestly Demolition Inc. Operations must formally notify all sub-contractors of the presence of any dangerous good used on any Priestly Demolition Inc. Operations site, which is subject to the TDG regulations. Conversely, sub-contractors must:

- Be able to provide proof of TDG training if requested.
- Inform Priestly Demolition Inc. Operations of any dangerous goods used in their work for Priestly Demolition Inc. Operations.
- Have appropriate documentation.
- Have containers and transport vehicles correctly labelled.

Operations Management is responsible for ensuring clients provide TDG information to Priestly Demolition Inc. Operations when working on client sites where exposure to dangerous goods and related operations subject to this regulation are involved.

# 72 SJP - TRENCHING AND EXCAVATION

The definition of an "excavation" is any cut, cavity, trench, or depression in the earth's surface resulting from rock or soil removal.

Excavations can be defined as two types:

- **Trench Excavations** are the most common and generally less than 12 ft in width. Some examples are excavations used for pipelines and manholes. They must be engineered if greater than 20 ft in depth.
- **Bulk Excavations** are greater than 12 ft in width and are commonly used for foundations or basements. They also must be engineered if greater than 20 ft in depth.

Other requirements for engineering on an excavation include:

- Excavations greater than 4 ft in depth, with sides sloped greater than <sup>3</sup>/<sub>4</sub> to 1.
- Excavations greater than 20 ft in depth.
- Excavations next to structures.
- Excavations in soil subject to vibration or hydrostatic pressure.
- Excavations shored in a manner differing from local regulation.
- Excavations as determined by the company.

#### **Excavation Pre- Planning**

There are many factors that need to be considered prior to work being done in or around excavations.

- All excavation work must be carried out in accordance with local regulations or with the specific requirements of a registered engineer.
- Utility services in the area, such as electrical, gas, steam, water and sewer, and fibre optic lines, must be located and assessed for hazard potential. If this equipment is dug into, undercut, or damaged in any way, it may result in an injury or death to workers, interruption of service, contamination of water, disruption of processes, and expensive delays. Test holes should be dug by hand prior to equipment being used. Pointed tools must not be used for probing to locate underground gas lines or electrical facilities.
- How large will the excavation be? This will determine if engineering is required as per the above.
- Trees, utility poles, rocks, and similar objects adjacent to an area to be excavated must be removed or secured if they could endanger workers. A clean area extending 2 ft back from the edge of a trench must be maintained (4 ft for any other excavation).
- Proper permits and authorization will be required prior to tree or pole removal.
- The side of the excavation must be trimmed or scaled to remove any loose rock.



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- Safe access must be provided in the immediate area where workers are employed in trenches over 4 ft deep. Ladders must extend from the bottom of the excavation to at least 3 ft above ground.
- Another consideration when excavation work is being done on travelled roadway is the need for traffic control and high visibility clothing for all workers.
- Any engineered excavation support system must have certified design documentation on site.
- The need to identify which type of barricades should be used to prevent workers and others from falling into the excavation needs to be considered. When an excavation must remain open for the duration of the construction work, barricades, fences, and warning signs are necessary. In some cases, watchers and flaggers may be required. Guard the work at night with flares, lanterns, or flashing lights.
- Consideration should be given to the prevention of excess water accumulation in the excavation if it might affect the stability of the excavation or might endanger workers. Erosion of slopes by surface water must be prevented if workers may be endangered. Appropriate pumping equipment should be on site for emergency use. Excessive rain and thawing soil can compromise the sloping of the excavation. Ground water should be controlled. Freezing, pumping, drainage, and similar control measures should be planned and directed by an engineer.
- Consideration should be given to the positioning of mobile equipment near the evacuation. For a trench, the equipment can be no closer than 2 ft from the edge. For a large excavation, 4 ft from the edge.
- An excavation could be considered a confined space and thus should be assessed for hazardous atmospheres.
- Determine what kind of sloping or shoring is required. Sloping is a system where the sides of the excavation are flared to a safe angle. Shoring is a support system designed to keep the sides of an excavation from caving in.

Note: Where the cut back method is not possible, shoring, trench jacks, sheet piling, cages, or other approved methods must be used to protect workers. No workers will enter any trench or excavation until the walls have been adequately cut back or temporary protective structures have been installed, unless said trench or excavation is shallower that the legal minimums and the soil is stable.

# 73 SJP – TRUCKS-LOADING AND UNLOADING

General:

This procedure will apply to all employees or subcontractors carrying out or assisting in the Loading/Unloading of any gravel dump truck or semi-trailer unit at any PDI work sites. Supervisors are charged with the direct responsibility for ensuring that this procedure is known to and complied with by all employees and persons, or companies subcontracted.

#### Access to Worksite:

• Establish haul route prior to commencing hauling with consideration given to the following:

- An Access route to the worksite must be established and communicated to truckers.
- All other heavy equipment or vehicle traffic in the area must be identified.
- Loading/Unloading location established, and hazards identified, if loading or unloading location is continually changing, hazards must be identified along the entire working area.
- An Entrance and Exit route to the worksite must be established and communicated to truckers.
- The "Maximum" speed limit on all work sites 30 km/hr. or less depending on site conditions.
- Consideration must be given that traffic patterns on the worksite do not overlap due to narrow roads or equipment crossings. Identify safeguards and hazard controls to prevent an incident.
- Identify all overhead or underground facilities that may be affected by the haul.

