LPDOCSA

ASSOCIATES, INC.
GENERAL CONTRACTORS

Updated:

1/1/2017

Crane, Sling and Hoist Policy and Procedures

The Crane, Hoist and Sling Safety Program applies to all staff members who operate and/or are responsible for cranes, hoists and slings. Moving large, heavy loads may involve the use of specialized lifting devices such as cranes, hoists and slings. There are significant safety issues to be considered, both for the operators and for workers in proximity to them. The Occupational Safety and Health Administration (OSHA) have established regulations and guidelines for the protection of workers and facilities relating to crane, hoist and slings in 29 CFR 1910 Subpart N Materials Handling and Storage. The Crane, Hoist and Sling Safety Program outline departmental responsibilities and provide important safety information regarding the use of these specialized lifting devices.

CRANE, SLING AND HOIST POLICY AND PROCEDURES

Table of Contents

An overhead crane operator's job is very important. It is a position of responsibility that you must be authorized to hold. There are rules and regulations you must obey and responsibilities you must accept.

For specific rules and regulations and your responsibilities when operating an overhead crane in Michigan, see MIOSHA General Industry Safety Standard Part 18. Overhead and Gantry Cranes.

This manual may be used as a tool in the overall training and authorization of a prospective overhead crane operator.

Employers and employees need to be aware that all cranes are different and may have specific operating, safety, inspection and maintenance requirements. It is essential that you have the manufacturers operating manuals and are familiar with your particular crane.

RESPONSIBILITIES

Safety Committee/Safety Manager

The L.D. Docsa Associates, Inc., Safety committee is responsible for the following:

Updates and revisions to the written Overhead Crane/Rigging Policy and Procedures manual

Ensure crane, hoist and rigging training programs meet applicable requirements

Provide program oversight

Superintendents/Supervisors

Designating and identifying personnel authorized to operate cranes, hoists and slings;

Ensuring authorized operators have received proper training

Ensure cranes, hoists and slings are maintained in proper working order and repaired when necessary

Ensure scheduled inspections and testing is conducted as required by the equipment being utilized.

Operators

Attending and passing training and evaluation of competence prior to operating a crane, hoist or sling

Performing and documenting pre-use inspections

Reporting all maintenance/repair issues to his/her supervisor and removing the equipment from service if necessary

Operating and maintaining equipment in a safe manner at all times.

DEFINITIONS

Bridge – the part of a crane consisting of girders, trucks, end ties, foot walks and drive mechanism which carries the trolley or trolleys.

Bridge crane – crane with bridge mounted on tracks, which enables three-dimensional handling.

Bridge travel – crane movement in a direction parallel to the crane runway.

Crane – a machine for lifting and lowering a load and moving it horizontally, with the hoisting mechanism an essential part of the machine. Cranes whether fixed or mobile are driven manually or by power.

Designated/Authorized person – person selected by department supervisor as being qualified to operate or work around specialized equipment.

Drum – cylindrical member around which rope/chains are wound for raising/lowering loads.

Floor-operated crane – crane which is pendant or rope controlled by an operator on the floor or platform.

Gantry crane – a crane similar to an overhead crane except the bridge for carrying the trolley is rigidly supported on two or more legs running on fixed rails or other runway.

Hand-held hoist – lever operated roller chain hoist

Hoist – apparatus, which may be part of a crane, exerting a force for lifting or lowering

Overhead crane – crane with a movable bridge carrying a movable or fixed hoisting mechanism and traveling on an overhead fixed runway structure.

Pawl – device used to hold machinery against undesired rotation by engaging a ratchet.

Pendant – controls suspended from an electric hoist.

Power-operated crane – a crane whose mechanism is driven by electric, air, hydraulic or internal combustion.

Rated load – the maximum load for which a crane or individual hoist is designed and built by the manufacturer and shown on the equipment nameplate(s).

Semi-gantry crane – a gantry crane with one end of the bridge rigidly supported on one or more legs that run on a fixed rail or runway, the other end of the bridge being supported by a truck running on an elevated rail or runway.

