LP 4.22

Effective:
9/15/2025

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Policy Owner:
Board of Trustees

Policy Administrator:
VP for Finance and Administration

Affected Parties:
Employees

Table of Contents:

Crane and Hoist Safety

References: OSHA 29 CFR 1910.179; 29 CFR 1910.180; 29 CFR 1926, Subpart CC

1 Purpose

1.1 This policy describes a program at Lander University that has been established to ensure a safe and healthful working environment and to act as a performance standard for all employees.

1.2 The guidelines contained in this policy are designed to help reduce employees' occupational exposure to the hazards of operating and/or working with, or near, cranes and hoists.

2 Scope

2.1 This policy applies to all tasks involving overhead and gantry cranes and hoists.

2.2 This policy does not apply to mobile or tower cranes.

3 Responsibilities

3.1 Safety and Regulatory Compliance Officer

The safety and regulatory compliance officer has the overall responsibility for maintaining the crane and hoist safety program, including:

3.1.1 Ensuring the implementation of the program.

3.2 Facilities Operations Manager

The facilities operations manager is responsible for:

3.2.1 Ensuring that the program is implemented in their area of responsibility.

3.2.2 Understanding the requirements of the program.

3.2.3 Ensuring that the program's procedures are understood and followed by employees who utilize cranes and hoists.

3.2.4 Ensuring that cranes/hoists have been inspected as described in the Inspections section of this policy.

3.3 Supervisors

Supervisors are responsible for:

3.3.1 Ensuring that all employees who operate a crane or hoist have been properly trained and certified in their operation.

3.3.2 Ensuring that there is a process in place for the frequent inspection of cranes and hoists, as described in the Inspection section of this policy.

3.3.3 Ensuring that employees are following the requirements of this program.

3.4 Crane Operators

Crane operators must:

3.4.1 Pass a written or oral examination and a practical operating examination unless they are able to furnish satisfactory evidence of qualifications and experience to the Safety and Regulatory Compliance Officer prior to operating any equipment.

3.4.1.1 Qualification shall be limited to the specific type of equipment for which the operator is examined.

3.4.2 Crane training must be current at the time of use for the type of crane used.

3.4.2.1 There is no universal fixed timeframe for retraining; instead, retraining is required when:

- The operator is assigned to a different type of crane/hoist.
- There is evidence of unsafe operation.
- The workplace or equipment changes significantly.
- A new standard or hazard is introduced.

3.4.3 Have normal depth perception, field of vision, reaction time, manual dexterity, coordination, and have sufficient depth perception, field of vision, reaction time, manual dexterity, coordination, and balance.

3.4.4 This requirement will apply to both crane operators and operator trainees.

3.4.5 Conduct a pre-use inspection of the equipment to be used.

3.4.6 Use the crane manufacturer's load chart for the crane.

3.4.7 Know the weight of each load.

3.4.8 Avoid hoisting, moving, or swinging suspended loads over or near workers.

3.4.9 Not engage in any activity that diverts attention away from the operation of the crane.

3.4.10 Stop and refuse to handle loads if there is a safety concern.

4 Definitions

4.1 **Boom angle indicator**: A device which measures the angle of the boom relative to horizontal.

4.2 **Come-a-long**: A mechanical device typically consisting of a chain or cable attached at each end that is used to facilitate movement of materials through leverage.

4.3 **Competent person**: A person who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who is authorized to take prompt corrective measures to eliminate them.

4.4 **Directly under the load**: A body part or the entire body of an employee that is directly beneath the load.

4.5 **Fall zone**: The area (including but not limited to the area directly beneath the load) in which it is reasonably foreseeable that partially or completely suspended materials could fall in the event of an accident.

4.6 **Hoist**: A mechanical device for lifting and lowering loads by winding a line onto or off a drum.

4.7 **Hoisting**: The act of raising, lowering, or otherwise moving a load in the air with equipment covered by this standard. As used in this standard, "hoisting" can be done by means other than wire rope/hoist drum equipment.