#### Loading and Dumping:

• When loading or dumping, the truck and trailer has to be safely positioned and the following items have to be taken into consideration:

- What is the method to be employed in loading or unloading the load?
- What additional equipment is being used in the area?
- Is the proposed truck loading/unloading area flat and level or in other ways, satisfactory for the job to be done?
- If a level spot is not available, pinpoint the location and do a hazard assessment for what other specific steps/actions have to be taken to provide for safe loading and dumping of trucks.
- Is there adequate clearance above and on both sides of the trailer unit in the event the load shifts resulting in spillage to either side or in the event of a truck roll over?



#### **Positioning:**

• When the truck/trailer is positioned for loading or unloading the driver "MUST".

• Park in a suitable location away from loading/unloading activities until it is your turn to load or unload.

• Back or drive into the loading or unloading site at the direction of the loader or spotter.

• Ensure that the brakes on the truck and/or trailer wheels have been set prior to loading/unloading.

• Ensure that the truck and trailer is not positioned under or near overhead lines during the loading/unloading process.

• Ensure that there is adequate clearance to the rear and on either side of the truck or trailer, in the event the load shifts, spillage, or roll over during the loading or unloading operations.

• Truckers "MUST NOT" alter or change an established haul route, direct your recommendations for any changes to the site supervisor. The supervisor will evaluate and communicate any change to all affected workers.

• Truckers "MUST NOT" move or change established barricades or signage, direct your recommendations for any changes to the site supervisor. The supervisor will evaluate and communicate any change to all affected workers.

#### Loading: Truckers Responsibility

As progression is made in the loading process, care is to be taken to compensate for changes in load locations and weights when they vary from the original positions at commencement.

- Enter the worksite site at a reasonable speed and via the established haul route.
- Park in a suitable location away from loading activities until it is your turn to load.
- Remove tarp.
- Ensure tailgate is latched.
- Proceed to the loading location as directed by the loader or spotter.
- Ensure that the brakes on the truck /and trailer wheels have been set prior to loading.
- As loading progresses the load should be evenly distributed.

• Do not overload the truck or trailer unit above the side boards, leave loose material on the load, or in a position that it could fall off the truck or trailer.

• Move truck or truck and trailer to a safe location on site



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- Clean off any loose debris off the top of the front end, side boards, tailgate, and hitch assemblies, etc. prior to leaving the worksite.
- Tarp all loads prior to leaving worksite.
- Exit the worksite site at a reasonable speed and via the established haul route.

#### Unloading: Truckers Responsibility

As progression is made in the unloading process, care is to be taken to compensate for changes in load locations and weights when they vary from the original positions at commencement.

- Enter the worksite site at a reasonable speed and via the established haul route.
- Park in a suitable location away from loading activities until it is your turn to unload.
- Proceed to the unloading location as directed by the spotter.
- Is the proposed truck unloading area flat and level or in other ways, satisfactory for unloading to be done?
- Ensure that the truck and trailer is not positioned under or near overhead lines during the unloading process.
- Back or drive into the unloading area at the direction of the spotter.
- Ensure that the brakes on the truck /and trailer wheels have been set prior to loading.
- Ensure that adequate clearance to the rear and on either side of the trailer, in the event the load shifts or spillage occurs during the unloading operation.
- Beware of a sudden shift in the load due to hang up in the truck box during the unloading process, potential of a truck rollover.
- Lower the truck box completely prior to leaving the unloading site.
- Move truck or truck and trailer to a safe location on site.
- Clean off any loose debris off the top of the front end, side boards, tailgate, and hitch assemblies, etc. prior to leaving the worksite.
- Exit the worksite site at a reasonable speed and via the established haul route.
- Signal person or spotter to be used at the discretion of the supervisor to guide the equipment operator and control vehicular or foot traffic in the area.
- Ensure that no worker puts himself or herself in an unsafe position where accidental movement of the load or parts of the load could cause injury to the worker.



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• During the loading/unloading procedure, ensure that all workers are equipped with the necessary personal protective equipment required for this operation and which is normally required for all personnel.

### Freightliner – PTO mechanism is located

CRITICAL POINTS TO REMEMBER:

- 1. REVIEW SWP prior to Operating.
- 2. DO NOT leave PTO engaged unless spreading gravel.
- 3. WATCH FOR HIGHLINES in work area.
- 4. DO mirror checks frequently to ensure box is lowered.
- 5. Ensure Tailgate lock is engaged after dump



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# 74 SJP - UNLOADING MACHINES

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Vehicle or property damage Slip/trip hazards Pinch points	High visibility vest Steel toed safety boots Safety glasses/ shield Gloves Hard hat Hearing protection SPF	Equipment certification or experience.

#### Safe Work Procedure:

- 1. Park truck and trailer on level ground and set parking brakes.
- 2. Exit vehicle using three-point contact method.
- 3. Remove chains from machine.
- 4. Mount trailer using caution and enter machine using three-point contact method.
- 5. Disengage safety switch.
- 6. Lift attachments.
- 7. Slowly back up, using your attachments.
- 8. Once on the ground, park on level ground.

