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MOVING DRILL WITH HELICOPTER

PPE Required: Hard hat, ear plugs, or muffs, safety glasses, gloves, steel toe boots, reflective clothing, masks, goggles.
Controls: SWP/SJP, training, policies, PPE, housekeeping, LOTO, WHMIS, Proper lighting, reporting.
<i>MEET WITH GEO, PILOT AND CREW PRIOR TO MOVING</i>
Step 1. Communicate clearly with pilot and other employees involved to plan the drill move.
Step 2. Do not perform any moves by helicopter unless you have received the safety briefing by the pilot.
Step 3. Be clear about which hand signals will be used and what each signal means.
Step 4. Test communication via hand held radio with pilot and other employees.
Step 5. Inspect new platform to ensure it is level and accessible and free of any debris that could get picked up in the rotor wash.
Step 6. Ensure drill is properly disassembled and securely packed up and ready to move.
Step 7. Maintain close communication with pilot to know which load will be slung
Step 8. Remove all items that are not required for the move from the area to ensure thins are not blown about and causing a hazard for employees or helicopter.
Step 9. Ensure all items involved in the move are secure.
Step 10. Stay out of the way of cable and hook as the pilot enters for a load and leaves with a load.
Step 11. Keep low on the ground as helicopter is approaching for each load and after each load has been secured to the cable.
Step 12. Attach sling or item to hook and cable as directed by the pilot then move out of the way and keep low to the ground as the pilot removes the load.
Step 13. Detach sling or item from hook and cable as directed by the pilot if receiving a load and then move out of the way and keep low to the ground as the pilot heads away from the location.
Step 14. There should never be a passenger in the helicopter when a load is being slung.
Hazards:
Contact with helicopter rotors and/or items being moved
Blowing items hitting people and/or helicopter
Items not secured properly and falling from heights
Incorrect communication
Equipment failure

RIGGING & SLINGING INFORMATION

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PURPOSE/APPLICATION

Rigging can vary considerably depending on the load weight, shape and circumstances. Rigging can range from a single sling to rigging components in multiple lengths and styles. This procedure will provide guidance to workers around the selection, inspection and use of a variety of rigging components.

<u>PPE</u>		Additional PPE as determined by JHA
<u>TRAINING</u>	Site-Specific Requirements	On the job instruction and trade related rigging instruction
<u>HAZARDS & CONCERNS</u>	Personal injury Property damage	Motion (crush/pinch points) Gravity (slips/falls)

PRECAUTIONS

- The rigger must know the weight of the load and rigging hardware, the capacity of the hoisting device and the working load limit of the hoisting rope, slings, and hardware.
- Ensure that wire rope, alloy steel chain, synthetic fiber rope, and metal mesh slings all meet the requirements Yukon Occupational Health and Safety Regulation.
- Recognize factors such as wear, temperature, improper sling angles, point loading, and center of gravity that can affect the rated working load limits of equipment and hardware.

INSPECTIONS

- All rigging equipment including wire rope, slings, shackles, etc. is to be inspected prior to use to ensure that the rigging is in good condition, functional and safe.
- Any defective rigging identified must be removed from service, tagged out of service, returned, and reported to the Supervisor.
- Any sling, strap or other lifting device that is damaged must be permanently removed from service as required by manufacturers specifications. A worn, damaged, or deformed hook is to be permanently removed from service if the wear or damage exceeds the manufacturers specifications allowed.

SYNTHETIC WEB OR ROUND SLINGS

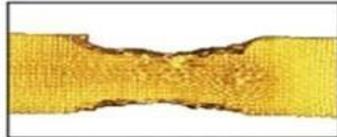
- Ensure the identification tag is attached and states the size, grade, rated capacity, and manufacturer's name.
- Inspect inch by inch and ensure damaged areas are identified.
- Look for melting or charring, chemical damage, cuts, tears, snags, or any other fiber damage.
- Check for worn or broken stitching, abraded areas, brittle fibers, and hardened areas.
- Inspect any permanently attached fittings for rust, corrosion, bends, cracks,



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gouges, or sharp edges.



