AMS

Cranes And Hoists

PURPOSE

This program is intended to provide ALLEN MECHANICAL SERVICES-AMS, hereafter referred to as "AMS", and/or Subcontracted Companies performing this type of work with guidelines for the safe operation, use, and inspection of mobile cranes and hoists. This policy applies to wheel mounted cranes of both truck and self- propelled wheel type, and any variations thereof that retain the same fundamental characteristics used at AMS controlled work locations where AMS workers are performing work.

Functional Description: Can hoist, lower, and horizontally move a suspended load.

Examples:

- Articulating cranes (such as knuckle-boom cranes)
- Crawler cranes
- Floating cranes
- Cranes on barges
- Locomotive 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)
- Dedicated pile drivers
- Service/mechanic trucks with a hoisting device
- Crane on a monorail
- Tower cranes (such as fixed jib ("hammerhead boom"), luffing boom and self-erecting)
- Pedestal cranes
- Portal cranes
- Overhead and gantry cranes
- Straddle cranes
- Side boom cranes
- Derricks

DEFINITIONS

Accessory - A secondary part or assembly of parts which contributes to the overall function and usefulness of a machine.

Axis of Rotation - The vertical axis around which the crane superstructure rotates.

Base - The traveling base or carrier on which the rotating superstructure is mounted such as a car, truck, crawlers, or wheel platform.

Boom Angle - The angle between the horizontal and longitudinal centerline of the boom. The boom longitudinal centerline is a straight line between the boom foot pin (heel pin) centerline

and boom point sheave pin centerline.
Boom crane - Member hinged to the front of the rotating superstructure with the outer end supported by ropes leading to a gantry or A-frame and used for supporting the hoisting tackle.
Boom Hoist - A hoist drum and rope reeving system used to raise and lower the boom. The rope system may be all live reeving or a combination of live reeving and pendants.
Boom Stop - A device used to limit the angle of the boom at the highest position.
Brake - A device used for retarding or stopping motion by friction or power means.
Cab - A housing which covers the rotating superstructure machinery and/or operator's station. On truck-crane trucks a separate cab covers the driver's station.
Clutch - A friction, electromagnetic, hydraulic, pneumatic, or positive mechanical device for engagement or disengagement of power.
Counterweight - A weight used to supplement the weight of the machine in providing stability for lifting working loads.
Crane Safe Work Permit - The permit issued by the Site Supervisor or Crane Competent Person at the job site to the crane operator before any mobile hoisting work is performed. **Critical Lift** - A lift where:

- The load exceeds 75% of the crane's capacity.
- Two booms are required.
- Personnel are being lifted.
- Any lift in a Critical Lift Area.

Designated - selected or assigned by AMS or a representative of AMS as being qualified to perform specific duties.
Drum - Cylindrical members around which ropes are wound for raising and lowering the load or boom. **Dynamic** - loads introduced into the machine or its components by forces in motion for hoisting and lowering loads.
Gantry - Structural frame, extending above the superstructure, to which the boom support ropes are reeved. **Jib** - An extension attached to the boom point to provide added boom length for lifting specified loads. The Jib may be in line with the boom or offset to various angles.
Load (working) - the external load, in pounds, applied to the crane, including the weight of load- attaching equipment such as load blocks, shackles, and slings.
Load block [lower] - the assembly of hook or shackle, swivel, sheaves, pins, and frame suspended by the hoisting ropes.
Load block [upper] - the assembly of hook or shackle, swivel, sheaves, pins, and frame suspended from the boom point.
Load hoist - A hoist drum and rope reeving system.
Load Ratings - Crane ratings in pounds established by the manufacturer.
Locomotive Crane - Consists of a rotating superstructure with power-plant, operating machinery, and boom, mounted on a base or car equipped for travel on railroad track. It may be self-propelled or propelled by an outside source.
Mobile Hoisting Equipment - Conventional rigid boom cranes, hydraulic cranes, and flex lifts. **Outriggers** - Extendable or fixed metal arms, attached to the mounting base, which rest on supports at the outer ends.
Reeving - A rope system in which the rope travels around drums and sheaves.