Sling – lifting devices such as chain, wire rope, metal mesh, fiber rope and synthetic web utilized to secure a load to be moved.

Trolley – the unit which travels on the bridge rails and carries the hoisting mechanism.

DESIGN AND SAFETY REQUIREMENTS

The design of all cranes and hoists constructed after 1971 must comply with the requirements of the American Society of Mechanical Engineers and American National Standards Institute's (ASME/ANSI) B30.2.0-1967 standards for crane construction; and the Crane Manufacturer's Association of America standards CMAA-70-2010 and CMAA-74-2010.

The rated load of the crane must be plainly marked on each side of the crane, and if the crane has more than one hoisting unit, each hoist shall have its rated load marked on it or its load block, which must be clearly visible from the floor.

Only designated/authorized personnel who have been properly trained may operate cranes, hoists and slings.

Clearance from obstructions:

A minimum clearance of 3 inches overhead and 2 inches laterally must be provided and maintained between the crane and any obstruction.

Where passageways, foot walks, or walkways exist, their placement must not present a hazard to employees when cranes are in use. Foot walks shall be of rigid construction and designed to sustain a distributed load of at least 50 pounds per square foot and shall be slip resistant. Elevated walkways must provide adequate fall protection through the installation of appropriate guardrail systems.

Cranes with parallel runways must always maintain clear path of travel for the crane.

Trolley stops and/or bumpers should be provided to limit the travel of the trolley along the runway and be capable of sufficiently stopping the trolley.

Guards shall be in place for all moving parts where there is potential for hazardous contact or wearing could occur.

Crane electronic controllers should be equipped to shut the crane to the "off" position as a fail-safe.

Hooks used as part of crane operation must be equipped with a safety latch to prevent loads from bouncing off the hook.

CRANE OPERATION REQUIREMENTS

Pre-operational test – At the start of each work shift (on a day when the crane will be used), operators should complete the following steps to ensure the crane is operating properly

Test the upper limit switch – raise the unloaded hook block until the limit switch trips.

Visually inspect the hook, load lines, trolley, and bridge as much as possible from the operator station (typically this is at floor level)

If provided, test the lower limit switch.

Test all direction and speed controls for both bridge and trolley travel

If equipped, test bridge and trolley limit switches when crane use will come close the tripping these switches.

Test the hoist brake.

If any of the above items does not pass the pre-operational inspection, the crane must be locked out and removed from service immediately.

Pre-operational inspections should be documented.

Rigging a load – when attaching a load to a crane, the following safety requirements should be followed

Determine the accurate weight of the load and ensure crane weight limitations are not exceeded.

Determine the appropriate size and number of slings and associated components.

Sharp edges on loads being lifted/lowered should be padded to prevent wear on slings.

Ensure slings and hooks are in proper working condition with no excessive wear.

Determine the center of gravity of the load and ensure rigging maintains the load level during movement.

Once slings are in place, lift the load only slightly off the ground to test the rigging and balance, re-work the rigging if necessary.

Use a tag line when loads must traverse long distance or be otherwise controlled.

