

STANDARD OPERATING PROCEDURE

Manual Lifting, Positioning and Carrying Heavy Objects

Document Number: 962C-SOP-009

Original Approval Date: Oct 10, 2012

Revision Number: 5

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Latest Revision Date: Sep 11, 2024

Next Revision Date: Sep 11, 2027

Document Approval Level: 4

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MANUAL LIFTING, POSITIONING AND CARRYING HEAVY OBJECTS

5	APP	Sep 11, 2024	Approved	T. Siver	L. Norris	B. Palmer 
4	APP	Sep 01, 2021	Approved	T. Siver	L. Norris	B. Palmer
3	APP	Aug 14, 2018	Approved	A. Letendre	T. Siver	B. Palmer
Rev	Status	Rev. Date	Status Description	Prepared by	Reviewed by	Approved by

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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 NACG 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 manually lifting, positioning and carrying heavy objects.

2.0 SCOPE AND APPLICATION

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

3.0 HAZARDS AND CONTROLS

- Manually lifting heavy or awkward objects improperly resulting in personal injury.
 - **In ideal conditions the maximum load for lifting with one person should not exceed 51 pounds.** Ideal conditions include when the object is within 7 inches from the front of the body, it is at waist height, it is directly in front of the person, it is being lifted with two hands, a comfortable grip can be maintained, and the load inside the box/bucket doesn't shift once lifted. If the load to be lifted does not meet all of these criteria, then it is an unsafe lift, and modifications must be made. Modifications can include (but are not limited to) lightening the load, getting help, or using a lifting aid. See picture below for *guidelines* on maximum handling loads based on body position. Refer to Appendix A – Decision to use a Two Person Lift or Lifting Aid.

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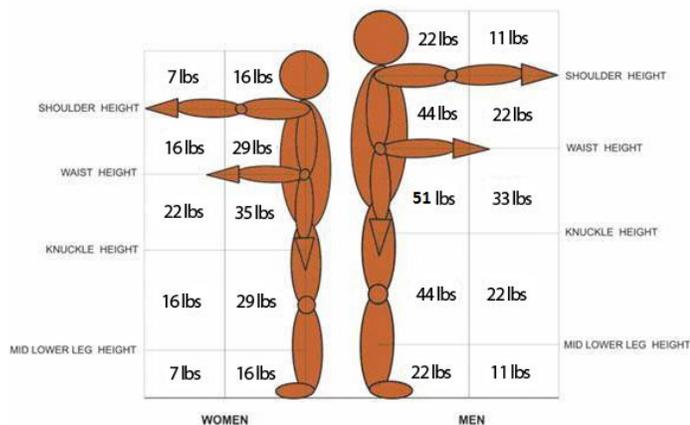
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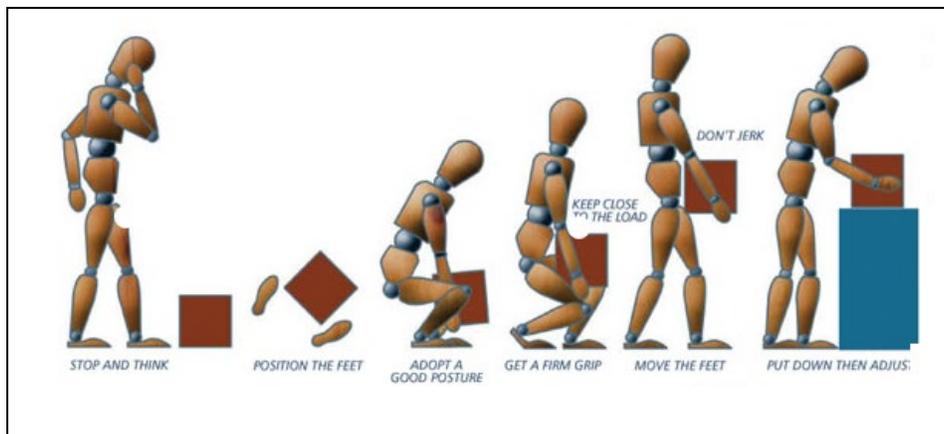
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GUIDELINE MAXIMUM HANDLING LOADS



- Stretch before completing the task and ensure muscles have warmed up.
- Utilize proper body mechanics when lifting (i.e. shoulders and feet square to load, lift with your legs from squat position, keep back straight, and use proper footing).



