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1. PURPOSE

1.1. The Purpose of this procedure is to detail the safe rigging and lifting requirements for Gallant Industrial.

2. SCOPE

2.1. The scope of this procedure establishes the requirements involved in safe lifting activities that include but are not limited to:

2.1.1. Crane operator certification
2.1.2. Rigger qualifications/certifications
2.1.3. PIC (person in charge)
2.1.4. Crane inspection
2.1.5. Unattended cranes
2.1.6. Crane movement
2.1.7. Working near power lines
2.1.8. Weather limitations
2.1.9. Signal Person qualifications/certifications
2.1.10. Hand rigging/bull rigging (where a crane cannot gain access)

2.2. The scope of this procedure establishes safe lifting requirements that include but are not limited to:

2.2.1. Standard lifts
2.2.2. Critical lifts
2.2.3. Personnel lifts
2.2.4. Material basket/skip pans
2.2.5. Personnel in lift areas

2.3. The scope of this procedure establishes the requirements involved in rigging and hardware that include but are not limited to:

2.3.1. Slings and cables
2.3.2. Lifting and hoisting accessories (shackles, clevis, spreader bars, hooks, chains)
2.3.3. Chain and lever hoist
2.3.4. Stationary overhead/gantry cranes
2.3.5. Base-mounted drum hoists
2.3.6. Powered Industrial Trucks (Bundle Carriers)

2.4. Application

2.4.1. This policy applies to all Gallant Industrial work sites and locations.

2.4.2. This policy does not address safe use of forklifts nor the use of earth moving equipment such as front-end loaders, tractors, or skid steers etc.

3. DEFINITIONS

3.1. **Approved** - Sanctioned, endorsed, accredited, certified, or accepted as satisfactory by a duly constituted and nationally recognized authority or agency.

3.2. **Authorized Person** - a person approved or assigned by the employer to perform a specific type of duty or duties.

3.3. **Barricade** – An obstruction placed on all sides of a hazard used to deter nonessential individuals from entering an area.

3.4. **Competent Person** - a competent person is an individual who, by way of training and/or experience, is knowledgeable of applicable standards, identifying workplace hazards relating to the specific operation, is designated by the employer, and has authority to take appropriate actions.

3.5. **Designated person** - an "authorized person," as defined in this section (see authorized above Ref-3.2).

3.6. **Escort / Spotter** - on foot or driving, the escort directs and guides the equipment operator when they are moving equipment to or from or within a work location.

3.7. **In-Service Equipment** – Any equipment associated within a process or process facility that is not isolated and de-energized.

3.8. **Lifting Equipment**- lifting equipment referring to the following types:

3.8.1. Below-the-hook attachments
3.8.2. Forklift attachments used for lifting and carrying of material and personnel
3.8.3. Carry deck
3.8.4. Fixed cab crane
3.8.5. Lattice boom crane
3.8.6. Swing cab crane
3.8.7. Truck mounted boom crane
3.8.8. Knuckle boom crane
3.8.9. Chain falls
3.8.10. Come-a-longs (lever hoist)
3.8.11. Overhead crane, bridge crane, under-hung crane, Gantry crane, and wall mounted jib cranes
3.8.12. Tower crane
3.8.13. Beams and Trolleys (Monorails)

3.9. **Critical Lift** - A lift is deemed critical when one or more of the following elements are met:

3.9.1. The lift exceeds 75 percent of crane or lifting equipment.
3.9.2. Requires two or more cranes to do the lift.

Note: Never exceed 75 percent of each crane during a multi-crane lift.

3.9.3. Within 20 feet of exposed live electrical power lines or non-insulated conductors.
3.9.4. Lifting personnel.
3.9.5. Lifting over any In-Service process equipment as applicable by client/host facility.
3.9.6. Lifting over an occupied structure or public street.

NOTE: In no instance will any lift be performed, which will be 90 percent or more of that specific crane chart capacity.

