



human energy®

rigging, hoisting & lifting



training objectives

- To explain the type of work which may constitute Rigging, Hoisting & Lifting work.
- To understand what controls should be in place when Rigging work is performed.
- To ensure personnel understand the basic requirements regarding permitting of rigging and lifting work.
- To provide details on where additional information can be obtained.



terms and definitions

There have been many clarifications within this Safe Work Practice. Two specific items are related to the definition of a critical lift. Please review the SWP for further definition and clarification.

Critical lift (non routine)	Lift that meets <u>one or more</u> of the following conditions: <ul style="list-style-type: none">• Complicated lifts. (including use of more than one crane or other mobile equipment)• Complex lifts.• Heavy lifts. (lifts >75% of crane chart)• Blind lifts.• Lifts involving personnel-riding work baskets.• Other types of lifts designated by management or a certified crane operator due to its uniqueness.• Lifts in excess of 25 tons within a boom length of an operating process area• Lifts in excess of 35 tons in all other areas.• Lifts within the Minimum Clearance Distances outlined in Table 1.• When boom length is over 200 ft., or lift radius is over 100 ft. or the crane rating is over 125 tons.
Routine Lift (non critical)	<ul style="list-style-type: none">• Uncomplicated lifts that are performed on a routine basis using fixed or dedicated lifting equipment. Essentially, this type of lift consists of normal crane operations within the facility and to or from supply vessels. Some examples”



typical rigging, hoisting & lifting

Typical work at a Retail site that would require Rigging, Hoisting and lifting would be:

- **Tanks, removal or installation**
- **Signage replacement**
- **Canopy or Roof work**
- **HVAC install or removal**
- **Dispenser installation**

Not a Complete List



pre-planning and hazard identification

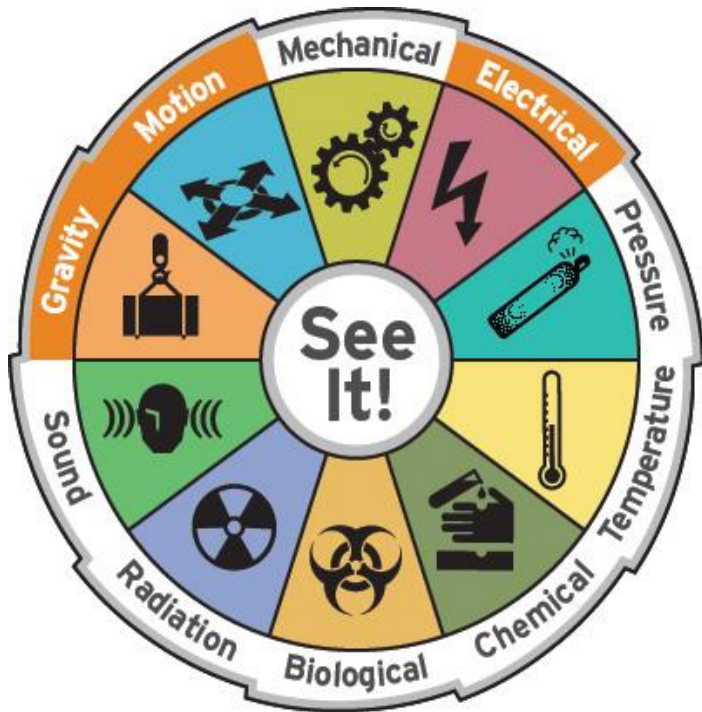
Pre Job hazard assessment and job specific JSA is critical to ensuring the rigging and lifting is completed in a safe and controlled manner. This evaluation should include but is not limited to:

- Crane inspection and checklist
- Proximity of buildings, roads and structures
- Lifting plan
- Operator certification
- Rigging completed by competent persons
- Soil Stability
- Overhead risks
- Work area isolation



lifting and rigging

potential significant hazards



- ◆ **Unclear communication** between crane operator and other personnel – including standing out of operator’s line of sight – may increase the risk for incidents.
- ◆ **Complex lifts (dynamic, blind or on unstable seas)** increase the potential for all lift hazards.
- 🔧 **Un-chocked pipes** may become falling objects.
- 🔧 **Improper rigging, misidentifying the load or equipment failure** may cause dropped loads.
- 🚚 **Loads striking personnel, vehicles or equipment** can result in serious loss.
- 🚚 **Equipment overloading, overextension and overturning** can result from crane malfunction, outrigger setup, heavy winds, or the load exceeding capacity due to extended use or miscalculations.
- 🚚 **Shifting loads** may cause overloading or falling objects.
- ⚡ **High-voltage power lines** in a crane’s working area can pose a potential electrocution hazard.
- 🚚 **Congested work area** can limit rigger escape.

