

SAFE OPERATING PROCEDURES

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Airbrake Adjustment

TOOLS/EQUIPMENT REQUIRED	Truck Blocks
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
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JOB STEPS

1. Complete Hazard Assessment
2. Complete walk around inspection
3. Make sure all workers are clear of the working areas
4. Block the vehicle's wheels and release the parking brake. Shut off the engine and leave the transmission in the lowest gear. Or put into park.
5. Make and hold a 100 psi (690 kpa) brake application. Check push rod travel and slake adjuster angle.
6. If readjustment is necessary, rotate the adjustment cap screw on the slack adjuster until the brake linings contact the drum. This can be checked visually or by rapping the drum with a hammer. When the linings are not in contact with the drum, the drum will ring. When the linings contact the drum, a dull thud is heard.
7. Back off the adjustment cap screw ¼ - ½ turn. Be sure the linings are not contacting the drum.
8. Recheck push rod travel, slack adjuster angle and side to side balance as in Step #6.
9. Make and hold a 100 psi (690 kPa) brake application and check push rod travel. Push rod travel should be within the specifications of no more than 1-1/2 inches travel and should not vary more than ½ inch side to side on drive and trailer axles. Steering axles should have less than ¼ inch side to side variance.
10. Check the angle formed between the brake chamber push rod and slack adjuster. This angle should not be less than 90 degrees. An angle of less than 90 degrees will cause the push rod to travel "over centre" and reduces brake application force. Incorrect brake chamber pushrod to slack adjuster angle must be adjusted by a qualified mechanic.

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Backfilling

TOOLS/EQUIPMENT REQUIRED	Track Hoe
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
COVERALLS	HARD HAT
SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

1. Complete Hazard Assessment.
2. Complete pre-trip inspection on track hoe using equipment checklist.
3. Make sure all workers are clear of the working areas.
4. Designate one competent, qualified spotter per piece of equipment being used.
5. Spotter is to stay in equipment operator's line of sight at all times.
6. Spotter is to watch for backfill debris that could cause damage to coating and/or pipe as well as any traffic approaching blindside of track hoe.
7. Track hoe begins pulling backfill material into ditch in a controlled manner so as to not cause any damage to coating or integrity of pipe.
8. If no project specific compaction procedure to fulfill, track hoe will place enough backfill material over pipeline to ensure that no damage is incurred when general compaction methods are performed (e.g. Two thirds of ditch backfilled before compacting)
9. After general compaction methods are performed for first lift, second lift may be placed in ditch by equipment other than track hoe if desired (e.g. Dozer) and compacted.
10. Continue Step 9 until C and B soils are replaced. If weather permits, topsoil (A soil) may be replaced.
11. At no time is anyone permitted to enter unsafe ditch.
12. Snow fence any remaining open excavations and place warning signs if necessary.
13. Clean up work area.

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Bending Machine – Loading/Unloading

TOOLS/EQUIPMENT REQUIRED	Sideboom Bending Shoe/Machine Truck Anchor Equipment
MATERIALS REQUIRED	Sizing Pig Slings Pipe Snake
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
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LOAD BENDING MACHINE USING HOE

1. Complete pre-use inspections of all equipment and rigging prior to use
2. Perform personal survey of area to ensure free from powerlines and other overhead hazards
3. A competent / qualified signal person must be designated. Operator, driver and signal person must clearly understand the hand signals
4. Swamper attaches rigging and tagline to bending machine and hoe.
5. Spotter backs truck driver up to bending machine in preparation for lift.
6. Signalperson signals the hoe to lift the bending machine as the swamper utilizes tagline to keep the load in line with the truck.
7. Signalperson then signals truck driver to back the trailer under the bending machine.
8. Once trailer is in desired position, signal person will then signal the hoe to let the bending machine down onto the trailer in a controlled manner.
9. Truck driver will secure the load appropriately and swamper will remove rigging.
10. Unloading Bending Machine Using Hoe
11. Complete pre-use inspections of all equipment and rigging prior to use
12. Perform personal survey of area to ensure free from powerlines and other overhead hazards.
13. A competent/qualified signal person must be designated. Operator, driver, and signal person must clearly understand the hand signals.
14. Position truck on level, stable surface with enough room to drive out from under bending machine during lift.
15. Swamper attaches rigging and tagline to bending machine and hoe.
16. Signal person signals operator to apply tension to rigging. Truck driver removes tie-downs.
17. Once area is free from personnel, signalperson signals operator to lift bending machine.
18. Signalperson signals truck driver to drive out from beneath bending machine.
19. Signalperson signals operator to let the bending machine down to the ground in a controlled fashion.
20. Swamper removes rigging.

LOAD BENDING MACHINE USING SCISSORNECK TRAILER

1. Complete pre-use inspections of all equipment and rigging prior to use.
2. Perform personal survey of area to ensure free from powerlines and other overhead hazards.
3. A competent/qualified signal person must be designated. Operator, driver, and signalperson must clearly understand the hand signals.
4. Park truck and trailer on a flat, level surface.
5. Truck driver attaches winch to scissorneck trailer, applies trailer brakes, and pulls locking pins from scissor mechanism.

6. Truck driver unhooks from scissorneck trailer and lets it to the ground using winch in a controlled fashion.
7. Truck driver unhooks winchline from trailer and pulls truck out of the way.
8. Utilizing a spotter, equipment operator backs bending machine onto scissorneck trailer.
9. Truck driver straps bending machine to trailer using appropriate tie-downs.
10. Once bending machine is secured to trailer, equipment operator unhooks from bending machine and drives off trailer.
11. Utilizing a spotter, truck driver backs up to trailer and re-hooks winch to scissorneck.
12. In a controlled fashion, truck driver lifts trailer using winch and hooks up to scissorneck.
13. Once trailer is secured to truck, truck driver will reinstall locking pins into scissorneck mechanism

UNLOADING BENDING MACHINE USING SCISSORNECK TRAILER

1. Complete pre-use inspections of all equipment and rigging prior to use.
2. Perform personal survey of area to ensure free from powerlines and other overhead hazards.
3. A competent/qualified signal person must be designated. Operator, driver, and signalperson must clearly understand the hand signals.
4. Park truck and trailer on a flat, level surface.
5. Truck driver attaches winch to scissorneck trailer, applies trailer brakes, and pulls locking pins from scissor mechanism.
6. Truck driver unhooks from scissorneck trailer and lets it to the ground using winch in a controlled fashion.
7. Truck driver unhooks winchline from trailer and pulls truck out of the way.
8. Utilizing a spotter, equipment operator backs up to bending machine on scissorneck trailer.
9. Once bending machine is secured to equipment, tie downs may be removed.
10. Utilizing a spotter, equipment operator drives off trailer with bending machine.
11. Utilizing a spotter, truck driver backs up to trailer and re-hooks winch to scissorneck.
12. In a controlled fashion, truck driver lifts trailer using winch and hooks up to scissorneck.
13. Once trailer is secured to truck, truck driver will reinstall locking pins into scissorneck mechanism

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Bending Pipe

TOOLS/EQUIPMENT REQUIRED	Sideboom
	Bending Shoe/Machine Truck Anchor Equipment
MATERIALS REQUIRED	Sizing Pig
	Slings
	Pipe Snake
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
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BENDING WITH SHOE

1. Complete Hazard Assessment.
2. Complete pre-use vehicle and equipment inspections.
3. Inspect all rigging
4. Place desired joint of pipe to be bent on level surface and on skids.
5. Ensure seam of pipe is located in such a fashion so as not to bend against it.
6. Anchor the end of the joint by backing truck tire or equipment track/bucket/blade against the end so as not to damage it.
7. Place bending shoe overtop of desired location at start of bend.
8. Hook sling into double basket a few meters in front of the shoe in such a fashion that the pipe will not roll the seam from desired location.
9. Clear all workers from fall zone of pipe.
10. Bender signals boom operator to make desired pull upwards in a controlled manner.
11. When desired degree is met, bender signals boom operator to let down, ensuring that the pipe stays in the shoe.
12. Bender signals boom operator to move shoe to next desired pull location and repeats steps 10 and 11 as needed.
13. Depending on how many pulls are needed, sling may need to be moved closer to the shoe throughout the bending process. This must happen in a controlled manner by setting pipe on tub close to shoe and bent portion of pipe to be supported by laborers or other equipment.
14. When desired degrees are met, lay pipe on its side out of the shoe in a controlled manner keeping all workers out of the fall zone.
15. Remove anchor truck/equipment.
16. Pull sizing pig through bend to check for kinks or deficiencies.

BENDING WITH BENDING MACHINE

1. Complete Hazard Assessment.
2. Complete pre-use vehicle and equipment inspections, including bending machine.
3. Inspect all rigging.
4. Load desired joint of pipe into loading end of bending machine using sideboom in such a fashion as not to be bending against the seam.
5. Run out winch line to end of pipe joint and attach stringing hook.
6. Run pipe through bending machine to desired pull location.
7. Lifting equipment shall position itself so as to hold the weight of the extruding pipe.
8. Bending machine operator shall ensure all workers are kept free of the fall zone of the pipe.
9. Bending machine operator pulls to desired degree, then releases hydraulic dyes.
10. Bending machine operator moves joint forward using hydraulic winch to next desired pull location and repeats steps 8 and 9 as needed.

11. Once 50% of the joint is fed through the bending machine, sideboom shall reposition itself to support the extruding pipe on the other side of the bending machine.
12. When desired degrees are met, sideboom operator shall pull remainder of the joint from the bending machine and place pipe on the ground so that ground crew can pull sizing pig through the bend to check for kinks or deficiencies

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Burning Brush

TOOLS/EQUIPMENT REQUIRED	Excavator Tiger Torch Brush Fan Smoke Warning Signs Burn Sloop
MATERIALS REQUIRED	Fire Extinguisher Fire Suppressant Can
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
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JOB STEPS

1. Ensure that all Burn Permits are in place, if required.
2. Conduct hazard assessment and pre job meeting
3. Conduct pre-trip inspections of powered mobile equipment.
4. Ensure fire extinguisher and fire suppressant is readily available and warning signage is in place.
5. Ensure weather and wind conditions are favourable for burning for up to 48 hours.
6. If burning in British Columbia, ensure that Air Index is within governing specifications.
7. Ensure that brush pile is built on stripped and stumped soil (clay only).
8. If using a burn sloop, drag burn sloop to prepared burn pile area.
9. Prior to igniting, ensure all hoses, fittings, regulators, and bottles are in good order before using. Propane bottles must be in upright position when in use. Do not leave lit propane torch unattended.
10. Light brush pile using tiger torch.
11. Stoke fire as needed with excavator.
12. Continually monitor fire. Use night shift if required.
13. Ensure all fire is completely extinguished and cooled before placing topsoil back on stripped area.

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Cell Phone – Safe Use

JOB STEPS

1. While traveling, handheld cell phone are NOT to be used.
2. Cell phones are not to be used in any of the live plant areas. Your phone must be shut off and put on call forward or directed to the answering service, until you reach the truck. Ensure your vehicle is in a safe location before using your cell phone.
3. Cell phones are NOT to be used in vehicles or equipment while in motion. If you receive a call while traveling, you must pull over to the shoulder and park. If the phone rings while traveling, the passenger should take the call. If the driver must take the call, the driver is strongly advised to pull over to the side of the road after ensuring that it is safe to do so.
3. Cell phone usage WILL be allowed in designated ONSITE areas.
4. Personal cell phones during work hours must only be used to contact management or in Emergency Response Situations.
5. There is absolutely no texting allowed while operating a vehicle.
6. Cell phone users have a responsibility to use the cell phone safely and responsibly.

NOTE:

If you have a HANDS FREE phone, you may answer your cell phone. There are no other exceptions to this rule.