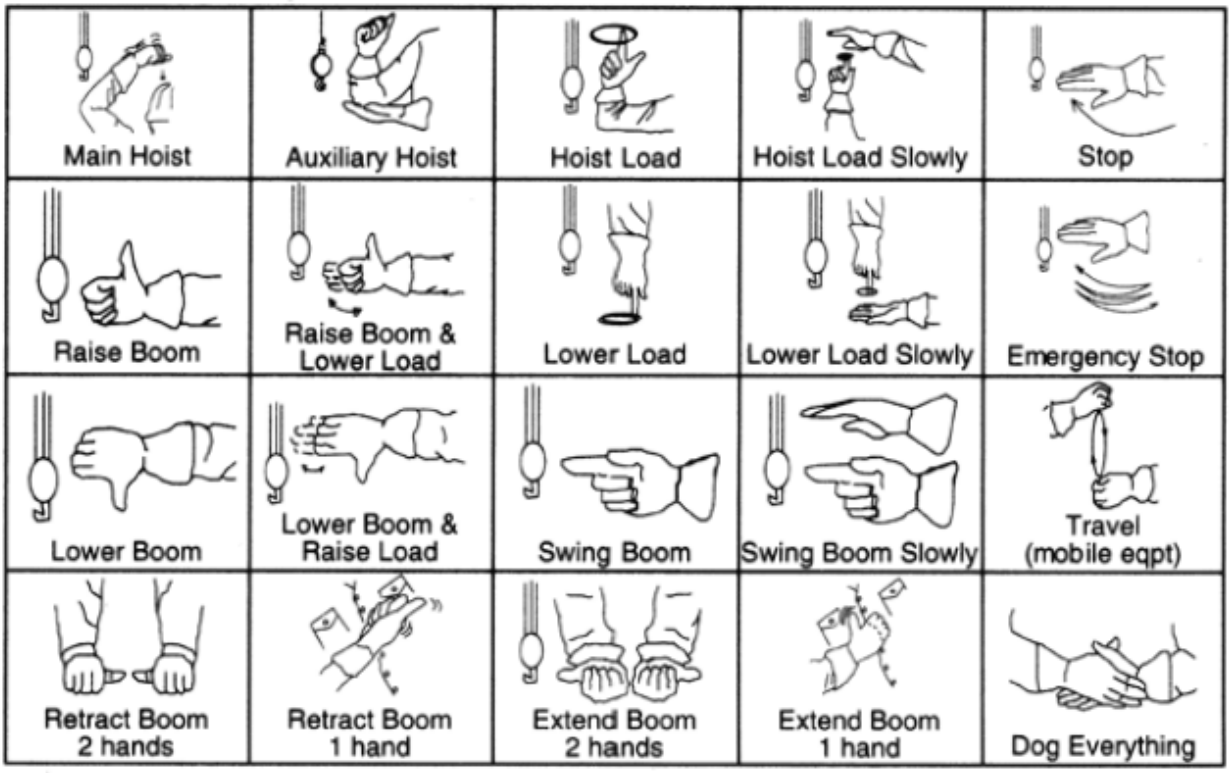
Lifting and lowering a load – during equipment moving operations the following safety requirements should be followed.

Only authorized personnel may operate a crane.

Ensure proper clearance in all areas of crane use and unauthorized entry will not occur.

Cranes should only be operated with an authorized operator and at least one spotter.

If audio (voice/radio) communication between crane operator and spotter is not possible, hand signals should be utilized. Signals must be discernible or audible at all times by both the crane operator and spotter.



Ease the load up/down to prevent shock load on the crane. Shock load can occur when a suspended load is accelerated/decelerated quickly.

Lift loads only high enough to clear the tallest obstruction in the travel path.

Never leave suspended loads unattended. In an emergency, if a load must remain suspended, ensure the area is clearly marked with signage and blocked on all four sides to prevent unauthorized access.

Parking a crane/hoist – once loads are moved and the crane is out of operation for the shift, it should be properly parked.

Remove all slings and accessories from the hook and return rigging devices to designated storage locations.

Raise the hook at least 7 feet above the floor.

Store the pendant away from aisles and work areas, or raise it at least 7 feet above the floor.

Place the emergency stop switch in the off position and place controller in designated storage location to prevent unauthorized use.

INSPECTION, MAINTENANCE AND TESTING

Cranes must be continuously inspected to ensure accidents do not occur. The pre-operational inspection must be conducted before each use as outlined in this program.

Daily Inspections

A daily inspection is required prior to use, for each day of crane operation. Inspection should be conducted by someone familiar with the crane and its operation, and should be documented.

A daily crane inspection checklist sample is attached to the end of this manual.

Monthly Inspections

Cranes should be inspected monthly regardless of use.

Monthly inspections should be conducted by someone familiar with the crane and its operation, and should be documented.

Defective cranes must be removed from service and locked out of service until defects are corrected.

A monthly crane inspection checklist sample is attached at the end of this manual. Checklists used in the field should be specific to the crane being inspected.