4.8 **Load**: The object(s) being hoisted and/or the weight of the object(s); both uses refer to the object(s) and the load-attaching equipment, such as the load block, ropes, slings, shackles, and any other ancillary attachment.

4.9 **Nationally recognized accrediting agency**: An organization that, due to its independence and expertise, is widely recognized as competent to accredit testing organizations. Examples of such accrediting agencies include, but are not limited to, the National Commission for Certifying Agencies and the American National Standards Institute (ANSI).

4.10 **Operational controls**: Levers, switches, pedals, and other devices for controlling equipment operation.

4.11 **Operator**: A person who is operating the equipment.

4.12 **Overhead and gantry cranes**: Overhead/bridge cranes, semi-gantry, cantilever gantry, wall cranes, storage bridge cranes, launching gantry cranes, and similar equipment, regardless of whether it travels on tracks, wheels, or other means.

4.13 **Qualified person**: A person who (by possession of a recognized degree, certificate, or professional standing or by extensive knowledge, training, and experience) has successfully demonstrated the ability to solve/resolve problems relating to the subject matter, the work, or the project.

4.14 **Rated capacity**: The maximum working load permitted by the manufacturer under specified working conditions. Such working conditions typically include a specific combination of factors, such as equipment configuration, radii, boom length, and other parameters of use.

4.15 **Tagline**: A rope (usually composed of fiber) attached to a lifted load for purposes of controlling load spinning and pendular motions or used to stabilize a bucket or magnet during material handling operations.

4.16 **Wire rope**: A flexible rope constructed by laying steel wires into various patterns of multi-wired strands around a core system to produce a helically wound rope.

5 Overhead and Gantry Cranes

5.1 Markings on Cranes

5.1.1 The rated load of the crane shall be marked on each side of the crane bridge girder, or other component attached to the crane bridge girder, and shall be legible from the ground or floor.

5.1.2 All crane load charts are to be clearly legible and in clear view from the operator's position.

5.1.3 The rated load of a crane must be clearly marked on each side of a crane.

5.1.4 Cranes shall have all required signage and decals on the crane body.

5.1.4.1 Equipment must not be operated in excess of rated capacity.

5.1.4.2 No one is permitted to ride on loads, hooks, or slings of any crane or hoist.

5.1.4.3 The empty hook, headache ball, or block should not swing freely.

5.1.4.4 Cranes shall be equipped with the applicable safety devices.

5.2 Markings on Hoists

5.2.1 The rated load of the hoist shall be marked on the hoist or trolley unit or its load block and shall be legible from the ground or floor.

5.2.2 If the crane has more than one hoisting unit, each hoist shall have its rated load marked on the hoist or trolley unit or its load block and each rated load marking shall be legible from the ground or floor.

5.2.3 The combined load applied to all hoists on a crane shall not exceed the rated load of the crane.

5.3 Warnings

5.3.1 Floor-operated and remote-operated cranes shall have a safety label or labels affixed to the pendant station or load block.

5.3.2 The label or labels shall include cautionary language against:

5.3.2.1 Lifting more than the rated load.

5.3.2.2 Operating a hoist when the load is not centered under the hoist.

5.3.2.3 Operating a hoist with a twisted, kinked, or damaged chain or rope.

5.3.2.4 Operating a damaged or malfunctioning crane.

5.3.2.5 Lifting people.

5.3.2.6 Lifting loads over people.

5.3.2.7 Operating a rope hoist with a rope that is not properly seated in its groove.

5.3.2.8 Operating manual motions with other than manual power.

5.3.2.9 Removing or obscuring a safety label(s).

5.3.3 A label shall be affixed on all electrical control enclosures. The label shall include, but not be limited to, such information as:

5.3.3.1 "Disconnect power and lockout/tagout disconnecting means before removing cover or servicing this equipment."

5.3.3.2 "Do not operate this equipment without cover in place."

5.4 Frequent Inspections

5.4.1 Frequent inspections shall be conducted by a designated person at least before each use, or as specifically indicated by the manufacturer, including observation during operation for any deficiencies that might appear between regular inspections.

