

The background image shows a large industrial facility at night, illuminated by warm lights. A prominent feature is a tall, complex structure with a large crane arm extending from it. Several smokestacks are visible, with white smoke rising into the dark sky. The overall scene conveys a sense of industrial activity and scale.

IPS

Industrial Performance Services

ITCS

Industrial Tubular Catalyst Services

CRANE AND LIFTING DEVICES PROCEDURE

V:2023.1

Crane and Hoist Safety Procedure

January 2023

A. Purpose

Many types of cranes, hoists, and rigging devices are used at IPS★ITCS for lifting and moving materials. It is IPS★ITCS' policy is to maintain a safe workplace for its employees; therefore, it cannot be overemphasized that only qualified and licensed individuals shall operate these devices.

The safety rules and guidance in this chapter apply to all operations at IPS★ITCS that involve the use of cranes and hoists installed in or attached to buildings and to all Company employees, supplemental labor, and subcontractor personnel who use such devices.

B. Responsibilities

Supervisors are responsible for:

- Ensuring that employees under their supervision receive the required training and are certified and licensed to operate the cranes and hoists in their areas.
- Providing training for prospective crane and hoist operators. This training must be conducted by a qualified, designated instructor who is a licensed crane and hoist operator and a full-time employee.
- Evaluating crane and hoist trainees using the Crane Safety Checklist and submitting the Qualification Request Form to the Safety Office to obtain the operator's license.
- Ensuring that hoisting equipment is inspected and tested monthly by a responsible individual and that rigging equipment is inspected annually.

Crane and Hoist Operators are responsible for:

- Operating hoisting equipment safely.
- Conducting functional tests prior to using the equipment.
- Selecting and using rigging equipment appropriately.
- Having a valid operator's license on their person while operating cranes or hoists.
- Participating in the medical certification program, as required.
- Equipment will not be operated within 10-feet of energized electrical transmission lines or distribution lines.
- Ensuring that a fire extinguisher, rated at least 5BC, shall be located in the cab of the crane

Maintenance Department is responsible for:

- Performing annual maintenance and inspection of all Company cranes and hoists that are not covered by a program with maintenance responsibility.

- Conducting periodic and special load tests of cranes and hoists.
- Maintaining written records of inspections and tests and providing copies of all inspections and test results to facility managers and building coordinators who have cranes and hoists on file.
- Inspecting and load testing cranes and hoists following modification or extensive repairs (e.g., a replaced cable or hook, or structural modification.)
- Scheduling a non-destructive test and inspection for crane and hoist hooks at the time of the periodic load test, and testing and inspecting before use new replacement hooks and other hooks suspected of having been overloaded. The evaluation, inspection, and testing may include, but are not limited to visual, dye penetrant, and magnetic particle techniques referenced in ASME B30.10 (Hooks, Inspection and Testing.)
- Maintaining all manuals for cranes and hoists in a central file for reference.

Safety Department is responsible for

- Conducting training for all Crane & Hoist Operators
- Issuing licenses to Crane and Hoist Operators
- Periodically verifying monthly test and inspection reports.
- Interpreting crane and hoist safety rules and standards.

C. Safe Operating Requirements

All workers who use any Company crane or hoist shall have an operator's license. The Company issues licenses for authorized employees who have been specifically trained in crane and hoist operations and equipment safety.

Crane and Hoist Operators

To be qualified as a Crane and Hoist Operator, the candidate shall have received hands-on training from a licensed, qualified crane and hoist operator designated by the candidate's supervisor. Upon successful completion of training, the licensed crane and hoist operator and the candidate's supervisor will fill out and sign the Qualification Request Form and Crane Safety Checklist and send them to the Safety Office for approval. The candidate will be issued a license upon approval by the Safety Manager. Crane and Hoist Operators must renew their license every three years by satisfying the requirements described above.