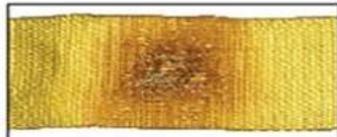
Acid / Caustic Burns



Cut



Edge Cut



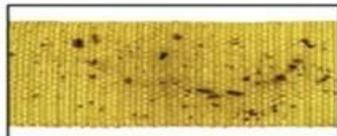
Melting / Charring



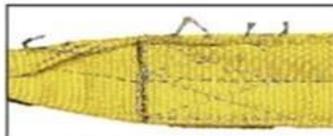
Abrasions



Puncture



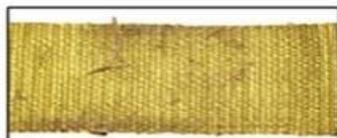
Weld Spatter



Broken / Worn Stitches



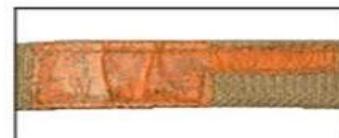
Damaged Eye



Embedded Materials



Tensile Break



Missing / Illegible Tag



UV Degradation



Red Core Yarn



Knot



Crushed Webbing



Snag



Damaged Hardware

WIRE ROPE SLINGS

- Ensure the identification tag is attached and states the size, grade, rated capacity, and manufacturer's name.
- Inspect inch by inch to identify any damaged areas.
- Look for broken, worn, abraded, or stretched wires. Provincial and OEM standards specifications for maximum numbers of broken strands permitted, review these requirements prior to inspecting.
- Check for signs of corrosion, rust, pitting, discoloration, and any heat damage such as melted areas and burn marks.
- Watch for "bird caging" (when the wire rope strands begin to unravel or push away from other strands).



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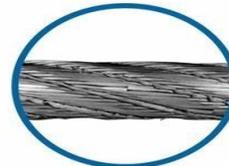
KINKING



DOGLEGS



BIRDCAGING



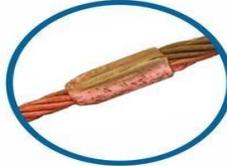
SEVERE WEAR



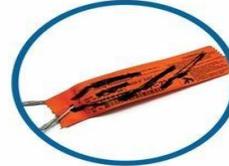
BROKEN WIRES



CORROSION



DAMAGED FITTINGS



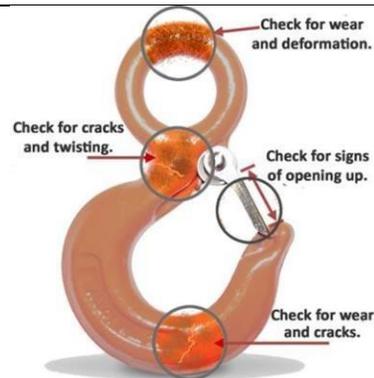
ILLEGIBLE TAG / ID

ALLOY STEEL CHAIN SLINGS

- Ensure the identification tag is attached and states the size, grade, rated capacity, and manufacturer's name.
- Carefully inspect each link and hook for bends, cracks, gouges, or marks showing excessive wear.
- Check the links for stretching.

RIGGING HARDWARE (SHACKLES, HOOKS, SPREADER BARS, EYE BOLTS, ETC.)

- Ensure identification markings are visible and legible.
- Check carefully for cuts, gouges, corrosion, rust (other than surface rust), bends, twists or areas that have been stretched, cracked, or broken.
- Inspect for melted areas, welding arcs, welding slag or other hot work markings.
- Carefully examine the area of the hardware that bears most of the load.