prevention means *Always*

lifting and rigging operations

- **Ask:** Is there a safer way to complete the job without lifting and rigging?
- **Comply** with permitting requirements.
- Provide **supervisory job-site walk-through** prior to permit approval and during work.
- Use **qualified or certified** crane operators, riggers and signalmen.
- Evaluate any potential to strike **process equipment** or to drop a load on it.
- **Avoid blind lifts.** If required, take extra precautions.
- **Eliminate** uncertified home-made lifting devices.
- **Use approved binding and chocking** equipment for loads and pipe racks.
- Keep signalmen **in view** of the crane operator and make sure they Look up and Live to spot electrical lines and safely guide their operations.
- **Use tag-lines** (non-conductive) to guide loads.
- **Maintain required clearance** when working near overhead power lines. **Provide a separate spotter** and warning cones to mark power lines.
- Make sure to have enough space, proper ground conditions and **proper outrigger deployment** for mobile crane operations.
- **Barricade and secure** clear pick-up, lay-down and crane operating areas at all deck levels, and establish clear escape routes for riggers.
- **Prohibit climbing on or walking under loads.**



lifting plan

Every lift with mechanical equipment shall be planned before the lift begins, at a minimum consider the following:

- Swing radius/travel path
- Load does not exceed capacities of lifting equipment
- Barricade work area
- Weather conditions, wind, rain etc.
- Control lines, connect before load is raised
- Review proper hand signals
- Consider hazards around lift
- Pick and Set area should be identified and barricaded and not changed unless JSA updated

Hazards to consider:

- Power Lines
- Flammable atmospheres
- Excavations
- Loose / shifting soil



assessing & managing rigging, hoisting and lifting hazards

There are 5 key steps in the hazard / risk assessment when working with rigging, hoisting and lifting:

- **Step 1** - There will be a hazard identification process to identify the likely hazards arising from lifting, hoisting and rigging work
- **Step 2** - Assess the risk of injury to a person and/or to adjacent structures arising from hoisting and lifting work
- **Step 3** - Control the risks by having systems which will prevent failure of the rigging and load or connection with overhead power lines
- **Step 4** - Document the results of the hazard assessment using the JSA form
- **Step 5** - Monitor controls for effectiveness



assessing and managing hazards

- **Soil Stability**, ensure proper clearance with open excavation or recently filled excavations.
- **Outriggers**, ensure placed on stable pavement or soil capable of withstanding the pressure
- **Overhead utilities**, assume all overhead utilities lines are energized, unless the owner of the line has verified that the line is not energized, maintain a distance of 3 meters (10 feet) between all parts of the crane and load and all overhead lines. Additional requirements and greater clearance apply for power lines rated higher than 50kV.
- **Work area isolation**, never allow anyone to stand under an object suspended by a lifting device or in the travel path. Keep workers out of tank excavations until secured.



rigging & lifting requirements

- **Hazards associated** with Lifting and Rigging shall be identified and mitigated and recorded on JSA prior to beginning work.
- **Competent personnel** must complete (i.e., develop lift plan as required) the steps needed to properly and safely prepare the job site and equipment for the start of work.
- **Lifting and rigging equipment** must be engineered and certified for current use and in good working order as verified through pre-use inspections.
- **Lifting and rigging equipment** shall be used in accordance with the intended design purposes and specified limits of the manufacturer and recognized and accepted good industry practices and company standards.
- **Confirm weight of the object** and establish the load's center of gravity prior to beginning the lift.
- **Establish clear pick-up and lay-down** areas that are within the crane's load lifting radius.
- **Ensure the load path** from the beginning of the lift to the lay-down area is clear of obstructions.
- **Rig loads appropriately** and verify that loads are free of possible restraints (hold-down bolts, etc.), debris and obstructions.
- **Place load in designated lay-down** area and remove rigging equipment after load is securely in place and free of support from the crane.