D. Crane and Hoist Safety Design Requirements

Following are the design requirements for cranes and hoists and their components:

- The design of all commercial cranes and hoists shall comply with the requirements of ASME/ANSI B30 standards and Crane Manufacturer's Association of America standards (CMAA-70 and CMAA-74). IPS★ITCS' fabricated lifting equipment shall comply with the requirements in Chapter 2.2 (Lifting Equipment) of Mechanical Engineering Design Safety Standards (latest edition).

- All crane and hoist hooks shall have safety latches.
- Hooks shall not be painted (or re-painted) if the paint previously applied by the manufacturer is worn.
- Crane pendants shall have an electrical disconnect switch or button to open the main-line control circuit.
- Cranes and hoists shall have a main electrical disconnect switch. This switch shall be in a separate box that is labelled with lock-out capability.

- Crane bridges and hoist monorails shall be labelled on both sides with the maximum capacity.
- Each hoist-hook block shall be labelled with the maximum hook capacity.
- Directional signs indicating N-W-S-E shall be displayed on the bridge underside, and a corresponding directional label shall be placed on the pendant.
- A device such as an upper-limit switch or slip clutch shall be installed on all building cranes and hoists. A lower-limit switch may be required when there is insufficient hoist rope on the drum to reach the lowest point.
- All cab and remotely operated bridge cranes shall have a motion alarm to signal bridge movement.
- All newly installed cranes and hoists, or those that have been extensively repaired or rebuilt structurally, shall be load tested at 125% capacity prior to being placed into service. If an overload device is installed, a load test to the adjusted setting is required.
- Personnel baskets and platforms suspended from any crane shall be designed in accordance with the specifications in 29 CFR 1926.550(g).

E. General Safety Rules

Operators shall comply with the following rules while operating the cranes and hoists:

- Do not engage in any practice that will divert your attention while operating the crane.
- Respond to signals only from the person who is directing the lift, or any appointed signal person. Always obey a stop signal, no matter who gives it.

Operators shall comply with the following rules (continued):

Do not move a load over people. People shall not be placed in jeopardy by being under a suspended load. Also, do not work under a suspended load unless the load is supported by blocks, jacks, or a solid footing that will safely support the entire weight. Have a crane or hoist operator remain at the controls or lock open and tag the main electrical disconnect switch.

Ensure that the rated load capacity of a crane's bridge, individual hoist, or any sling or fitting is not exceeded. Know the weight of the object being lifted or use a dynamometer or load cell to determine the weight.

Check that all controls are in the OFF position before closing the main line disconnect switch.

If spring-loaded reels are provided to lift pendants clear off the work area, ease the pendant up into the stop to prevent damaging the wire.

Avoid side pulls. These can cause the hoist rope to slip out of the drum groove, damaging the rope or destabilizing the crane or hoist.

To prevent shock loading, avoid sudden stops or starts. Shock loading can occur when a suspended load is accelerated or decelerated and can overload the crane or hoist. When completing an upward or downward motion, ease the load slowly to a stop.

Operation Rules:

Pre-operational Test

At the start of each work shift, operators shall do the following steps before making lifts with any crane or hoist:

1. Test the upper-limit switch. Slowly raise the unloaded hook block until the limit switch trips.
2. Visually inspect the hook, load lines, trolley, and bridge as much as possible from the operator's station; in most instances, this will be the floor of the building.
3. If provided, test the lower-limit switch.
4. Test all direction and speed controls for both bridge and trolley travel.
5. Test all bridge and trolley limit switches, where provided, if operation will bring the equipment in close proximity to the limit switches.
6. Test the pendant emergency stop.
7. Test the hoist brake to verify there is no drift without a load.
8. If provided, test the bridge movement alarm.
9. Lock out and tag for repair any crane or hoist that fails any of the above tests.