Rigging - Any cables, chokes, slings, hooks, beams, spreaders, or other device used to attach or lift the load.
Rope - a wire rope unless otherwise specified.
Side Loading - A load applied at an angle to the vertical plane of the boom.
Superstructure - The rotating upper frame structure of the machine and the operating machinery mounted thereon.
Swing - the rotation of the superstructure for movement of loads in a horizontal direction about the axis of rotation.
Swing Mechanism - The machinery involved in providing rotation of the superstructure.
Tackle - Assembly of ropes and sheaves arranged for hoisting and pulling.
Truck Crane - Consists of a rotating superstructure with power plant, operating machinery, and boom, mounted on an automotive truck equipped with a power plant for travel.
Wheel Mounted Crane - Consists of a rotating superstructure with power plant, operating machinery, and boom, mounted on a base or platform equipped with axles and rubber-tired wheels for travel. The base is usually propelled by the engine in the superstructure, but it may be equipped with a separate engine controlled from the superstructure.
Whip line - A separate hoist rope system of lighter load capacity and higher speed than provided by the main hoist.
Winch Head - A power driven spool for handling loads by means of friction between fiber or wire rope and spool.

RESPONSIBILITIES

Site Supervisor

The Site Supervisor or their designate is responsible for assuring that:

- Workers know, understand, and comply with the requirements of this policy.
- Workers are trained in the procedures and use of equipment they are to use to complete the job.
- Audit and inspect for compliance with this policy.
- Each crane is on a regular (daily, monthly, annual) inspection schedule.
- Proof of regular inspections using the checklist in this policy is available.
- Rental or leased cranes have a valid annual certification sticker or other documents prior to the use of the cranes.
- Competent, qualified operators are used when lifting.
- A Crane Safe Work Permit is issued for the following:
    - All lifts with cranes have a capacity greater than 10 tons.
    - All critical lifts.
- Joint responsibility with the crane operator for the safe operation of the crane(s) and the safety of the lift is maintained.
- Failure to comply with this policy will result in disciplinary action, up to and including discharge.

Crane Operators

The crane operator will be designated by AMS and is responsible for:

- Knowing, understanding, and complying with this policy.
- Inspecting cranes daily and reporting defects noted during these inspections.
- Reporting any unsafe conditions to supervision.
- Knowing the weight of loads PRIOR to lifting.
- Knowing the wind speed PRIOR to lifting.
- Performing a daily inspection using the Daily Operators Inspection Report at the beginning of each day's work PRIOR to the crane use. Any deficiencies that affect the safe operations of the crane shall be repaired PRIOR to use. Each daily inspection report shall remain with the operator during the operation of the crane and will be turned in at the end of the workday.
- Perform a lifting job specific pre-task assessment using Operators Lift Pre-Task Safety Assessment for each lift.
- Ensure the load, rigging, procedures, and lifts are safe to use. The operator is responsible for the load and lift when the crane is connected to the load.
- Assume joint responsibility with the Site Supervisor for the safe operation of the crane(s) and the safety of the lift.
- Understand that failure to comply with this policy will result in disciplinary action, up to and including discharge.

PROCEDURES

Pre-Lift

- The manufacturer's lifting procedures and methods shall always be observed.
- No modifications or additions which affect the capacity or safe operation of the equipment shall be made by AMS or its workers without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals, shall be changed accordingly. In no case shall the original safety factor of the equipment be reduced.
- All cranes shall have a qualified competent operator.
- Inspect cranes when they arrive on site for mechanical integrity, load chart, operating manual, and annual certification decal/sticker.
- The crane operator must complete an Operator's Lift Pre-Task Assessment and Mobile Hoisting Safe Work Procedure PRIOR to lifting.
- Rated load capacities recommended operating speeds, special hazard warnings, or instructions shall be in a conspicuous place on all equipment, as required, and shall be visible to the operator while at the control station.
- Inspect all rigging devices before use. Follow manufacturer's capacities and recommendations.
- Obtain a Crane Safe Work Permit for all cranes with capacities of 10 tons or more and critical lifts.
- Work with lifts, cranes, or any hoisting equipment must always be supervised.
- The rear of the rotating superstructure of a crane will be barricaded to warn of the pinch point hazard.
- The area where an overhead lift is made will be barricaded if personnel can have access and walk under the load.
- Load block, headache ball, hooks, boom tip, and anti-2 block devices shall be marked

with highly visible fluorescent orange paint.

- All jibs shall have positive stops to prevent their movement of more than 5 degrees above the straight line of the jib and boom on conventional type crane booms. The use of cable type belly slings does not constitute compliance with this rule.