Annual Preventative Maintenance

Cranes should be inspected annually for preventative maintenance.

Cranes, which sit idle for periods longer than 12 months or are unused, should be inspected prior to anticipated use.

A properly trained crane specialist designated by the supervisor, or third party company should perform and document the annual PM service.

The annual inspection should address, at a minimum, the following items.

- Hoisting and lowering mechanisms
- Trolley and bridge travel
- Limit switches and safety devices

- Structural members
- Bolts or rivets
- Sheaves and drums
- Moving parts such as bearings, shafts, gears, rollers locking and clamping devices
- Fuel, electric or other power plants
- Chain-drive sprockets
- Crane and hoist hooks
- Electrical controllers, limit switches and push button stations
- Slings (wire, metal mesh, fiber mesh, rope, etc.)

Specific inspection items may vary depending on the type of crane being inspected. It is the responsibility of the supervisor to ensure the manufacturer's specified inspection checkpoints are covered during the annual PM service.

Load testing on newly installed or recently repaired cranes

Newly installed cranes and hoists, and those which have undergone sufficient repairs or have been rerated, should be load tested at 125% of the rated load

Slings should be accompanied by load test data upon purchase

Any time a crane is overloaded during use, it shall be inspected before returning to use.

RECORDKEEPING

Each job site is responsible for maintaining records relating to cranes in use throughout the project. Upon project close-out, records should be given to the Safety Manager for proper filing.

Records to be maintained include the following:

- A list and specifications/operator manuals for all cranes and hoists
- Training records to include name of trainer and employee, date of training and type of training.
- Daily, monthly and annual inspection reports
- Maintenance and repair records

NON-STANDARD CRANE-LIKE LIFTING DEVICES

Non-standard devices and equipment used for lifting people or equipment should be used as designed and engineered; and should be maintained as required by the manufacturer.

Each such device can be evaluated by Supervisor for suitability and safety of personnel.

SUBCONTRACTORS

Subcontractors are required to have their own specific crane, hoist and sling safety programs and allow only fully trained crane operators.

Subcontractors using cranes must ensure cranes are properly maintained and have been recently inspected to ensure safe operation.

Subcontractors are not permitted to operate Docsa-owned cranes with authorization from management. All applicable standards, regulations and other written programs must be followed.

FORMS

Daily Crane Inspection Checklist

LD DOCSA ASSOCIATES, INC. GENERAL CONTRACTORS SINCE 1963
Celebrating Our Past. Building Your Future.

DAILY CRANE INSPECTION LOG

EQUIPMENT NO: DESCRIPTION: LOCATION:		(SIGNATURES)	
	WEEK OF:	MONDAY:	
	BEGINNING HR:	TUESDAY:	
	ENDING HR:	WEDNESDAY	
		THURSDAY:	
		FRIDAY:	
		SAT/SUN:	

CRWELER/ TOWER	ROUGH TERRAIN CARRY DECK	VISUAL CHECKS BEFORE STARTING EQUIPMENT Leave this form with the equipment in a protective pouch	DAY OF WEEK (✓) in box if OK (P) in box if PROBLEM M	TU	W	TH	F	SA	SU
•	•	Control Mechanisms							
•	•	Electrical Apparatus							
•	•	Crane Structure or Boom							
•	•	Ropes							
•	•	Crane Hooks							
•	•	Bolts and Rivets							
•	•	Sheaves and Drums							
•	•	Lubrication							
•	•	Pins							
•	•	Bearings							
•	•	Shafts							
•	•	Braking							
•	•	Travel Steering							
•	•	Locking Devices							
	•	Power Plants							
	•	Tires							
•		Gears							
•		Rollers							
•		Chain Drive Sprockets							
•	•	Operators manual included (in cab of crane?)							
	•	Outriggers fully extended?							
	•	Outriggers float pads built correctly? (Pads center)							
•	•	Dead level, or level to specification in operators manual?							
•	•	Checked all crane devices? (load indicator, computer, etc.)							
•	•	Checked the cables, shives and boom members for damage?							
•	•	Checked for any fluid leakage?							
•	•	Are the load charts readily accessible?							
•	•	Applied all of the load derating % factors for that days conditions? (age of crane, wind velocity)							
•	•	Is the maximum load well within the boom angles capability? Include weight of the rigging, material bucket, material, etc. Be sure to apply derating %'s to capacity at intended angle.							
		WORK CONDITIONS			Y=Yes		N= No		
•	•	Has wind velocity & direction been verified?							
•	•	Has the soil been in spected and determined to be adequate?							
•	•	Swing area barricades installed?							
•	•	Inspect rigging for damage prior to lifts?							
•	•	Any obstacles in the intended swing area? (Powerlines/10ft)							
•	•	Has the radius of the lift been checked?							
•	•	Have all crews in area of crane been informed of work area affected by overhead loads?							