Note: The use of non-certified locally fabricated or modified lifting and rigging equipment is prohibited



crane pre-use inspection

The Crane Pre-Use Inspection will include, but not be limited to, the following:

- **Visually inspect boom** and lattice for any sign of damage.
- **Visually inspect crane**, rigging and hooks for missing nuts, bolts, pins or keepers.
- **Ensure the area around the base** of the crane is free from all obstructions.
- **Check fluid levels** in the engine fuel, water and oil, also check the hydraulic oil level.
- **Ensure the engine safety** devices, i.e., controls are set.
- **Visually inspect all wire rope** for damage and correct spooling.
- **Check all controls** for correct operation, control levers are spring loaded and must return to the center or neutral position when related.
- **Check weight and radius** indicator, load chart.
- **Start engine and run at idle** speed for 3 to 5 minutes to allow the engine to warm up. While warming up the engine, check around for any sign of water, oil or hydraulic leaks.
- **Raise the boom**, test the anti-two block and boom kick out functions.
- **Lower the boom** and check boom tip sheaves, and ensure the wire rope is on the sheave.
- **Report any abnormalities** and **DO NOT operate the crane.**



do's and don'ts for tag lines

Do's

- Make sure that at all times the personnel handling tag lines work at a horizontal distance from the load equivalent to its height above the handling area, maintaining an angle between the line and the horizontal of not more than 45 degrees.
- Keep all sections of the line, including slack, in front of the body, between the handler and the load.
- Ensure that when two or more persons are handling the same line, ALL of them must work on the same side of the line. Any slack must be kept in front of the group.
- Hold the tag line in such a manner that it can be quickly and totally released.
- Take extra care when using tag lines while wearing gloves to ensure that the line does not become entangled with the glove.

Don'ts

- Don't secure or attach tag line in any manner to adjacent structures or equipment. This includes the practice of making a "round turn" on stanchions or similar structures and surging the line to control the load.
- Don't loop tag line around wrists, or other parts of the body.
- Don't retrieve taglines by going under load.



permit requirements

A General Work Permit and Rigging, Hoisting and Lifting Form are required for any rigging, hoisting and lifting work and any prior work.

This form shall only be completed by an Approved, Competent, Authorized and Qualified person. This form is required to be completed and posted on All sites where Chevron work is being performed.

Chevron - NA Retail/M&C/C&I General Work Permit Permit Number: **GW-**

This permit is to be used for Remote-Permitting at North America Retail and C&I facilities only. Signature of Issuer: This Permit to be Displayed at Job Site

Stakeholder Signature: I acknowledge that I have been made aware of the work activities covered by this permit and will work with the work crew foreman/supervisor to coordinate safe operations. (Signature required on active sites before this permit becomes effective) **Stakeholder Manager or designee Signature (Date)**

Work Order # _____ Equipment ID _____ Location: _____ Construction or Maintenance work (check box)

Who requested and authorized the work: _____
Description of Work to be authorized by this Permit: _____

List Types of Tools and Equipment Required: _____

Nearest Medical Facility Phone # _____ Name of Medical Facility: _____
Emergency / Rescue Phones _____ Directions: _____

GENERAL PERMIT REQUIREMENTS

Permit issuer to Check items required below and once verified as completed, the responsible party to initial this form:

<input checked="" type="checkbox"/> Risk Assessment / LPSA	<input checked="" type="checkbox"/> Pre-job safety briefing, including simultaneous operations - SIMOPS
<input checked="" type="checkbox"/> All employees understand their Stop Work Authority and Responsibility.	<input checked="" type="checkbox"/> All employees are properly trained to the appropriate level for the work they will be performing.
<input checked="" type="checkbox"/> Review of work procedures	<input type="checkbox"/> JLA/USA - required for all high risk work
<input type="checkbox"/> Approved 2-way radio required on site	<input type="checkbox"/> Area is required to be barricaded
<input type="checkbox"/> Approved scaffolding is required to perform the job task	<input type="checkbox"/> Fall protection is required
<input type="checkbox"/> Equipment required to be depressurized	<input type="checkbox"/> Equipment _____
<input type="checkbox"/> Standby Person required during performance of work	<input type="checkbox"/> _____
<input type="checkbox"/> Special PPE and/or clothing required List: _____	
<input type="checkbox"/> Respiratory protection required List: _____	
<input type="checkbox"/> All energy sources to equipment _____	
<input type="checkbox"/> MSDS provided & t _____	
<input type="checkbox"/> Additional instruction _____	

Additional hazards, equipment, site precautions, special _____

ADDITIONAL REQUIREMENTS (PERMITTALS) REQUIRED TO ACCOMPANY THIS GENERAL WORK PERMIT - ADDITIONAL PAGES PERMIT FORMS TO BE ATTACHED TO THIS GENERAL WORK PERMIT:

Hot Work Equipment Isolation Checklist (EIOC) Excavation and Trenching Hoisting/Rigging Pre-Entry Checklist

Confined Space Work at Heights Energized Electrical Work Gas test results Other _____

PERMIT TO WORK For Petroleum/Convenience Sites

Worker Signature: I have reviewed and understand the conditions of this permit and its attachments. I will report hazardous conditions or acts identified on the jobsite to my supervisor or customer representative. My signature indicates that I fully understand and will fully comply with all conditions and requirements of this Remote-Permitted Form.

