

Crane Safety

Serious injury or death can be the result of improper use, or use of cranes having defective or poorly maintained components. The Occupational Safety and Health Administration (OSHA) estimates that most of these types of accidents can be prevented if proper safety precautions at job sites are initiated.

The OSHA Crane safety standards establish uniform requirements to ensure that the hazards associated with the use of cranes in U.S. workplaces are evaluated, safety procedures implemented, and that the proper hazard information is transmitted to all affected workers.

This is to inform you that this company will take all appropriate and necessary action to comply with the following OSHA standards in an effort to create the highest level of safety.

OSHA - 29 CFR 1910.179 - Overhead and Gantry Cranes

OSHA - 29 CFR 1926.550 - Cranes and Derricks

OSHA - 29 CFR 1903.1 (The General Duty Clause)

CMAA-Spec. No. 70 and 74 Crane Operator's Manual ANSI /ASME

B-30 series Cranes, Derricks, Hoists,

B- 30.2 Overhead And Gantry Cranes (Top Running Hoist)

B- 30.10 Hooks

B- 30.11 Monorail And Underhung Cranes

B- 30.16 Overhead Hoists (Underhung)

B- 30.17 Overhead & Gantry Cranes (Underhung Hoists)

B- 30.18 Stacker Cranes

B- 30.21 Manually Lever Operated Hoists

We will ensure that all cranes used within our facility(s) are evaluated. This standard practice instruction is intended to address comprehensively the issues of;

- evaluating the associated potential hazards,
- communicating information concerning these hazards
- establishing appropriate procedures
- protective measures for employees

The company Safety Director is solely responsible for all facets of this program and has full authority to make necessary decisions to ensure success of the program. The Safety Director is responsible to amend these instructions and is authorized to halt any operation of the company where there is danger of serious personal injury.

We will review and evaluate this standard practice instruction on an annual basis, or when changes occur to regulatory standards that prompt revision of this document, or when facility operational changes occur that require a revision of this document. Effective implementation of this program requires support from all levels of management within this company. This written program will be communicated to all personnel that are affected by it. It encompasses the total workplace, regardless of number of workers employed or the number of work shifts. It is designed to establish clear goals, and objectives.

We will establish crane safety operational procedures through the use of this document. This standard practice instruction applies to cranes used in conjunction with other material handling equipment for the movement of material. The types of cranes covered are:

- 1) Overhead Cranes
- 2) Track Cranes
- 3) Gantry Cranes

Training will be conducted prior to job assignment. We will provide training to ensure that the purpose, function, and proper use of cranes is understood by employees and that the knowledge and skills required for the safe application and usage is acquired by employees. This instruction will be provided to, and read by all employees receiving training. The training shall include, as a minimum the following:

- Preoperational inspection requirements of the crane to be used.
- Specific operational requirements of the crane to be used.
- Principals of crane operations.
- Recognition of applicable hazards associated with the work to be completed.
- Load determination and balancing requirements.
- Procedures for removal of a crane from service.
- All other employees whose work operations are or may be in an area where cranes may be utilized, shall be instructed to an awareness level concerning hazards associated with cranes.
- Physical and mental requirements of operators. Crane operators will be screened for physical and mental impairments that could result in a improper use. Operators will meet as a minimum, the following requirements before being certified to operate cranes.
 - Be drug and alcohol free.
 - Be thoroughly trained in all facets of the required lift.

- Have a mature and safe attitude at all times.
- Have good depth perception (essential for load spotting).
- Have good hearing and vision (corrected or uncorrected).
- Have no history of unsafe acts in the workplace.
- Have the ability to react quickly in an emergency.
- Take no medication that will interfere with the operation.
- Understand the requirements for all phases of the lift.

We will certify that employee training has been accomplished and is being kept up to date. The certification will contain each employee's name and dates of training.