5.4.2 Any deficiencies shall be carefully examined, with a determination made as to whether they constitute a hazard.

5.4.3 Frequent inspections shall include, but not be limited to, the following items:

5.4.3.1 Operating mechanisms for proper operation, proper adjustment, and unusual sounds, including, but not limited to, squeaking, grinding, grating, etc.

5.4.3.2 Verifying the operation of the upper limit device(s) under no-load conditions.

5.4.3.3 Determining the presence of and leaks in tanks, valves, pumps, lines, and other parts of air or hydraulic systems.

5.4.3.4 The means of attaching and securing hooks.

5.4.3.5 The condition of rope for proper spooling onto the drum(s) and sheave(s).

5.4.3.6 The presence of warning device(s) for proper operation.

5.5 Frequent Inspections

5.5.1 Frequent inspections shall be performed by a qualified person at least monthly, depending on the crane's activity, severity of service, and environment, or as specifically indicated below.

5.5.2 Any deficiencies shall be examined, with a determination made as to whether they constitute a hazard.

5.5.3 These inspections shall include all items listed under frequent inspection and such items as the following:

5.5.3.1 Deformed, cracked, or corroded members.

5.5.3.2 Loose or missing fasteners, including, but not limited to, bolts, nuts, pins, or rivets.

5.5.3.3 Cracked or worn sheaves and drums.

5.5.3.4 Worn, cracked, or distorted parts, including, but not limited to, pins, bearings, shafts, gears, rollers, locking and clamping devices, and bumpers and stops.

5.5.3.5 Excessive wear on brake and clutch system parts.

5.5.3.6 Excessive wear on chain drive sprockets and excessive chain stretch.

5.5.3.7 Deterioration of controllers, master switches, contacts, limit switches, and push-button stations, although not limited to these items.

5.5.3.8 Wind indicators for proper operation.

5.5.3.9 Motion limit devices that interrupt power or cause activation of a warning for proper performance.

5.5.3.10 Each motion shall be inched or operated at low speed into the limit device with no load on the crane.

5.5.3.11 Roper reeving for compliance with crane manufacturer's design.

5.5.3.12 The legibility of function, instruction, and safety information signs, labels, or plates and any need for replacement.

5.6 Operation

5.6.1 A hoist chain or hoist rope shall be free from kinks or twists and shall not be wrapped around the load.

5.6.2 A load shall be attached to the load block hook by means of slings or other devices.

5.6.3 Care shall be taken to ensure that the load, sling, attachments, and load block clear all obstacles.

5.6.4 The appointed person directing the lift shall ascertain that:

5.6.4.1 A load, sling, or lifting device is seated in the bowl of the hook.

5.6.4.2 A load is secured, balanced, and positioned in the hook, sling, or lifting device before the load is lifted more than a few inches.

5.6.4.3 A hoist chain or rope is not kinked.

5.6.4.4 Multiple part lines are not twisted around each other.

5.6.4.5 A hook is brought over the load in such a manner as to minimize swinging.

5.6.4.6 A rope is seated in the drum grooves and in the sheaves if there is or has been a slack rope condition.

5.6.5 During lifting, care shall be taken to ensure that the following are adhered to:

5.6.5.1 No sudden acceleration or deceleration of a moving load.

5.6.5.2 A load does not contact any obstructions.

5.6.5.3 Cranes shall not be used for side pulls.

5.6.5.4 An operator shall not cause the crane to lift, lower, or travel while any person is on the load or hook.

5.6.5.5 An operator shall not carry loads over people.

5.6.5.6 An operator shall check the hoist brake(s) at least once during each shift if a load is approaching the rated load that is to be handled.

- This check shall be performed by lifting the load a short distance and applying the brake(s).

5.6.5.7 An operator shall not leave their position at the controls while the load is suspended over an area accessible to people.

5.6.6 An operator shall not leave a suspended load unattended unless specific precautions have been instituted and are in place.