#### Report any hazardous situations to your supervisor

#### **Guidance Documents/Standards:**

Alberta OH&S regulations and guidelines: This SJP will be reviewed any time the task, equipment or materials change and at a minimum of once a year.



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# 75 SJP – WELDING, CUTTING, AND BURNING

#### Purpose

Define the minimum welding, cutting, and burning requirements to be followed while working for Priestly Demolition Inc. Operations.

#### Scope

This procedure applies to all Priestly Demolition Inc. Operations employees, visitors, and subcontractors while performing work for Priestly Demolition Inc. Operations. If the client or facility owner has a Hot Work Procedure, the most stringent shall be followed.

#### Definitions

Acetylene	A highly combustible gas composed of carbon and hydrogen. Used as a fuel gas in the oxy-acetylene welding process.
Arc welding	A group of welding processes in which fusion is obtained by heating with an electric arc or arcs, with or without the use of filler metal.
Slag	A by-product formed in the welding processes from impurities in the metals or ores being heated.
Weld	A localized fusion of metals produced by heating to suitable temperatures.

#### Procedure

Step	Action	
24.1	PPE Requirements	
24.1.1	Welding, cutting, and burning operations can produce hazards such as sparks, spatter, radiation (infrared, ultraviolet, and blue light), slag, heat, hot metal, fumes and gases, and even electric shock. Since these hazards may cause burns, injury, or death, it is important to wear proper personal protective equipment (PPE) at all times.	
	<ul> <li>Protective clothing will vary with the task. Generally, cotton, wool, or special fire resistant material should be worn.</li> </ul>	
	<ul> <li>Polyester, nylon, or other material that will melt and readily support combustion shall not be worn. Approved welding gloves, jackets, or aprons shall be worn in addition to these requirements.</li> </ul>	
	<ul> <li>Respiratory protection shall be selected in accordance with the hazard. Safety data sheets (SDS) and health, safety, and environment (HSE) representatives shall be used for reference if requirements are not clear.</li> </ul>	
	<ul> <li>Use of welder hard hat/hood combinations is required and welders will wear safety glasses underneath their welding helmets.</li> </ul>	
	<ul> <li>Eye protection appropriate to the hazard shall be worn at all times. Approved cutting goggles shall be used for all cutting operations.</li> </ul>	

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Step	Action		
	<ul> <li>Workers assisting the welders that are exposed to a similar hazard shall be protected in the same manner as the welder.</li> </ul>		
24.2	General		
24.2.1	<ul> <li>Welding, cutting, and burning operations have a high potential for injuries and fires.</li> <li>When performing any operations, follow these precautions:</li> <li>Before starting to burn or weld, the work area around and below must be inspected to ensure that sparks or molten metal won't fall on workers, cylinders, or combustible materials. If an employee is unable to provide the necessary safeguards, check with the supervisor.</li> <li>Welding or burning in a hazardous area without obtaining written authorization from the responsible authority is prohibited. Refer to hot work permit requirements.</li> <li>Ensure that suitable fire extinguishing equipment is available in the immediate work area.</li> <li>Each employee is responsible for maintaining the burning or welding equipment they use in good operating condition.</li> <li>Welders shall wear welding hoods mounted on hard hats and safety glasses with side shields will be worn underneath the hoods.</li> <li>When welding above shoulder height, ears shall be protected from the entry of slag and sparks.</li> <li>When burning or welding, approved goggles or hoods must be worn with the suitable filter lenses. Sunglasses or tinted safety glasses are not acceptable.</li> <li>Keep all welding leads and burning hoses off floors, walkways, and stairways. Each employee is responsible for ensuring their equipment complies with all applicable safety regulations. The use of rebar tie-wire to support leads, hoses, and cords is prohibited. Using rope prevents damaging the leads or hoses.</li> <li>Never weld or burn on barrels, tanks, or piping systems that may have contained either combustible or unknown products without first obtaining proper approval.</li> <li>If an employee's eyes are exposed to flying objects from chipping slag or other weld-cleaning activity, approved eye protection must always be worn: <ul> <li>Welder's hood with filip-up lens and safety glasses with side shields.</li> <li>Full-face shield with safety glasses.</li> </ul> </li> <li>When arc-wel</li></ul>		
	<ul> <li>Do not use matches to light torches. Spark ignites must be used. Torches must not be used to light smoking materials.</li> <li>Appropriate fire-resistant gloves must be worn when burning or welding.</li> <li>When a crescent or special wrench is required to operate the acetylene cylinder valve, the wrench must be kept in position on the valve.</li> </ul>		



