

STANDARD OPERATING PROCEDURE

Raising-Blocking Equipment Using Crane or Hydraulic Implements

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RAISING-BLOCKING EQUIPMENT USING CRANE OR HYDRAULIC IMPLEMENTS



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The following is a step-by-step procedure on how to complete a specific task or meet a facility specific requirement. Standard Operating Procedures (SOPs) are written for all identified critical tasks. By virtue of the hazard or complexity associated with critical tasks it is paramount that the SOP be followed as written. SOPs contain a listing of high-level hazards associated with the task, for detailed hazard analysis reference the applicable Task Hazard Assessments. SOPs do not replace the requirements contained in the company Standards, Codes, and Processes nor does it replace the need to comply with required legislation. Section 8.0 references documentation that the worker shall understand before work commences.

1.0 PURPOSE

- To establish a company standard to safely and effectively carry out work as it applies to raising and blocking equipment using a crane or hydraulic implements.

2.0 SCOPE AND APPLICATION

- This document applies to all company Heavy Construction Mining operations. Ensure all site-specific requirements are met or exceeded before performing the task.

3.0 HAZARDS AND CONTROLS

- Uncontrolled movement of equipment or components.
 - Isolate all forms of hazardous energy as per 950C-C-028 Hazardous Energy Isolation Code. Ensure Park brake is applied.
 - Use wheel chocks where applicable and ground all implements.
 - Follow 960C-SOP-111 Live Work; establish communication plan and designate spotters prior to using hydraulics to lift equipment.
 - Operator will stand outside cab when stands/blocking are being placed and removed; engage hydraulic lock out (if available) prior to leaving the cab.
 - Only competent operators are permitted to operate the equipment.
 - All moving components are to be adequately retained and secured.
 - Do not rely on unit hydraulics for support. Use properly rated stands or blocks.
- Equipment falling off support stands.
 - Use stands rated for the weight of the equipment and install under manufacturer designated lifting points.
 - Ensure equipment and stands are on firm level ground. Use steel plates if unit is in an area without a concrete pad.
 - To prevent load from slipping, metal to metal contact between stand and load is not permitted. Ensure a barrier (i.e., piece of rubber, softener, etc.) is placed between the stand and the contact surface of the load.
 - Verify that the stands are approved by an engineer and the stamped load limit meets or exceeds the load being placed on the stands.
 - Stands must be thoroughly inspected by a competent individual prior to use. Ensure stands are current with their annual inspection and certification.

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- Uncontrolled work area.
 - Keep work area clear of unnecessary tools, equipment, and personnel, erect barriers as required.
- Pinch points from attaching the rigging to the lifting points or lugs.
 - Wear gloves while handling rigging. Do not put fingers or hands in between cables and lifting points or lugs.
- Poor communication leading to unstable lift and shifting load.
 - Develop and review a communication plan before the lift. Ensure all personnel understand the hand signals being used (if required).
 - Ensure all personnel involved have adequate communication and that communication is verified before the lift.
 - Designate a primary spotter with clear view of the load and clear communication with the crane operator.
- Lift failure while hoisting / raising heavy equipment with crane.
 - Inspect crane and rigging before use. Do not use defective or damaged equipment or rigging.
 - Verify all weights and specifications of equipment being lifted. Confirm the crane, rigging parts, and configuration are rated and/or exceeds the lifting capacity required for the load to be lifted.
 - Verify equipment is clean of all material.
 - Lift equipment at approved lifting points.
 - Do not pull on an angle or drag materials with the crane.
- Rigging failure.
 - Prior to the lift, a competent rigger must inspect rigging equipment for damages and defects.
 - Make sure all rigging, including shackles, hooks and slings are rated and/or exceed the lifting capacity required for the load to be lifted.
 - All personnel will maintain an adequate safe distance from suspended loads. No worker shall stand or pass under a suspended load.
 - The perimeter of the work area is to be closed off with barricade tape and tagged to prevent unauthorized personnel from entering
- Raised equipment striking, pinching, or crushing a person while positioning stands under raised equipment.
 - Equipment operator will exit the cab while stands are being placed.
 - Whenever possible, use forklifts or another mechanical device to position stands under equipment.
 - Do not stand under a suspended load. Never take a position where a person could be pinned or caught if the suspended load failed.
 - Keep all your body below the height of the stands.
 - Establish an exclusion zone to keep other people out of area.
 - Keep all your body below the height of the stands.
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- Heavy and awkward lifting or moving of blocking and stands.
 - Stretch before task.
 - Use mechanical devices where possible.
 - Do not exceed personal limitations.
 - Use a multi-person lift.