5.6.7 A load block should be lifted above head level for storage when the crane is not in use.

5.6.8 Exposed moving parts, such as gears, set screws, projecting keys, chains, and chain sprockets which constitute a hazard under normal operating conditions, shall be guarded.

5.6.9 Brake and braking means shall be provided for overhead and gantry cranes.

5.6.10 Each power-driven trolley unit of a crane shall be equipped with a braking means or have trolley drive frictional characteristics that will provide stopping and holding functions, under conditions in which the rails are dry.

5.6.11 A power-driven bridge shall be equipped with a braking means or have bridge drive functional characteristics that will provide stopping and holding functions, under conditions in which the rails are dry.

6 Overhead Hoists

6.1 Markings on Hoists

6.1.1 The rated load of a hoist shall be marked on the hoist or its load block and shall be legible from the ground.

6.1.2 The hoist shall be marked with the manufacturer's identification information, on a plate or label attached to the hoist or cast, forged, or stamped on the hoist, as follows:

6.1.2.1 Hand Chain-Operated Hoist:

- Name of manufacturer.

- Manufacturer's model or serial number.

6.1.2.2 Electric-powered hoist.

- Name of Manufacturer:
- Manufacturer's model or serial number.
- Voltage of AC or DC power supply and phase and frequency of AC power supply (4) circuit ampacity.

6.1.2.3 Air-Powered Hoist:

- Name of manufacturer.
- Manufacturer's model and serial number.
- Rated air pressure.

6.2 Warnings

6.2.1 All hand chain-operated hoists shall have affixed to the hoist or load block a label or labels displaying information concerning operating procedures.

6.2.1.1 The label or labels shall include cautionary language against:

6.2.1.2 Lifting more than the rated load.

6.2.1.3 Operating a hoist with a twisted, kinked, or damaged chain.

6.2.1.4 Operating a damaged or malfunctioning hoist.

6.2.1.5 Lifting people.

6.2.1.6 Lifting loads over people.

6.2.1.7 Operating a hoist with other than manual power.

6.2.1.8 Removing or obscuring a label.

6.2.2 All electric-powered and air-powered hoists shall have affixed to the hoist, load block, or controls a label or labels displaying information concerning operating procedures.

6.2.3 The label or labels shall include cautionary language against:

6.2.3.1 Lifting more than the rated load.

6.2.3.2 Operating a hoist when a load is not centered under hoist.

6.2.3.3 Operating a hoist with a twisted, kinked, or damaged chain or rope.

6.2.3.4 Operating a damaged or malfunctioning hoist.

6.2.3.5 Lifting people.

6.2.3.6 Lifting loads over people.

6.2.3.7 Operating a rope hoist with a rope that is not properly seated in its groove.

6.2.3.8 Removing or obscuring a label.

6.3 Frequent Inspections

6.3.1 Frequent inspections shall be conducted by a designated person at least before each use, or as specifically indicated by the manufacturer, including observation during operation for any deficiencies that might appear between regular inspections.

6.3.2 Any deficiencies shall be carefully examined, with a determination made as to whether they constitute a hazard.

6.3.3 Frequent inspections shall include, but not be limited to, the following items:

6.3.3.1 Operating mechanisms for proper operation, proper adjustment, and for unusual sounds.

6.3.3.2 The hoist upper limit device of electric- or air-powered hoists, without a load on the hook at the beginning of each shift.

- The load block shall be inched into its limit device or run in at slow speed on multi-speed or variable-speed hoists.

6.3.3.3 Hoist braking system for proper operation.

6.3.3.4 Lines, valves, and other parts of air systems for leakage.

6.3.3.5 Hooks.

6.3.3.6 Hook latches, if used, for proper operation.

6.3.3.7 Rope or load chain reeving for compliance with recommendations of the hoist manufacturer.

6.4 Periodic Inspections

6.4.1 Periodic inspections shall be performed by a qualified person at least monthly, depending on the crane's activity, severity of service, and environment, or as specifically indicated in this section.