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Chainsaw Operation

TOOLS/EQUIPMENT REQUIRED	Chainsaw First Aid Kit
MATERIALS REQUIRED	Fuel Chain Oil
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
COVERALLS	HARD HAT
SAFETY GLASSES	SAFETY BOOTS
ADDITIONAL PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
	Saw Pants
	Visor
	Gloves
	Ear Muffs

JOB STEPS

Starting a Chainsaw

1. Make sure all PPE is on.
2. Inspect saw for any deficiencies and its condition (chain tension, leaks, loose or broken handles etc.)
3. Pull choke out
4. Secure the saw.
 - a. On Ground
 - i. Set saw on the ground in area clear of obstructions.
 - ii. Place foot in rear handle.
 - iii. Grip front handle firmly with left hand.
 - b. Between Legs
 - i. Secure saw between knees.
5. Grip front handle firmly with left hand.
6. Pull the starter handle.
7. Keep hold of the starter handle as the rope rewinds.
8. Repeat steps 5 and 6.
9. When the saw fires push the choke in, the saw will usually start the next pull.
10. Rev up the engine briefly and let the saw idle.
11. Make sure the saw idles without the chain turning.

Refuelling a Chainsaw

1. Allow saw engine to cool down before refuelling.
2. Re-fuel in a well-ventilated area, away from ignition sources.
3. Top off chain oil.
4. Fill fuel container use spout to prevent spills.
5. Ensure filler caps are reinstalled tightly.

Bucking Logs

1. Ensure you have enough fuel before starting.
2. Start the saw using the proper procedure according to the owner's manual.
3. Always start on the uphill side and have a clear escape path planned.
4. Assess where the log is supported.
5. Log supported at only one end (bottom bind)
6. Cut the bottom (compression) side to about $\frac{1}{4}$ of log diameter.
7. Finish the cut on top (tension) side of the log.
8. Log supported at both ends.
9. Cut the top (compression side about $\frac{1}{4}$ of the log diameter. This releases some of the pressure and allows the log to break.
10. Finish the cut on the bottom (tension) side of the log.
11. Use the same technique for logs under "side bind". Use standing trees to protect yourself whenever possible and cut into smaller pieces to gradually release tension/compression.
12. Always keep two hands on the saw and always keep the chain bar pointed away from your body.

Falling a Tree

1. Assess the tree that need to be fallen for location, lean, physical damage, overhead hazards and deterioration of limbs, stem, or roots.
2. Plan the direction of the fall.
3. Ensure no one is in falling area.
4. Brush out tree.
5. Plan and clear an escape route 45 degrees from the tree that is at least 3 metres.
6. Complete a pre-inspection of the chainsaw.
7. Make a clean undercut, $\frac{1}{4}$ - $\frac{1}{3}$ of the diameter of the tree.
8. Start the back cut 2.5 – 5 cm above the undercut.
9. Start the wedge.
10. Complete the back cut.
11. Drive the wedge until the tree starts to fall.
12. Use the planned escape route.
13. Wait 15 seconds or longer for the tree and the branches to fall.

Falling a Dangerous Tree

1. Fuel saws prior to starting any cuts and make sure wedges are readily available.
2. Make undercuts and back cuts at a comfortable height to ensure maximum visibility and freedom from action.
3. Keep glancing up while making falling cuts as the top limbs or entire tree may fall at any time.
4. A deep undercut about $\frac{1}{3}$ of the tree diameter will minimize use of a wedge and resulting vibrations.
5. Examine wood chips and saw dust made from the undercut to confirm the trunk condition.
6. Clean out undercuts prior to starting the back cut to allow for a smooth fall.
7. Place back cuts horizontally 2.5 – 5 cm above the undercut.
8. Use wedges only when necessary. Drive them just enough to get the tree moving. Use more than one wedge. Check the top section of the dangerous tree after each blow to the wedge.
9. As soon as the dangerous tree starts to fall, retreat along the escape route, watching for overhead hazards, and remain at a safe distance until debris has fallen.

Falling a Heavy Leaner

1. Fuel saws prior to starting any cuts.
2. Plan and clear an escape route.
3. Make and undercut in the usual manner.
4. Make two side cuts on the same plane, leaving either triangle or square holding the wood.
5. Complete the back cut, leaving the normal amount of “hinge” or holding wood.
6. Use planned escape route.

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Cold Cutting a Pipe

TOOLS/EQUIPMENT REQUIRED	Cold Cutter/Track Hoe Picker Truck
MATERIALS REQUIRED	Pipe
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	

JOB STEPS

1. Ensure the pipe to be cold cut is isolated, depressurized, flushed or purged
2. Ensure all personnel are aware of gases and/or fluids that were recently running through the line and take all measures to ensure all applicable PPE is worn (eg. Supplied air for H2S, etc).
3. Mark the spot to be cut, clear off yellow jacket and mud
4. Ground pipe to each side of cut by chain grips and booster cables.
5. Ensure piping is properly supported using dunnage/blocking or equipment & rigging.
6. Ensure spill containment is in place.
7. Ensure all ignition sources are turned off or removed from the area.
8. Place Cold Cutters around pipe ensuring that it is clamped properly
9. Start tightening lever while rotating around pipe or in a back and forth motion to start cutting the pipe.
10. Once cut has been completed, remove cold cutters.
11. Cautiously clean ends of pipe as cold cutting operations will have left the edges sharp
12. Install mud plugs.
13. Perform a sniff check with four head monitor to ensure mud plugs have successfully decreased the level of hydrocarbons in the area.
14. File sharp edges.

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Cross Changing a Jeep and Trailer to Assist Backing

TOOLS/EQUIPMENT REQUIRED	Tractor Trailer Jeep
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
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JOB STEPS

1. Drop Trailer air bags by using dump valve located on left hand side in front of axle on trailer.
2. Cross Chain Jeep to trailer neck. Make sure chains will hold side to side as well as pull up.
3. Drop Jeep Air.
4. Air Up Trailer ensuring that you keep clear of the jeep and trailer.
5. Ensure that there are no obstacles behind the truck and trailer.
6. Proceed to back up trailer.

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Dozer Operation

TOOLS/EQUIPMENT REQUIRED	Dozer Fire Extinguisher First Aid Kit Spill Kit
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
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JOB STEPS

1. Ensure that operator is competent.
2. Always walk around the dozer to ensure all parts are in order and guards are in place. Check for damaged parts or oil leaks. Make sure fire extinguisher, first aid kit and spill kit are on hand.
3. Check all fluids before starting or moving. e.g. oil, fuel, and antifreeze
4. Check maintenance sticker for hours of service.
5. Check the backup alarm and brakes before moving.
6. Check all hydraulic functions before moving.
7. Ensure equipment pre-use checklist is complete.
8. Clean inside of cab and windows inside and out.
9. Do not fuel up while running.
10. Start the engine and allow to warm up before moving. All gauges should be checked for proper readings.
11. Always use three point contact rule for mounting and dismounting – two hands and one foot or two feet and one hand.
12. If someone approached the dozer while operating, stop, rest blade and ripper on ground, and engage all lockout safety devices.
13. Never dismount before applying transmission lock and lowering blade to the ground.
14. Cool engine down before shutting off.
15. All safety guards and mesh are to be left in place.

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Driving – Jacking a Vehicle

TOOLS/EQUIPMENT REQUIRED	Jack Block Truck
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
COVERALLS	HARD HAT
SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

1. Set parking brake and shut off the vehicle. Ensure that the vehicle is left in gear or put into park
2. Block wheels opposite to the ends you are working.
3. Position jack. Use even ground.
4. Raise vehicle.
5. Block vehicle under frame.
6. Lower vehicle to make contact with blocks. Lower unit slowly until firmly supported by blocking.
7. Raise the vehicle when work is completed.
8. Remove blocking from frame.
9. Lower vehicle.
10. Remove jack using proper lifting technique.

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Driving – Lock Out Tag Out for Vehicles Maintenance

TOOLS/EQUIPMENT REQUIRED	Out of Service Tag		
MATERIALS REQUIRED			
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED			
COVERALLS	HARD HAT	SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

1. Turn off vehicle
2. Put park break on
3. Remove Keys
4. Tag Unit with "Out of Service" tag on driver's side door.

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Driving – Pre-trip Inspections for Trucks

TOOLS/EQUIPMENT REQUIRED	Truck First Aid Kit Fire Extinguisher Spill Kit
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
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JOB STEPS

1. Visually inspect the units for oil leaks and low tires.
2. Check oil and coolant levels.
3. Enter the cab and start the unit.
4. Turn on the lights, check the gauges. Check exterior lights and check for air leaks.
5. Check the brakes air pressure and test the brake operation.
6. When pulling a trailer, check the air line connection, electrical connection, lights and brake operation prior to leaving the yard or job site.
7. Make sure to fuel the truck and document any mechanical work required. Make the foreman or mechanic aware of repairs needed.
8. When hauling a load on a lowboy, make sure the item being hauled is clean of any rocks, loose pieces of material and is properly tied down.
9. Ensure inspection is documented on pre-use inspection checklist.

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Revision Number 9

Driving Backing Up Trucks

TOOLS/EQUIPMENT REQUIRED	Truck
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
COVERALLS	HARD HAT
SAFETY GLASSES	SAFETY BOOTS
ADDITIONAL PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
HEARING PROTECTION	REFLECTIVE COVERALLS OR TRAFFIC VEST

This procedure deals with the hazards associated with positioning equipment in and around congested areas with the assistance of an assistant/spotter. The procedure is signed much like a job task, to help the worker acting as an assistant/spotter identify hazards that the operator cannot see such as overhead power lines, live pipe racks, tree branches, signs, or parked vehicles.

JOB STEPS

1. The operator, spotter and client’s representatives will conduct a walk of the controlled area, including the complete worksite and pre-determined dump areas.
2. A pre-job safety meeting and hazard assessment will be completed during which time all hazards and obstacles will be identified, including overhead lines.
3. The spotter must be wearing reflective coveralls or traffic vest when spotting the truck.
4. The spotter is designated as the signaller and will use hand signalling techniques
5. The operator must bring truck to a complete stop when visual contact cannot be achieved with the spotter or he loses sight of the spotter at any time.
6. While backing the truck into position, the spotter will maintain a safe distance from the unit at the back corners of the unit always in view of the operator while unit is in motion. The spotter must always be aware of the surroundings, constantly watching for potential hazards.
7. In conditions where slipping hazards may be present, Spotter must walk to where the trucks destination will be and signal from that location, ensuring that they are always visible by the Operator.
8. Once the unit is positioned, the operator will get out, walk around his truck, and look up for overhead obstacles before lifting his boom to work or lifting his debris tank to dump.
9. When parked on any grade the spotter will set wheel chocks appropriately.

NOTE:

Boom must be stowed in boom cradle while truck is being moved. Moving the unit with the boom extended or out of the cradle may result in personal injury or equipment damage. When moving in confined, crowded or congested

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Revision Number 9

Driving - Changing a Flat Tire

TOOLS/EQUIPMENT REQUIRED	Jack Spare Tire Wheel Wrench
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
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JOB STEPS

1. Ensure that the vehicle is in park and the emergency brake is applied.
2. Ensure that the manufacturer’s specifications are followed
3. Get the spare tire and inspect it for pressure and that the rim is in good condition
4. Place jack under the axle on the vehicle
5. Loosen lug nuts with the proper size wrench
6. Jack up the vehicle only enough to remove the tire.
7. Remove the flat tire from the vehicle and place the spare tire on the vehicle.
8. Put lug nuts on and tighten them down. Place a lug nut at 12 o’clock, then 6 o’clock. Continue adding lug nuts on opposite sides until they are all on the vehicle.
9. Let the vehicle down slowly on the Jack and remove the jack from under the vehicle.
10. Place the flat tire in the vehicle and ensure that it is repaired as soon as possible.