Moving a Load

- Center the hook over the load to keep the cables from slipping out of the drum grooves and overlapping, and to prevent the load from swinging when it is lifted. Inspect the drum to verify that the cable is in the grooves.
- Use a tag line when loads must traverse long distances or must otherwise be controlled. Manila rope may be used for tag lines.
- Plan and check the travel path to avoid personnel and obstructions.
- Lift the load only high enough to clear the tallest obstruction in the travel path.
- Start and stop slowly.
- Land the load when the move is finished. Choose a safe landing.
- Never leave suspended loads unattended. In an emergency where the crane or hoist has become inoperative, if a load must be left suspended, barricade and post signs in the surrounding area, under the load, and on all four sides. Lock open and tag the crane or hoist's main electrical disconnect switch.

Parking a Crane or Hoist

- Remove all slings and accessories from the hook. Return the rigging device to the designated storage racks.
- Raise the hook at least 2.1 m (7 ft) above the floor.
- Store the pendant away from aisles and work areas or raise it at least 2.1 m (7 ft) above the floor.
- Place the emergency stop switch (or push button) in the OFF position.

Rigging:

General Rigging Safety Requirements

Only select rigging equipment that is in good condition. All rigging equipment shall be inspected annually; defective equipment is to be removed from service and destroyed to prevent inadvertent reuse. The load capacity limits shall be stamped or affixed to all rigging components.

Company policy requires a minimum safety factor of 5 to be maintained for wire rope slings. The following types of slings shall be rejected or destroyed:

- Nylon slings with
- Abnormal wear.
- Torn stitching.
- Broken or cut fibers.
- Discoloration or deterioration.
- Wire-rope slings with
- Kinking, crushing, bird-caging, or other distortions.
- Evidence of heat damage.
- Cracks, deformation, or worn end attachments.
- Six randomly broken wires in a single rope lay.
- Three broken wires in one strand of rope.
- Hooks opened more than 15% at the throat.
- Hooks twisted sideways more than 10deg. from the plane of the unbent hook.
- Alloy steel chain slings with
- Cracked, bent, or elongated links or components.
- Cracked hooks.
- Shackles, eye bolts, turnbuckles, or other components that are damaged or deformed.

Rigging a Load

Do the following when rigging a load:

- Determine the weight of the load. Do not guess.
- Determine the proper size for slings and components.
- Do not use manila rope for rigging.
- Make sure that shackle pins and shouldered eye bolts are installed in accordance with the manufacturer's recommendations.
- Make sure that ordinary (shoulderless) eye bolts are threaded in at least 1.5 times the bolt diameter.
- Use safety hoist rings (swivel eyes) as a preferred substitute for eye bolts wherever possible.
- Pad sharp edges to protect slings. Remember that machinery foundations or angle-iron edges may not feel sharp to the touch but could cut into rigging when under several tons of load. Wood, tire rubber, or other pliable materials may be suitable for padding.
- Do not use slings, eye bolts, shackles, or hooks that have been cut, welded, or brazed.
- Install wire-rope clips with the base only on the live end and the U-bolt only on the dead end. Follow the manufacturer's recommendations for the spacing for each specific wire size.
- Determine the center of gravity and balance the load before moving it.
- Initially lift the load only a few inches to test the rigging and balance.

Crane Overloading:

Cranes or hoists shall not be loaded beyond their rated capacity for normal operations. Any crane or hoist suspected of having been overloaded shall be removed from service by locking open and tagging the main disconnect switch. Additionally, overloaded cranes shall be inspected, repaired, load tested, and approved for use before being returned to service.

Working at Heights on Cranes or Hoists:

Anyone conducting maintenance or repair on cranes or hoists at heights greater than 1.8 m (6 ft) shall use fall protection. Fall protection should also be considered for heights less than 1.8 m. Fall protection includes safety harnesses that are fitted with a lifeline and securely attached to a structural member of the crane or building or properly secured safety nets.

Use of a crane as a work platform should only be considered when conventional means of reaching an elevated worksite are hazardous or not possible. Workers shall not ride a moving bridge crane without an approval from the Safety Office, which shall specify the following as a minimum:

- Personnel shall not board any bridge crane unless the main disconnect switch is locked and tagged open.
- Personnel shall not use bridge cranes without a permanent platform (catwalk) as work platforms. Bridge catwalks shall have a permanent ladder access.
- Personnel shall ride seated on the floor of a permanent platform with approved safety handrails, wear safety harnesses attached to designated anchors, and be in clear view of the crane operator at all times.