6.4.2 Any deficiencies shall be examined, with a determination made as to whether they constitute a hazard.

6.4.3 These inspections shall include all items listed under frequent inspection and such items as the following:

6.4.3.1 Covers and other items normally supplied to allow inspection of components should be opened or removed for the inspection and then closed or replaced before restoring the hoist to normal operation unless additional maintenance is required.

6.4.3.2 Fasteners for evidence of loosening.

6.4.3.3 Load blocks, suspension housings, levers, chain attachments, clevises, yokes, suspension bolts, shafts, gears, bearings, pins, rollers, and locking and clamping devices for evidence of wear, corrosion, cracks, and distortion.

6.4.3.4 Hook-retaining nuts or collars and pins, welds, or rivets used to secure the training members for evidence of damage.

6.4.3.5 Load sprockets, idler sprockets, drums, and sheaves for evidence of damage and wear.

6.4.3.6 The brake mechanism on hand chain-operated hoists for evidence of worn, glazed, or oil contaminated friction disks; worn pawls, cams, or ratchets; corroded, stretched, or broken pawl springs.

6.4.3.7 The motor brake and load brake on electric- or air-powered hoists for evidence of wear.

6.4.3.8 Electrical apparatus on electric-powered hoists for evidence of pitting or deterioration of controller contacts.

6.4.3.9 The supporting structure or trolley, if used, for evidence of damage.

6.4.3.10 Label or labels for legibility.

6.5 Operation

6.5.1 An operator shall be familiar with all operating controls of the hoist and be instructed in the operation(s) to be performed.

6.5.2 If adjustments or repairs are necessary, or any defects are known, an operator shall report this promptly to a designated person.

6.5.3 An operator shall not operate a hoist that bears an out-of-order sign.

6.5.4 An operator shall not adjust or repair a hoist unless qualified to perform maintenance on it.

6.5.5 A chain or rope shall not be used as a ground for welding.

6.5.6 A welding electrode shall not be touched to the chain or rope.

6.5.7 A hand chain-operated hoist shall only be operated with hand power, with no more than one operator per hand chain.

6.5.8 A hoist rope or chain shall not be wrapped around a load.

6.5.9 A load shall be attached to the load hook by suitable means.

6.5.10 A sling or other device shall be properly seated in the base (bowl or saddle) of a hook.

6.5.11 A hook latch shall not be allowed to support any part of a load.

6.5.12 A load shall not be applied to the point of a hook.

6.5.13 Before moving the load, an operator shall ensure that chains or wire rope are not kinked or twisted or that multiple part chains or ropes are not twisted about each other.

6.5.14 A hoist shall not be operated unless its rope or chain is seated properly on the drum, sheaves, or sprockets.

6.5.15 A hoist shall not be operated unless the hoist unit is centered over the load, except when authorized by a qualified person who has determined that the components of the hoist and its mounting will not be overstressed.

6.5.15.1 If it becomes necessary to pick up a load that is not centered under the hoist unit, precautions shall be taken to control the swing of the load when it is picked up clear of its support.

6.5.16 Special attention should be given to balancing of a load and hitching or slinging to prevent slipping of the load.

6.5.17 An operator shall not engage in any activity that would divert the operator's attention while operating a hoist.

6.5.18 An operator shall not lift or lower a load with a hoist until the operator and all other personnel are clear of the load.

6.5.19 An operator shall ensure that a load and hoist will clear all obstacles before moving or rotating the load.

6.5.20 An operator shall inch powered hoists slowly into engagement with a load, but should avoid unnecessary inching and quick reversals of direction.

6.5.21 A load shall not be lifted more than a few inches until it is well-balanced in the sling or lifting device.

6.5.22 Each time a load approaching rated capacity is handled, an operator shall check hoist brake action by lifting the load just clear of supports and continue only after verifying that the brake system is operating properly.

6.5.23 On rope hoists, a load shall not be lowered below the point where less than two wraps of rope remain on each anchorage of the hoist drum, unless a lower limit device is provided.