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Step	Action		
24.3	Welding Boxes and Enclosures		
24.3.1	<ul> <li>Where work is performed in hazardous areas and welding sparks and hot slag fro torch cutting can ignite hazardous materials below or near the work area (Not when the materials or the work cannot be moved), then welding boxes or simil enclosures shall be created.</li> <li>The floors shall be solid, with a doubled fire blanket covering the floor.</li> <li>All sides shall be covered with fire blanket at a minimum of 42 inches high exce solid, non-flammable walls.</li> <li>A 20 lb fire extinguisher must be inside the box. (Note: workers who may have use fire extinguishers, must be trained in their use.)</li> <li>The box is sealed to the point of no slag or sparks escaping (i.e., higher walls, roof, additional layers of fire blanket, etc., installed if required by the work.)</li> <li>Welding machines must be located in non-restricted areas, leads pulled into the work area and, where indicated, the area checked for flammable vapours.</li> <li>The ground leads located as close to the welding area as possible to minimiz secondary arcs.</li> </ul>		
24.4	Use of Tiger Torches		
24.4.1	<ul> <li>Tiger torches, although valuable to a jobsite, are sometimes misused in a manner that can make them dangerous.</li> <li>Tiger torches are only to be used for preheating of piping, etc. prior to welding.</li> <li>When a torch is used, an adequate fire extinguisher must be present.</li> <li>Torches, when not being used, are not to be used for heating of work areas or thawing of lines and equipment, etc.</li> <li>Ensure that the propane bottles are properly shut off.</li> <li>Fuel lines are to have regulators.</li> <li>Propane bottles shall be secured in an upright position.</li> </ul>		

# **Training Requirements**

All workers involved with welding, cutting, and burning activities will be trained in the following:

- Welding, cutting, and burning procedure; and
- Fire extinguisher use.



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### 76 SJP - WORKING ALONE

#### Purpose

This procedure outlines the minimum requirements for establishing communications, identifying hazards and emergency response requirements, and identifying activities that are deemed high risk work when performed by workers working alone.

#### Scope

This procedure applies to all Priestly Demolition Inc. Operations employees, visitors, and subcontractors while performing work for Priestly Demolition Inc. Operations. If a client or facility owner has a Working Alone Procedure, the most stringent shall be followed.

#### Definitions

**Working Alone -** means a worker working at a workplace who is the only worker of the employer at that workplace, in circumstances where assistance is not readily available to the worker in the event of injury or an emergency.

**Isolated Worker** – A worker that is isolated from the assistance of other persons due to the location, time, or nature of the work.

#### Procedure

Step	Responsibility	Action
4.1	Responsibilities	
4.1.1	Management / Supervision	<ul> <li>Approve any deviation from this procedure.</li> <li>Responsible for taking the necessary measures to ensure that the hazards of working alone have been eliminated or controlled.</li> <li>Providing an effective system for ensuring adequate communication is available to the worker who is working alone; <ul> <li>Cell phone;</li> <li>Radio; or</li> <li>Satellite phone.</li> </ul> </li> <li>Personnel available to assist in case of an emergency or sudden illness.</li> <li>Periodically check in with worker or individual as required, at a minimum of every two hours.</li> <li>Ensuring all incidents are reported, investigated, documented, and communicated.</li> <li>Providing assistance should the worker or individual fail to check in as required and/or is not present at the end of the shift and should a search be required.</li> </ul>

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Step	Responsibility	Action
4.1.2	Workers	<ul> <li>Will ensure that means of communication are in good working condition and that all portable devices are turned on, fully charged, and with the worker or individual.</li> <li>Follow the check in schedule with his/her supervisor.</li> <li>Responsible for participating in completion of hazard assessments and implementing means of elimination and control of said hazards.</li> <li>Following all applicable Safe Job Procedures and Safe Work Practices.</li> <li>Reporting all incidents and near misses.</li> </ul>
4.2	Working Alone Pro	ocedure
4.2.1	<ul> <li>Check in requirem</li> <li>All workers or i leaving camp of</li> <li>Once worker har responsible suresponsible surespon</li></ul>	ents: ndividuals must call or text their responsible supervisor prior to or residence. as arrived at the work location, they shall text or call their pervisor. check in at intervals of 2 hours, at a minimum.
4.2.2	<ul> <li>Failure to check in</li> <li>If a worker doe attempt to mak</li> <li>If supervisor is</li> <li>If supervisor is verbal contact is</li> <li>If unable to ma shall initiate an</li> <li>Send a</li> <li>Initiate of</li> </ul>	: s not check in at the 2-hour mark, their responsible supervisor shall e verbal contact with the worker/individual. able to make verbal contact, work shall continue as normal. unable to make verbal contact, they shall re-attempt to make a second time. ke verbal contact with the worker after two attempts, the supervisor d attempt to make visual contact with worker. nearby worker/ individual to look for worker; and emergency response plan to conduct search for worker.
121	The following is a lis	t of high-risk activities that should be avoided by personnel
Note:	required to perform <ul> <li>Operating equi</li> <li>Working near h</li> <li>Climbing ladde</li> <li>Working near s</li> <li>Working with e</li> <li>Preforming rou</li> </ul> If the above tasks a to commencing wor Working alone sho	work alone: pment or machinery; highly toxic substances; rs/scaffolds; hignificant volumes of flammable substances; xposed energized electrical equipment; or tine maintenance in operating areas. The to be performed, a Job Safety Analysis shall be conducted prior k. uld only occur as a last resort while performing high risk
activiti	es.	