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Revision Number 9

Excavation – Buried Utility

TOOLS/EQUIPMENT REQUIRED	Excavator Shovel(s) Ladder
MATERIALS REQUIRED	Spray Paint Snow Fence T-Posts Warning Signs
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
COVERALLS	HARD HAT
SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

1. Review Hazard Assessment and discuss excavation permit with all workers involved.
2. Ensure there has been a One Call and line has been swept and marked on the ground.
3. Conduct an inspection of the buried structure and any existing records to determine and record the following:
 - a. Owner of the buried line
 - b. Number of underground lines on R.O.W.
 - c. Contents of lines
 - d. Pipe size
 - e. Depth below surface
 - f. Line condition
 - g. Type of lines (Steel, Fiberglass)
4. Ensure that line is exposed for line-of-sight by hand digging or hydrovac.
5. With Owner Representative, Client Representative, and competent Ground Disturbance Level II operator and spotter present, begin excavation.
6. Using clear hand signals, spotter shall keep mechanical equipment from coming within 1.5 meters of hotline.
7. Access and egress must be present for spotter to enter and exit excavation area safely by ladder or excavated steps.
8. If excavation is deeper than 1.5 meters, it must be sloped or shored to prevent cave-in.
9. If at any time the hotline cannot be seen by spotter, work is to stop until hotline is once again hand exposed or hydrovac'd.
10. Once excavation is complete, hotline coating shall be inspected for any damage caused by hand exposure. If necessary, and approved by hotline representative, proceed to fix coating on hotline as needed.
11. If required, support hotline with representative approved material.
12. If required due to winter conditions, insulate the hotline with representative approved material.
13. Install snow fence around open excavation and place warning signs.

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Revision Number 9

Excavation – Ditching

TOOLS/EQUIPMENT REQUIRED	Excavator
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
COVERALLS	HARD HAT
SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

1. Complete a Hazard assessment and pre-job meeting.
2. Complete a ground disturbance permit.
3. Ensure First Call and proper locates have been completed and that utilities are properly marked.
4. Ensure that overhead powerlines are clearly defined and marked.
5. Operator to conduct a pre-trip inspection of the Equipment
6. Ensure there is a level stable surface for the excavator.
7. Only experienced operators shall operate the excavation equipment.
8. Begin ditching.
9. In areas where access is required to ditch, a bell hole must be dug with access and egress using a ladder or excavated stairs.
10. In areas of unstable soil, ditch shall be sloped to prevent cave in.
11. Fence the excavation and put signs up to warn trespassers of open excavation.
12. Leave excavator at least 10 metres away from the open excavation at the end of the day.
13. Clean-up work area so there are no obstructions left out in the open.

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Excavation – Digging Bell Hole

TOOLS/EQUIPMENT REQUIRED	Track Hoe Fire Extinguisher First Aid Kit Spill Kit
MATERIALS REQUIRED	Overhead Powerline Signage

STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED



JOB STEPS

1. Ensure that One Call is in place and buried utilities have been clearly marked on the ground.
2. Check for overhead power lines
3. Find the required information on the depth of the Bell Hole to be dug. This helps you to know how to slope the sides of the ditch.
4. Strip the top soil and sub soil if required.
5. Place stripping's far enough away from each other so that they do not mix.
6. Start digging the ditch, start wide and slope any hole that is deeper than 3 feet or if the hole is deeper than it is wide.
7. Make sure that there is proper egress and access in and out of the Bell Hole.
8. Keep the edge of the Bell Hole clear of loose or unstable material.
9. Keep the soil pile at least 1 meter away from the open excavation.
10. Ensure that the bottom of the Bell Hole is flat.

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Excavator Operation

TOOLS/EQUIPMENT REQUIRED	Fire Extinguisher First Aid Kit Spill Kit
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
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JOB STEPS

1. Ensure that operator is experienced.
2. Always walk around the excavator to ensure all parts are in order and guards are in place. Check for damaged parts or oil leaks. Make sure fire extinguisher, first aid kit and spill kit are on hand.
3. Check all fluids before starting or moving. E.g. Oil, fuel and antifreeze
4. Check maintenance sticker for hours of service.
5. Clean inside of cab and windows inside and out.
6. Fuel up the piece of equipment.
7. Start the engine and allow it to warm up before moving. All gauges should be checked for proper readings.
8. Always use three point contact rule for mounting and dismounting – two hands and one foot or two feet and one hand.
9. Before operating, make sure to check for overhead power lines. Make sure when moving machine, the boom is low and the backup alarm is functioning.
10. Ensure One Call is in place and all buried utilities are clearly marked on ground prior to any excavation.
11. Refer to OH&S Regulations for proper slope (grade)
12. Cool engine down before shutting off.

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Revision Number 9

Fencing – Barbed Wire

TOOLS/EQUIPMENT REQUIRED	Post pounder, chain saw, fencing pliers, Wire Stretchers, Fencing Pliers
MATERIAL REQUIRED	Posts, brace posts, nails, wire, fencing staples

STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED

COVERALLS

HARD HAT

SAFETY GLASSES

SAFETY BOOTS

ADDITIONAL PERSONAL PROTECTIVE EQUIPMENT REQUIRED

LEATHER GLOVES

BUILDING FENCE

1. Ensure that operator is trained and experienced.
2. Ensure that all personnel have on their PPE
3. Conduct personal survey of area for overhead power/hazards.
4. Ensure One Call is in place to ensure that there are no buried lines or cables
5. Observe the area where the fence is to be put in
6. Ensure that there is a level area to set the post pounder.
7. Set the distance between brace posts.
8. Park the tractor and pounder on level ground.
9. Put the tractor park break on and dismount from the tractor.
10. Pick up the post to be pounded placing the “sharp” end down
11. Place post under the post pounder and bring in the arm that holds the post in place
12. Slowly bring the post pounder down to tap the post into the ground.
13. Get a spotter to ensure the post is straight.
14. Continue pounding in the post to the desired height.
15. Complete pounding the posts at the set distance with the pounder.
16. Start the chain saw according to manufactures guidelines
17. Cut notches out of the posts with the chain saw where they are needed to accommodate the brace post.
18. Cut the brace to fit in the posts
19. Secure the brace by nailing through the brace into the post
20. Measure and cut the #9 wire to the desire length.
21. Run the wire from corner to corner and staple in place.
22. Twist the wire until there is tension on the posts
23. Install second brace in desired location.
24. Stretch one strand of wire from outside of brace to outside of brace using fence stretchers.
25. Install remaining posts at even increments along wire line.
26. Staple wire to all posts using fencing staples.
27. Stretch additional wires as desired and secure to posts using staples.

STRETCHING BROKEN WIRE

1. Ensure that all worker have on their PPE
2. Get all tools and materials required to do the job ready.
3. Ensure the person operating the wire stretcher has been trained on how to use the stretcher
4. Wearing leather gloves, untangle the broken wire
5. Fully extend the wire stretcher as per manufactures specifications.

6. Place one of the broken wires in one end of the wire stretcher and put the other end of the broken wire in the opposite end of the wire stretcher.
7. Stretch the wire by pulling on the lever to tighten the wire. Tighten until the wire is tight all along the fence and there is tension on the wire.
8. Twist wires together with the fencing pliers ensuring that they cannot come apart
9. Remove the wire stretcher from the wire at both ends.
10. Ensure that all wires are stapled up at the fence posts.

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Revision Number 9

Fencing – Slit Fence

TOOLS/EQUIPMENT REQUIRED	Truck, Hammer Ratchet Straps Sidecutters, Shovel and/or Backhoe
MATERIALS REQUIRED	Slit Fence T-Posts Mechanic’s Wire
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
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JOB STEPS

Installation of Silt Fence

1. Complete hazard assessment.
2. Complete walk around and pre-use inspection of vehicles, equipment, and tools to be used.
3. Load material.
4. Get assistance with awkward or heavy lifts or utilize equipment. Use proper body mechanics.
5. Be aware of other works in area while loading material.
6. Use three-point contact getting on or off trucks or trailers.
7. Tie down material prior to driving to location.
8. Ensure all material is properly loaded and secured.
9. Drive to location (Refer to Driving Safe Work Practice).
10. Upon arrival, check in with site supervisor/medic if applicable.
11. Unstrap material and unload.
12. When working near or in live facilities, foreman must ensure that area has been electronically swept for buried facilities and are properly identified.
13. Dig small trench in location of desired silt fence installation to accommodate for partial burial of silt fence.
14. Roll out desired length of silt fence and cut to size.
15. Stretch out silt fence and pound posts into the bottom of the trench until the silt fence is below grade of expected water flow.
16. Return dirt into trench covering the bottom portion of the silt fence.
17. Install T-posts to backside of silt fence for added support, if needed.
18. Clean up work site.

Removal of Silt Fence

1. Complete hazard assessment.
2. Complete walk around and pre-use inspection of vehicles, tools, and equipment to be used
3. Remove T posts, if applicable.
4. Dig up buried portion of silt fence using shovel or mechanical equipment as necessary.
5. Remove Silt fence.
6. Return dirt to trench if necessary.
7. Clean up worksite.

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Revision Number 9

Fencing - Snow Fence

TOOLS/EQUIPMENT REQUIRED	Truck Hammer Ratchet Straps Sidecutters Hand Operated Post Pounder
MATERIALS REQUIRED	Snow Fence T-Posts Mechanic's Wire Open Excavation Sign
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="background-color: #ccc; padding: 5px; border-radius: 10px;">COVERALLS</div> <div style="background-color: #ccc; padding: 5px; border-radius: 10px;">HARD HAT</div> <div style="background-color: #ccc; padding: 5px; border-radius: 10px;">SAFETY GLASSES</div> <div style="background-color: #ccc; padding: 5px; border-radius: 10px;">SAFETY BOOTS</div> </div>	

JOB STEPS

Installation of Snow Fence

1. Complete hazard assessment.
2. Complete walk around and pre-use inspection of vehicle and tools to be used.
3. Load material.
4. Get assistance with awkward or heavy lifts or utilize equipment. Use proper body mechanics.
5. Be aware of other works in area while loading material.
6. Use three-point contact getting on or off trucks or trailers.
7. Tie down material prior to driving to location.
8. Ensure all material is properly loaded and secured.
9. Drive to location (Refer to Driving Safe Work Practice).
10. Upon arrival, check in with site supervisor/medic if applicable.
11. Unstrap material and unload.
12. When working near or in live facilities, foreman must ensure that area has been electronically swept for buried facilities and are properly identified.
13. Install T-posts with post pounder.
14. Stretch out and install snow fence.
15. Secure snow fence to T-posts using mechanic's wire.
16. Install open excavation sign where it is most visible to traffic in area. Use multiple signs if necessary.
17. Clean up work area.

Removal of Snow Fence

1. Complete hazard assessment.
2. Complete walk around and pre-use inspection of vehicle and equipment to be used.
3. Untie mechanic's wire from snow fence and T-posts.
4. Remove open excavation signs.
5. Remove snow fence from T posts and roll up for loading and storage.
6. Remove T posts. If necessary, utilize mechanical equipment.
7. Load material.
8. Be aware of other works in area while loading material.
9. Use three-point contact getting on or off trucks or trailers.
10. Tie down material prior to driving to location.
11. Ensure all material is properly loaded and secured.
12. Drive to desired location.

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Revision Number 9

Fencing – Temporary Panels

TOOLS/EQUIPMENT REQUIRED	Truck/Trailer Skidsteer Hammer Ratchet Straps
MATERIALS REQUIRED	Temporary Panel Fencing and Attachments

STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED



JOB STEPS

Installation of Temporary Panels

1. Complete hazard assessment.
2. Complete walk around and pre-use inspection of vehicle and equipment to be used.
3. Load material.
4. Get assistance with awkward or heavy lifts or utilize equipment. Use proper body mechanics.
5. Be aware of other works in area while loading material.
6. Use three-point contact getting on or off trucks or trailers.
7. Tie down material prior to driving to location.
8. Ensure all material is properly loaded and secured.
9. Drive to location (Refer to Driving Safe Work Practice).
10. Upon arrival, check in with site supervisor/medic if applicable.
11. Unstrap material and unload.
12. Lay out fence panels in necessary location for installation.
13. Place bottom base plates on the ground in position for installation.
14. Erect fencing one panel at a time onto base plates utilizing proper equipment or minimum two workers.
15. Utilize a third worker to support erected fence panel while erecting the next panel and place top locking clip between the two panels.
16. Continue steps 13 through 15 until desired number of panels is erected and locked into place.
17. Clean up work area.