The following employees or position titles will receive training and as required, serve as crane trainers. Qualified trainers will consist of the following:

| <u>Title</u> | <u>Member</u> |
|---------------------|--------------------------------|
| Crane Trainer | Department Manager |
| Crane Trainer | Safety Officer |
| Crane Trainer | First Line Supervisors |
| Crane Trainer | Qualified Outside Contractors |
| Crane Trainer | Manufacturers of In-use cranes |

This instruction will be provided to, and read by all employees receiving refresher training. The training content shall be identical to initial training. Refresher training will be conducted on an annual basis or when the following conditions are met, which ever occurs sooner.

- Retraining will be provided for all authorized and affected employees whenever (and prior to) there being a change in their job assignments, a change in the type of crane used, equipment being lifted, lifting procedures, or when a known hazard is added to the lifting environment.
- Additional retraining shall also be conducted whenever a periodic inspection reveals, or whenever this employer has reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of crane procedures.
- The retraining shall reestablish employee proficiency and introduce new or revised methods and procedures, as necessary.
- We will certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.

Whenever any crane is used, the following safe practices will be observed:

1. Always check warning devices and signals before use.
 2. Always document and maintain inspection records.
 3. Always ensure cranes shall not be loaded in excess of their rated capacities.
 4. Always ensure the new location support the weight
 5. Always keep employees clear of loads about to be lifted and suspended loads.
 6. Always keep suspended loads clear of all obstructions.
 7. Always lockout before maintenance or repairing cranes.
 8. Always position the hook directly over the load before lifting.
 9. Always test brakes by a short lift to ensure control.
 10. Before being lifted, loads will be checked for proper balance.
 11. Follow the manufacturer's recommendations.
 12. Frequently inspect cranes exposed to adverse conditions.
 13. Hands must not be placed between the suspension means and the load during lifting.
 14. Know where you're going to set the load down!
 15. Know your travel path in advance of the lift!
 16. Loads will in all cases be properly balanced to prevent slippage.
 17. Move loads only after being signaled by the designated, qualified signaler.
 18. Never allow riders on loads or hooks.
 19. Never allow unauthorized persons to operate cranes.
 20. Never attempt to operate a crane or hoist that is suspected to be unsafe.
 21. Never carry loads over workers.
 22. Never carry loads past workers (they must yield right of way).
 23. Never use a crane that is damaged or defective in any way.
 24. Operators must watch the signalers.
 25. Shock loading is prohibited.
 26. Signalers must keep line-of-sight with the operator.
 27. Signalers must watch the load.
 28. Test all hoist controls and brakes at the beginning of each shift.
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- Ensure that only one person is the designated signaler.
 - Ensure the operator acknowledges every signal.
 - Follow the manufacturer's recommendations.
 - Know the new location will support the weight.
 - Maintain line-of-sight with the operator.
 - Operators must watch the signalers.
 - Plan in advance where the load is going!

- Stop the operation any time comprehension is lost.

Whenever leaving or parking hoists or cranes, the following safe practices will be observed:

- Follow the manufacturer's recommendations.
- Make a visual check for any dangerous condition.
- Place all controls in the "off" position.
- Place main power switch in the "off" position.
- Raise all hooks to - but not through - limit switches.
- Report all cranes that are not in operation immediately.
- Report any defects immediately.
- Tag out defective equipment immediately.

The following general safe practices will be observed when handling slung loads:

- Always keep hands and fingers clear of untensioned loads.
- Always keep suspended loads clear of all obstructions.
- Always keep suspended loads clear of employees.
- Always pad or protect slings from sharp edges of the load.
- Always think before you affect a load.
- Determine the history of the care and usage of the sling.
- Determine the number of sling legs (if used) and load requirements.
- Ensure you know rated capacity of the sling.
- Ensure you know the angle the sling makes with the horizontal line.
- Ensure you know the size, weight, and center of gravity of the load.
- Follow the manufacturer's recommendations.
- Never load in excess of the rated capacity.
- Never pull a sling from a suspended load under tension.
- Never shorten with knots, bolts or other makeshift devices.
- Never use a sling that is damaged in any way.