Lifting

- Hand signals to crane operators shall be those prescribed by the applicable ANSI standard for the type of crane in use. An illustration of the signals shall be posted at the job site.
- All workers shall be kept clear of loads about to be lifted and of suspended loads.
- There shall be no sudden acceleration or deceleration of the moving load.
- Side loading of booms shall be limited to freely suspended loads. Cranes shall not be used for dragging loads sideways.
- No hoisting, lowering, swinging, or traveling shall be done while anyone is on the load or hook.
- On truck-mounted cranes, no loads shall be lifted over the front area except as approved by the crane manufacturer.
- The operator shall test the brakes each time a load approaching the rated load is handled by raising it a few inches and applying the brakes.
- Outriggers shall be used when the load to be handled at that particular radius exceeds the rated load without outriggers as given by the manufacturer for that crane. Where floats are used, they shall be securely attached to the outriggers.
- Wood blocks used to support outriggers shall:
  - Be strong enough to prevent crushing.
  - Be free from defects.
  - Be of sufficient width and length to prevent shifting or toppling under load.
- Neither the load nor the boom shall be lowered below the point where less than 2 full wraps of rope remain on their respective drums.
- When two or more cranes are used to lift one load, one designated person shall be responsible for the operation. They shall be required to analyze the operation and instruct all personnel involved in the proper positioning, rigging of the load, and the movements to be made.
- In transit the following additional precautions shall be exercised:

  - The boom shall be carried in line with the direction of motion.
  - The superstructure shall be secured against rotation, except when negotiating turns when there is an operator in the cab or
  - The boom is supported on a dolly.

The empty hook shall be lashed or otherwise restrained so that it cannot swing freely.

- Before traveling a crane with load, a designated person shall be responsible for determining and controlling safety. Decisions such as position of load, boom location, ground support, travel route, and speed of movement shall be in accord with their

determinations.

- A crane with or without load shall not be traveled with the boom so high that it may bounce back over the cab.
- When rotating the crane, sudden starts and stops shall be avoided. Rotational speed shall be such that the load does not swing out beyond the radii at which it can be controlled. A tag or restraint line shall be used when rotation of the load is hazardous.
- When a crane is to be operated at a fixed radius, the boom-hoist pawl or other positive locking device shall be engaged.
- Ropes shall not be handled on a winch head without the knowledge of the operator.
- While a winch head is being used, the operator shall be within convenient reach of the power unit control lever.
- The operator shall not be permitted to leave his position at the controls while the load is suspended.
- No person should be permitted to stand or pass under a load on the hook.
- If the load must remain suspended for any considerable length of time, the operator shall hold the drum from rotating in the lowering direction by activating the positive controllable means of the operator's station.

Other Requirements

- Cranes shall not be operated without the full amount of any ballast or counterweight in place as specified by the manufacturer, but truck cranes that have dropped the ballast or counterweight may be operated temporarily with special care and only for light loads without full ballast or counterweight in place. The ballast or counterweight in place specified by the manufacturer shall not be exceeded.
- Necessary clothing and personal belongings shall be stored in such a manner as to not interfere with access or operation.
- Tools, oil cans, waste, extra fuses, and other necessary articles shall be stored in the toolbox and shall not be permitted to lie loose in or about the cab.
- Refueling with small portable containers shall be done with an approved safety type can equipped with an automatic closing cap and flame arrester.
- Machines shall not be refueled with the engine running.
- A carbon dioxide, dry chemical, or equivalent fire extinguisher shall be kept in the cab or vicinity of the crane.
- Operations and maintenance personnel shall be familiar with the use and care of the fire extinguishers provided.

Crane Maintenance, Repairs and “Out of Service” Procedures

Prior to making repairs or adjustments to a crane, specific procedures shall be followed, and precautions taken:

- Move the crane to be repaired to a place where it will cause the least interference with other cranes and operations in the area.
- Set all controllers to the off position.
- Open the main or emergency switch and lock it in the open position.

- Place prominent warning or "out of order" signs on the crane so that they are in plain sight of workers in the area.
- After repairs and adjustments are completed, replace all guards, reactivate all safety devices, and remove maintenance equipment before operating the crane.
- All maintenance and repair workers will be competent and qualified to perform essential duties and tasks.