Permit Requester (Authorized Permit Issuer) (signature required): _____
Permit Issuer (Authorized Permit Issuer) (signature required): _____

Company Name: _____

General Work Permit Renewal

This permit may be renewed up to 2 consecutive days, but conditions must be re-evaluated each day.

My signature below indicates all requirements and conditions of this GWP and referenced forms remain in effect and the work can be performed safely.

Notes: 1) Gas Test results (if required) to be recorded on this form or on an attached supplemental Gas Test Record sheet.
2) The renewal of a General Work Permit including Confined Space Entry is prohibited.

Date	Valid From (start time)	Valid To (end time)	Permit Requester Signature (renewal/extension)	Permit Issuer Signature (renewal/extension)

General Work Permit

Chevron - NA Retail/M&C/C&I Permit-to-Work Forms to be used with a General Work Permit For use at Chevron - NA Retail/M&C/C&I Petroleum/Convenience Sites This form shall only be completed by an Approved, Competent, Authorized and Qualified Person!

EQUIPMENT ISOLATION CHECKLIST (EIC) General Work Permit # _____

Equipment Name and location: _____

EIC Prepared By: _____ EIC Field Checked By: _____

Isolation Point	Equipment Isolation Point	Is Job Installed	Is Lock Installed	Lock Number	Blind Installed	Blind ID Number	Normal Operating position	Date Installed	Initials	Date Removed	Initials
1 (Primary)											
2											
3											
4											
5											
6											
7											
8											
9											
10											

Comments: _____

RA _____ Review and Approval

Permit Requestor (signature): _____ Permit Issuer (signature): _____

Time Issued: _____ Date: _____ Date & Time Work Completed: _____ Associated General Work Permit No. _____

RIGGING, HOISTING AND LIFTING—ANSI 1548 Section 19

Has the Lift Plan been completed by a competent person?	YES	NO	Does the equipment have the size, load, and swing capacity to do the job safely?	YES	NO
Air or hydraulic systems inspected for deterioration or leakage in lines, tanks, valves, drain pumps, etc?	<input type="checkbox"/>	<input type="checkbox"/>	Tool Box discussion conducted & lift plan communicated to all affected personnel?	<input type="checkbox"/>	<input type="checkbox"/>
Hooks, hoist chains, and end connections checked for signs of wear, twist, cracks, distorted links, or excessive stretch	<input type="checkbox"/>	<input type="checkbox"/>	Are outriggers set before hoisting operations begin?	MS	<input type="checkbox"/>
Has rigging been performed by a competent person?	<input type="checkbox"/>	<input type="checkbox"/>	Is proper cribbing being used?	<input type="checkbox"/>	<input type="checkbox"/>
Is the hoisting equipment sitting on a stable surface?	<input type="checkbox"/>	<input type="checkbox"/>	Overhead risks evaluated as part of the lift plan?	<input type="checkbox"/>	<input type="checkbox"/>
Is work area properly barricaded/isolated?	<input type="checkbox"/>	<input type="checkbox"/>	Is the operator certified for the equipment?	<input type="checkbox"/>	<input type="checkbox"/>
Has the hoisting equipment been inspected before use?	<input type="checkbox"/>	<input type="checkbox"/>	Are periodic inspections complete and documented?	<input type="checkbox"/>	<input type="checkbox"/>

NOTE: IF ANY OF THE ABOVE ANSWERS ARE "NO", DO NOT PROCEED UNTIL CORRECTED

Permit Requester (signature): _____ Permit Issuer (signature): _____

Time Issued: _____ am/pm _____ Date: _____ Date & Time Work Completed: _____ Associated General Work Permit No. _____

This form must be accompanied by a valid General Work Permit Page 1

Rigging, Hoisting & Lifting



permit requirements (cont)

- All boxes must be checked, Yes/No/NA, for Yes/No only boxes if No is checked Do not proceed until corrected.
- Only contractors approved to Remote Permit and who have meet the competency as defined by OSHA and WorkSafe BC can sign the High risk form.
- “Time issued” should be filled in after all the requirements of the permit have been satisfied and work can begin.
- Validate current certification of operator prior to permitting work.