ANGLES AND TENSION

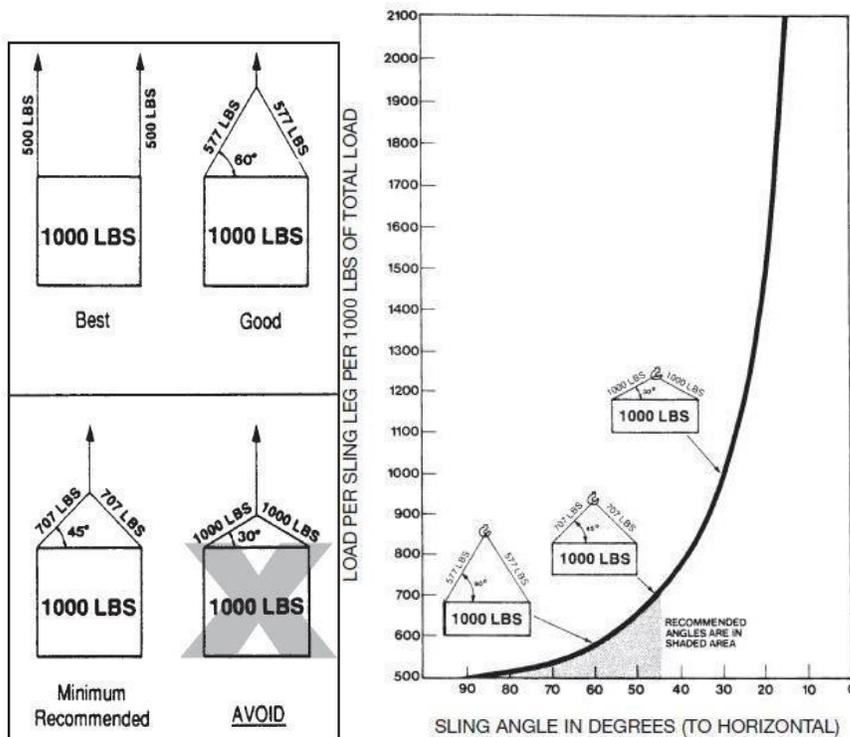
- The working load limits of hoisting equipment apply only to freely suspended loads on plumb hoist lines. If the hoist line is not plumb during load handling, side loads are created which can destabilize the equipment and cause structural failure or tip-over with little warning.



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- The rated capacity of any sling depends on its size, configuration and the angles formed by its legs with the horizontal. The smaller the sling angle, the more weight there is on each sling.
- Hardware's rated capacity also decreases when it is pulled from any direction other than vertical.
- Low sling angles create large, compressive forces on the load and may cause buckling, especially in longer flexible loads.
- Ensure that the sling angle is always greater than 45° and preferably between 60° and 90°. When the horizontal distance between the attachment points on the load is less than the length of the shortest sling leg, then the angle is greater than 60°.



SLING HITCHES

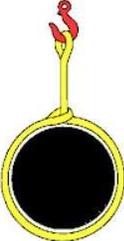
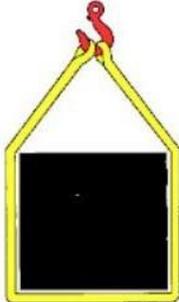
- The capacity of a lifting sling will vary depending on the hitch that is used to rig the load, it is important to understand how the lifting capacity of the sling will be impacted by the hitch.
- Remember, the overall strength of the rigging will be dictated by the capacity of the weakest component.

Hitch	Capacity Impact
Vertical Hitch	Sling will have 100% capacity when there is a straight attachment to the load by using hooks, shackles, or other hardware,



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Choker Hitch		<p>A choker hitch has 80% of the capacity of a single leg sling if the angle of the choke is 120 degrees or greater.</p> <p>A choke angle that is less than 120 degrees will result in a capacity as low as 40% of the single leg.</p>								
Basket Hitch		<p>Basket hitches distribute a load equally between the two legs of a sling. When using a basket hitch, the load is cradled by running the sling underneath the load and then attaching both eyes of the sling separately to the hook.</p> <p>A basket hitch has twice the lifting capacity of a single leg vertical hitch when the legs are in a true 90° vertical fashion.</p> <p>If the sling angle is less than 90° when using a basket hitch, the sling capacity is reduced.</p> <p>Single Leg Capacity based on the angle of the legs:</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding-right: 20px;">90°</td> <td>200%</td> </tr> <tr> <td>60°</td> <td>170%</td> </tr> <tr> <td>45°</td> <td>140%</td> </tr> <tr> <td>30°</td> <td>100%</td> </tr> </table>	90°	200%	60°	170%	45°	140%	30°	100%
90°	200%									
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45°	140%									
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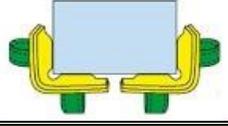
General DOs and DON'Ts