4.0 CHECKLIST

- ☐ Attend all preparatory meetings (i.e. daily PSI; job scope; review of JSA's and SOP's for the job)
- ☐ Complete FLRA cards before starting the work.
- ☐ Ensure all personnel involved in the task are aware of the hazards and the controls to be used, as identified in the SOP's; JSA's; and FLRA's.
- ☐ Conduct a pre-job inspection of all equipment to be worked on and tools to be used.
- ☐ **Standard of Training required for working on this job: On-the job training.**

5.0 DEFINITIONS

5.1 Company

Means North American Construction Group Ltd. (NACG) and all directly or indirectly owned subsidiary companies, including joint ventures.

5.2 Company Personnel

Includes the Company's employees, officers, directors, agents, associates, consultants/contractors, temporary employees, and third-party processors.

5.3 HSE

Refers to the Health, Safety & Environment department.

6.0 PROCEDURE

6.1 Prepare Work Area

- 1) Complete a hazard assessment for the task and inspect work area. Notify supervision if unsure of task or if there are hazards outside of the worker's control.
- 2) Prepare ground by making a level pad large enough for steel plates (if using) and vehicles/equipment.
- 3) Park unit on level, solid ground.
- 4) Operator will set brakes, lower implements.
- 5) This is a LIVE WORK task. Follow 960C-SOP-111 and complete an additional hazard assessment as well as a live work checklist before starting the task. Notify supervision if unsure of task or if there are hazards outside of the worker's control.
- 6) Using barricade tape, establish an exclusion zone to prevent unauthorized personnel from entering the area.

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- 7) Position blocking and stands in area. Inspect stands and blocking.

6.2 Raising & Blocking Equipment using Hydraulic Implements

- 1) Conduct hazard assessment and Live Work Checklist prior to beginning task. Review hazard assessment with all parties involved to ensure a safe work plan has been communicated and primary spotter has been designated. Notify supervisor if unsure of task or if hazards cannot be controlled.
- 2) Designate Primary Spotter. Clear area of personnel.
- 3) Primary Spotter will direct equipment operator from a safe location using hand signals to raise the unit using the equipment's hydraulic attachments.
- 4) Once the unit is at the proper height, the equipment operator will engage the hydraulic lock out (if equipped) and exit the cab. No personnel shall go under the raised equipment at any time.
- 5) Place support stand(s) under each identified lifting and blocking points. Use a forklift or other mechanical device to move stands into position. Do not position body under the raised equipment unless it is supported by the stand. Ensure support stands have a non-slip barrier on top of the stand.
- 6) Clear the area of personnel. Equipment operator will enter the cab.
- 7) From a safe location, the primary spotter will direct the operator using hand signals to lower the unit until its weight is resting on the stands and/or blocks.
- 8) Once the unit is resting safely and securely on the stands and/or blocks, the unit will be locked out in accordance with 950C-C-028 Hazardous Energy Isolation Code prior to any maintenance activities being performed.

6.3 Lowering Equipment using Hydraulic Implements

- 1) Perform a walk around prior to lowering the vehicle and remove any tools or obstructions.
- 2) Conduct hazard assessment and Live Work Checklist prior to beginning task. Review hazard assessment with all parties involved to ensure a safe work plan has been communicated and primary spotter has been designated. Notify supervisor if unsure of task or if hazards cannot be controlled.
- 3) Designate Primary Spotter. Clear area of personnel
- 4) Remove lock out to facilitate unit operation.
- 5) Primary spotter will direct operator from a safe location using hand signals to raise the unit using the equipment's hydraulic attachments. Unit will be raised enough to facilitate removal of stands and/or blocks.
- 6) Once the unit is at the proper height, the equipment operator will engage the hydraulic lockout (if equipped) and exit the cab. No personnel shall go under the raised equipment at any time.
- 7) Remove stands and place safely out of the way.
- 8) Once stands are removed and personnel are cleared from the area, the operator will enter the cab.