Report any UNSATISFACTORY conditions to your supervisor immediately!

300 S. 8th Street | Kalamazoo, MI 49009 LDDOCSA.com (O) 269-349-7675 (F) 269-349-2511

Monthly Crane Inspection Checklist

LD DOCSA
SINCE 1963
ASSOCIATES, INC.
GENERAL CONTRACTORS
Celebrating Our Past. Building Your Future.

MONTHLY CRANE INSPECTION CERTIFICATION

EQUIPMENT NO: _____

DESCRIPTION: _____

LOCATION:

Crane, as described above has been inspected per OSHA 29CFR Part 1926.550 (b) (2)

ON THIS _____ *(day of week)* **DAY OF** _____ *(Month)*, _____ *(Year)*

LD DOCSA ASSOCIATES, INC.

BY: _____ *(Signature)* **DATE:** _____

POSITION/TITLE: _____

(Instructions)

The assigned operator should complete this written inspection the 1st week of each month. Any deficiencies should be noted and reported to the Project Sauperintendent. In the event the operator cannot correct the deficiency, the Superintendent should report the deficiency immediately to the L.D. DOCSA EQUIPMENT MANAGER. A copy of this form should also be forwarded to the L.D. DOCSA SAFETY DEPARTMENT for follow-up with the mechanic to assure repairs are completed.

300 S. 8th Street | Kalamazoo, MI 49009 LDDOCSA.com (O) 269-349-7675 (F) 269-349-2511

Lift Plan Document

LIFT PLAN DOCUMENT

LD DOCSA ASSOCIATES, INC. GENERAL CONTRACTORS SINCE 1963
Celebrating Our Past. Building Your Future.

Prepared by: _____ Date: _____

Customer: _____ Contact: _____

Phone: _____ Fax No.: _____

Project Name: _____ Project Location: _____

Date of Lift: _____ Lift Location: _____

LOAD:

Description of Load: _____

Weight of Load: _____

Weight of Rigging and Lifting Equipment: _____

Other Deductions: _____

Total Weight: _____

HOIST CABLE:

No. of Hoist Cable(s): _____

Size of Cable: _____

RIGGING SIZE:

No. of Slings/Cables: _____ Pin Diameter: _____

Sling/Cable Capacity: _____ Capacity Tons: _____

Shackle Size and No.: _____

CRANE:

Crane Manufacturer: _____ Corresponding Boom Length: _____

Model No.: _____ Outrigger/Crawler Position: _____

Capacity: _____ Is Jib to be Used: _____

Maximum Load Radius: _____ Length of Jib: _____

Corresponding Boom Angle: _____ Offset of Jib: _____

ADDITIONAL:

Rated Capacity: _____

Capacity Margin = (Total Load/Rated Capacity) X 100: _____

Clearance to Surrounding Obstructions: _____

Clearance to High Voltage Lines (12' min): _____

Stability of Ground Under Crane Outriggers: _____

SPECIAL INSTRUCTIONS:

REVIEW/APPROVAL

Reviewed by: _____ Approved by: _____

Date: _____ Date: _____

300 S. 8th Street, Kalamazoo, MI 49009 www.LDDOCSA.com (O) 269-349-7675 (F) 269-349-2511