- Operators shall lock and tag open the main (or power) disconnect switch on the bridge catwalk when the crane is parked.

Hand Signals

Signals to the operator shall be in accordance with the standard hand signals unless voice communications equipment (telephone, radio, or equivalent) is used. Signals shall be discernible or always audible. Some special operations may require addition to or modification of the basic signals. For all such cases, these special signals shall be agreed upon and thoroughly understood by both the person giving the signals and the operator and shall not be in conflict with the standard signals.

F. Inspection, Maintenance, and Testing

All tests and inspections shall be conducted in accordance with the manufacturer's recommendations.

Monthly Tests and Inspections

All in-service cranes and hoists shall be inspected monthly, and the results documented on IPS★ITCS' Crane and Hoist Inspection Form

Defective cranes and hoists shall be locked and tagged "out of service" until all defects are corrected. The inspector shall initiate corrective action by notifying the facility manager or building coordinator.

Annual Inspections

The Maintenance Department shall schedule and supervise (or perform) annual preventive maintenance (PM) and annual inspections of all cranes and hoists. The annual PM and inspection shall cover

- Hoisting and lowering mechanisms.
- Trolley travel or monorail travel
- Bridge travel.
- Limit switches and locking and safety devices.
- Structural members.
- Bolts or rivets.
- Sheaves and drums.
- Parts such as pins, bearings, shafts, gears, rollers, locking devices, and clamping devices.
- Brake system parts, linings, pawls, and ratchets.
- Load, wind, and other indicators over their full range.
- Gasoline, diesel, electric, or other power plants.
- Chain-drive sprockets.
- Crane and hoist hooks.

- Electrical apparatus such as controller contractors, limit switches, and push button stations.
- Wire rope.
- Hoist chains.

Load Testing:

- Newly installed cranes and hoists shall be load tested at 125% of the rated capacity by designated personnel.
- Slings shall have appropriate test data when purchased. It is the responsibility of the purchaser to ensure that the appropriate test data are obtained and maintained.
- Re-rated cranes and hoists shall be load tested to 125% of the new capacity if the new rating is greater than the previous rated capacity.
- Fixed cranes or hoists that have had major modifications or repair shall be load tested to 125% of the rated capacity.
- Cranes and hoists that have been overloaded shall be inspected prior to being returned to service.
- Personnel platforms, baskets, and rigging suspended from a crane or hoist hook shall be load tested initially, then re-tested annually thereafter or at each new job site.
- All cranes and hoists with a capacity greater than 2722 kg (3 tons) should be load tested every four years to 125% of the rated capacity. Cranes and hoists with a lesser capacity should be load tested every eight years to 125% of the rated capacity.
- All mobile hoists shall be load tested at intervals to be determined by HSEQT Manager.

Records

The Maintenance Department shall maintain records for all cranes, hoist and rigging equipment.

Crane & Hoist Operator License

Operator's name: _____ Employee No: _____

Job Title: _____ Dept./Div.: _____

Supervisors

please note that by completing and signing this form, you are certifying that the operator

1. Is required to operate a crane or hoist as part of his/her job assignment.
2. Has completed Crane Operation & Safety Training on _____
3. Has had on-the-job training for a period of ____ months operating a crane or hoist under supervision.
4. Has been evaluated using the Safety Checklist and Is capable of operating a crane or hoist and making lifts safely.

Supervisor: _____

Forward the completed form to Safety Office for approval.

Attach Safety Checklist.

Safety Office Approval: _____ Date: _____

Safety Checklist for Crane and Hoist Operator Qualification

A licensed operator, certified to operate the type of equipment for which the new operator is being evaluated, shall complete this checklist by initialling each item in the space provided to indicate that the new operator has demonstrated knowledge in the particular area or by marking "NA" for items that do not apply. Both the licensed operator and new operator's supervisor shall sign the completed checklist.