- Determine PPE required based on worksite and material handling requirements. Ensure gloves are free from oil, grease or any other substance that would prevent a good grip.
- Use two hands to grip and lift the object.
- Take micro-breaks when completing multiple lifts to reduce fatigue and strain on muscles and body.
- Exceeding personal limitations when manually lifting, holding or positioning heavy or awkward objects resulting in personal injury.
 - Assess/identify the weight of the load. Be sure you can lift, hold or position the load without overexertion. Do not lift if you cannot handle the load safely. Use a lifting aid or get assistance.

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- Reduce the frequency or time required to hold or carry a load or object. Use a lifting aid or get assistance.
- Use lifting aids to control unwanted movement of components or objects exceeding a worker's ability to manually control.
- Slipping, tripping or falling while manually carrying objects.
 - Inspect travel route prior to task; remove tools, debris, rocks and other tripping hazards from lift/travel area.
 - Plan the travel route and discuss with others when more than one person is involved in lift.
 - Use a hand dolly or wheeled cart to assist in transporting objects long distances rather than carrying them.
 - Ensure footwear is adequate for the task; laces are not a tripping hazard and the boot soles/grips are in good condition. Wear traction aids in icy/slippery conditions.
 - Where possible walk in the forward direction, do not walk backwards for extended distances.
- Congested areas and pinch points when placing or moving objects.
 - Identify potential pinch points prior to lifting and transporting load (i.e. door frames, walls, other equipment, tables, and any other place where hands can be caught between objects and loads); avoid these areas.
 - Avoid putting fingers under the load when setting down or placing in area.
 - Use good communication when multiple people are lifting and carrying loads.
- Restricted work areas when lifting or positioning objects.
 - Use lifting aids to raise, lower or hold an item in static position if required.
 - Plan task to minimize requirement to work in tight, restricted work areas.
- Restricted or obstructed visibility when manually lifting or carrying loads.
 - Do not attempt to lift or carry loads that obstruct visibility (use buddy system when required).
 - Ensure adequate lighting is available in lift area and along transport route.
- Improper lifting and communication when using team lifts resulting in personal injuries or damages.
 - Determine a set of commands to be used prior to the lift; ensure all personnel know what to do when they hear the command. Assign a team leader.
 - Where possible, select team members of similar height and strength.
 - Practice team lifting and carrying together before attempting the task.
 - Carry loads on same side of body (i.e. same shoulder); walk in step.
 - Where possible walk in the forward direction, do not walk backwards for extended distances.
 - In ideal conditions the maximum load for lifting with two persons should not exceed 110 pounds.
- Pinch points and line of fire hazards resulting in personal injury when using lifting aids.
 - Do not stand under a suspended load or object. Use tag lines where possible to control the load or object; do not place body parts underneath the load or object.

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- Do not place body parts between object and rigging.

4.0 CHECKLIST

- Attend all preparatory meetings (IE: 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

North American Construction Group (NACG) divisions, departments or subsidiaries.

5.2 Load Constant (LC)

Maximum recommended load weight to be lifted under ideal conditions. NIOSH Lifting Equation Applications Manual recommends an LC of 51 lbs.

5.3 Lifting Aid

A lifting aid is used to assist a person in lifting or positioning heavy objects. Lifting aids can include devices such as cranes and rigging, jacks, chain hoists and winches. Refer to Appendix B for a list of commonly used lifting aids or positioning devices.

6.0 PROCEDURE

- 1) Conduct a hazard assessment prior to commencing task.
- 2) Assess / identify weight of load. Determine if load can be lifted safely within personal limitations or if multiple personnel or a lifting aid are required. Refer to Appendix A – Decision to use a Two Person Lift or Lifting Aid.
- 3) Perform a pre-use inspection of any tools to be used.
- 4) Inspect and clear lift area and transport route of slipping and tripping hazards prior to lift. Determine if load can be carried safely or if a dolly or wheeled cart is required.
- 5) Identify pinch points along travel route prior to lift.
- 6) Ensure adequate lighting in lift area and along travel routes.
- 7) Establish communication plan and lift commands if using a team lift.
- 8) Utilize proper lifting techniques.
 - a) Prepare for the lift by warming up your muscles.
 - b) Stand close to the load and face the way you intend to move.
 - c) Use a wide stance to gain balance.
 - d) Be sure you have a good grip on the load.
 - e) Keep arms straight.
 - f) Tighten abdominal muscles.