DO'S	DON'TS
JHA	Use a wire tagline
Communicate the hazards to anyone involved in the task and any other workers in the area	Conduct hoisting or rigging operations in high winds
Determine the weight of the load. Use the information on shipping papers, design plans, catalogue data and manufacturer's specifications. You can calculate the weight of a standard steel object using a standard formula	Use rigging equipment for vehicle or equipment recovery or towing. If rigging has been used to tow or recover equipment it must be tagged and removed from service



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<p>Select the properly rated rigging for the task and ensure that the tags are marked with the working loads</p>	<p>Allow a sling to bunch up on a shackle, or load the hook's latch</p>
<p>Determine the proper hitch based on load type</p>	<p>Wrap a tagline around your hand</p>
<p>Ensure load is centered/balanced. While it is easy to determine the center of gravity on uniform objects, oddly configured loads may require more trial and error. Have the operator perform a slow, careful test lift a few inches off the ground. If the load tilts during the trial, signal the operator to set it back down and then re-rig the load</p>	<p>Permit bending near any splice or attached fitting as the bend will weaken the splice or swaging, verify there is no bending near any attached fittings</p>
<p>Ensure that the hoist line is plumb. Side loads are created when the hoist line is not plumb and can de-stabilize the equipment and cause structural failure or tip-over</p>	<p>Use a shackle or any other rigging hardware if you cannot read the identification markings. These components must be immediately removed from service</p>
<p>Protect slings from cuts and tears from sharp edges on a load. Place softeners such as padded materials between slings and edges. Ensure the material is strong enough to withstand the increased force of the sharp edges when the load is lifted</p>	<p>Attach a sling directly to a lifting lug, use a shackle</p>
<div style="display: flex; align-items: center;">   </div>	<p>Attach a sling directly to a lifting lug, use a shackle</p>
<p>Select one or more taglines to control the load as required (based on site and lift conditions)</p>	<p>Ever stand or walk under a suspended load</p>
<p>Select a rope tagline that is free of knots and long enough for the worker to be a safe distance from the load during the entire lift</p>	<p>Ever tie two or more slings together. Always connect two slings with a shackle</p>
<p>Hold the tagline such that it can easily be released if the load swings dangerously</p>	
<p>Attach a tagline to a spot where it can be easily removed</p>	
<p>Be aware of the direction of the swing and the roll of the load</p>	
<p>Ensure that the hook is secured by a safety latch, mousing, shackle, or other effective means where the dislodgment of a hook could injure a worker</p>	
<p>Perform one or more test lifts so that you can see where any adjustments need to be made. If the load tilts during the test lift, then the load must be re-rigged until the center of gravity is determined</p>	

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Store rigging in a clean, dry place and protect it from the elements, where possible	
Prepare adequate blocking before loads are lowered. Blocking can help prevent damage to slings	
Ensure all loads have been safely landed and supported to prevent any load shift or movement of any kind before removing any rigging equipment	
Be aware of the location of pinch points and keep your hands and body clear. Note the specific pinch points on your JHA	

PERSONAL TRANSPORTATION BY HELICOPTER

Contribute to a Successful Flight

- be reasonable in your requests
- support the pilot's safety decisions
- Know; how to embark and disembark; inflight and ground procedures; location and use of safety and survival equipment; emergency procedures; what is expected of you on the flight

On the Ground

- dress for the weather
- inform the pilot of
 - your baggage weight
 - applicable medical problems
 - susceptibility to motion sickness
- don't smoke in or around the helicopter
- stay *well to the side* of the helipad when the helicopter is arriving or departing
- secure your clothing and headgear against rotor winds
- protect your eyes against blown dust and particles
- keep the helipad clear
- **wait for instructions to approach or leave the helicopter**
- **approach and leave to the side or front in a crouched position - never by the rear of the helicopter**
- if you can, wait until the rotors stop turning
- **approach and leave by the downslope side - for rotor clearance**
- carry gear firmly at your *side*, never over your shoulder or above your head
- never throw items towards or out of a helicopters
- load cargo carefully and secure it against movement
- ensure baggage compartment doors are properly closed and latched