# 77 SJP - WORKING NEAR OVERHEAD POWERLINES

#### PURPOSE

The purpose of this document is to define PDI practice related to work done in the area around overhead power lines. This practice applies to all PDI employees and contractors.

#### RESPONSIBILITIES

#### SUPERVISOR

- Provide instruction and training to workers on the proper processes for working safely near or under power lines. Employees working near high voltage electricity who are not qualified electrical workers shall be provided awareness training. Employees shall be trained in safety related work practices that pertain to their respective job assignments, clearance distances, Lockout Tagout, long dimensional conductor objects clearances, Arc Flash Protection, and conductive materials awareness. Training may be performed in-house or by a 3rd Party.
- Physically inspect the area before permitting any work.
- Perform hazard analyses.
- Monitor the workers (including sub-contractors) and their use of equipment during any operation near or under power lines. Ensure that all workers use safe work practices and that unsafe use of the equipment as well as unsafe practices are identified and corrected.
- Ensure all trades on site know the work being carried out and where the danger zone is.
- Supervisor has a special responsibility to review the situation and to take action if the work is not being done safety and without risk.
- All overhead power lines shall be given a minimum clearance distance of 7 m.

#### WORKER

- Complete Field Level Hazard Assessment and include the location of overhead power lines.
- Follow all Safe Work Practices and Safe Job Procedures in the HSE manual.
- Maintain minimum safe distances and clearances at all times.
- Adhere to all site-specific requirements.

#### PROCEDURE

- All effort will be made to have power shut down and locked out before work commences.
- Worker shall follow all safety practices and procedures laid out in the HSE Manual.



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- Worker shall not approach beyond the safe work limits.
- Equipment, if required, and users must respect the safe limit of approach distances specified in Part 17 "Safe limit of approach" (225) of the Alberta OHS Code.
- A competent signaller as described in section 191 of the OHS Code should be used. The signaller's only responsibility is to make sure that the equipment operator does not get closer than the safe limit of approach distance.
- No one should be allowed to touch the load or any part of the equipment until the signaller indicates it is safe to do so.
- Other workers not directly involved in the work being performed should be kept away from equipment when it is being used near overhead power lines.
- Equipment operators must always be aware of the position of their equipment in relation to overhead power lines. They should not depend on safety devices such as hook insulators, insulating blankets, etc.
- Equipment operators should be aware that a long span of power line can rise and fall as the ambient temperature changes, affecting safe limit of approach.
- Wind-induced swing can also affect these distances.
- Grounding equipment in the area of the power line is not a safe practice.
- The route that a crane or similar equipment will follow should be marked out.
- When using tag lines to control an elevated load, the tag lines should be made of a nonconducting material such as dry rope.
- Regulations under the Safety Codes Act require that all electrical accidents and power line contacts to be reported to Alberta Municipal Affairs, Safety Services.

# Safe Limit of Approach Distances from Overhead Power Lines for Persons and Equipment

(Appears as Schedule 4 in the Alberta OHS Code)

Operating Voltage Between Conductors of Overhead Power Line	Safe Limit of Approach Distance for Persons and Equipment
0-750 volts	300 millimeters
Insulated or polyethylene covered conductors (1)	
0-750 volts	1.0 meter
Bare, uninsulated	1.0 meter
Above 750 volts	1.0 motor
Insulated conductors (1) (2)	1.0 meter
750 volts-40 kilovolts	3.0 meters

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69 kilovolts, 72 kilovolts	3.5 meters
138 kilovolts, 144 kilovolts	4.0 meters
230 kilovolts, 260 kilovolts	5.0 meters
500 kilovolts	7.0 meters

PDI shall permit only qualified electrical workers to construct, install, alter, repair, or maintain high voltage electrical equipment. Qualified workers shall be trained on the use of special precautionary techniques, specific PPE requirements (e.g., Arc Flash), insulating & shielding materials, and insulated tools.

A hazard assessment shall be conducted to identify and evaluate hazards before entering high voltage work areas. Safe work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts.

A worker shall not approach high voltage electrical equipment within the safe limit of approach distance unless the equipment has been de-energized and locked and tagged out.

If parts cannot be de-energized, tagging must be applied in any event and barriers such as insulated blankets must be used to protect against accidental contact. Arc Flash PPE must be worn.

## 78 SJP - WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM

NOTE: By December 2018 Canada will follow the Globally Harmonized System (GHS), called WHMIS 2015 in Canada, which uses a different set of pictograms and a different, standardized format of MSDS called SDS. Please see the separate section on the pictograms and format following the existing WHMIS information below and note that during the transition, both types of classifications are likely to be encountered in the workplace.

**WHMIS (1998):** The Workplace Hazardous Materials Information System (WHMIS) is a Canadawide Hazard Communication System that deals with the most basic aspects of health and safety at work sites where chemicals are transported, received, stored, or otherwise handled. It is fundamental "right to know" legislation. It enables anyone at a work site to become knowledgeable about the hazards of the chemicals they come into contact with. Information about materials or hazardous products is provided in three forms:

- Labels or placards on the product containers;
- Data Sheets (SDS); and
- Education and training.