Removal of Temporary Panels

1. Complete hazard assessment.
2. Complete walk around and pre-use inspection of vehicle and equipment to be used.
3. Two workers position themselves on each side of panel, while third worker removes top locking clip.
4. The two workers lay panel on ground.
5. Continue steps 3 and 4 until all desired panels are down.
6. Load material.
7. Get assistance with awkward or heavy lifts or utilize equipment. Use proper body mechanics.
8. Be aware of other works in area while loading material.
9. Use three-point contact getting on or off trucks or trailers.
10. Tie down material prior to driving to location.
11. Ensure all material is properly loaded and secured.
12. Return fencing to destination.

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Revision Number 9

Heavy Equipment – Loading/Unloading

TOOLS/EQUIPMENT REQUIRED	Heavy Equipment		
MATERIALS REQUIRED			
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED			
COVERALLS	HARD HAT	SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

1. An experienced operator shall unload the equipment.
2. Area of loading and unloading shall be personally surveyed to ensure it is free from overhead power / hazards.
3. Consideration should be taken in situations of inclement weather as to traction of personnel and equipment.
4. Operator shall ensure that the unloading/loading should be done on a level, stable surface.
5. All tie-down equipment should be removed completely from the trailer before unloading any equipment. When loading equipment, all tie downs must be applied securely from the equipment to the trailer.
6. The operator should unload or load the equipment either off the front or the back of the trailer. The equipment should be driven straight ahead or back, limiting any side movement or turning.
7. Once equipment is unloaded, park a safe distance from the truck, all attachments lowered to the ground and the ignition shut off. When loading, put equipment in proper transport position, lower all attachments and shut off ignition.
8. Once equipment is unloaded, park a safe distance from the truck, all attachments lowered to the ground and the ignition shut off. When loading, put equipment in proper transport position, lower all attachments and shut off ignition.
9. Make sure the deck of the truck has been swept clean of debris, all tie down equipment has been picked up before leaving the site.

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Heavy Equipment – Mounting/Dismounting

TOOLS/EQUIPMENT REQUIRED	Fire Extinguisher First Aid Kit Heavy Equipment
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
COVERALLS HARD HAT SAFETY GLASSES SAFETY BOOTS	

JOB STEPS

1. Ensure the machine is at a complete stop and the emergency brake is engaged.
2. Make sure to clean off boots before climbing into the machine.
3. Always face towards machine when mounting and dismounting.
4. Always have a three point contact (two feet and one hand or two hands and one foot) at all times.
5. Do not use the steering wheel or controls as hand holds when entering or leaving the operator's compartment.
6. Never jump off the machine, always step down gently.

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Heavy Equipment - Winching

TOOLS/EQUIPMENT REQUIRED	Truck Sling Winch
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
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JOB STEPS

1. Ensure that operator is qualified.
2. Always do a walk around check to look for leaks and problems.
3. Check all fluids before starting or moving
4. Check winch line for breaks and frays
5. Check hooks for breaks or cracks
6. When walking your cat to tow or winch equipment know exactly the location of the operator of that equipment.
7. The operator should never leave during the towing or winching of their equipment
8. Set the blade down on the Cat before spooling line
9. Spool line before winching
10. Never attach a winch line on to any equipment that is not owned by TERRAFIRMA. Have the operator hook up his own equipment.
11. Have the operator of the vehicle needing to be towed hook up the sling to the frame or to the tow hook of vehicle to be towed with the eye of the sling or a clevis.
12. Never winch or tow with less than 3 wraps of line on the drum.
13. Watch the cable roll in while winching, never let the cable pile up on one side of the drum.
14. Never let the cable to cross wrap on the drum.
15. Ensure that the vehicle to be towed is in 4 low and maintain radio or signal communication with the operator of the vehicle to be towed.
16. Never jerk the cable if towing or winching
17. When using a cat ensure that the blade is down on the cat and then have the operator unhook the winch line.
18. Recoil the winch line and ensure that the cable is evenly wrapped on the drum, check for any damage then move onto your next project.

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Heavy Equipment Operation

TOOLS/EQUIPMENT REQUIRED	Heavy Equipment
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
COVERALLS	HARD HAT
SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

1. Heavy Equipment operators such as track hoe operators shall at all times be aware of the surrounding environment while the machine is being operated.
2. Ensure that equipment being operated is equipped with a positive shutoff device.
3. Conduct a walk around inspection of equipment and complete a daily per trip inspection form before mounting equipment.
4. Always face equipment when mounting or dismounting and use the three contact rule.
5. Ensure that footwear is free of grease, mud or snow before entering onto or off the equipment.
6. Ensure that the lights are on at all times while operating equipment.
7. Seat belts must be worn by the operator.
8. Always back up with extreme caution. Back up alarm must sound.
9. Obey all speed limits and posted signs.
10. 3 to 5 meter distance between machines when parking
11. When parking machine, engage all safety brakes, lower and shut off all components.
12. All operators must wear their hard hat when they leave their seat.

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Revision Number 9

Holiday Detection (Jeeping)

TOOLS/EQUIPMENT REQUIRED	Holiday Detector Ground Rod Ground Cable Equipment for Grounding (if necessary) Propane Bottle Torch Jeoper Tester
MATERIALS REQUIRED	Manufacture Approved Repair Kit
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
<div style="display: flex; justify-content: space-around; align-items: center;"> COVERALLS HARD HAT SAFETY GLASSES SAFETY BOOTS </div>	

JOB STEPS

1. Complete hazard assessment.
2. If using equipment to support pipe while detecting holidays, complete pre-use equipment inspection.
3. Inspect holiday detecting, grounding cables, and holiday fixing tools (e.g. Propane bottle & torch) to ensure good working order.
4. Test holiday detector using tester to ensure desired voltage is established and document using form QF-30 "Holiday Detector Record".
5. Ensure calibration is up to date for holiday detector and document calibration and document using form QF-30 "Holiday Detector Record".
6. If voltage needs to be adjusted at any time to accommodate a different coating, the holiday detector must be tested again, and results documented using form QF-30 "Holiday Detector Record".
7. Ground section of pipe that is to be detector for holidays.
8. If performing holiday detection during winter, utilize equipment to attach holiday detector ground to ensure continuity due to frost.
9. Perform holiday detection on desired section of pipe.
10. If holiday is located, turn holiday detector off and fix holiday in accordance to Manufacturer Specifications.
11. Once complete, place holiday detector back in designated case and place tape over the positive and negative ports on the battery.

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Revision Number 9

Hot Tie In of Pipeline

TOOLS/EQUIPMENT REQUIRED	Cold Cutter/Track Hoe/Picker Truck
MATERIALS REQUIRED	Pipe
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
COVERALLS	HARD HAT
SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

1. Ensure the pipe to be cold cut is isolated, depressurized, flushed or purged
2. Ensure all personnel are aware of gases and/or fluids that were recently running through the line and take all measures to ensure all applicable PPE is worn (eg. Supplied air for H2S, etc).
3. Mark the spot to be cut, clear off yellow jacket and mud
4. Ground pipe to each side of cut by chain grips and booster cables.
5. Ensure piping is properly supported using dunnage/blocking or equipment & rigging.
6. Ensure spill containment is in place.
7. Ensure all ignition sources are turned off or removed from the area.
8. Puncture pipe with a punch and non-sparking hammer
9. Place Cold Cutters around pipe ensuring that it is clamped properly
10. Start tightening lever while rotating around pipe or in a back and forth motion to start cutting the pipe.
11. Once cut has been completed, remove cold cutters.
12. Cautiously clean ends of pipe as cold cutting operations will have left the edges sharp
13. Install mud plugs.
14. Perform a sniff check with four head monitor to ensure mud plugs have successfully decreased the level of hydrocarbons in the area.
15. File sharp edges.
16. Align pipe in external clamps.
17. Preheat weld to desired temperature and perform weld.
18. Clean up work area.

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Hydrostatic Testing

TOOLS/EQUIPMENT REQUIRED	Air Compressor Two-Way Radios Containment Tray Warning Signs Catch Truck Recorders Digital Deadweights
MATERIALS REQUIRED	Pigs
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="background-color: #ccc; padding: 5px; border-radius: 10px;">COVERALLS</div> <div style="background-color: #ccc; padding: 5px; border-radius: 10px;">HARD HAT</div> <div style="background-color: #ccc; padding: 5px; border-radius: 10px;">SAFETY GLASSES</div> <div style="background-color: #ccc; padding: 5px; border-radius: 10px;">SAFETY BOOTS</div> </div>	

JOB STEPS

Fill

1. Complete Hazard Assessment.
2. Place signage to control access to testing area.
3. Determine proper size of pig needed to fill the line.
4. Ensure that all employees are aware of the filling operation before starting.
5. Ensure adequate communications between the sending and receiving ends of the line throughout the process.
6. Ensure all blinds, pancakes, plugs, catch containments, and/or catch trucks are in place and that any and all bolt up involved in the test is torqued to specifications.
7. Ensure calibrated digital deadweight's and recorders are in place at both ends of the pipeline.
8. Complete Form QF-8 "Pressure Piping Examination Guide" in the Quality Control Job File.
9. Confirm with receiving end to ensure that personnel are ready to begin filling.
10. Insert fill pig into sender and push to front of sender to ensure pig does not float backwards once filling commences.
11. Hook up fill truck to back of sender ensuring that all hoses and fittings involved are rated for the pressure it will encounter.
12. Begin filling at a controlled rate of speed, keeping open communication with receiving end and confirming the movement of air through the line. Record the rate of fill using QF-9 "Fill Report" in the Quality Control Job File.
13. Once receiving end confirms pig and fluid have reached the end, shut the line in, place a small appropriate amount of pressure on the pipeline, and then slowly bleed air from any available high points.
14. Tighten all plugs in, crack all valves to halfway, and check for any leaks at all bolt up. Unhook fill truck and allow fluid to stabilize.

Test

1. Complete Hazard Assessment.
2. Ensure that all employees are aware of the testing operation before starting.
3. Ensure adequate communications between both ends of the line throughout the process.
4. Hook pressure truck to desired valve ensuring all whip checks and safety pins are in place.
5. Pressure truck sets pop valve to ensure that at no time throughout the process the line will see more than desired pressure.
6. Fill out test charts with appropriate information. Place in recorder and turn on. Let chart spin at zero temporarily to ensure it is functioning properly.
7. Keeping open communication with the other end of the pipeline, slowly increase pressure to first desired stage.

8. Once valve is closed off to pressure truck at first stage, perform leak checks at all bolt up. Leak checks shall not be performed while pressurizing the system.
9. Once confirmation from both ends that leaks are non-existent, begin pressuring to next stage.
10. Once valve is closed off to pressure truck at second stage, perform leak checks of all bolt up.
11. Repeat steps 7 and 8 as many times as required by client specifications.
12. Once desired test pressure is achieved, unhook pressure truck, and replace plug in valve.
13. Record digital deadweight readings throughout desired strength test using Form QF-9 "Pressure Report" in the Quality Control Job File.
14. With client approval of achieved strength test, hook catch truck or containment to drain on sender or receiver.
15. With open communication between both ends of pipeline, lower test pressure to desired leak test pressure.
16. Close valve and check for leaks on all bolt up.
17. Once desired pressure is achieved, unhook truck, replace plug in valve, and begin recording pressures of leak test using Form QF-9 "Pressure Report" in the Quality Control Job File.
18. With client approval of achieved leak test, hook catch truck or containment to drain on sender or receiver.
19. With open communication between both ends of pipeline, lower test pressure in same stages as pressurization in a controlled manner.
20. Once pressure is off, allow chart to run at zero temporarily before pulling charts.
21. Close recorders to pipeline test before dewatering.