Operations Near Overhead Electrical Lines

Except where electrical distribution and transmission lines have been de-energized and visibly grounded at point of work or where insulating barriers, not a part of or an attachment to the equipment or machinery, have been erected to prevent physical contact with the lines, equipment or machines shall be operated proximate to power lines only in accordance with the following:

Could you get within 20 feet of ANY power line? If the answer is NO, there is no further action required. If the answer is YES, then you have 3 options:

1. De-energize & Ground
2. Maintain 20-foot clearance
3. Ask Utility for Voltage and use Table A (with minimum clearance distances)

If you chose option 2 or 3 then Encroachment Prevention Measures need to be implemented including, a planning meeting, if tag lines are used then non-conductive, elevated warning lines, barricade, or line of signs, plus choose one: Proximity alarm, spotter, warning device, range limiter, or insulating link

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 1000	45
over 1000	(As established by the power line owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution)

- If you intentionally work closer than the Table A Zone, you must show that:
  - Staying outside the zone is infeasible
  - It is infeasible to de-energize and ground and the following is required:

    - Power line owner – **sets minimum approach distance**
    - Planning meeting – minimum procedures
    - Dedicated spotter
    - Elevated warning line or barricade
    - Insulating link/device
    - Nonconductive rigging
    - Range limiter (if equipped)
    - Nonconductive tag line (if used)
    - Barricades - 10 feet from equipment
    - Limit access to essential workers
    - Prohibit non-operator workers from touching above insulating link
    - Properly ground crane
    - Deactivate automatic re-energizer
    - Insulating line cover-up installed

- Electric Utilities – employers whose workers are qualified to perform power distribution and transmission work are considered to be in compliance with §§ 1926.1407-1926.1411 of subpart CC (power lines sections) when performing subpart V work in accordance with § 1910.269. (§ 1926.1400(g)).
- A worker shall be designated to observe clearance of the equipment and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means.
- Cage-type boom guards, insulating links, or proximity warning devices may be used on cranes, but the use of such devices shall not alter the requirements of any other regulation of this part even if such device is required by law or regulation.
- Any overhead line shall be considered to be an energized line unless and until the person owning such line or the electrical utility authorities indicate that it is not an energized line, and it has been visibly grounded.
- Prior to work near transmitter towers where an electrical charge can be induced in the equipment or materials being handled, the transmitter shall be de-energized, or tests shall be made to determine if electrical charge is induced on the crane.

The following precautions shall be taken when necessary to dissipate induced voltages:

- The equipment shall be provided with an electrical ground directly to the upper rotating structure supporting the boom.
- Ground jumper cables shall be attached to materials being handled by boom equipment when electrical charge is induced while working near energized transmitters.
- Crews shall be provided with nonconductive poles having large alligator clips or other similar protection to attach the ground cable to the load.

- Combustible and flammable materials shall be removed from the immediate area prior to operations.
- Identify work zone by marking boundaries or ensure that clearance of 360 degrees around the crane up to the maximum working address.

Inspection Requirements

The Crane Operator and the Crane Competent Person are responsible for performing inspections using Daily Operators Inspection Report - Mobile Crane Operation, Monthly Hydraulic Crane Inspection Report, and Monthly Inspection of Truck Cranes.

Inspection of critical components of the crane shall be performed at least monthly.

Assessment of ground conditions must be conducted prior to set-up and operation. A competent person on site will ensure that the flooring on which equipment may be placed is substantial enough to safely hold the weight of the load per the manufacturer's specifications. If the strength of the floor is unknown and/or cannot be determined, a professional engineer will determine the pounds per square foot required and, if necessary, the appropriate shoring to be installed to sustain the weight. Cranes will not be used unless grounding conditions can support the equipment and all supporting material and all conditions meet manufactures' requirements.

Components inspected shall include crane hooks and safety latches, brakes and braking components, and ropes.

Inspection records shall be filed and maintained by the Safety Coordinator at AMS's main office. Crane certification records shall include the inspection date, signature of the inspector, and identification of the component by serial number or another identifier. This certification record shall be maintained so that it is readily available for inspection and confirmation.

A written record also shall be maintained of reports showing rated load test procedures and confirming the adequacy of repairs or alterations.

Test loads shall not exceed 110 percent of the rated load at any selected working radius.

If re-rating is required, crawler, truck, and wheel-mounted cranes shall be tested in accordance with SAE Recommended Practice, Crane Load Stability Test Code J765 (2017). Re-rating test report shall be readily available.