WHMIS became law through a series of complementary federal, provincial, and territorial legislation that became effective October 31, 1988. The majority of the information requirements (and exemptions) of WHMIS legislation were incorporated into the Hazardous Products Act and the Hazardous Materials Information Review Act. These apply to all of Canada. Regulations made under these acts include:

- Hazardous Products Regulations;
- Ingredient Disclosure List;
- Hazardous Materials Information Review Act Appeal Board Procedures and Regulations; and
- Hazardous Materials Information Review Regulations.

The conditions and requirements of this safe job procedure will be rigidly applied and enforced at all work sites owned or operated by Priestly Demolition Inc. Operations where employees and contract workers may be exposed to any hazardous product while performing their work-related activities or services.

Suppliers of hazardous products and employers are both responsible for:

- Providing information on hazardous products;
- Labelling hazardous materials supplied to the workplace; and
- Preparing SDS.

It is Priestly Demolition Inc. Operations' expectation that the client makes the information available to all workers and ensures hazardous substance checklists are retained for the regulated hazardous materials encountered at their worksites and properties.

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Priestly Demolition Inc. Operations will obtain a Safety Data Sheet (SDS) for every hazardous product that is handled, used, and stored at the worksite.

Workers must ensure all hazardous products on a worksite:

- Are labelled with supplier labels and/or appropriate worksite labels or other required identification;
- Have a corresponding current SDS located for easy access by all workers; and
- Are handled and stored in accordance with company, client, and legislated requirements.

SDS expire after three (3) years and must therefore be renewed at the three (3) year point or the manufacturer can supply written confirmation that since no changes to the product/SDS have occurred, the life of the existing SDS is extended by attachment of the written notice.

#### Labels

- The employer must ensure a workplace label is affixed to a container of hazardous product that was transferred from its original container to another container.
- Labels are not required on containers if:
  - The container is for immediate use;
  - It is under the control of and for the exclusive use of the worker who transferred it;
  - It is for use only on that shift; and/or
  - The contents are clearly identifiable.
- Hazardous products, chemicals, and other hazardous materials which have been brought to the workplace must have a "Supplier Label" attached. If no label is attached or exists, the product should not be accepted and returned with the carrier.
- The supplier label must identify the product and provide basic hazard information and hazard prevention measures.
- Symbols and written material are used on the labels, so you can immediately recognize the associated hazards.
- Hazardous products manufactured at the worksite are to be labelled with "worksite labels or placards". These include hazardous products from outside whose original supplier labels may have been damaged, bulk containers of hazardous products, and products that have been decanted.
- The worksite label identifies the product and includes basic information on its safe use, handling, storage, and disposal and refers the user to the Safety Data Sheet (SDS); SDS provide detailed information on hazardous products.
- SDS must be made available at the field office/worksite for all hazardous products that you will come in contact with. If you find that an SDS is not available, contact your supplier immediately; they are responsible for providing you with a current SDS for the product. WHMIS requires a current SDS be supplied by the manufacturer of the product.

#### MSDS (WHMIS 1998) are divided into nine specific sections:



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### 1. Hazardous Ingredients:

Includes Chemical Abstract Services (CAS) registry number, product identification number, LD<sub>50</sub> (Lethal Dose, kills 50%) and LC<sub>50</sub> (Lethal Concentration, kills 50%) information.

#### 2. Preparation Information:

Includes the name and phone number of the group, department, or party responsible for the preparation of the SDS, as well as the date of preparation.

#### **3. Production Information:**

Includes the manufacturer's information: name, street address, city, province, postal code, and emergency telephone number as well as the same information for the supplier (if transporting another company's product). This section also shows the product identifier and explains the product uses.

#### 4. Physical Data:

Includes the physical state of the product (e.g., gas, liquid, or solid), the odor and appearance of the product, the odor threshold, specific gravity, vapor pressure, vapor density, evaporation rate, boiling point, freezing point, pH, and coefficient of water/oil distribution.

#### 5. Fire or Explosion Hazard:

Includes the conditions of flammability, means of extinguishing, flash point, upper flammable limit, lower flammable limit, auto-ignition temperature, hazardous combustion products, and explosion data (for both sensitivity to mechanical impact and to static discharge).

#### 6. Reactivity Data:

Includes conditions under which the product is chemically unstable, name of any substance or class of substance with which the product is incompatible, conditions of reactivity, and hazardous decomposition products.

#### 7. Toxicological Properties:

Includes the route of entry, including skin contact, skin absorption, eye contact, inhalation, and ingestion; effects of acute exposure to product; effects of chronic exposure to product; exposure limits; irritancy of product; sensitization to product; carcinogenicity; reproductive toxicity; teratogenicity; mutagenicity; and the name of toxicologically synergistic products.

#### 8. Preventative Measures:

Includes personal protective equipment to be used, specific engineering controls to be used, procedures to be followed in case of leak or spill, waste disposal, handling procedure and equipment, storage requirements, and special shipping information.

#### 9. First Aid Measures:

Includes specific first aid measures.