Dewatering

1. Complete Hazard Assessment.
2. Ensure that all employees are aware of the dewatering operation before starting.
3. Ensure adequate communications between the sending and receiving ends of the line throughout the process.
4. Hook up dewater truck to receiving end, ensuring all pins and whip checks are in place.
5. With main pipeline and bypass valves closed at sender, drain the barrel into containment or truck.
6. Load dewater pig into sender and push to front of sender to ensure pig does not float backwards once dewatering commences.
7. Perform pre-use equipment check on air compressor.
8. Hook up air compressor to valve on sender, ensuring all pins and whip checks are in place.
9. With clear communication to the receiving end, ensure pipeline is open to catch truck.
10. Using the air compressor, put a small amount of pressure behind dewater pig and open pipeline valve.
11. During dewatering operations, record the fluid release into truck using Form QF-9 "Dewatering Report" in the Quality Control Job File.
12. Once receiving end has confirmed that the dewater pig has reached the end, close valve to catch truck and remove pressure from pipeline.
13. With open communication between both ends and once all pressure is off the pipeline, remove pig from receiver.
14. Perform another pig run utilizing steps 1 through 13 of "dewatering" to complete a dry pig run if necessary.
15. Remove all client specified pancakes and blinds. Install all gauges and plugs.
16. Remove all testing signage. Clean up work area.

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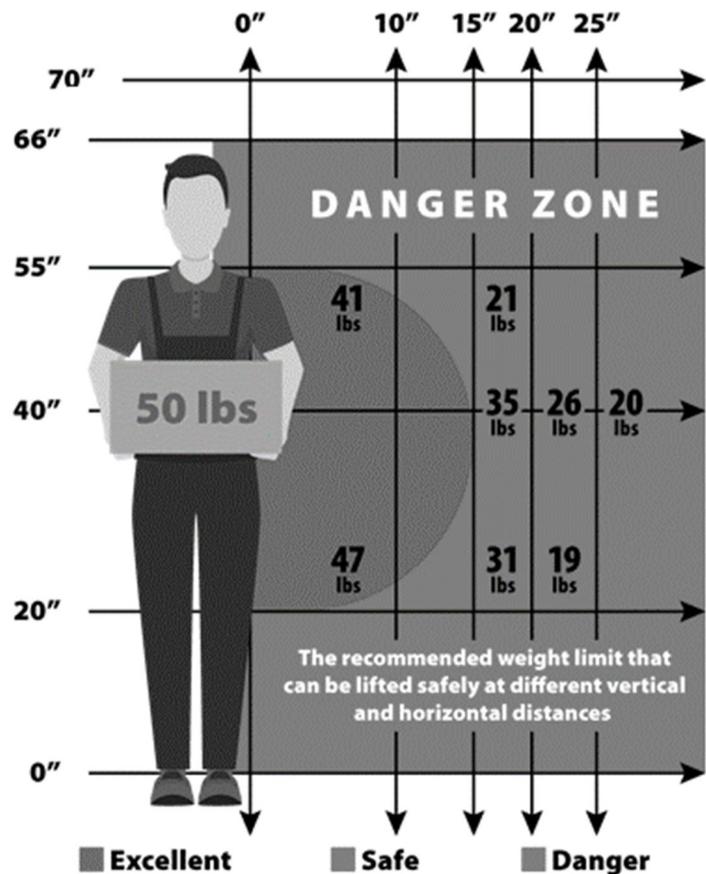
Lifting – Manual/Mechanical

TOOLS/EQUIPMENT REQUIRED	Mechanical Lifting Device Rigging
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
COVERALLS	HARD HAT
SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

MANUAL LIFTING

1. Assess the object to be lifted. If weight limit exceeds recommended limit in chart below, do not perform manual lift. Utilize appropriate mechanical lifting device instead.
2. A hazard assessment shall be performed before a worker manually lifts, lowers, pushes, pulls, carries, handles, or transports a load that could injure the worker.
3. Pre-plan destination of load and ensure destination is free of pinch points and tripping hazards.
4. Extreme caution shall be exercised when pipe is lifted.
5. Be sure there is a clearance between the pipe and any other object to prevent injury.
6. When lifting, take a firm grip, secure good footing, place feet a comfortable distance apart, bend knees, keep back straight, and lift with leg muscles.
7. Do not twist or rotate the spine to set a load down or pick the load up.
8. If the load is to be carried, keep the spine straight and move the feet. Get help when needed.
9. Use cranes or hoists to lift heavy loads.
10. Use gloves and appropriate PPE when handling materials.
11. Never carry a load in such a way that it obstructs the vision.



MECHANICAL LIFTING

1. Complete hazard assessment.
2. Complete pre-use vehicle and equipment inspections.
3. Inspect all rigging and hoisting components. Refer to Rigging SOP.
4. Inspect area for any overhead powerlines.
5. Assess ground stability prior to performing lift. Use outrigger pads if outriggers are required.
6. Ensure desired lift does not exceed load chart capabilities of mechanical device or ratings of rigging.
7. Pre-plan lift and destination of load to ensure it is free of hazards/obstacles.
8. Ensure that equipment operator is experienced and competent to perform the lift.
9. Ensure swamper is competent and experienced in hand signals.
10. Attach rigging.
11. Prior to lift, ensure all personnel are clear of lifting area.
12. Perform trial lift by lifting load slightly off ground to ensure proper balance of load.
13. Swamper will attach taglines if necessary.
14. Execute lift following clear hand signals from swamper.
15. Lowering the load at destination is to be performed in a slow and controlled manner.
16. When removing rigging, use caution as load could possibly shift when released. Ensure body and limbs are out of potential line of fire.

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Lowering In Pipe

TOOLS/EQUIPMENT REQUIRED	Sideboom Cradles Rollers Crumbing Shovel Jeeper Torch Slings
MATERIALS REQUIRED	Jeep Stick
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
<div style="display: flex; justify-content: space-around;"> COVERALLS HARD HAT SAFETY GLASSES SAFETY BOOTS </div>	

JOB STEPS

1. Complete hazard assessment.
2. Complete pre-use vehicle and equipment inspection.
3. Inspect all rigging including cradles for any damage, ensuring latest certification is up to date, and that cradles are proper size for pipe to be lowered in.
4. Get first boom cradled onto pipe and walked forward far enough to be able to cradle the second boom.
5. Utilize the appropriate number of booms based on the size/thickness and number of pipelines to be lowered in.
6. Prior to commencing, perform safety meeting with crews, ensuring everyone is aware of all pinch point locations.
7. Set up jeeper on pipe and ground the section.
8. Place skids in bell hole where section will be lowered in for tie-in purposes.
9. Using one designated signal person, begin lowering in and jeeping the pipe.
10. When there is a jeep to be fixed, stop equipment. Fix the jeep and continue lowering in at the direction of the designated signal person.
11. While lowering in, designated signal person watches pipe being laid in ditch to ensure that pipe is not set on rocks or foreign debris.
12. If needed, use crumbing shovel to remove any rocks or foreign debris.
13. While pipe is lowered in, workers remove tubs and skids and place to side out of way of equipment.
14. When equipment is approaching end of section, caution must be taken to ensure no one is around the end of the section in case the pipe moves in uncontrolled direction.
15. Once equipment approaches end of section, the first boom will wait a minimum of five meters from end of pipe section until second boom relieves the weight of the section from the first boom's cradles.
16. Once second boom carries the weight of the pipe, the first boom may walk off of the section.
17. Continue until all equipment but one is left on the section.
18. Using a designated signal person, use the last boom to place the end of the section on skids in bell hole.
19. Place watertight night caps on both ends of pipe section.
20. Snow fence any open excavation and place signage as necessary.
21. Clean up work area.

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Pigging - Sizing Pig/Above Ground

TOOLS/EQUIPMENT REQUIRED	Air Compressor Two-Way Radios Containment Tray Warning Signs
MATERIALS REQUIRED	Sizing Pig Foam Pigs x 2
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
COVERALLS	HARD HAT
SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

1. Complete Hazard Assessment.
2. Place signage to control access to pigging area.
3. Determine proper size of pigs and plates for the line being pigged as per client specifications.
4. Ensure that all employees are aware of the pigging operation before starting.
5. Ensure adequate communications between the sending and receiving ends of the line throughout the process.
6. Place cushion pig either in the receiver or in front of sizing pig to be loaded.
7. Load sizing pig into pipe and push in as far as possible so as not to damage pig when completing weld.
8. Load a second foam pig behind the sizing pig and push in as far as possible.
9. Complete weld.
10. Weld on slip-on flanges to accommodate receiver at receiving end.
11. Bolt on pig receiver.
12. Ensure all valves are open to receive pigs.
13. Ensure client representative has approved the completion of backfill and shading on the pipeline before proceeding.
14. Hook up air compressor to sender. Ensure that the number of hoses and fittings is kept to a minimum. Ensure that all equipment is rated for the air pressures. Ensure that hoses and fittings are in good condition. Wire or otherwise pin hose connections to ensure they do not come apart and use whip checks on hoses.
15. Perform equipment inspection on air compressor and related equipment to ensure good working order.
16. Check with the receiver end of the pipe to ensure all is clear. Keep personnel away from the receiver end of the line until the pig has been received and line de-pressured. Utilize nipple 90's and drip trays if necessary (e.g. If using methanol in winter conditions).
17. Start up compressor and slowly pressure up behind the pig.
18. When pig is received, contact sending end to shut down air compressor and depressurize line.
19. Ensure there is no pressure on both sides of the pig by gently opening valves on both ends of the pipeline.
20. Communicate with sending end to ensure all pressure is off.
21. With client representative present, unbolt pig receiver and confirm sizing pig is free of damage.
22. Clean up worksite.

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Pigging

TOOLS/EQUIPMENT REQUIRED	Air Compressor Two-Way Radios Containment Tray Warning Signs
MATERIALS REQUIRED	Pig
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
<div style="display: flex; justify-content: space-around; background-color: #cccccc; padding: 5px;"> COVERALLS HARD HAT SAFETY GLASSES SAFETY BOOTS </div>	

JOB STEPS

1. Complete Hazard Assessment.
2. Place signage to control access to pigging area.
3. Determine proper size of pigs for the line being pigged.
4. Determine type of pig to be used for specific pigging operation.
5. Ensure that all employees are aware of the pigging operation before starting.
6. Ensure adequate communications between the sending and receiving ends of the line throughout the process.
7. Install pig into certified sender in the proper direction.
8. Hook up air compressor to sender. Ensure that the number of hoses and fittings is kept to a minimum. Ensure that all equipment is rated for the air pressures. Ensure that hoses and fittings are in good condition. Wire or otherwise pin hose connections to ensure they do not come apart and use whip checks on hoses.
9. Perform equipment inspection on air compressor and related equipment to ensure good working order.
10. Check with the receiver end of the pipe to ensure all is clear. Keep personnel away from the receiver end of the line until the pig has been received and line de-pressured. Utilize drip trays if necessary.
11. Start up compressor and slowly pressure up behind the pig.
12. When pig is received, contact sending end to shut down air compressor and depressurize line.
13. Ensure there is no pressure on both sides of the pig by gently opening valves on both ends of the pipeline.
14. Communicate with sending end to ensure all pressure is off.
15. Close main pipeline valve and open 1" drain valve, then slowly open barrel keeping body out of line of fire.
16. Remove pig from barrel.
17. Clean up worksite and reinstall any plugs, gauges, and valves that were removed for pigging process.

NOTE

For sizing pigs, see Pigging - Sizing Pig / Above Ground SOP.

For test, fill, and dewater, see Pressure Testing Pipeline SOP.