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- g) Tuck chin into the chest.
- h) Initiate the lift with body weight. Lift with your legs and not your back.
- i) Lift the load as close to and as centred to the body as possible.
- j) Lift smoothly without jerking.
- k) Breathe normally during lift. Do not hold your breath.
- l) Avoid twisting and side bending while lifting.
- m) Avoid carrying loads with only one hand.
- n) Stop immediately and safely set down the load should you experience any discomfort.

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 14 Lifting and Handling Loads
- NIOSH Lifting Equation Applications Manual
- Government of United Kingdom Health and Safety Executive – Manual Handling Assessment Charts (the MAC tool)
- 950C-C-036 Manual Materials Handling Code
- 906C-P-001 Ergonomics Process

9.0 APPENDICES

- Appendix A – Decision to Use a Two Person Lift or Lifting Aid
- Appendix B – Commonly used Lifting Aids or Positioning Devices
- Appendix C – Examples of Body Positions for Manual Lifting – MAC Assessment

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Appendix A Decision to use a Two Person Lift or Lifting Aid

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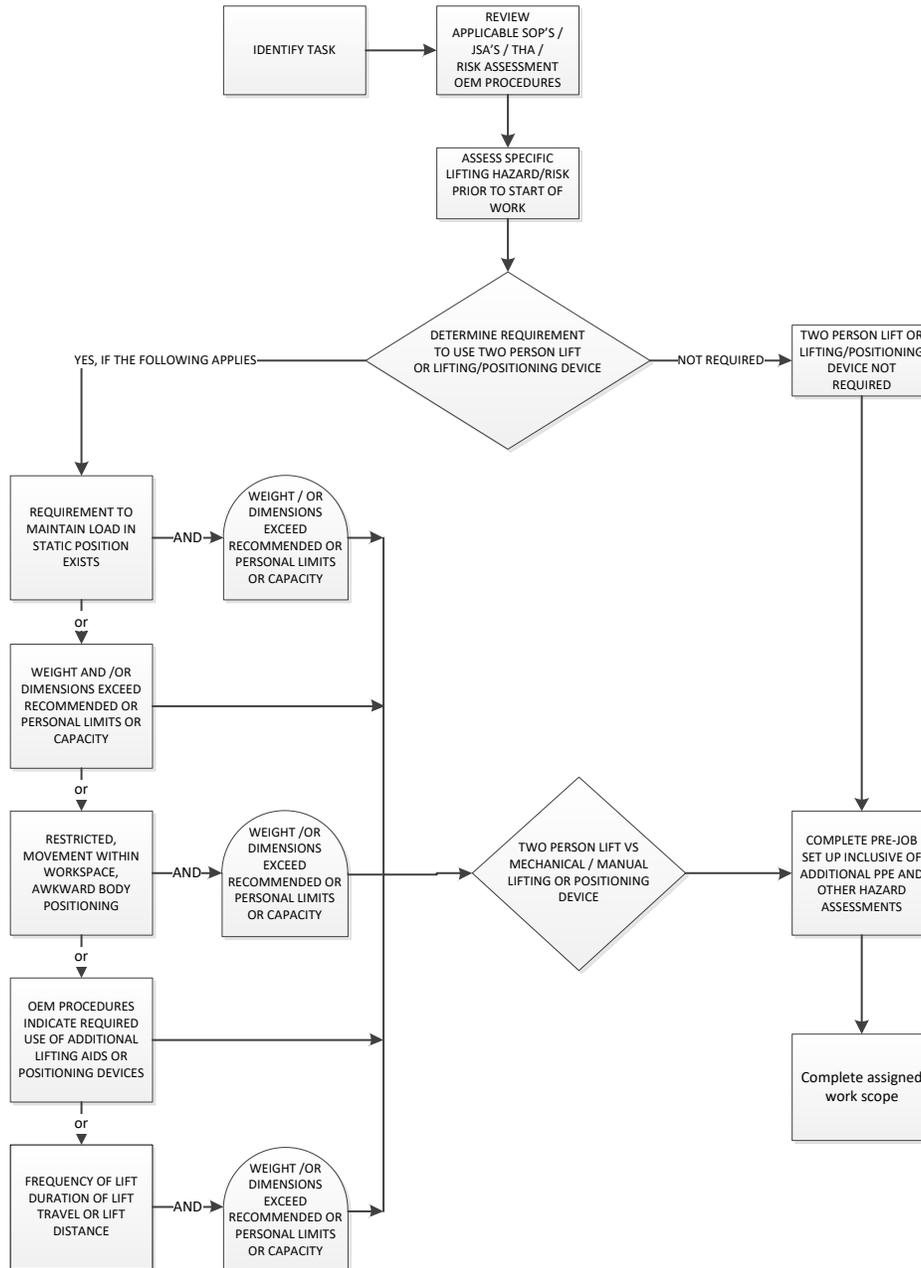
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Appendix B Commonly Used Lifting Aids or Positioning Devices

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The following list shall be considered, but not limited to, acceptable lifting aids or positioning devices.