#### WHMIS 1998 Hazardous Materials Awareness Chart



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	Class A
$\bigcirc$	Compressed Gas (Oxygen, Acetylene, Propane, aerosol spray cans, etc.)
	Class B
	Flammable and Combustible Materials
6	Class C
	Oxidizing materials that can emit Oxygen and thereby help other materials burn
	Class D: Poisonous and Infectious Materials
	D1 - Materials causing immediate and serious toxic effects
	<b>D2</b> - Materials causing other toxic effects that cause long-term eye/skin irritations
	<b>D3 -</b> Bio-hazardous infectious materials (live bacteria or viruses)
	Class E
で、	Corrosive materials that cause burns through the skin or eyes, or by inhalation
	Class F
	Dangerously reactive materials that can burn or explode if exposed to excessive heat, shocked, or mixed with other chemical products

#### WHMIS 2015 Hazard Classes

The Globally Harmonized System of Classification and Labelling of Chemicals (GHS – WHMIS 2015) includes three types of hazard classes:

- **Physical hazard classes** which represent hazards relating to physical and chemical properties, such as flammability or compressed gases;
- **Health hazard classes -** which represent hazards to health arising from exposure to a substance or mixture, such as acute toxicity or skin sensitization; and
- Environmental hazard classes hazardous to the aquatic environment and hazardous to the ozone layer. Further information on how each type of hazard class is addressed in the HPR is listed below.

#### Physical Hazards:

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The GHS (WHMIS 2015) physical hazard classes subdivide physical hazards in a manner that differs from the Controlled Products Regulations (CPR – WHMIS 1998); however, nearly all of the physical hazards that are covered in the CPR are addressed by the GHS (WHMIS 2015) physical hazard classes.

All GHS (WHMIS 2015) physical hazard classes except the Explosives hazard class have been adopted in Canada. In addition, the following new physical hazard classes have been introduced in the WHMIS 2015 to enhance protections for workers: Combustible Dusts, Simple Asphyxiants, Pyrophoric Gases, and Physical Hazards Not Otherwise Classified.

#### Health Hazards:

The GHS WHMIS 2015 health hazard classes subdivide health hazards in a manner that differs from the WHMIS 1998; however, these classes address nearly all of the health hazards that are currently covered in the WHMIS 1998 and introduce some additional types of hazards that are not currently covered but would enhance protection for workers (i.e., aspiration hazard). All GHS WHMIS 2015 health hazard classes have been adopted in Canada by the HPR. The Biohazardous Infectious Materials hazard class (which is not a GHS health hazard class) has been retained in the HPR in order to maintain worker protection, and a new Health Hazards Not Otherwise Classified class has also been introduced.

**Environmental Hazards:** The GHS environmental hazard classes have not been adopted in the HPR.

	SDS (WHMIS 2015) are divided into 16 specific sections:				
1.	Identification	9.	Physical and chemical properties		
2.	Hazard(s) identification	10.	Stability and reactivity		
3.	Composition/information on ingredients	11.	Toxicological information		
4.	First-aid measures	12.	Ecological information		
5.	Fire-fighting measures	13.	Disposal considerations		
6.	Accidental release measures	14.	Transport information		
7.	Handling and storage	15.	Regulatory information		
8.	Exposure controls/personal protection	16.	Other information		



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# Summary of SDSs requirements

	lssue (Heading)	Requirements (Specific Information Element)
1.	Identification	Requirements consist of: ( <i>a</i> ) product identifier; ( <i>b</i> ) other means of identification; ( <i>c</i> ) recommended use and restrictions on use; ( <i>d</i> ) initial supplier identifier; and ( <i>e</i> ) emergency telephone number and any restrictions on the use of that number, if applicable.
2.	Hazard identification	Requirements consists of: ( <i>a</i> ) classification of the hazardous product, (e.g., Carcinogenicity, Category 1); ( <i>b</i> ) the symbol, signal word, hazard statement, and precautionary statement, for each of the applicable classes; ( <i>c</i> ) other hazards known to the supplier with respect to the hazardous product.
3.	Composition/ information on ingredients	<ul> <li>Requirements consist of:</li> <li>(1) If the hazardous product is a material or substance,</li> <li>(a) its chemical name;</li> <li>(b) its common name and synonyms;</li> <li>(c) its CAS registry number and any unique identifiers; and</li> <li>(d) the chemical name of the impurities, stabilizing solvents and stabilizing additives that are known to the supplier, that individually are classified in any category or subcategory of a health hazard class and that contribute to the classification of the material or substance.</li> </ul>
		<ul> <li>Requirements consist of:</li> <li>(2) If the hazardous product is a mixture, provide the:</li> <li>(a) chemical name;</li> <li>(b) common name and synonyms;</li> <li>(c) CAS registry number and any unique identifiers; and</li> <li>(d) concentration of each material or substance in the mixture that, individually, is classified in a health hazard class and is present above the concentration limit for that class or, if not above the concentration limit, is present in the mixture at a concentration that results in the mixture being classified in any health hazard class.</li> </ul>
4.	First-aid measures	Requirements consists of: ( <i>a</i> ) a description of necessary first-aid measures, subdivided according to the different routes of exposure (inhalation, ingestion, skin, and eye contact); ( <i>b</i> ) the most important symptoms and effects, whether acute or delayed; and ( <i>c</i> ) an indication of immediate medical attention and special treatment needed, if necessary.