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- take a reserve of special medications you require in the event of enroute delays

In the Helicopter

- secure seatbelts (and shoulder straps, if provided) while in flight
- use helmet or headset if provided
- remain in your seat unless given permission to move
- do not distract the pilot during takeoff, maneuvering or landing
- read instructions on the operation of doors, emergency exits, and the location of the ELT (emergency locator transmitter) and emergency equipment



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SAFETY AROUND HELICOPTERS

APPROACHING OR LEAVING A HELICOPTER

Do not approach or leave without the pilot's visual knowledge. Keep in pilot's field of vision at all times. Observe Helicopter Safety Zones (see diagram right)

On sloping ground always approach or leave on the downslope side for maximum rotor clearance.

If blinded by swirling dust or grit, STOP – crouch lower, or sit down and await assistance.

If disembarking while helicopter is at the hover, get out and off in a smooth unhurried manner.

Do not approach or leave a helicopter when the engine and rotors are running down or starting up.



Proceed in a crouching manner for extra rotor clearance. Hold onto hat unless chin straps are used. Never, never, reach up or chase after a hat or other articles that blow away.

Carry tools, etc, horizontally below waist level – never upright or on the shoulder.

LANDING, TAKE-OFF AND LOADING OPERATIONS

Keep helipad clear of loose articles – water-bags, ground-sheets, tins, etc. Secure other gear from effects of rotor wash.

When transporting personnel, loading staff should ensure that:

- Passengers are briefed as above
- They are grouped together and well back at side of landing zone
- They face away from helicopter during take-off and landing
- Each person looks after their own gear
- They are paired off and ready to board in turn as soon as the pilot gives the signal

When directing pilot for landing, stand with back to wind and arms upraised.

After hooking up cargo sling, move forward and to the side to signal pilot. Ensure sling is not across skid. Never ride on sling.

When directing pilot by radio, remember that he or she may be too busy to give an acknowledgment.

Fasten and adjust seat belt on entering helicopter and leave it fastened until pilot signals to get out.



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Safety Around Helicopters

APPROACHING OR LEAVING A HELICOPTER



Helicopter Safety Zones

- Acceptable:** Yellow areas (top-left, bottom-right)
- Preferred:** Green areas (bottom-left, top-right)
- Prohibited:** Red area (top-right)

Do not approach without receiving a visual signal from the pilot. Do not leave without a visual or spoken instruction to do so. Stay where the pilot can see you at all times.

On sloping ground always approach or leave on the downslope side for maximum rotor clearance.

If blinded by swirling dust or grit, STOP – crouch lower, or sit down and wait for assistance.

If disembarking while the helicopter is hovering, get out slowly and smoothly when cleared to by the pilot.

Do not approach or leave a helicopter when the engine and rotors are running down or starting up.

Crouch while walking for extra rotor clearance. Always remove hats. Never reach up or chase after anything that blows away.

Carry long objects horizontally below waist level – never upright or on the shoulder.

TAKEOFF, LANDING, AND LOADING OPERATIONS

Clear helipad of loose articles. Secure your gear from the effects of rotor wash.

When directing the pilot for landing, stand with back to wind and arms raised.

After hooking up a cargo sling, move forward and to the side to signal the pilot. Ensure the sling is not across the skid. Never ride on the sling.

- When transporting personnel, loading staff should ensure that:
 - Passengers are briefed on approaching and leaving the helicopter
 - They are grouped together and positioned to one side of the landing zone
 - They face away from helicopter during takeoff and landing
 - Each person looks after their own gear
 - They are ready to board in turn as soon as the pilot gives the signal, and they are escorted to the helicopter.

When directing the pilot by radio, remember they may be too busy to give a reply.

Fasten and adjust your seat belt on entering the helicopter and leave it fastened until the pilot signals you to get out.

Revised April 2007

Review	Approval		
Author	Description of version changes (Control of changes):	Revision Control:	Date:



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