Lifting will not be conducted until load weights have been determined. When estimating load weights operators will stay within 50% of the cranes rated capacity when estimating loads (or manufacturer recommendation). Never attempt a load lift based solely on a guess! The following methods may be used to estimate the weight of loads.

- Check equipment nomenclature plates.
- Check shipping papers.
- Consult with the equipment manufacturer.
- Estimate weight using weights of similar loads.
- Use a dynamometer.
- Use industry standard tables or charts.

Supervisor will ensure that a **Job Hazard Analysis** is conducted for specific lifting operations. Operators will use the required PPE in the conduct of lifting operations.

- Ensure PPE is appropriate for the particular hazard(s).
- Ensure PPE is kept clean, fully functional, and sanitary.
- Maintained all PPE in good condition.
- Properly store PPE when not in use.

Where not other wise delineated, crane inspections will be conducted in accordance with this section. The following employees or position titles will receive training and as required, serve as crane inspectors. Company qualified inspectors will consist of the following:

| <u>Title</u> | <u>Member</u> |
|-----------------|------------------------|
| Crane Inspector | Department Manager |
| Crane Inspector | Safety Officer |
| Crane Inspector | First Line Supervisors |

Cranes will be **inspected each day** before being used, the crane will inspected in accordance with OSHA, Consensus Standards, and Manufacturer recommendations.

- Supervisors will determine and schedule additional inspections periodically during crane use, where service conditions warrant. A thorough periodic inspection shall be made on a regular basis, to be determined on the basis of, frequency of crane use; severity of service conditions; nature of lifts being made; experience gained on the service life of cranes used in similar circumstances, and OSHA, Consensus Standards, and Manufacturer recommendations.

- The Safety Director will coordinate inspection dates and times with all assigned crane inspectors. The inspections will be conducted on a bi-annual basis. Such inspections will in no event be at intervals greater than once every 12 months.

Cranes inspections will be documented as having been inspected. Scheduled inspections will be documented as having been conducted.

- Identify items that were inspected.
- Show the status of the inspected items.
- Provide the signature of the inspector.
- Show the date.
- File it and maintain it!
- Review the manufacturers specific inspection requirements!

Inspection records and certifications will be maintained in the Safety Directors office

Cranes found to be damaged or unserviceable will be immediately removed from service.

The following items will be checked prior to use of any crane:

1. Check for air or hydraulic fluid leakage.
2. Check for load capacity stenciling on both sides of unit.
3. Check for twisted, broken or kinked cables or chains.
4. Check the operation of the crane; controls & movement.
5. Inspect for deformed, cracked, or stretched hooks.
6. Inspect for serviceable safety latches.
7. Observe correct drum spooling as the hook is raised.
8. Operate empty hook till it actuates the upper limit switch.
9. Operate hoist and trolley brakes, ensure no excessive coasting.
10. Visually inspect all units for integrity, leaks etc.
11. Review the manufacturers specific requirements!

The following items shall be checked monthly:

1. Follow any additional recommendations of the manufacturer.
2. Inspect for twisted, broken or kinked cables or chains.
3. Inspect hooks for cracks, missing or broken parts.
4. Measure hooks for deformation or stretching.
5. Measure lifting chains for excessive stretch, twisting etc.

6. Review the manufacturers specific inspection requirements!
7. Visually inspect all critical items.

Review the manufacturers specific inspection requirements!

