

972. Rigging and Lifting for Material Handling
Effective: 4/19/26; Revised: 8/12/26

.1 Purpose

It is the policy of the City of Tulsa to protect employees from recognized hazards while using various types of rigging and lifting devices. This policy provides the framework for operating overhead cranes, hoists, and other rigging and lifting devices safely and responsibly.

.2 Scope

.21 This policy applies to all non-sworn employees who operate cranes (e.g., mobile, stationary, overhead), any other mechanical lifting devices with associated rigging, and other equipment used for lifting, such as backhoes, excavating equipment, forklifts with rigging, truck-mounted hoists, other hoists, and chain falls.

.22 The policy does not apply to forklifts, manlifts, personnel-elevating work platforms, or similar equipment used in its intended manner and without rigging.

.23 If any situation arises not specifically covered by this policy, a lifting plan shall be developed and approved by a member of the Safety and Health Section of HR.

.3 Regulatory References

Title 29, Subtitle B, Chapter XVII, Part 1910, Subpart N: Materials Handling and Storage. See specifically §1910.179 (Overhead and gantry cranes); §1910.184 (Slings); §1926.251 Rigging equipment for material handling; and ANSI/ASME B30 Safety Standards for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings.

.4 Definitions

Blind lift - a lift where, at any point in time during the lifting operation, the operator cannot directly see the load or landing area.

Chain fall - A hoisting device consisting of a chain suspended from or laid over a fixed structure, such as a beam.

Competent person - Someone 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 has the authorization to take prompt measures to eliminate them.

Crane - Power-operated equipment that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck

cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); service/mechanic trucks with a hoisting device; overhead and gantry cranes; and variations of such equipment.

Free rigging - The direct attachment to or placement of rigging equipment (e.g., slings, shackles, rings) onto the tines of a powered industrial truck (e.g., forklift) for a below-the-tines lift. This type of lift does not use an approved lifting attachment.

Hoisting Rope - A high-tensile wire rope, cable, or chain used within a hoist device to vertically raise, lower, or suspend loads.

Lift Operator - An employee who has appropriate experience and formal training (classroom and hands-on) in the operation of stationary or mobile lifting devices and has met the requirements of a Rigger.

Lift plan - Documents that plan for a safe lift by requiring the appropriate personnel to review and approve all criteria involved in the lift.

Qualified person – Someone who has formal schooling, or a recognized certification, or documented experience and training, and can prove they understand the subject well enough to make decisions, correct hazards, or solve technical problems.

Rated load - Maximum load designated by the manufacturer for which a crane or individual hoist is designed and built.

Rigger - An employee deemed a qualified Rigger. The person is skilled in sling and rigging hardware identification and inspection, the use of rigging equipment, and basic hitch configurations.

Signal Person (Spotter) - A person with appropriate background and formal training, and who is responsible for communicating with the Lift Operator, so the load is lifted, moved, and placed without interference to or from surrounding obstacles.

.5 Roles and Responsibilities

.51 Employees

- .511** Employees are accountable for following the requirements of this policy and for reporting any damaged or unsafe lifting equipment to their supervisor.
- .512** Only qualified employees shall operate cranes, hoists, and other lifting devices. In cases where certification is required, only certified operators will operate a crane.
- .513** Qualified employees conducting a lift are responsible for the entire lift and shall:

- Make the required inspections
- Ensure the crane, hoists, or other lifting device is maintained
- Ensure that all employees working in the area around the lifting device are kept clear of all hazards related to lift operations
- Determine the weights and correct rigging required for the load to be lifted

.52 Supervisors

- .521 Ensure employees are trained prior to using lift equipment applicable to this policy and ensure all provisions of this policy are followed.
- .522 Ensure the preventative maintenance programs, inspections, and certifications are followed for cranes, hoists, and other lifting devices

.53 Division/Section Manager

- .531 Establish a preventative maintenance program for cranes, hoists, and other lift devices, based on the manufacturer's recommendations.
- .532 Ensure only trained and designated employees are allowed to operate equipment covered under this policy
- .533 Ensure training and maintenance records are maintained and made available for audit or inspection.

.54 Safety & Health

- .541 Conduct annual audits to verify departments are following the requirements outlined in this policy.
- .542 Review and update this policy as needed to ensure compliance with regulatory requirements.
- .543 Review lifting plans for approval

.6 General Requirements

- .61 The use of ropes, slings, chains and hooks shall be in accordance with OSHA 1926.251, 1910.179, 1910.184 and ANSI B30.9-10 and shall also be in accordance with the safe usage recommendations of the manufacturer.
- .62 Rigging equipment shall not be loaded in excess of its recommended safe working load.
- .63 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.