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# Summary of SDSs requirements

	Issue (Heading)	Requirements (Specific Information Element)
5.	Fire-fighting measures	Requirements consists of: ( <i>a</i> ) suitable and unsuitable extinguishing media; ( <i>b</i> ) specific hazards arising from the hazardous product, such as the nature of any hazardous combustion products; and ( <i>c</i> ) special protective equipment and precautions for fire-fighters.
6.	Accidental release measures	Requirements consist of: ( <i>a</i> ) personal precautions, protective equipment, and emergency procedures; and ( <i>b</i> ) methods and materials for containment and cleaning up.
7.	Handling and storage	Requirements consist of: ( <i>a</i> ) precautions for safe handling; and ( <i>b</i> ) conditions for safe storage, including any incompatibilities.
8.	Exposure controls/ personal protection	Requirements consist of: ( <i>a</i> ) control parameters, including occupational exposure limit values or biological limit values and the source of those values; ( <i>b</i> ) appropriate engineering controls; and ( <i>c</i> ) individual protection measures, such as personal protective equipment.
9.	Physical and chemical properties	Requirements consists of: (a) appearance, such as physical state and colour; (b) odour; (c) odour threshold; (d) pH; (e) melting point and freezing point; (f) initial boiling point and boiling range; (g) flash point; (h) evaporation rate; (i) flammability, in the case of solids and gases; (j) upper and lower flammability or explosive limits; (k) vapour pressure; (l) vapour density; (m) relative density; (n) solubility;



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# Summary of SDSs requirements

	lssue (Heading)	Requirements (Specific Information Element)
		<ul> <li>(o) partition coefficient n-octanol/water;</li> <li>(p) auto-ignition temperature;</li> <li>(q) decomposition temperature; and</li> <li>(r) viscosity.</li> </ul>
10.	Stability and reactivity	Requirements consists of: (a) reactivity; (b) chemical stability; (c) possibility of hazardous reactions; (d) conditions to avoid, including static discharge, shock, or vibration; (e) incompatible materials; and (f) hazardous decomposition products.
11.	Toxicological information	<ul> <li>Requirements consists of:</li> <li>Concise but complete description of the various toxic health effects and the data used to identify those effects, including:</li> <li>(a) information on the likely routes of exposure (inhalation, ingestion, skin, and eye contact);</li> <li>(b) symptoms related to the physical, chemical, and toxicological characteristics;</li> <li>(c) delayed and immediate effects, and chronic effects from short-term and long-term exposure; and</li> <li>(d) numerical measures of toxicity, including Acute Toxicity Estimates (ATEs).</li> </ul>
12.	Ecological information	<ul> <li>While the heading of this section is required to preserve the SDS 16-heading format, content within this section is optional.</li> <li>Content consists of: <ul> <li>(a) ecotoxicity (aquatic and terrestrial, if available);</li> <li>(b) persistence and degradability;</li> <li>(c) bio accumulative potential;</li> <li>(d) mobility in soil; and</li> <li>(e) other adverse effects.</li> </ul> </li> </ul>
13.	Disposal considerations	While the heading of this section is required to preserve the SDS 16-heading format, content within this section is optional. Content consists of:


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	lssue (Heading)	Requirements (Specific Information Element)
		Information on safe handling for disposal and methods of disposal, including any contaminated packaging.
14.	Transport information	<ul> <li>While the heading of this section is required to preserve the SDS 16-heading format, content within this section is optional.</li> <li>Content consists of: <ul> <li>(a) UN number;</li> <li>(b) to (d) United Nations proper shipping name, transport hazard class, and packing group, as provided for in the UN Model Regulations;</li> <li>(e) environmental hazards according to the International Maritime Dangerous Goods Code and the UN Model Regulations;</li> <li>(f) transport in bulk (according to Annex II of the International Convention for the Prevention of Pollution From Ships, 1973, as modified by the Protocol</li> <li>of 1978 (MARPOL 73/78), and the International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk (IBC Code)); and</li> <li>(g) special precautions in connection with transport or conveyance either within or outside the premises.</li> </ul> </li> </ul>
15.	Regulatory information	While the heading of this section is required to preserve the SDS 16-heading format, content within this section is optional. Content consists of: Safety, health, and environmental regulations, made within or outside Canada, specific to the product in question.
16.	Other information	Date of the latest revision of the SDS.

While WHMIS 2015 includes new harmonized criteria for hazard classification and requirements for labels and safety data sheets (SDS), the roles and responsibilities for suppliers, employers, and workers have not changed.

**Suppliers**, defined as persons who, in the course of business, sell or import a hazardous product, will continue to:

• Identify whether their products are hazardous products; and,



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• Prepare labels and SDS and provide these to purchasers of hazardous products intended for use in a workplace.

Employers will continue to:

- Educate and train workers on the hazards and safe use of hazardous products in the workplace;
- Ensure that hazardous products are properly labelled;
- Prepare workplace labels and SDS (as necessary); and,
- Ensure appropriate control measures are in place to protect the health and safety of workers.

Workers will continue to:

- Participate in WHMIS and chemical safety training programs;
- Take necessary steps to protect themselves and their co-workers; and,
- Participate in identifying and controlling hazards.