The following items will checked at periodic inspections (1 to 12 month)

1. Interval dependent on the type of activity performed.
2. Interval dependent on the severity of service.
3. Interval dependent on the environmental conditions.
4. As a minimum the inspection should cover:
 - Chain Or Cable
 - Reeving
 - Hook Condition
 - Electrification
 - Hoist Drives
 - Travel Drives
 - Brakes
 - Limit Switches
 - Couplings
 - Rails
 - Balance
 - Controls
 - Warning Devices
 - End Stops
 - Signage

Periodic CMAA Inspection Recommendations:

| <u>Class</u> | <u>Description</u> | <u>Typical Schedule</u> |
|---------------------|---|--------------------------------|
| A | Standby or infrequent service | Annually |
| B | Light service - 2-5 lifts hr. | Annually |
| C | Moderate service - 50% capacity, 5-10 lifts hr. | Annually |
| D | Heavy service - 50% capacity, 10-20 lifts hr. | Semiannually |
| E | Severe service - near capacity, 20+ lifts hr. | Quarterly |
| F | Continuous severe service - near capacity and continuous service throughout day | Bi-monthly |

Note: Different conditions may suggest different intervals.

The use status of cranes will drive specific requirements for periodic maintenance and servicing. The status of the crane will be determined based on manufacturer recommendations and consultation with specific regulatory standards. Prior to initial or reintroduction into service cranes will be tested and inspected completely using the criteria applicable to periodic inspections. A report will be generated and kept on file for future reference. The manufacturer's specific requirements will be reviewed!

Preventative maintenance procedures will be developed and used for specific cranes. Maintenance procedures will be determined on the basis of, frequency of crane use; severity of service conditions; nature of lifts being made; experience gained on the service life of cranes used in similar circumstances, and OSHA, Consensus Standards, and Manufacturer recommendations.

Typical requirements include:

1. Adjusting the brakes.
2. Adjusting the operation of limit switches.
3. Checking and filling the gear cases to the proper levels.
4. Cleaning and lubricating the wire rope (cable) and load chain.
5. Cleaning or replacing pitted or burned electrical contacts.
6. Cleaning or replacing the air and fluid filters.
7. Inspecting the operation of all controls and warning systems.
8. Lubricating the bearings, gears, pinions, linkages, shafts, etc.
9. Replacing any contaminated oils.

Preoperational tests will be conducted prior to use of any crane. Testing requirements will be determined on the basis of, frequency of crane use; severity of service conditions; nature of lifts being made; experience gained on the service life of cranes used in similar circumstances, and OSHA, Consensus Standards, and Manufacturer recommendations.

Typical requirements include:

Preoperational Tests - General:

1. Check for obstructions in the travel path of the crane.
2. Check upper and lower limit switches.
3. Ensure all emergency disconnects are known before any test.
4. Ensure that the manufacturers recommendations are followed.
5. If you're not familiar with the cranes' operations get help.
6. Inspect all electrical controls for proper operation.
7. Never unwind the spool completely!

8. Observe for smooth operation of the components.
9. Test all controls to determine proper operation.

Preoperational Tests - Hooks:

1. Replace if deformation or cracks are found.
2. Check for proper function of the safety latch.
3. Inspect for twists from the plane of the unbent hook.
4. Check for proper swivel.
5. Hook repair is not recommended allowed.
6. Emergency hook repair must be performed only under competent supervision.

Preoperational Tests - Rope:

1. Broken or worn outside wires.
2. Corroded or broken wires at end of connections.
3. Corroded, cracked, bent, worn, or improperly applied end connections.
4. Reduction in rope diameter (replace if found).
5. Severe kinking, crushing, cutting or unstranding.

Lockout /Tagout will be conducted when maintenance or servicing is performed on any crane. Lockout requirements will be determined on the basis of, OSHA, Consensus Standards, and Manufacturer recommendations.

Typical requirements include:

1. Review requirements for the individual crane.
2. Integrate lock out and maintenance requirements.
3. Ensure training is adequate for level of maintenance.
4. Ensure written programs are established and reviewed.
5. Carefully select lockout devices, ask the manufacturer for recommendations.
6. Do not assume devices are interchangeable between cranes.

We use these types of Cranes:

Crane Inventory:

| Crane Authority | ID Number | Rated Capacity | Date Certified | |
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