- Synthetic Webbing consisting of the following configurations:
 - Type I – Triangle-Choker sling (Basket hitch or Choker Hitch)
 - Type II – Triangle-Triangle sling (Vertical or basket hitch)
 - Type III – Flat eye sling
 - Type IV – Twisted Eye Sling
 - Type V Endless Sling
 - Type VI Return Eye
- Synthetic Round Slings
- Wire Rope Slings
- Synthetic Rope
- Metal Mesh Slings
- Shackles, lifting lugs
- Below the hook lifting devices inclusive of plate clamps, spreader bars, magnets, grapples, electric chain hoists
- Manual lifting devices inclusive of chain hoist, winches, Lever hoists,
- Overhead hoists
- Hand trucks, wheel dolly's, Drum dolly's
- Jigs for holding and securing work pieces or components
- Jib (Fork extensions) or other approved forklift attachments
- Service truck cranes, picker truck, fork lifts, pallet trucks
- Variable height scissor lift
- Mobile floor cranes, engine stands, transmission jacks, portable hoist or cranes
- Hydraulic or manual jacks
- Equipment stands

Important

All items shall meet the applicable standards and approvals and shall be inspected prior to use. Specific sling hardware to be selected based on application. Sling protection (i.e. sling padding, sling wear pad, sliding sleeve or Edge Wrap) to be used where needed to prevent damage to the sling.

Appendix C Examples of Body Positions for Manual Lifting – MAC Assessment

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G = GREEN - Low level of risk

Although the risk is low, consider the exposure levels for vulnerable groups such as pregnant women or young workers, where appropriate.

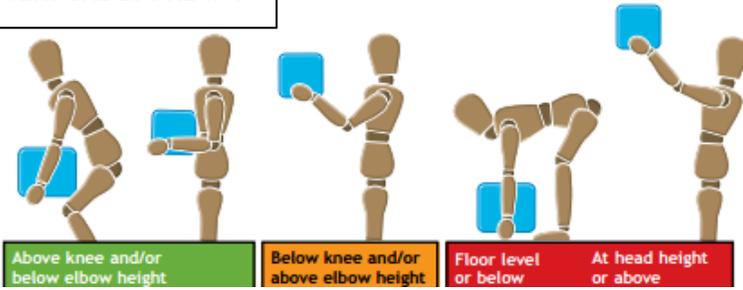
A = AMBER - Medium level of risk

Examine tasks closely.

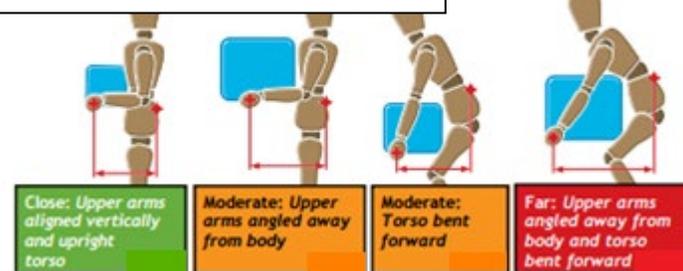
R = RED - High level of risk

Prompt action needed. This may expose a significant proportion of the working population to risk of injury.

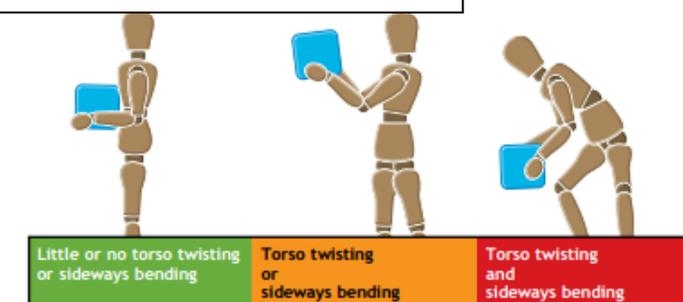
VERTICAL LIFT REGION



HAND DISTANCE FROM LOWER BACK



TORSO TWISTING & SIDEWAYS BENDING



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