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Piling - Excavator

TOOLS/EQUIPMENT REQUIRED	Excavator Hoe Pack Sling Beveller Ladder Hammer
MATERIALS REQUIRED	Piles Tag Lines Tape Measure Soap Stone Builders Level Fire Extinguisher
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="background-color: #444; color: white; padding: 5px 15px; border-radius: 10px;">COVERALLS</div> <div style="background-color: #444; color: white; padding: 5px 15px; border-radius: 10px;">HARD HAT</div> <div style="background-color: #444; color: white; padding: 5px 15px; border-radius: 10px;">SAFETY GLASSES</div> <div style="background-color: #444; color: white; padding: 5px 15px; border-radius: 10px;">SAFETY BOOTS</div> </div>	
ADDITIONAL PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
<div style="background-color: #eee; padding: 5px 15px; border-radius: 10px; border: 1px solid #ccc;">Welders PPE</div>	
<div style="background-color: #eee; padding: 5px 15px; border-radius: 10px; border: 1px solid #ccc;">Hearing Protection</div>	
<div style="background-color: #eee; padding: 5px 15px; border-radius: 10px; border: 1px solid #ccc;">Gas Monitor</div>	

Responsibilities:

<u>Supervisor</u>	Ensure that workers are following the proper procedures when pushing piles. Help ensure workers are staying clear from hazardous areas and making sure everybody on site are aware of the task at hand.
<u>Operator</u>	Inspect all equipment and rigging before use. Operators are responsible to maintain strong communication with those working in proximity and to lock out all equipment when not in use.
<u>Worker</u>	To stand clear of all equipment hazards zones as well as potential pile fall zones. Workers are responsible to maintain strong communication with operators(s). Ensure all PPE is worn.

JOB STEPS

1. Ensure One call was notified and a ground disturbance checklist/permit issued.
2. Conduct hazard assessment and pre job meeting
3. Conduct pre-trip inspections of powered mobile equipment and all rigging to be used
4. Check for overhead power lines. Do not work within 7 meters of power lines unless the power has been SHUT OFF.
5. Pre-set piles on ground in a suitable and safe location
6. Inspect Pile prior to beginning installation. Check thickness of pile, look for cracks and ensure seam is intact.
7. Put hoe pack on Excavator
8. Sling pile & connect to hoe pack with shackle
9. Operator to lift piles slowly and cautiously with excavator into a vertical position

10. When pile touches ground worker to manually guide pile into position over pin
11. When pile is level and all workers clear, Operator may engage excavator and begin vibrating piles.
12. Push pile to refusal depth
13. In the case the pile needs to be extended a qualified welder welds on extension.
14. Mark elevation for cut with soap stone
15. Bevel Pile, remove slag with hammer
16. Put Pile cap on (square it on)
17. If cap is not covering complete pile, gusset side that is over hanging
18. Add plate (weld) to cover open pile (see Welding, Cutting, and Burning Safe Work Practice)
19. If building or supports are not set on piles by end of day, ribbon, flag, or cover piles to ensure visibility.

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Pipe- Loading, Hauling and Unloading

TOOLS/EQUIPMENT REQUIRED	Truck/Trailer Mechanical Lifting Device (Excavator, Boom, etc) Straps Flagging
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
<div style="display: flex; justify-content: space-around; background-color: #ccc; padding: 5px;"> COVERALLS HARD HAT SAFETY GLASSES SAFETY BOOTS </div>	

PURPOSE

All steel pipe shall be handled in such a safe way as to protect the pipe and pipe coating from unnecessary damage. As well as to ensure that load is safety secured and transported.

LOADING PIPE

1. Complete hazard assessment.
2. Assess the work area and ensure there are no overhead powerlines in the immediate area.
3. The driver shall position the trailer on a level surface.
4. Driver shall ensure all items needed for proper securement are available (Dunnage, Cargo Securement Straps etc.).
5. Assess the pipe to be loaded and strategize on the best method in which to arrange/load the pipe.
6. Steel Pipe shall be loaded by the use of a mechanical lifting device and by a competent, experienced operator.
7. Trailer deck shall be prepped with proper dunnage prior to loading of pipe. Pipe of different diameter sizes should never be loaded together.
8. The trailer operator should arrange the load so all pipes with the same diameter size are loaded together.
9. The operator should form a bottom layer of load that covers the full width of the trailer.
10. To arrange the second tier, the operator must place pipes in the wells formed by adjacent pipes in the bottom tier.
11. Operator should fill up all the wells in the tier beneath before starting a higher tier to load the pipes.
12. The Operator is to center the load evenly on the trailer from front to back and from side to side to distribute the weight evenly.
13. Secure the load in accordance with National Safety Code Standard 10 – Division 4 (Tie-Downs).

HAULING PIPE

1. Complete hazard assessment.
2. Ensure all permits are in place if needed.
3. When hauling pipe on a truck or trailer, the pipe shall be securely fastened to the vehicle so as not to allow damage to the pipe or the pipe to move when the vehicle is starting, turning, or braking.
4. The number of tie downs to be used shall be determined in accordance with National Safety Code Standard 10 – Division 4 (Tie Downs).
5. All pipe intended for service should be tarped during transport to keep pipe safe from weather and to prevent static charge from developing due to wind.
6. Loads exceeding the length of the trailer must be flagged.
7. Driver to inspect the load prior to hauling, prior to entering a public road from a haul road, and within 80 kms after the trip has begun to ensure that it has not shifted and continues to be properly secured.
8. The load must also be inspected:
 - a. If there is a change of duty status of the driver or.
 - b. The vehicle has been driven for 3 hours or;
 - c. The vehicle has been driving for 240 kms

UNLOADING PIPE

1. Complete hazard assessment.
2. Assess the work area and ensure there are no overhead powerlines in the immediate area.
3. The driver shall position the trailer on a level surface.
4. Assess the pipe to be unloaded and strategize on the best method in which to arrange/store the pipe.
5. Steel Pipe shall be unloaded using a mechanical lifting device and by a competent, experienced operator.
6. The pipe shall not be turned loose to roll down the skids.
7. Signals used during the process of unloading shall be given by only one person to avoid confusion.
8. Pipe retaining stakes shall remain in place on the truck or trailer body until the bottom layer of pipe is to be unloaded.
9. Cleanup work area, including sweeping the deck of trailer to prevent loose material from falling from deck while driving.

MINIMUM NUMBER OF STRAPS

(National Safety Code for Motor Carriers Section 10 – Division 4 (Tie-Downs) 2013

22 (1) Subject to subsection (4), cargo transported by a vehicle shall be secured using the number of tiedowns calculated under subsection (2) or (3).

(2) Where an article of cargo is not blocked or immobilized by a front end structure, bulkhead, by other immobilized cargo or by another device that prevents it moving forward, it shall be secured by at least National Safety Code for Motor Carriers Standard 10: Cargo Securement – June 2013 10 - 17

(a) 1 tiedown where the article is 1.52 metres or shorter and weighs not more than 500 kilograms,

(b) 2 tiedowns where the article is

(i) 1.52 metres or shorter and weighs more than 500 kilograms, or

(ii) longer than 1.52 metres but not longer than 3.04 metres regardless of its weight, or

(c) where the article is longer than 3.04 metres

(i) 2 tiedowns for the first 3.04 metres of length, and

(ii) 1 extra tiedown for each additional 3.04 metres or fraction of 3.04 metres.

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Pipe - Dismantling

TOOLS/EQUIPMENT REQUIRED	
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
COVERALLS	HARD HAT
SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

1. Obtain work permit
2. Complete hazard assessment
3. Ensure that the desired pipe to be dismantled is properly blocked from any live piping
4. Ensure all desired pipe to be dismantled is properly depressurized.
5. Spill containment is to be utilized at all places of potential spill.
6. Evaluate what tools and equipment are needed to dismantle
7. Inspect all components of rigging to ensure they are free from defects or damage. Remove and replace if necessary.
8. Ensure scaffolding and picker is safely braced and supported.
9. Attach rigging to piping that is to be removed in such a fashion that will allow for a level, controlled lift. Attach taglines as necessary prior to unbolting to aid in control of piece during lift.
10. Place spill containment under area of unbolting.
11. Ensure appropriate amount of tension is on rigging and unbolt flange.
12. Remove pipe using proper rigging, equipment or by manual lifting.
13. Ensure ends of piping are sealed appropriately (eg. Blinds or night caps) according to situation
14. Dispose of pipe in accordance with environmental and client specification.

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Pressure Systems – Lockout/Tagout

TOOLS/EQUIPMENT REQUIRED	Locking Device Tags		
MATERIALS REQUIRED			
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED			
COVERALLS	HARD HAT	SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

1. Isolate systems as determined in scope of work
2. Depressurize and drain system
3. Purge the system if combustible materials or hazardous gas, vapour, dust or fumes exist
4. Isolate all lines tying into the system
5. Install locking devices and tags on all valves that would affect the system if operated
6. Continually monitor the area for combustible material and hazardous gases
7. Once job is completed and it is safe, remove Lock Out Devices

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Rigging and Hoisting

TOOLS/EQUIPMENT REQUIRED	Mechanical Lifting Device Rigging
MATERIALS REQUIRED	Tag Lines – Where Necessary
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="background-color: #555; color: white; padding: 5px; border-radius: 10px;">COVERALLS</div> <div style="background-color: #555; color: white; padding: 5px; border-radius: 10px;">HARD HAT</div> <div style="background-color: #555; color: white; padding: 5px; border-radius: 10px;">SAFETY GLASSES</div> <div style="background-color: #555; color: white; padding: 5px; border-radius: 10px;">SAFETY BOOTS</div> </div>	

JOB STEPS

Rigging

1. Pre-plan the lift to determine type of rigging necessary for specific lift (eg. Just up and down lifting, traveling with load, oversized lift requiring spreader bar, etc).
2. Conduct pre-trip inspection on all equipment and rigging.
3. Ensure the working load limit of the rigging and rated load capacity of the equipment are adequate for lift to be performed.
4. Attach slings to load in such a fashion so as to ensure a level, balanced lift and proper securement of load throughout the lift (eg. If traveling with a load, choked style of rigging is recommended)

Hoisting

1. Ensure that operator is competent, and all pre-operation checks have been performed.
2. Conduct personal survey of area to ensure it is free of overhead power/hazards.
3. Ensure that the load capacity is not greater than what the lifting device is rated for.
4. Rigging components are to be suitable for the load being lifted.
5. Hoisting hook shall be equipped with a safety latch or safety catch
6. Effective communication between the workers should be established and maintained. Signal person shall be positioned in full view of equipment operator.
7. Ensure hands and fingers are kept away from load when lifting.
8. Extreme caution shall be exercised when walking with a suspended load.
9. During hoisting, tag lines or similar devices shall be used where necessary to ensure stability of the load.
10. Never walk or work under booms or suspended loads.
11. Suspended loads should not be left unattended by the operator.
12. Remove slings in a manner so as not to endanger other workers.
13. Do not ride the Load.

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Sandblasting

TOOLS/EQUIPMENT REQUIRED	Truck, Sandblaster Air Compressor Grounding Cable "Sandblast in Area" Warning Signs
MATERIALS REQUIRED	Sand
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
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JOB STEPS

1. Review Hazard Assessment
2. Refer to MSDS
3. Ensure all workers involved in the sandblast are trained or working with a competent worker.
4. Don all required PPE.
5. Conduct a peruse inspection of all involved equipment including O-rings, safety pins, Chicago fittings, whip checks, hoses, oil level, fuel level, all areas where equipment is fastened.
6. Ensure all valves are closed.
7. Stretch all lines to ensure there are no kinks or cuts.

Hookup

1. Ground material to be sandblasted.
2. Ensure all warning signs are in place to restrict public access.
3. Connect air supply from compressor to sandblast skid.
4. Hook blasting hose to sandblaster.
5. Put regulator on compressed air bottle.
6. Open bottle.
7. Don sandblasting helmet.
8. Hook airline to the helmet.
9. Adjust regulator so you are comfortable and can breathe normally and your mask stays defogged.
10. Safety Watch to ensure proper PPE is donned and is manning the equipment to operator controls.
11. Put sand in pot.
12. Open compressor valve.
13. Open valves to sandblast pot.
14. Turn on compressor by turning key to the "run" position.
15. Pressure up sandblast pot.
16. Open valve on bottom of sandblast pot to charge sand blast line.
17. Open blast hose valve to allow sand & air to combine and flow through hose.
18. Make final sand/air adjustment relative to require pressure/sand for task at hand.
19. Begin sandblasting.