- .64 Rigging equipment shall have permanently affixed, legible identification marking by the manufacturer that indicates the recommended safe working load. Equipment shall not be used without legible identification markings.
- .65 While **not** in use, rigging equipment must be moved out of the immediate work zone to prevent accidental injury to workers.
- .66 *Attaching the load:* The hoist chain, hoist cable or hoist rope shall be free from kinks or twists. The load shall be attached to the load block hook by means of slings or other approved devices.
- .67 *Moving the load:* The load shall be well secured and properly balanced in the sling or lifting device before it is lifted more than a few inches. During hoisting, care shall be taken that there is no sudden acceleration or deceleration of the moving load. The load shall not be lowered below the point where less than two (2) full wraps of rope, cable, or chain remain on the hoisting drum. Tag lines shall be used to aid in the control and movement of the load.
- .68 The making of eye splices is prohibited. All eye splices shall be purchased from a qualified vendor.
- .69 The use of open hooks is prohibited in rigging to lift any load where there is danger of relieving the tension on the hook due to the load or hook catching or fouling.
- .610 The use of natural rope and synthetic fiber rope is prohibited.
- .611 When operating near power lines, you must implement a "Prohibited Zone" based on the voltage of the line:

<u>Line Voltage</u>	<u>Minimum Required Clearance Distance</u>
Up to 50KV	10 Feet
Over 50KV to 200KV	15 Feet
Over 200KV to 350KV	20 Feet
Over 350KV to 500KV	25 Feet
1000KV or More	As established by the utility owner/operator

If you do not know the exact line voltage, a mandatory clearance of at least 20 feet must be maintained until the utility company verifies the true voltage, or deenergizes the line.

- .612 All rigging and lifting operations must be immediately suspended upon any indication of lightning conditions. Operations must not resume until the area is confirmed safe.
- .613 Blind lifts are prohibited without an approved plan and dedicated signal/communications system.

.7 Cranes

- .71 Only trained and designated personnel shall be permitted to operate a crane.
- .72 For construction work, a crane operator must be certified and licensed per OSHA 1926.1427.
- .73 Cranes shall be plainly marked with the rated load on each side. If the crane has more than one hoisting unit, each hoist shall have its rated load marked on it or its load block. Markings shall be clearly legible from the ground or floor.
- .74 Exposed moving parts such as gears, set screws, projecting keys, chains, chain sprockets, and reciprocating components, which might constitute a hazard under normal operating conditions, shall be guarded.
- .75 In using hoisting ropes, these requirements shall be followed:
 - .751 The crane manufacturer's recommendation shall be followed.
 - .752 Replacement rope shall be the same size, grade, and construction as the original rope furnished by the crane manufacturer, unless otherwise recommended by a wire rope manufacturer due to actual working condition requirements.
 - .753 Ropes shall be secured to the drum by a clamp or sprocket arrangement approved by the crane or rope manufacturer, with no less than two wraps on the drum when the hook is in its extreme low position.
 - .754 Replacement rope shall be the same size, grade, and construction as the original rope furnished by the crane manufacturer, unless otherwise recommended by a wire rope manufacturer due to actual working condition requirements.
- .76 Warning device. An effective warning signal shall be operable for each crane equipped with a power traveling mechanism.
- .77 Crane Inspections
 - .771 All cranes shall be inspected and documented in accordance with manufacturer guidelines and OSHA requirements on a frequent and periodic basis based upon the nature of the critical components of the crane and the degree of their exposure to wear, deterioration, or malfunction. OSHA requirements for crane inspections include, but are not limited to:
 - 1926.1412(d-f) - All cranes used in construction
 - 1910.179(j) - Overhead and gantry cranes used in general industry

1910.180(d) – Truck cranes used in general industry

.772 A crane inspection checklist shall be obtained from the manufacturer to conduct frequent and periodic inspections. If an inspection checklist is not available from the manufacturer, Appendix A may be used to assist in the inspection process. The crane inspection checklist may be modified to meet the department's unique crane inspection requirements, as approved by the Safety & Health Section of Human Resources. Crane inspections must be kept on file for one year and until the next inspection is completed.

.78 Prohibited actions include the following:

- Do not use the crane for side pulls.
- Do not carry the load over people.
- Never load a crane beyond its rated load.
- Do not conduct multi-lift operations.
- Do not use a crane outside of its designed purpose as specified by the manufacturer.

.79 When moving the load, balance the load in the sling, verifying that the rope is not twisted or kinked.

.8 Slings

.81 Whenever any sling is used, the following practices shall be observed:

.811 Slings and all fastenings and attachments shall be inspected prior to use for damage or defects by a competent person designated by the supervisor.

.812 In addition to frequent visual inspections, all slings must be inspected periodically, no greater than 12-month intervals. Inspections shall be completed by a 3rd party to ensure compliance with ASTM standards. Inspection documentation must be kept on file for one year and until a new inspection is completed.

.813 Damaged or defective slings shall be immediately removed from service.

.814 Slings shall not be shortened with knots, bolts, or other makeshift devices.

.815 Sling legs shall not be kinked.

.816 Slings shall not be loaded in excess of their rated capacities.

.817 Slings shall be securely attached to their loads.

.818 Slings shall be padded or protected from the sharp edges of their

loads.