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- 9) From a safe location, the primary spotter will direct the operator using hand signals to lower the unit until it is resting on ground.
- 10) The operator will set the unit's brakes, lower any implements to the ground, shut down the equipment and exit the cab.

6.4 Raising & Blocking Equipment using a Crane

- 1) Review the task and determine the load weights being lifted. Complete hazard assessment (i.e. FLRA) and associated lift plans and or JSAs if the load exceeds 75% capacity of the crane.
- 2) Review hazard assessment with all parties involved to ensure a safe work plan has been communicated and primary spotter has been designated. Notify supervisor if unsure of task or if hazards cannot be controlled.
- 3) Designate Primary Spotter. Clear area of personnel.
- 4) Verify all moving components are adequately secured and the equipment is locked out and tagged. Follow 950C-C-028 Hazardous Energy Isolation Code.
- 5) Identify the appropriate lifting and blocking points of the equipment to be lifted. In most cases the lifting and blocking points are clearly labelled on the framework of the equipment. However, they may be difficult to see due to material build-ups or fading. Some of the older equipment models are not labelled. If you are unsure about lifting or blocking point, reference the OEM or follow up with supervision.
- 6) Close off and tag the perimeter of the work area where the lift will take place with barricade tape to prevent entry by unauthorized personnel.
- 7) When using a shop overhead crane, in most cases, it will not be rated to lift the equipment all at once. The equipment will need to be raised and blocked one end at the time. One qualified person will be designated as the crane operator. The crane operator will at no time leave the crane unattended when a load is suspended. The crane operator will raise or lower the suspended load based on signals from the person setting the blocking stands or a designated signal person only.
- 8) When positioning stands, it is critical that personnel maintain body positioning in such a way as to prevent oneself from being caught or pinned if the suspended load were to fall. Whenever possible, use forklifts or pallet jacks to position stands underneath equipment. Do not stand under a suspended load.
- 9) Once the first end of the equipment is successfully raised and blocked, it is important to ensure the overhead crane is centered directly over the second lift. Even a small angle off center can change the center of gravity and allow the load to shift when hoisted, causing the blocked end of the equipment to become unstable.
- 10) Upon completion of blocking the second lift, verify the first stands are still securely in place before commencing work activities.
- 11) The barricade tape must be around the perimeter of the blocked equipment work area while the equipment is being raised and remain until its security is verified. Only authorized personnel are allowed inside the barricaded area.

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7.0 NOTES

If this task is to be done by a method different than described in this SOP, the work must **STOP**, and the alternate method must be **DOCUMENTED** with an adequate hazard assessment tool such as a JSA. The document must be **APPROVED** by a supervisor before such procedures are implemented.

8.0 REFERENCES

- Alberta Occupational Health and Safety Act, Regulation and Code – {Part 6, Sections 59, 61-73, 88, 89-92.2, 3-95.1, Cranes, Hoists and Lifting Devices}
- Alberta Occupational Health and Safety Act, Regulation and Code – {Part 15, Sections 212(1), 212(2), 213, 214, 215, Managing the Control of Hazardous Energy}
- 950C-C-008 Cranes, Hoists and Rigging Code
- 950C-C-028 Hazardous Energy Isolation Code
- 960C-SOP-111 Live Testing, Working on Equipment while its Running
- 960C-SOP-403 Crane Operation – Shop Bridge & Jib Cranes
- 960C-SOP-404 Mobile Crane Operation
- 962C-SOP-008 Signaling Equipment
- ASME Standard B30.9-2006, Safety Standard for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings.
- Manufacturer (i.e.: CAT) Service Manual for weights, lift points, and blocking points

9.0 APPENDICES

No appendices.