Operator's Name: _____ Date completed: _____

- _____ 1. Describe the difference between a bridge crane and a hoist. (A bridge crane operates on two tracks; a hoist operates on a single monorail track.)
- _____ 2. Why is a bridge crane more versatile than a hoist? (The bridge crane has 4-way horizontal movement, while a hoist has only 2-way horizontal movement.)
- _____ 3. What are the components of a bridge crane? (Bridge, trolley, hoist drum, hoist cables, hoist block and hook, pendant, stops, bumpers, and limit switches.)
- _____ 4. What are the standard markings used on a bridge crane control pendant? (Raise, lower, trolley east, trolley west, bridge north, bridge south, on/off switch.)
- _____ 5. Why are on/off switches required on control pendants? (For emergency stops in the event that any of the pendant controls fails.)
- _____ 6. If a crane's bridge, trolley, and hoist have more than one speed, describe the proper lifting procedures. (Start with the slowest speed and progressively increase to the highest.)
- _____ 7. Explain the term "drum overlapping," as it pertains to a bridge crane, and the primary cause of overlapping. (The hoist cables will not lie properly in the grooves on the hoist drum if the operator does not center the hook over the load and start lifting the load from an angle.)
- _____ 8. When should a bridge crane be checked for drum overlapping? (Prior to each use.)
- _____ 9. How many wraps of wire must still be on the hoist drum when the hoist hook reaches the lowest working level in the work area? (No less than two full wraps of wire must be left on the hoist drum.)

- _____ 10. Which hoists are required to have upper-limit switches, and how often these switches should be tested? (All motor-driven bridge cranes and hoists are required to have upper-limit switches, and they must be tested each day the crane is used.)
- _____ 11. When are lower-limit switches required? (In any area that has lower working levels (e.g., pits). Hoists that do not have enough wire on the drum to lower the hook to the lowest level and maintain at least two full wraps of wire on the drum must be fitted with lower-limit switches.)
- _____ 12. Should limit switches be depended upon to stop the hoist movement? (Never. Limit switches are installed for safety only, and no operator should depend upon them for normal stopping.)
- _____ 13. Where is the main electric disconnect for the bridge crane or hoist located? (Normally, a separate disconnect switch is located in a wall-mounted box with lock-out capability.)
- _____ 14. What are the proper procedures for cranes found to be defective (e.g., the upper-limit switch does not operate, a pendant control fails, the hoist does not hold the load)? (Report the defect to the supervisor immediately, lock out and tag the crane's main electrical disconnect switch, report the defect to Maintenance Department)
- _____ 15. Are movement alarms required on pendant-operated bridge cranes? (Alarms are not required; however, if a crane is fitted with a movement alarm, it must be maintained in working condition.)
- _____ 16. Is a written, signed inspection report required for all bridge cranes and hoists, and who should complete that report? (The inspection is completed monthly by a responsible individual assigned by the supervisor and documented on the Monthly Inspection Report Form)
- _____ 17. Explain the action required if there is a hoist brake drift when the hoist stops with a load suspended. (There should be no hoist drift; if there is, the brake is not holding and should be reported to the Maintenance Department)
- _____ 18. Why is the hook always centered over the load? (To prevent drum overlapping and stress on the hoist and lifting fixtures.)
- _____ 19. At what height should a load be lifted when it is being moved. (Only lift a load high enough to clear all obstructions in its path. Never move a load over personnel or costly equipment.)
- _____ 20. When it is permissible to leave a load suspended on a crane hook, and who should be notified if mechanical problems prevent landing the load? (It is never permissible to leave a load suspended. The load must be landed and the slings removed from the hook. If there are mechanical problems, the maintenance department must be notified.)
- _____ 21. Describe the procedures for parking a crane. (Remove all accessories from the hook, raise the hook 2.1 m (7 ft) above the floor level, store the pendant clear off work areas or

aisles or 2.1 m above the floor level if the crane is fitted with a pendant-retracting reel, and place the stop switch in the OFF position.)