No re-rating in excess of a crane's original load rating shall be performed unless the manufacturer or designated technician who is in charge of final assembly gives their approval in writing. Such written approval shall be maintained in a file by the Safety Coordinator.

A thorough annual inspection of the hoisting machinery shall be made by a competent person, or by a government or private agency recognized by the U.S. Department of Labor.

AMS shall maintain a record of the dates and results of inspections and rated load tests for each

hoisting machine and piece of equipment.

Any defects found will be repaired by a qualified person before the crane is used.
Before a crane is placed in service for use, rope components shall be inspected by a qualified person for defects, damage, and deformities and at least monthly thereafter.

Certification of this inspection shall be in writing and document the date of inspection; inspector's name and signature, and identification number of the rope component inspected.

Inspection of Wire Rope

Wire rope shall be taken out of service when any of the following conditions exist:

- In running ropes, 6 randomly distributed broken wires in 1 lay or 3 broken wires in one strand in one lay.
- Wear of 1/3 the original diameter of outside individual wires.
- Kinking, crushing, bird caging, or any other damage resulting in distortion of the rope structure.
- Evidence of any heat damage from any cause.
- Reductions from nominal diameter of more than 1/64 inch for diameters up to and including 5/16-inch, 1/32 inch for diameters 3/8 inch to and including 1/2-inch, 3/64 inch for diameters 9/16 inch to and including 3/4-inch, 1/16 inch for diameters 7/8 inch to 1 1/8 inches inclusive, 3/32 inch for diameters 1 1/4 to 1 1/2 inches inclusive.
- In standing ropes, more than 2 broken wires in 1 lay in sections beyond end connections or more than 1 broken wire at an end connection.
- Wire rope safety factors shall be in accordance with American National Standards Institute ASME B 30.5-2018 or SAE J959-2012.

Heavy wear and/or broken wires may occur in sections that have contact with equalizer sheaves or other sheaves (where rope travel is limited) or with saddles. Specific care shall be taken to inspect ropes at these locations.

If rope has not been used for a month or longer (i.e., due to shut down or storage of a crane on which it is installed) this rope shall be given a thorough inspection before it is used.

This inspection shall be made by a designated worker who is authorized by AMS.

This inspector shall examine rope for any kind of damage, deterioration or defect that might compromise the safety and specifications of the rope. Specific attention and care shall be given to the inspection of non-rotating rope.

Only this designated and authorized inspector shall give approval for use of this rope following satisfactory safety inspection as described above.

A written record of the inspector's certification shall be maintained by the Safety Coordinator in a file and be readily available for review and confirmation. This certification shall include the inspection date, name, and signature of the inspector, and the identification number of the rope component that was inspected.

Inspection of Hoist Chains

Hoist chains and end connections shall be inspected daily for damage, deterioration, excessive wear, twist, distorted links interfering with proper function, or stretch beyond manufacturer's recommendations.

Chains shall be inspected visually by the operator each day or before use.

Chains also shall be inspected monthly for safety certification. The written certification shall include the date of inspection, name, and signature of the inspector, and the identification number of the chain that was inspected. Written certification records shall be maintained by the Safety Coordinator in a file.

Inspection of Hooks and Hook Components

Crane hooks and safety latches shall be visually inspected each day or at the beginning of a shift prior to use for damage, cracks, or deformation.

Hooks and safety latches also shall be inspected monthly for safety certification. The written certification shall include the date of inspection, name, signature of the inspector, and the identification number of the hook that was inspected. Written certification records shall be maintained by the Safety Coordinator.

Hooks that have cracks or a throat opening that is greater than 15 percent in excess of normal or more than 10- degree twist from the plane of the unbent hook shall be discarded.

Preventive maintenance

AMS has implemented a preventive maintenance program to help ensure the safety of cranes, hoists, rigging, and related equipment. Preventive maintenance shall be performed in accordance with the manufacturer's recommendations. Each crane shall have a written record of preventive maintenance that is maintained by the Safety Coordinator.

Type of Inspection	Who?
Modified or repaired/adjusted	Qualified person
Post-assembly	Qualified person
Shift	Competent person
Monthly	Competent person
Annual	Qualified person

- Inspections – all documentation required by the inspection provisions must be available to all inspectors performing required inspections (including wire rope inspections).