6.5.23.1 In this case, no less than one wrap may remain on each anchorage of the hoist drum.

6.5.24 An operator shall avoid carrying loads over people.

6.5.25 An operator shall avoid swinging a load or load hook when traveling the hoist.

6.5.26 On trolley-mounted hoists, contact between trolleys or between trolleys and stops should be avoided.

6.5.27 An operator shall not use the upper (or lower, if provided) limit device(s) as a normal means of stopping the hoist as these are emergency devices only.

6.6 Slings, Ropes, and Attachments

6.6.1 A damaged or defective sling shall be taken out of service and may only be repaired by the manufacturer or a qualified person.

6.6.2 The selection and installation of equipment on cranes must meet the recommendations of the rope manufacturer, crane manufacturer, or a qualified person.

6.6.3 Fiber core ropes must not be used for boom hoist reeving.

6.6.4 A rotational-resistant rope may be used at the discretion and under the guidance of a qualified person. A chain or wire rope sling shall not be shortened with knots, bolts, or other makeshift devices.

6.6.5 A sling shall not be kinked, knotted, loaded in excess of its rated capacities, or pulled from under a load when the load is resting on the sling and damage to the sling may result.

6.6.6 A sling shall be set to avoid slippage and shall be padded or protected from the sharp edges of its loads. A sling used in a basket hitch shall have the loads balanced to prevent slippage.

6.6.7 A suspended load shall be kept clear of all obstructions.

6.6.8 Hands or fingers shall not be placed between a sling and its load while the sling is being tightened around the load.

6.6.9 Shock loading is prohibited.

6.6.10 Only slings with permanent affixed identification markings that show the maximum load for each sling shall be used.

6.7 Frequent Inspections

6.7.1 Frequent inspections shall be conducted by a designated person at least before each use, or as specifically indicated by the manufacturer, including observation during operation for any deficiencies that might appear between regular inspections.

6.7.2 Any deficiencies shall be carefully examined, with a determination made as to whether they constitute a hazard.

6.7.3 Frequent inspections shall include, but not be limited to, any condition that may result in a hazard, which shall cause the sling to be removed from service.

6.7.4 A sling shall not be returned to service until it has been approved by a qualified person.

6.8 Periodic Inspections

6.8.1 A complete inspection for damage of a sling shall be performed by a qualified person at least monthly, depending on the activity, severity of service, and environment, or as specifically indicated below.

6.8.2 Any deficiencies shall be examined, with a determination made as to whether they constitute a hazard.

6.8.3 These inspections shall include frequent inspection items and in the presence of such damage to items as the following:

6.8.3.1 Missing or illegible sling identification.

6.8.3.2 Cracks or breaks.

6.8.3.3 Excessive wear, nicks, or gouges.

6.8.3.4 Stretched chain links or components.

6.8.3.5 Bent, twisted, or deformed chain links or components.

6.8.3.6 Evidence of heat damage.

6.8.3.7 Evidence of excessive pitting or corrosion.

6.8.3.8 Lack of chain articulation or components to move freely.

6.8.3.9 Weld splatter.

6.8.3.10 Other conditions, including visible damage, that cause doubt as to the advisability of continued use of a sling.

6.8.4 An alloy steel chain sling shall be removed from service if listed above are present.

7 Training

7.1 An overhead crane shall only be operated by trained and authorized employees.

7.2 A mechanic performing maintenance on a crane shall:

7.2.1 Operate equipment only when operation is critical for a maintenance task.

7.2.2 Be familiar with the equipment or operate it under the direct supervision of a qualified operator.

7.2.3 Be qualified to perform maintenance on the equipment

8 Policy Revision History

- First draft of policy submitted for review by VP for Finance and Administration on 1/20/2025.
- Reviewed by Board of Trustees Policy Committee on 8/23/2025.
- Final review stakeholder review and approval of policy on 8/25/2025.
- Final revisions applied by Policy Coordinator on 8/26/2025.
- Approved by the Lander University Board of Trustees on 9/15/2025.