3.10. **Personnel Lift** - Any lift that raises, lowers, or transports personnel using hoisting equipment covered by the ASME B30.23 and OSHA 29 CFR 1926.1431 standard.
3.11. **PIC (Person in Charge)** – The designated Signal Person on the job that will give all hand signals to the crane operator and ensures non-essential personnel are not in the lift area. This person will also ensure no work is done by the crafts on the equipment being lifted until it is safe to do so.
3.12. **NCCCO** - National Commission for Certification of Crane Operators
3.13. **NCCER** - National Center for Construction Education and Research
3.14. **Qualified person** - A person, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, successfully demonstrates the ability to solve/resolve problems relating to the subject matter, the work, or the project.
3.15. **Rigger** - an individual who is responsible for crane or rigging components installation and removal work, hooking, unhooking, and guiding a load. Rigger SHALL be certified with one of the following certifications: NCCER, NCCCO, other nationally recognized certification, or company provided competency training supplemented by verified experience.
3.16. **Standard lift**- A lift that is undertaken within the normal operating parameters of the crane and does not meet critical status.
3.17. **Signal person** – A person who is trained and qualified to signal cranes and other lifting equipment.
3.18. **SME** – A Subject Matter Expert is an authority on a specific area, practice, process, technical method, or piece of equipment. The SME assesses and authorizes and manages Qualified Persons (seat time, **training**, etc.) for personnel assigned to the competent person role (Equipment Operator).

4. REQUIREMENTS

4.1. Lift Plans are required for all lifts in any client/host facility.

4.1.1. Lift Plan exceptions;

4.1.1.1. Pick and Carry type lifts (as applicable in client/host facility)
4.1.1.2. Powered industrial Trucks using fork attachments as intended.
4.1.1.3. Overhead Crane lifts that do not meet critical lift criteria.
4.1.1.4. Other lifts as applicable in client/host facility and approved by SME.

4.2. Mobile Cranes, Lifting Equipment, and Rigging

4.2.1. **Operator Certification**

4.2.1.1. Specific training and/or certification shall be required for all employees and subcontractors who operate lifting equipment covered by this policy.

4.2.1.1.1. NCCER, NCCCO, Etc.

4.2.1.2. All crane operators are required to have a valid driver's license and a certification card/documentation on-site and available for review upon request.

4.2.2. **Rigger Qualification / Certification**

4.2.2.1. Riggers are required to have documentation of their certification at the job site, either NCCER, NCCCO, other nationally recognized certification, or company provided competency training supplemented by verified experience.

4.2.3. **Crane inspection:**

4.2.3.1. Cranes must be inspected prior to operation with the documentation stored in the crane and available for review upon request.

4.2.3.2. Cranes must have an annual comprehensive inspection per OSHA 29 CFR 1926.1412 with the required information documented, maintained, and retained for a minimum of 12 months, by the employer that conducts the inspection.

4.2.3.3. Cab windows must be clean so as not to impair visibility and steps/stairs to cab must be kept clean to minimize slipping.

4.2.3.4. It is the crane operator's responsibility to inspect and report any deficiencies immediately to supervision.

4.2.4. **Unattended cranes:** Crane operators are forbidden to leave their position at the controls while a load is suspended. Before leaving a crane unattended, the operator shall:

4.2.4.1. Land or properly secure any attached load, or other device.

4.2.4.2. Secure crane against accidental travel with boom fully retracted.

4.2.4.3. Set travel, swing, boom brakes, and other locking devices.

4.2.4.4. Put controls in the "OFF/Neutral" position.

4.2.4.5. Stop the engine or motor.

4.2.4.6. During multi-day operations, non-Turnaround, the crane may be left at the worksite after following the client/host facility process as applicable.

4.2.5. **Escort Requirements for Cranes**

4.2.5.1. Mobile cranes used to pick and carry a load must have an escort (e.g., vehicle or walking) acting as a spotter to assist the equipment operator in safely moving the crane to or from the jobsite.

4.2.5.2. It is the crane operator's responsibility to know the client/host facility expectations and comply along with this policy.

4.2.5.3. Cranes must have a walking escort when maneuvering in process units and other congested areas.

4.2.5.3.1. It is the crane operator's responsibility to know the client/host facility expectations and comply along with this policy.

4.2.5.4. Movement of escorted cranes shall be planned and travel path verified clear of obstruction.

4.2.5.4.1. Spotters and escorts shall be used to control traffic (including bicycles and pedestrian) as needed.

4.2.5.5. All crane escorts and cranes shall yield to emergency vehicles.

4.2.5.6. Radio and dedicated channels shall be provided for the Crane Operator and Person in Charge/Signal Person(s) to facilitate clear communication.

4.2.6. **Barricades** – The lifting area for a crane must be barricaded off to limit the number of people working near the lift. The crane operator must sound the horn before moving any load.

4.2.7. **Responsibilities** – The Crane Operator and Spotter/Escort are responsible when traveling with a load hooked to the crane and must first determine:

4.2.7.1. Position of load

4.2.7.2. Boom location

4.2.7.3. Ground support needed

4.2.7.4. Travel route

4.2.7.5. Speed of movement

4.2.7.6. Securing the load

4.2.8. **Working around Power Lines**

The following clearances are required when operating any cranes near energized high voltage lines: See OSHA requirements 1926.1408 at table A

TABLE A—MINIMUM CLEARANCE DISTANCES

Voltage (nominal, kV, alternating current)	Minimum clearance distance (feet)
up to 50	10
over 50 to 200	15
over 200 to 350	20
over 350 to 500	25
over 500 to 750	35
over 750 to 1,000	45
over 1,000	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).