RIGGING, HOISTING AND LIFTING—API 1646 Section					
Has the Lift Plan been completed by a competent person?	<u>YES</u> <input type="checkbox"/>	<u>NO</u> <input type="checkbox"/>	Does the equipment have the size, load, and swing capacity to do the job safely?	<u>YES</u> <input type="checkbox"/>	<u>NO</u> <input type="checkbox"/>
Air or hydraulic systems inspected for deterioration or leakage in lines, tanks, valves, drain pumps, etc?	<input type="checkbox"/>	<input type="checkbox"/>	Tool Box discussion conducted & lift plan communicated to all affected personnel?	<input type="checkbox"/>	<input type="checkbox"/>
Hooks, hoist chains, and end connections checked for signs of wear, twist, cracks, distorted links, or excessive stretch	<input type="checkbox"/>	<input type="checkbox"/>	Are outriggers set before hoisting operations begin?	<u>N/A</u> <input type="checkbox"/>	<input type="checkbox"/>
Has rigging been performed by a competent person?	<input type="checkbox"/>	<input type="checkbox"/>	Is proper cribbing being used	<input type="checkbox"/>	<input type="checkbox"/>
Is the hoisting equipment sitting on a stable surface?	<input type="checkbox"/>	<input type="checkbox"/>	Overhead risks evaluated as part of the lift plan?	<input type="checkbox"/>	<input type="checkbox"/>
Is work area properly barricaded/isolated?	<input type="checkbox"/>	<input type="checkbox"/>	Is the operator certified for the equipment?	<input type="checkbox"/>	<input type="checkbox"/>
Has the hoisting equipment been inspected before use?	<input type="checkbox"/>	<input type="checkbox"/>	Are periodic inspections complete and documented?	<input type="checkbox"/>	<input type="checkbox"/>
NOTE: IF ANY OF THE ABOVE ANSWERS ARE “NO”, DO NOT PROCEED UNTIL CORRECTED					
Permit Requester (signature): Signature of Permit Requester			Permit Issuer (signature): Signature of Permit Issuer		
Time Issued: _____ am/pm	Date: _____		Date & Time Work Completed: _____	Associated General Work Permit No. General Work Permit number	

permit requirements (cont)

- Only **approved** Permit Writers that have had additional competency training per OSHA / Worksafe BC guidelines, API and contractor assessments completed can sign in the Permit Requestor or Permit Issuer boxes on the Permit forms.
- The workers name must also be on your companies remote permit writer list that are submitted to Chevron, this includes any work which requires permits such as the GWP and Rigging, Hoisting and Lifting form.

NOTE: IF ANY OF THE ABOVE ANSWERS ARE "NO", DO NOT PROCEED UNTIL CORRECTED			
Permit Requester (signature):		Permit Issuer (signature):	
Time Issued:	am/pm	Date:	Associated General Work Permit No.

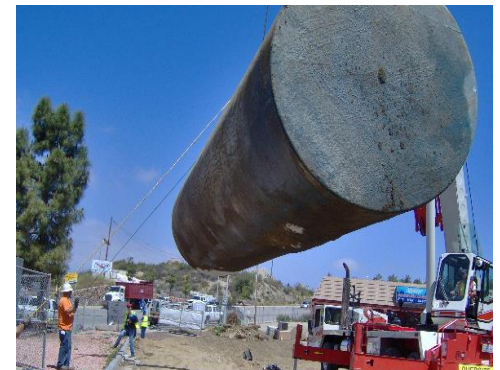
- See Remote Permit Power Point for additional General Contractor guidelines and requirements for certifying Sub Contractors to Remote Permit.



lessons learned

Several incidents have occurred in the past while performing Rigging, Hoisting & Lifting, below are several learning's after review of each incident:

- Identification and verification of the competency of the people in charge of the lift.
- Identification of person(s) responsible for lifting & rigging and for approving rigging plans, accepting crane contractors, and monitoring performance.
- Verification that workers understand safety limits for the lift and consistently obey alarms and shutdowns.
- Identification of hazardous drop zones (e.g., have a clearly defined “no go” zone), and control of the lift area to keep people out of the line of fire.
- Verification of the capability and condition of the crane, lifting components and rigging; look for and secure loose equipment.



rigging, hoisting & lifting – additional information

For additional details on Rigging, Hoisting & Lifting requirements refer to:

- **Your company's operating procedures**
- **Your Company's Safety Department**
- **API**
- **OSHA**
- **WorkSafe BC**
- **Contractor Safety Orientation Material**