Shutdown

1. Operator to signal safety watch for shut down.
2. Blow out all sand.
3. Close blast hose valve.
4. Bleed off hoses.
5. Close all other valves.
6. Turn off compressor.

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Traffic Control – Flag Persons

TOOLS/EQUIPMENT REQUIRED	Air Compressor Two-Way Radios Containment Tray Warning Signs
MATERIALS REQUIRED	Sizing Pig Foam Pigs x 2 Windshield Washer Fluid Dish Soap
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="background-color: #444; color: white; padding: 5px; border-radius: 10px;">COVERALLS</div> <div style="background-color: #444; color: white; padding: 5px; border-radius: 10px;">HARD HAT</div> <div style="background-color: #444; color: white; padding: 5px; border-radius: 10px;">SAFETY GLASSES</div> <div style="background-color: #444; color: white; padding: 5px; border-radius: 10px;">SAFETY BOOTS</div> </div>	
ADDITIONAL PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
<div style="background-color: #eee; padding: 10px; border-radius: 10px; margin-bottom: 5px;">Hearing Protection</div> <div style="background-color: #eee; padding: 10px; border-radius: 10px; margin-bottom: 5px;">Whip Check in Pins</div> <div style="background-color: #eee; padding: 10px; border-radius: 10px;">Four-Head Monitors</div>	

JOB STEPS

1. Complete Hazard Assessment.
2. Place signage to control access to pigging area.
3. Determine proper size of pigs and plates for the line being pigged as per client specifications.
4. Ensure that all employees are aware of the pigging operation before starting.
5. Ensure adequate communications between the sending and receiving ends of the line throughout the process.
6. Place cushion pig either in the receiver or in front of sizing pig to be loaded.
7. Load sizing pig into pipe and push in as far as possible so as not to damage pig when completing weld.
8. Load a second foam pig behind the sizing pig and push in as far as possible.
9. Complete weld.
10. Weld on slip-on flanges to accommodate receiver at receiving end.
11. Bolt on pig receiver.
12. Ensure all valves are open to receive pigs.
13. Ensure client representative has approved the completion of backfill and shading on the pipeline before proceeding.
14. Hook up air compressor to sender. Ensure that the number of hoses and fittings is kept to a minimum. Ensure that all equipment is rated for the air pressures. Ensure that hoses and fittings are in good condition. Wire or otherwise pin hose connections to ensure they do not come apart and use whip checks on hoses.
15. Perform equipment inspection on air compressor and related equipment to ensure good working order.
16. Check with the receiver end of the pipe to ensure all is clear. Keep personnel away from the receiver end of the line until the pig has been received and line de-pressured. Utilize nipple 90's and drip trays if necessary (e.g. If using methanol in winter conditions).

17. Start up compressor and slowly pressure up behind the pig.
18. When pig is received, contact sending end to give confirmation that pig has landed and to monitor pressure gauge on compressor until desired pressure is met.
19. When desired pressure is met, shut all open valves and hold pressure.
20. Mix windshield washer fluid with a few drops of dish soap in a labeled container.
21. Moving weld to weld, soak each weld with the mixture and visually inspect for bubbles.
22. When soap testing of desired section is complete, ensure area is clear and depressurize section using radio communication.
23. Ensure there is no pressure on both sides of the pig by gently opening valves on both ends of the pipeline.
24. Communicate with sending end to ensure all pressure is off.
25. With client representative present, unbolt pig receiver and confirm sizing pig is free of damage.
26. Clean up worksite.

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Stringing – Flex/Composite

TOOLS/EQUIPMENT REQUIRED	Deployment Trailer/A Frame Truck Heavy Equipment
MATERIALS REQUIRED	Flex/Composite Pipe Pipe Reels
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="background-color: #333; color: white; padding: 5px 15px; border-radius: 10px;">COVERALLS</div> <div style="background-color: #333; color: white; padding: 5px 15px; border-radius: 10px;">HARD HAT</div> <div style="background-color: #333; color: white; padding: 5px 15px; border-radius: 10px;">SAFETY GLASSES</div> <div style="background-color: #333; color: white; padding: 5px 15px; border-radius: 10px;">SAFETY BOOTS</div> </div>	

JOB STEPS

Stringing with Deployment Trailer

1. Complete Hazard Assessment.
2. Complete pre-use vehicle and equipment inspections.
3. Inspect deployment trailer, including all hydraulic hoses and fittings. Ensure roll braking system is properly functioning.
4. Load desired roll into deployment trailer in such a fashion that the pipe can be deployed from the bottom of the roll.
5. When ready to string, the roll brakes are engaged on the deployment trailer. Utilize equipment to hold starting end back before cutting tie-backs.
6. After tiebacks have been cut, anchor the end of the pipe utilizing pile/equipment/truck/etc.
7. Release roll brakes on trailer and drive forward in a controlled manner while stringing out pipe.
8. While pipe is being deployed, signalperson walks along with trailer to check pipe for any deficiencies and to stop the driver of the truck once roll is nearing end.
9. When at the end, the roll brakes are engaged on the deployment trailer. Utilize equipment to hold finishing end back before cutting tie-backs.
10. Once tie-backs are cut, equipment can release tension on finishing end and be released.

Stringing with Deployment A-Frame

1. Complete Hazard Assessment.
2. Complete pre-use vehicle and equipment inspections.
3. Inspect A frame for any defects.
4. Inspect all rigging used to load reels into A frame.
5. Hook rigging up to pipe rolls using proper lifting lugs on the reel.
6. Pull center pin from A frame and load reel using proper equipment in such a fashion that the pipe can be deployed from the bottom of the roll.
7. Drag A frame to desired location.
8. Utilize equipment to hold back pipe while cutting tie-backs.
9. Begin pulling pipe off of reel utilizing desired equipment (sideboom, excavator, truck, etc).
10. While pipe is being deployed, signalperson stays beside A frame to check pipe for any deficiencies and to stop the equipment once roll is nearing end.
11. When at end of roll, utilize equipment to hold finishing end back before cutting tie-backs.
12. Once tie-backs are cut, equipment can release tension on finishing end and be released.

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Stringing – Flex/Composite

TOOLS/EQUIPMENT REQUIRED	Highboy Trailer Boom with a cable and hooks Ladder Stringing Nets
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
<div style="display: flex; justify-content: space-around; background-color: #444; color: white; padding: 5px;"> COVERALLS HARD HAT SAFETY GLASSES SAFETY BOOTS </div>	

JOB STEPS

1. Complete Hazard Assessment.
2. Complete pre-use vehicle and equipment inspections.
3. Inspect rigging, including hooks, to ensure hooks are rated for size of pipe and that equipment is free of damage.
4. Ensure tubs and skids or strung out in place and rated for size of pipe.
5. Position pipe truck in desired location on level ground.
6. Remove bungee straps and tarp from trailer and inspect the load for coating defects, pipe damage, proper loading, cement in between tiers, and proper QC specifications as listed on pipe tally.
7. Perform safety meeting with crew and truck driver. Complete Stop & Think card.
8. Designate one person to begin removing all straps except for the center strap.
9. For the final center strap, workers must be clear of the area. Worker slowly loosens center strap while crews watch for shifting loads.
10. If determined to be stable, final strap is fully removed. If determined to be unstable, do not attempt to unload pipe.
11. Front hook worker mounts the truck using three point contact. Another worker passes him/her the front hook of the sideboom. The front hook must always be placed first before the rear hook.
12. Worker hooks into the front of the desired joint of pipe and steps to the side to avoid pinch point.
13. Back hook worker places hook in the same joint of pipe as the Front hook worker. If needed due to height of load, utilize ladder and another worker to pass the hook (as per Step 11).
14. Back hook worker signals the boom operator to ensure boom is directly over joint of pipe to be lifted.
15. Once directly over, Back hook worker signals boom operator to lift.
16. Once pipe is lifted off of load, back hook worker signals boom operator to boom in so the joint is no longer over truck deck. Ensure that all workers are not underneath any suspended load and are clear from pinch points/line of fire.
17. Once no longer over deck, back hook worker signals boom operator to lower pipe to waist level.
18. Truck is signalled to move ahead if grade of ground is conducive to safely move forward without load shifting.
19. If there is potential for load shifting, pipe must be strapped and netted prior to moving forward.
20. Tubs and skids are set under waist-high pipe and pipe is lowered onto tubs and skids.
21. Hooks are pulled from the ends of the joint.
22. Back hook worker signals the boom operator to move to the next joint location.
23. While moving to next location, front and back hook workers carry hooks loosely ensuring that taglines are not wrapped around their hands in case of sudden movement of boom.
24. Repeat process until load is strung out.
25. Between loads of pipe, check over all rigging and equipment (hooks, cable clamps, cables, pins, cotter pins, etc.) to ensure good working order.

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Revision Number 9

Stringing – Stringing Wheels

TOOLS/EQUIPMENT REQUIRED	Highboy Trailer Stringing Wheels
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
COVERALLS	HARD HAT
SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

1. Complete Hazard Assessment
2. Inspect all components of stringing wheels to ensure they are free of defects and/or damage.
3. Mount stringing wheels on appropriate side of trailer and run anchor chains to adjacent side of trailer and secure.
4. Wrap deck pins in shock absorbing material to ensure the coating of the pipe is not damaged while stringing activities occur.
5. Install pipe chute to back stringing wheel.
6. Designate one worker to roll pipe into wheels. Immediately prior to pipe being rolled into wheels, worker must yell **“PIPE”** in a manner so as all workers can hear. This informs all workers involved in stringing that a piece of pipe is being loaded into the chute and to stand clear.
7. When pipe has landed in the wheels, a second worker grabs on and holds onto end of pipe from back end of the trailer.
8. As the truck drives out from under the
9. As the final end of the pipe makes its way down the pipe chute, a fourth worker places a tub under where the pipe will land.
10. Repeat steps 5 through 8 until truck is empty.

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Revision Number 9

Stringing – Vac Pac

TOOLS/EQUIPMENT REQUIRED	Highboy Trailer Hoe with Vacuum Pack
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
COVERALLS	HARD HAT
SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

1. Pre-trip inspection:

Complete a pre-inspection prior to using the Vacuum pack using the pre-inspection checklist.

 - a. Ensure to check the oil in the motor and in the vacuum components. Note only use non- detergent oils for the vacuum component.
 - b. Check the fuel level.
 - c. Check the pad wheels to ensure they spin
 - d. Ensure the pins are in the pads
 - e. Check all the hardware. Ensure all bolts are there and tightened. There are 6 bolts that hold the blue Rotating piece onto the yellow frame.
 - f. Check all filters to ensure they are in good condition and clean.
 - g. Ensure to grease the rotator
 - h. Check the battery connection
 - i. Check the alarm system
 - j. Inspect all load carrying parts
 - k. Check the wireless lift transmitter
 - l. Check the 4 pressure gauges
 - m. Maintenance needs to be done every 200 hours as per manufacturer's specifications.
 - n. Must replace the whole pad if more than 4 patches of repair to damages on the pads.
 - o. If the pads are worn out, you are allowed to turn them over and reuse. Use the provided blue tool to push the pads back in and use the glue to glue the ends together. Refer to the manufacturer’s specifications.
NOTE: The most common problems with Vacuum pack are the pads and the valves in the winter.
2. Vacuum pack
 - a. Ensure that the correct pads are on the vacuum pack for the size of pipe that will be lifted.
 - b. The alarm will go off when the vacuum is not at the correct pressure. If the horn and light is going off the vacuum is losing pressure. The operator must then set the load down as soon as possible. NOTE: when the alarm is going off the load could fall. All personnel need to stay back. Let the operator work the machine and the load.
 - c. Never put the pads directly on the ground. Always keep the pads rested on top of the pipe on the ground or put it back onto the stand.
 - d. The wireless remote takes 4 double A batteries. If the wireless remote goes down there is a screw underneath the frame that you can hardwire into to release the pipe.
 - e. If you must hardwire into the Vacuum pack. Remove the screw from under the frame and take off the plug. Put the hardwire plug into place then connect the red and black wires to the battery.
 - f. The Vacuum pack has a 5:1safety ratio for lifting.
 - g. There is a fuel shutoff for the event of an emergency.
 - h. The vacuum pack only has one speed.
3. Hooking up Vacuum Pack to the Hoe
 - a. Hook up the plate onto the hoe then set on top of the vacuum sliding the pin through to secure the vacuum.
NOTE: Watch out for the pinch points while performing this task.