_____ 22. Can a person work under a suspended load? (Never. Unless the load is supported by blocks or jacks.)

_____ 23. Can operators exceed the maximum capacity of a crane or hoist? (An operator shall never exceed the maximum capacity marked on both sides of the bridge or monorail for a hoist.)

_____ 24. What is the minimum safety factor for slings? (The safety factor for slings is 5 to 1.)

_____ 25. What precautions should be taken when using wire-rope slings or synthetic-webbing slings? (Protect the slings from sharp edges by using padding. This is especially important when using synthetic-webbing slings.)

_____ 26. Explain the proper procedure to follow if a synthetic sling is too short. (Use a shackle to join the two slings together. Never tie a knot in a sling, as this will weaken it considerably.)

_____ 27. What precautions should be taken when using eye bolts as lifting fixtures? (Ordinary eye bolts should only be used for straight pulls and must have a minimum of 1-1/2 times the bolt diameter threaded into the load. Shoulder-type eye bolts must have the shoulder tightly secured against a flat surface. The safe working load of an eye bolt decreases rapidly as the angle of the pull increases. Safety hoist or swivel rings are preferred and recommended.)

_____ 28. Describe the proper installation procedures for wire-rope clips★ITCS. (The saddle of the clip must always rest on the part of the wire that will hold the load and take the stress. The U-bolt part of the clip must rest against the dead end of the rope. The nuts must be tightened with a torque wrench to the clip manufacturer's settings.)

_____ 29. What effect will a kink in a wire rope cause? (A kink weakens the wire considerably. Any wire rope with a kink must be cut up and discarded to prevent reuse.)

Licensed Crane and Hoist Operator: _____

Supervisor: _____

References

ASME/ANSI B30.2, "Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)."

ASME/ANSI B30.9, "Slings."

ASME/ANSI B30.10, "Hooks."

ASME/ANSI B30.11, "Monorails and Underhung Cranes."

ASME/ANSI B30.16, "Overhead Hoists (Underhung)."

ASME/ANSI B30.17, "Overhead and Gantry Cranes (Top Running Bridge, Single Girder, Underhung Hoist)."

ASME/ANSI B30.20, "Below-the-Hook Lifting Devices."

ASME/ANSI B30.21, "Manually Lever Operated Hoists."

Code of Federal Regulation, Title 29, Part 1910.179, "Overhead and Gantry Cranes."

Code of Federal Regulation, Title 29, Part 1910.184, "Slings."

Code of Federal Regulation, Title 29, Part 1926.550, "Cranes and Derricks."

Mechanical Engineering Department Design Safety Standards, Chapter 2.2, "Lifting equipment."

CMAA Specification No. 70, Specifications for Electric Overhead Traveling Cranes.

CMAA Specification No. 74, Specifications for Top-Running and Under-Running Single-Girder Electric Overhead Traveling Cranes Utilizing Under Running Trolley Hoist.

NFPA 70, Article 610, Cranes and Hoists.

G. Lifting Plans and Procedures

A Formal lifting plan is to be developed, documented, and reviewed for all critical lifts prior to a lift being made. The jobsite superintendent shall ensure that this occurs. Attachment 50A.

Procedure

1. Variables such as weight of loads, length of boom, radius of lifts, value of loads, value of loss that may result from an accident, multi-crane lifts, etc., may dictate when a lift is defined as critical. For the purpose of this policy, a formal lifting plan is to be developed, documented and reviewed for the following:
 - a. Any lift which exceeds 70% of the rated capacity of the equipment as determined by the load chart for the specific piece of lifting equipment. Attachment 49B & 49C.
 - b. Any lift or equipment set-up where more than 70% of the maximum boom length is utilized.
 - c. Any lift made over an operating unit, including fuel, feed, or product lines of an operating unit. (Consideration must be given to adjacent operating units within the boom length);
 - d. ANY LIFT WHERE PERSONNEL ARE HOISTED IN A PERSONNEL BASKET.
 - e. Any other lift which may not be completely routine.
 - f. All Multi-Crane lifts.