Note: The value that follows "to" is up to and includes that value. For example, over 50 to 200 means up to and including 200kV.

4.2.8.1. All lifts made under powerlines shall be confirmed to be deenergized and visibly grounded at the work site, and will be in compliance with 29 CFR 1926.1408 Subpart CC.

4.2.8.2. Any lift over 50 kV or higher must be reviewed by utility owner and SME.

4.2.8.3. Spotters shall be used to assist crane operators when moving cranes near energized power lines to ensure safety.

NOTE: Use of guards on energized high voltage lines without meeting the minimum clearance distances is prohibited.

4.2.9. **Weather Limitations**

Note: During storms or high winds, OSHA prohibits crane hoists (29 CFR 1926.1431(k)(8)).

4.2.9.1. Winds

4.2.9.1.1. There are several factors to consider when determining if the wind will affect the lift, such as, height, weight, shape (wind sailing factor) and size of material being lifted.

4.2.9.1.2. Wind speed can adversely affect the load that is being lifted. If the wind speed is above the crane manufacturers recommended wind speed, stop work until it is safe for the work to continue.

4.2.9.1.2.1. Refer to Owner/Operator Manual.

4.2.9.1.3. If the wind gust at the location of the lift makes the conditions unsafe, stop work until it is safe for the work to continue.

4.2.10. **During a lightning alert**, all lifts shall be terminated until the lightning alert has passed.

4.2.11. **Cold Weather**

4.2.11.1.1. Cold weather operation of the winch requires a warm-up procedure. Failure to properly warm up the winch may result in brake slippage. Warm-up the winch before beginning crane operations.

4.2.11.1.2. If the environmental temperature is too cold, a crane's hydraulic system can slow down from reduced fluid speed due to thickening of the hydraulic oil. In addition, extreme cold can reduce the crane's structural tensile strength and can even cause it to fail. Because of this, you should reduce your load weight by 50 % in subzero (Fahrenheit) temperatures.

4.2.11.1.3. When temperatures reach 34°F or below a follow up inspection will be required every four hours. Inspection will consist of general crane functions and safety devices.

4.2.11.1.4. When temperatures get below 32°F with any forecasted precipitation, inspections will increase to every 2 hours with the safety switch being tested every hour when possible.

4.2.11.1.5. When temperatures get below 32°F with any precipitation in the forecast deicer will be applied to outrigger pads, decks, and steps of all cranes.

4.2.11.1.6. Upon inspection, if any cab windows, moving components, or safety devices are found to be iced up or frozen the crane will be shut down immediately and de-icing measures will be taken. The crane will not return to service until all safety devices and functions are operational and verified by crane person-in charge.

4.2.12. **Signal Person Certification/Qualification**

4.2.12.1. Each Signal Person must possess one of the following certifications, NCCER, NCCCO, other nationally recognized certification, or company provided competency training supplemented by verified experience.

4.2.12.2. Only certified/Qualified personnel can signal crane lifts.

4.2.12.3. Anytime a load is to be lifted, swung, or placed out of the crane operator's view, the use of a relay signal person is required, or dedicated radios for communication are required.

4.2.12.4. Movement of cranes to/from a job requires an escort.

4.3. Lifting Requirements

4.3.1. When a lift is to be made participants must clearly understand the scope of work.

4.3.2. The crane operator and person in charge must perform the onsite evaluation phase of planning for a lift. This includes but is not limited to:

4.3.2.1. Investigate and evaluate the surrounding environment and conditions.
4.3.2.2. Identify and develop mitigations for overhead powerlines, aboveground piping, buildings, and process equipment that have the potential to be contacted by the boom.
4.3.2.3. Identify and develop mitigations for underground firewater lines, utility lines, sewers, and water mains that could collapse under the outrigger loads.
4.3.2.4. Gallant Industrial employees and subcontractors will perform pre lift job site evaluations.

4.3.2.4.1. Pre Lift Job Site Evaluations must include;

4.3.2.4.1.1. Detailing the lift plan
4.3.2.4.1.2. The Type of Lift (Critical or Standard)
4.3.2.4.1.3. Any Potential Hazards
4.3.2.4.1.4. Ground Stability
4.3.2.4.1.5. Weather
4.3.2.4.1.6. Other factors that may impact the safe lifting of the load or operation of the crane.