- b. Connect the hydraulic hoses to the hoe and to the vacuum. Ensure the connections are tight. Be sure to have pans and spill kits ready during this process.
 - c. Start up the hoe and start to lift and move the vacuum without lifting any loads to ensure there are no hydraulic leaks and the vacuum is secured to the hoe.
4. Lift Test
- a. It is a Legal requirement that at least one lift test is done per day prior to using vacuum pack. Terrafirma Resources Ltd requires that a minimum of 2 lift tests are done per day.
 - i. Ensure the pads are centered on the pipe
 - ii. Push the control button to pick up the pipe
 - iii. Lift one joint of pipe
 - iv. Shut down the engine while the pipe is lifted
 - v. Watch the pressure gauges. 20 percent of pressure can be lost in 5 minutes. If more than 20 percent pressure is lost in 5 minutes than it is not safe to lift load. The operator must then put the load down and check for leaks. If leaking check the seal around the pipe, the seal in the filters, and the valve fittings.
 - vi. If the pressure stays good for 5 minutes than it is safe to continue with the lifting of the loads.
 - vii. To release the pipe, hold the two controls buttons down at the same time for 2 seconds.
5. Complete Hazard Assessment
 6. Ensure vacuum check has been complete and all components of vacuum pack are working correctly.
 7. Set up cones and skids along the ROW
 8. Confirm driver has pipe tally, review pipe tally
 9. Inform truck driver of safe work procedure, review project specific JHA
 10. Identify designated signal man who is responsible to instruct the truck driver in moving
 11. Position truck on level ground prior to removing any straps from load
 12. Verify deck pins are properly spaced and installed
 13. Remove straps holding tarp, and roll up
 14. Have group discussion about roles and positions of all workers involved in the stringing process
 15. Position truck on ROW, and remove final strap making sure all deck pins are in place prior to removal
 16. Skids/Cones positioned for the setting of the pipe
 17. Position excavator along side truck in alignment with center of load (Pipe)
 18. Operator takes direction for designated signal person
 19. Place vacuum pack over center of the pipe and lift off the truck
 20. Reposition truck forward with use of signal person to desired location.
 21. Signal person then directs equipment operator to move pipe into position
 22. Lower pipe to manageable height (24") and place on cones or skids
 23. Ground crew then is directed to move skids and cones to appropriate position and place pipe
 24. Once complete signal man will direct crew forward to repeat task

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Revision Number 9

Tie-Ins

TOOLS/EQUIPMENT REQUIRED	Mechanical Lifting Equipment Rigging External Clamps Propane & Torch
MATERIALS REQUIRED	Snow Fence Open Excavation Warning Signs Skids
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
<div style="display: flex; justify-content: space-around; background-color: #ccc; padding: 5px;"> COVERALLS HARD HAT SAFETY GLASSES SAFETY BOOTS </div>	

JOB STEPS

1. Complete hazard assessment.
2. Complete pre-use vehicle and equipment inspection.
3. Inspect all rigging.
4. Assess bell hole to ensure proper slope, access/egress, and that edge of bell hole is free of debris.
5. If in British Columbia, set up handrails on bell hole stairs.
6. Position equipment and welding truck in desired locations.
7. Hook up slings to pipe in desired location ensuring that boom is directly over top of rigging to avoid pipe from swinging when raised.
8. Using one designated signal person, ensure everyone in the bell hole is aware that the pipe is about to move.
9. Lift pipe to line up for marking.
10. Prep the area of pipe to be cut by removing coating.
11. Hook up equipment to catch excess pipe before cut is to be performed.
12. Cut the pipe using beveller or cold cutting method (See SOP Cold Cutting of Pipeline).
13. Remove excess pipe from ditch and place in safe and secure location away from the edge of bell hole.
14. Prepare pipe ends for welding and then preheat.
15. Using one designated signal person, align pipe in external clamps to be welded.
16. Perform the tie-in weld.
17. Once complete, place skids under pipe to ensure weld stays off the ground and out of any water when set down so weld can be properly x-rayed and coated.
18. Place weld blanket on weld if necessary due to ambient temperature/weather.
19. Using one designated signal person, have equipment lower pipe onto pre-placed skids.
20. Remove all rigging.
21. Remove all garbage and clean up work area.
22. Snow fence bell hole and place Open Excavation warning signs.

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Revision Number 9

Traffic Control – Flag Persons

TOOLS/EQUIPMENT REQUIRED	45 cm stop/slow paddle with a 1.6 m pole, Communication devices (air horn or whistle, two way radio with microphone for hands free) Rain Gear (if applicable) to be worn under safety vest
MATERIALS REQUIRED	Logbook/incident report and pen to record incidents

STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED

COVERALLS

HARD HAT

SAFETY GLASSES

SAFETY BOOTS

ADDITIONAL PERSONAL PROTECTIVE EQUIPMENT REQUIRED

Highly visible head gear and clothing. Fluorescent orange or yellow.

If wearing coveralls have high visibility striping on arms and legs.

Vest with reflective striping.

CSA approved protective footwear

Rain Gear (if applicable) to be worn under safety vest.

Hearing protection (if required due to dba in are)

JOB STEPS

1. Pre-plan all traffic control sites
2. Plan an escape route
3. Be clearly visible to approaching traffic always
4. At highway speeds motorists should be able to see you from at least 150 m away
5. Stand on the shoulder facing approaching traffic
6. Choose a flagging position that will provide the greatest color contrast between you and the background
7. Never stand in a shadow
8. Never flag from inside a vehicle
9. Stand alone, do not permit a group of workers to congregate around you
10. Be able to answer motorists' questions
11. Familiarize yourself with the nature of the work being performed
12. Verify with the work crew the warning signal that will be used in case of emergency
13. Stay alert, be able to respond to any situation
14. When anything unusual occurs, the flagger should note the incident in a logbook as soon as possible after the incident
15. Be courteous, professional and communicate clearly
16. Use eye contact to get driver's attention
17. Keep your mind on your job
18. Cover turn over or remove the "flagger ahead" sign when a flagger is no longer required.
19. Do Not lean, sit, or lie on the vehicle
20. Do not involve yourself in unnecessary conversations with coworkers, pedestrians, or motorists
21. Never leave the station unattended

22. Never wave the paddle
23. Keep signs clean and in good condition
24. Never stand or walk in the path of moving vehicles
25. No personal radios or other distractions at traffic control sites
26. Check to make sure all road signage is in place.

FLAGGERS DAILY CHECKLIST

1. Verify that Flagger Ahead and other warning signs have been placed on the roadway in the correct positions.
2. Plan for breaks. Never leave your post until a trained flagger comes to relieve you.
3. Check that you have all the necessary supplies and equipment (drinking water, logbook, personal protective equipment).
4. Make sure the STOP/SLOW paddle/pole is clean and undamaged.
5. Remove or cover the FLAGGER AHEAD warning signs on the roadway when not in use.
6. If two-way radio communication is used, ensure that batteries are placed on charge at the end of shift.

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Revision Number 9

Trial Lift (CSA Z150)

TOOLS/EQUIPMENT REQUIRED	Crane
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
COVERALLS	HARD HAT
SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

1. All systems, controls, crane set-up and safety devices are activated and functioning properly.
2. No interference exists for lift routes
3. All configurations necessary to reach the work location allow the operator to remain under the 50-percent limit of the crane's rated load capacity
4. Verify the integrity of the work platform and the secondary support.
5. Verify the integrity of the rigging
6. While suspended by the secondary support, lift the empty personnel platform or man basket one metre above the ground.
7. Verify the integrity of the primary support.
8. Verify the lift routes using a maximum of the 50-percent limit of the crane's rated load capacity.
9. While suspended by the primary support, lift the empty personnel platform or man basket to all work locations.

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Walk Around Procedure – Vehicle/Equipment

TOOLS/EQUIPMENT REQUIRED	Vehicle		
MATERIALS REQUIRED			
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED			
COVERALLS	HARD HAT	SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

1. Operator and/or spotter to complete a walk around of vehicle/equipment prior to movement.
2. Walk around the full parameter of vehicle/equipment
3. Ensure:
 - Tailgates are closed
 - Equipment is properly stowed
 - That there are no obstructions located in the direction of travel
 - Vehicle/equipment has no visible defects.
4. Document all findings on equipment pre-use inspection checklist.
5. Proceed to move vehicle/equipment, using spotter when backing

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Water/Trash Pump Operation

TOOLS/EQUIPMENT REQUIRED	Water Pumps Hose
MATERIALS REQUIRED	
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
COVERALLS	HARD HAT
SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

1. Ensure that operator is qualified.
2. Ensure that all men have on their PPE
3. Get instructions from the Foreman as to where to pump the water
4. Find the deepest part of the water
5. Ensure that there is a screen on the hose that is connected to the pump.
6. Place the water pump on a high part of land where the pump will remain dry.
7. Unroll the discharge hose to the location that you want the water to run to, ensuring that the water will not flood or erode that area
8. Hook up the suction hoses to the lower coupler on the pump and the discharge hose to the upper coupler.
9. Prime the pump with water
10. Make sure that there are no major leaks.
11. When water pumping activities are complete, ensure that pump and any hoses used are completely drained of water.
12. If winter conditions apply, ensure to add antifreeze to pump.
13. Shut fuel off prior to storage.

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Welding

TOOLS/EQUIPMENT REQUIRED	Welder Grinder		
MATERIALS REQUIRED	Welding Rods		
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED			
COVERALLS	HARD HAT	SAFETY GLASSES	SAFETY BOOTS
ADDITIONAL PERSONAL PROTECTIVE EQUIPMENT REQUIRED			
Face Shield with Filter Lens			
Leather Gloves			

JOB STEPS

1. Put all protective gear on.
2. Check the welding helmet for lenses, clear or coloured.
3. Ensure there is adequate ventilation. Note: In British Columbia, follow BC OH&S legislation.
4. Ensure there are no flammables such as gas, WD-40, ether, diesel etc. in the area.
5. Inspect welding cables for bare areas.
6. Check condition of grinders. Ensure the grinding disc is not worn past safe limits, that the edges are not cracked, the condition of the power cord etc.

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Winching on a Load

TOOLS/EQUIPMENT REQUIRED	Cold Cutter/Track Hoe Picker Truck		
MATERIALS REQUIRED	Pipe		
STANDARD PERSONAL PROTECTIVE EQUIPMENT REQUIRED			
COVERALLS	HARD HAT	SAFETY GLASSES	SAFETY BOOTS

JOB STEPS

1. Ensure that operator is qualified.
2. Always do a walk around check to look for leaks and problems.
3. Check all fluids before starting or moving
4. Walk around the object that you wish to load and ensure that it is safe to load. (etc. No obstructions such as people)
5. Put Deck Pins in place
6. Hook a sling or cable on to what you are loading. Ensure that the cable cannot slip off
7. Make sure that all swampers are aware that you are starting to load.
8. Engage the winch bringing the load straight up
9. When the load comes down over the roll slow the winch down so that it does not crash down.
10. Securely chain down the load.
11. Put flags or wide load signs on the load if they are required.

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