2. Critical lifts may be defined as:
 - a. Horizontal lifts over 50 tons.
 - b. Vertical lifts over 40 tons.
 - c. Vertical lifts over 20 tons without lifting lugs/trunnions.
 - d. All multi-crane lifts (excluding tailing rigs).
 - e. All lifts over 20 tons requiring over 150' boom.
 - f. All barge transfers weighing over 20 tons.
 - g. All jib lifts over 10 tons (lattice boom) or 5 tons (hydraulic cranes).
 - h. All lifts where the boom or load is over pipe racks or other critical equipment.
 - i. All lifts of special value - (\$)
 - j. Jack and skid lifts or stationary rigging lifts over 20 tons.
 - k. Assembly of boom over pipe racks or other obstructions.
 - l. All lifts requiring modification or special configurations of lifting equipment.
 - m. Lifts requiring design and/or fabrication of special rigging equipment.
 - n. Lifts over 20 tons requiring walking the load with a crawler or truck crane.
 - o. All derrick and pole lifts.
 - p. Any other lift deemed critical by any single or combination of factors.
 - q. Any transportation of equipment weighing over 75 tons or oversize in any dimension.

3. Critical lifts are those where the load weight is close to the rated capacity of the crane. When lifting load weights heavier than 70% of the rated capacity it is recommended that the following precautions be taken. See Attachment ***HSE.FOR.Critical Lift Form.2022***.
 - a. Supporting Surface - the ground must be compact and stable.
 - b. Blocking - unless crane sits on a concrete pad, outrigger blocking must be used, and crawlers should be on pads or cribbing.
 - c. Level - the machinery deck or boom foot pins must be absolutely level.
 - d. Load - the load weight must be determined exactly.
 - e. Center of gravity - the location of the loads C of G must be determined, and the crane hook positioned above it.
 - f. Load Radius - the radius must be measured exactly.
 - g. Boom length - the boom length must be determined exactly.
 - h. Boom angle - the boom angle, if necessary for determining the crane capacity, must be determined exactly. Do not rely on the crane boom angle indicator.
 - i. Wind - wind effects must be considered, and the lift delayed if the wind loads are significant. If the wind speeds are more than 30 mph do not make the lift. If the speeds are more than 20 mph consider postponing it.
 - j. Reeving - the reeving must be balanced.
 - k. Load Rigging - check for adequacy and security. The weight of rigging must be known exactly.
 - l. Operation - all control, machine and load movements must be made as slowly and smoothly as possible.
4. Once a formal lifting plan has been developed, if any of the variables in the equipment, load, or lift change, then a new lift plan must be developed.
5. These guidelines in no way limit the documentation of any lift. Many variables may dictate that other lifts be defined as critical, or documentation may be desired for other lifts.
6. ALL lifts should be planned with equipment capabilities, weights of loads, radius of lifts, etc., determined before any lift is made.
7. The signed and dated documentation of the formal lifting plan is to be retained in the jobsite files.

If there are any questions, doubts, or uncertainties about the equipment, rigging, equipment set-up, load chart interpretation, or the load, the appropriate authority source should be consulted prior to completion of a formal lifting plan.

Revision History

Rev	Rev Date	Rev By	Approved By	Description
1.0	1.3.2022	Shayne Torrans	Shayne Torrans	Initial Procedure Document
1.1	12.20.2022	Shayne Torrans	Shayne Torrans	Format Revision

Approvals:

Procedure Owner

Competency Assessment

No.	Questionnaire	C/NYC
Q1		
A1		
Q2		
A2		
Q3		
A3		
Q4		
A4		
Q5		
A5		

Enclosed Attachments	
Risk Assessment	<input checked="" type="checkbox"/>
Environmental Aspect and Impact	<input checked="" type="checkbox"/>
Training and Competency	<input checked="" type="checkbox"/>
Measure and Evaluation Tools	<input checked="" type="checkbox"/>

Competency Checklist

To be filled out by Trainer and signed by Employee, Assessor and Supervisor before being returned to the HSEQT Manager for recording purposes.