- .819 Suspended loads shall be kept clear of all obstructions.
- .8110 All employees shall be kept clear of suspended loads and loads about to be lifted.
- .8111 Hands or fingers shall not be placed between the sling and its load.
- .8112 Shock loading is prohibited.
- .8113 A sling shall not be pulled from under a load when the load is resting on the sling.
- .8114 Slings shall not be dragged on the ground.
- .8115 All slings shall be stored in a cool, dry place.
- .82 Removal from service, replacement, repair of slings
 - .821 Synthetic web slings shall be removed from service when the competent person finds cuts, holes, tears, snags, abrasions, melting, chemical damage, or when inner yarns are exposed.
 - .822 Wire rope slings shall be removed from service when the competent person finds broken wires, kinking, crushing, bird caging, wear, corrosion, or heat damage.
 - .823 Chain slings shall be removed from service when the competent person finds wear greater than 10%, nicks, cracks, breaks, gouges, stretching, bent links, weld splatter, or discoloration due to excessive heat.
 - .824 No slings shall be repaired. Damaged chain sections may be replaced by certified chain repairers.

.9 Cable/Wire Rope

- .91 Cable/wire rope and all fastenings and attachments shall be inspected prior to use for damage or defects by a competent person designated by the supervisor.
- .92 Shall not be used if there are missing tags, visible broken wires, corrosion, heat damage, kinking, crushing, bird caging, or other signs of damage/wear.
- .93 Wire rope/cable removed from service due to defects shall be cut up.
- .94 Drums, sheaves, and pulleys shall be smooth and free of surface defects liable to damage cable.

.95 Shall be padded or protected from sharp edges.

.10 Chains

.101 Chains and all fastenings and attachments shall be inspected prior to use for damage or defects by a competent person designated by the supervisor.

.102 Chains used in load carrying service shall be inspected before each use.

.103 Chains shall be normalized or annealed periodically as recommended by the manufacturer.

.104 Chains shall be removed from service when showing evidence of cracks, nicks, lifting of any link-weld, or whenever wear at any point of any chain link exceeds that shown in OSHA 1926.251 Table H-1 – Maximum Allowable Wear at any Point of Link.

.105 Welded alloy steel-chain slings shall have permanently affixed durable identification tag stating size, grade, rated capacity and sling manufacturer.

.106 Hooks, links, or other attachments when used with alloy steel chains shall have a rated capacity at least equal to that of the chain.

.107 Job or shop hooks and links or makeshift fasteners formed from bolts, rods, etc., or other such attachments shall not be used.

.108 Alloy steel-chain slings must not be used in excess of the rated capacity.

.11 Additional Safe Rigging Practices

.111 Turn hooks out

.112 Use shackles or chokers where there may be cutting action

.113 Pad all sharp corners and edges.

.114 Always make vertical lifts on eye bolts.

.115 Remove from service any hooks that have been opened more than 15% of the normal throat opening measured at the narrowest point or twisted more than 10% from the plane of the unbent hook.

.116 Use tag line to control loads.

.117 Secure all unused sling lines.

.118 Do not use a screw pin shackle if the pin can roll while under tension and unscrew.

.119 Use the proper hand signals provided in Appendix B of this policy.

.12 Training and Recordkeeping

.121 Training for cranes shall include the following:

- pre-use inspection process and documentation;
- how to properly and safely operate the specific crane;
- address the operational hazards that are specified by the equipment manufacturer;
- how to recognize the hazards when working with and around the equipment;
- tag-out procedures for failed crane inspections; and
- who to contact for repairs.

.122 Training for rigging shall include the following:

- Sling Operating Practices
- Load Control
- Calculating Load and the Center of Gravity
- Calculating Sling Tension
- Application of Wire Rope Slings
- Inspection of Wire Rope Slings
- Inspection of Chain Slings

In addition to classroom training provided by the Safety & Health Section of Human Resources, hands-on (practical) training provided by the department shall be conducted by a qualified person who is knowledgeable in the specific equipment being utilized. Hands-on training shall be documented using the checklist in Appendix C or equivalent.

Employees must demonstrate their ability to:

- Inspect rigging gear
- Select appropriate slings and hardware
- Determine load weight and sling angles
- Properly attach rigging to a load
- Direct and perform a controlled lift
- Store rigging equipment correctly

.123 Retraining will occur when it has been documented that the operator has failed to operate the crane, hoist, or other lifting equipment in a safe and appropriate manner as directed by this policy.

.124 Recordkeeping

.1241 Employee department training records shall be submitted to the Safety and Health Section of HR to be added to the employee's training records.

.1242 Documentation of equipment inspection records for each crane, hoist, or other lifting device must be maintained to ensure all

components have been checked before each use, and that the equipment is in safe working condition.

.1243 Documentation of preventative maintenance records of lifting and rigging equipment, along with proof testing certification, must be maintained by the using department and made available for auditing and inspection.

.1244 All rigging/lifting equipment inspections shall be maintained to show equipment was thoroughly inspected and shall be made available for auditing and inspection.

.13 Disciplinary Action

.131 Failure to follow safe lifting practices outlined in this policy may result in disciplinary action up to and including termination.

.132 Knowingly operating a crane, hoist, or other lifting device without training or prior equipment inspection may result in disciplinary review for corrective actions.

.133 Safety coaching may be utilized by management to address unsafe acts or behaviors as defined in PPPM Section 903.5.