- Pre-Erection Inspection for Tower Cranes – inspection of crane components shall be performed after transportation to the work site and prior to erection of the crane.
- Operations procedures must be developed by a qualified person when the manufacturer's procedures are unavailable.
- Procedures related to the capacity of the equipment must be developed by a registered professional engineer (familiar with the equipment) when the manufacturer's procedures are unavailable.
- This information must be readily available in the crane cab.
- Operators cannot be engaged in activities that distract their attention while operating the equipment (for example, no cellular phone use unless used for signaling).

Training Requirements for Crane Operators

All Crane Operators must be trained to recognize and avoid hazards. Training must be provided to the worker in a manner where they can understand it whether it be oral/written training. Training must also be provided in a language that the worker understands. Training will be conducted on the requirements of this policy annually, whenever this policy is revised, and for new crane operators or newly hired operators.

If the job has multiple lifts this policy will be reviewed once prior to starting the job. All new crane operators and rigging crew members will review this policy prior to starting work.

Acceptable types of training to verify crane operators are qualified to perform their tasks:

- Accredited Testing
- Audited Employer Program
- US Military
- State/Local License

	PORTABLE	VALIDITY PERIOD
Accredited testing Organization	YES *	5 years
Audited Employer Program	NO	5 years
U.S. Military license	NO *	Set by issuing entity
State/local license	NO * Valid only in jurisdiction	Set by issuing entity, not > 5 years

* Subject to State & Local requirements and whether the military/state training meets accredited requirements.

Assembly/Dis-Assembly

(AMS Crane Operators/Riggers), must be competent and qualified and must:

- Understand procedures
- Review procedures
- Check that crew members understand their tasks/hazards
- Follow manufacturer's prohibitions
- All rigging work is done by a Qualified Rigger
- When using outriggers, fully extend OR deploy as per the load chart

Qualified Riggers

All riggers of AMS or riggers supplied by a contractor will be qualified person for the performance of specified hoisting activities such as during assembly/disassembly work and those that require workers to be in the fall zone to handle a load. The rigger would be considered qualified through possession of a recognized degree, certificate, or professional standing; or by extensive knowledge, training, and experience, successfully demonstrating the ability to solve/resolve problems related to rigging work and related activities.

Signal Persons

- Qualification Requirements:
  - Know & understand signals
  - Competent in using signals
  - Basic understanding of crane operation
  - Verbal or written test plus practical test

Qualified How	Documentation	Portable
Third party qualified evaluator	Yes	Yes
Employer qualified evaluator	Yes	No

Safety Devices

- Safety devices are required and must always be operational, including:

  - Crane level indicator
  - Boom/Jib stops (except derricks)
  - Integral holding device/check valve for outrigger and stabilizer jack

Operational aids are required but temporary alternative measures are also allowed while operational aids are being repaired.

- **Category I Devices**
  - Boom hoist limiting device, luffing jib limiting device, and anti-two- blocking device. Replacement of parts**:** Must be repaired within 7 calendar days of discovery of deficiency unless AMS documents parts are ordered within 7 calendar days.
- **Category II Devices**
  - Boom angle or radius indicator, boom length indicator, load weighing devices, jib angle indicator, outrigger/stabilizer position sensor/monitor, and hoist drum rotation indicator.
  - Replacement of parts**:** Must be repaired within 30 days of discovery of deficiency.
  - Exception: employer has documented that it ordered the part and then repaired the equipment within 7 days of receipt of the replacement part.

- When any necessary repairs or adjustments are needed for the equipment and alternative methods are being implemented, the employer must communicate this information to all affected workers at the beginning of each shift. (§ 1926.1417(j))

Tower Cranes

Some supplemental requirements for Tower Cranes:

- Foundations & structural supports
  - Design & Inspection
- Plumb tolerance
  - Specification & verification
- Climbing procedures
  - Host structure strength verification
  - Wind
- Post-erection load test
- Monthly Inspection: tower mast bolts, upper-most tie-in, braces, floor supports, floor wedges

Required Documentation Includes:

- Monthly & annual inspection reports for the equipment and wire rope
- Modifications that affect the safe use of the equipment
- Operator and signal person qualifications
- Tower crane foundation/support design
- When repairs or adjustments of the equipment are needed
- Employer-developed procedures (i.e., assembly/disassembly, operational, and other procedures related to the safe operation of the equipment)
- Power line encroachment procedures/plan