NOTE: A load center of gravity shall remain directly under crane hoist, i.e., side loading is prohibited!

4.3.3. **Standard Lifts**

4.3.3.1. All Standard lifts SHALL be executed by a Crane Operator certified by NCCCO, NCCER.
4.3.3.2. All lift participant (operators, riggers, PIC) employees will be authorized by the site SME according to their roles and responsibilities.

4.3.4. **Critical lifts**

4.3.4.1. All Critical lifts SHALL be executed by a Crane Operator certified by NCCCO, NCCER.
4.3.4.2. All lift participant (operators, riggers, PIC) employees will be authorized by the site SME according to their roles and responsibilities.
4.3.4.3. The equipment operator SHALL fill out their portion of the critical lift form. A supervisor, SME, or appointed person will review all critical lift plans before executing the work.
4.3.4.4. Personnel Lifts: Personnel lifts shall be accomplished in compliance with ASME B30.23 and OSHA 29 CFR 1926.1431 Standard.
4.3.4.5. Critical lifts require the completion of a Critical Lift Form (see Attachments). A Pre-Lift Meeting attended by the crane operator, person in charge, spotter(s)/rigger(s), a Safety Dept. representative shall be held to review this procedure and the specific crane lift requirements to ensure that they have been followed.

4.3.4.6. Engineering Departments or outside engineering help may be required to fully assess and resolve all important loads and site factors. Lift evaluations are not considered complete if lift parameters are calculated or devised without proper input.

4.3.4.7. After the Pre-Lift Meeting, complete the JHA (Job Hazard Analysis) and Safe Work Permit forms as applicable for the job.

4.3.4.8. If any condition on a form changes, the lift must stop and be reevaluated. Reevaluation will include initial review team and other personnel as needed.

4.3.4.9. During a critical lift, you cannot change crane operators. If a crane operator must change, you must stop the job and reevaluate the lift.

4.3.5. **Material basket/skip pans and lifting fixtures:**

4.3.5.1. Material baskets or fixtures used for lifting equipment or material must meet all ASME and OSHA standards.

4.3.5.2. Lifting capacities will be clearly labeled on the lifting fixture or material baskets being used.

4.3.5.3. Before each use, the rigger SHALL do a visual inspection of the lifting fixture or material basket. This inspection will identify any visible signs of wear, deformation, deterioration, or damage.

4.3.5.4. The use of unapproved and/or non-engineered material handling devices (for example, pallets) SHALL not be used to lift material or equipment with a crane.

4.3.5.5. Further requirements of rigging equipment and lifting fixtures can be found with the Lifting SME.

4.3.6. **Lift Area**

4.3.6.1. The lift area for all crane work shall be barricaded in accordance with facility/Gallant Industrial barricade procedures.

4.3.6.2. Where barricading is not practical, no permitted work is allowed below the lift area.

4.3.7. **Bundle Extractor** (also known as a Remover or Puller): The proper use of the bundle extractor will be in accordance with the operator's manual. (Some client/host facilities may deem this to be a critical lift)

4.3.8. **Rigging and Hardware**

4.3.8.1. Slings and cables: The proper use and inspection of slings and cables SHALL be in compliance with ASME B30.26 and OSHA 29 CFR 1926.251.

4.3.8.2. Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to ensure that it is safe. Defective rigging equipment shall be removed from service.

4.3.8.3. Rigging equipment shall not be used without affixed, legible identification markings as required by OSHA 29 CFR 1926.251 (a)(2)(i).

4.3.8.4. Accessories: Lifting of compressed gas Cylinders SHALL comply with OSHA 29 CFR 1926.350(a)(2) and 29 CFR 1910.253.

NOTE: Cylinders SHALL not be hoisted, lifted, or transported by means of magnets, or choker slings.

4.3.9. **Chain and lever hoist:** The proper use and inspection of chain and lever hoist SHALL comply with OSHA Standards and ASME B30.21 Manual Lever Operated Hoists.

4.3.10. **Stationary overhead/gantry Cranes:** Inspection of overhead and gantry cranes SHALL comply with OSHA Standards 29 CFR 1910.179 and ASME B30.2 Overhead and Gantry Cranes.

4.4. **Base Mounted Drum Hoists:** Base mounted drum hoists are used infrequently and will be inspected before each use. This inspection will include the "frequent inspection" and the "periodic inspection" of the hoist and wire rope in accordance with ASME B30.7.

4.5. **Powered Industrial Trucks (Forklifts/ Bundle Carriers):** The proper use of powered industrial trucks SHALL comply with OSHA 29 CFR 1910.178 and ASME B56.1 Powered Industrial Trucks.