Procedure	Competency	Date	Competent YES / NO	Employee Signature

(Please tick appropriate box)

This employee is competent in performing the job.

This employee has not attained the competency level.

*

* *If the employee has not attained all competency levels, the General Manager must assess the action to be taken, provide an extension of training or alternative action as listed below.*

Alternate action to be taken: _____

Signed By	Employee:	_____	Date:	_____
	Trainer:	_____	Date:	_____
	Assessor:	_____	Date:	_____
	Regional Manager:	_____	Date:	_____

Environmental Aspects and Impacts

Identified Environmental Aspects and Impacts

The following table is a summary of the likely environmental aspects and impacts that may be identified during site inspections. The significance of each impact needs to be assessed using the Risk Assessment Model.

Activity	Aspect	Impact
Purchasing & Administrative Work	Consumption of goods	Conservation of natural resources
	Consumption of energy (eg. Electrical equipment and facilities)	Release of greenhouse gases and atmospheric pollution; Consumption of natural resources; Habitat loss
	Generation of waste (eg. Paper)	Consumption of space for waste disposal; Habitat loss
Climate Control	Consumption of energy	Release of greenhouse gases and atmospheric pollution; Consumption of natural resources; Habitat loss
	Generation of noise	Disturbance to community; Habitat loss
Cleaning of – offices / vehicles	Storage, use and release of chemicals	Contamination of air, water or soil; Risk to human health
Transport (Fleet vehicles / staff travel)	Consumption of energy	Release of greenhouse gases and atmospheric pollution; Consumption of natural resources; Loss of habitat at all stages of generation; Light pollution
	Consumption of goods (eg. Oil)	Consumption of natural resources; Generation of waste; Habitat loss; Biodiversity impacts
	Generation of waste (eg. Oil)	Consumption of space for waste disposal; Potential contamination of water or soil; Habitat loss
	Exhaust emission	Release of greenhouse gases and atmospheric pollution
	Use of dangerous goods (eg. Batteries)	Potential contamination of air, water or soil; Risk to human health
	Generation of noise	Disturbance to community; Habitat degradation
Operations		

Sample only.
To be filled in

Risk Assessment



Risk Assessment // insert name here

<p>Step No: Logical sequence</p>	<p>Sequence of Basic Job Steps documented in the Procedure, Work Instruction and project plans. Break down Job into steps.</p> <p>Each step should be logical and accomplish a major task.</p>	<p>Potential Safety & Environmental Hazards/Impacts at the site of the Job</p> <p>Identify the actual and potential health and safety hazards and the environmental impacts associated with each step of the job.</p>	<p>Risk Rating</p> <p>Refer to the risk matrix or HSEQT.PRO. Risk Mgt</p>	<p>Recommended Corrective Action or Procedure</p> <p><i>Determine the corrective actions necessary to reduce the risk to as low as reasonably practical (ALARP) refer to HSEQ.PRO.Risk Mgt. The risk must be reduced or controlled to ALARP before work commences.</i></p> <p>Document who is responsible for implementing the controls to manage each hazard identified.</p>	<p>Risk Rating refer to the risk matrix or HSEQT.PRO.Risk Mgt</p>
1.					
2.					
3.					
4.					
5.					

Audit



Process: insert// Procedure: Insert //		Date:	Audited by:	
		Location of Audit:	Area Mgr/Supervisor:	
Item	Question	Evidence Sited	Comments	Conformance Score 0,3,5
1.				
2.				
3.				
4.				
5.				
6.				
7.				
AUDITOR'S SIGNATURE:		CONFORMANCE SCORE: / 25		0 – Non-Conformance 3 – Continuous Improvement Opportunity 5 – Total Conformance
SAFETY REP'S SIGNATURE:		CONFORMANCE %:		