5. RESPONSIBILITIES

5.1. **Site Manager / Project Manager:** The Site/Project Manager or Designee is ultimately responsible for the craft and subcontractors performing the lift.

5.2. **Safety Representative:** The Safety Representative is a competent person, who has been authorized to oversee and enforce the safety aspects of a specific job or site. The Safety Representative is ultimately responsible for updating lift requirements, evaluating, and determining safe lifting practices in conjunction with Site/Project Manager.

5.3. **Equipment Operator:** The equipment operator is the person that is in physical control of any lifting devices covered in this policy. The operator is required to verify the authentication of the contract signal person and/or rigger certification at the job site. When verification is complete, the operator SHALL document that verification by competing the signal person/riggers verification card and ensure critical lift form has been completed when applicable (see attachments).

NOTE: The operator SHALL maintain full attention on the task being performed. Use of headsets, music, cellular phones, or any other device not directly related to normal operation is strictly forbidden. Whenever the operator has doubt as to the safety of crane operations, the operator shall

stop the crane's functions in a controlled manner. Lift operations shall resume only after safety concerns have been addressed or the continuation of crane operations is directed by the Person in Charge and the Maintenance Supervisor.

5.4. **Rigger:** The rigger is a certified and or qualified person who SHALL be trained and authorized to select the proper rigging equipment, attach selected equipment, and determine the rated rigging equipment to perform the lift. The rigger may also be the signal person and or the PIC (Person in Charge). The rigger can also direct people to assist him/her as necessary.

5.5. **Signal Person:** The signal person SHALL be certified and or qualified and is the responsible person who communicates to the equipment operator by giving hand signals or radio communication.

5.6. **Person in Charge:** The PIC is the designated person on the job that will give all hand signals to the crane operator unless the situation dictates that another person is necessary for the task and properly trained. The PIC ensures non-essential personnel are not in the lift area. This person will also ensure no work is done by the crafts on the equipment being lifted until it is safe to do so.

5.7. **Construction Manager / Superintendent:** The person authorized by the company that oversees the day-to-day lifting activities for a specific job or site.

5.8. **SME**: A competent/qualified person with extensive knowledge, training, and experience in the crane and rigging practices that writes, approves, and reviews critical/complex lifts for the site.

6. Auditing

6.1. The Rigging and Lifting Policy shall be audited triennially or as part of the investigation process after a crane incident is recorded.

6.2. Crane inspections forms are to be retained in the respective projects safety folder.

7. References

7.1. OSHA 29 CFR 1910

7.1.1. 29 CFR 1910.178 Powered Industrial Trucks
7.1.2. 29 CFR 1910.179 Overhead and Gantry Cranes
7.1.3. 29 CFR 1910.180 Crawler, Locomotive, and Truck Cranes
7.1.4. 29 CFR 1910.184 Slings
7.1.5. 29 CFR 1910.253 Oxygen-Fuel gas welding and cutting
7.1.6. 29 CFR 1910.269 Electric Power Generation
7.1.7. 29 CFR 1910.333 Electrical Work Practices

7.2. OSHA 29 CFR 1926

7.2.1. 26.106 Working over or near water
7.2.2. 29 CFR 1926.350 Gas welding and cutting
7.2.3. 29 CFR 1926.550 Cranes and Derricks

7.2.4. 29 CFR 1926.251 Rigging and Material Handling
7.2.5. 29 CFR 1926.1408 Power line safety
7.2.6. 29 CFR 1926.1427 Operator Training Certification and Evaluation
7.2.7. 29 CFR 1926.1428 Signal Person Qualifications
7.2.8. 29 CFR 1926.1431 Hoisting Personnel

7.3. ASME

7.3.1. B30.2 Overhead and Gantry Cranes
7.3.2. B30.5 Mobile and Locomotive Cranes
7.3.3. B30.7 Base Mounted Drum Hoist
7.3.4. B30.9 Slings
7.3.5. B30.10 Hooks
7.3.6. B30.11 Monorails and Under-hung Cranes
7.3.7. B30.16 Overhead Hoist
7.3.8. B30.20 Below the Hook Lifting Device
7.3.9. B30.21 Manual Lever Operated Hoists
7.3.10. B30.23 Personnel Lifting Systems
7.3.11. B30.26 Rigging Hardware
7.3.12. B56.1 Powered Industrial Trucks

7.4. Gallant Industrial

7.4.1. Standard Lift Plan
7.4.2. Critical Lift Plan
7.4.3. STA (Safety Task Assessment)
7.4.4. Crane Inspection Form