## Cal/ OSHA Rigging Material Handling

1. **Purpose**

To provide standardized procedures for safe crane operations.

1. **Responsibilities**

* The supervisor shall ensure that chains and slings are maintained and stored in a safe condition and immediately removed from service as required.
* Employees ensure chains and slings are properly used and stored, and that rigging equipment is used as intended.

1. **General Safety Requirements**

* Stay away from elevated loads when there is tension on the load line and when there

is no tension on the load line except for the minimum time necessary to hook/unhook the load. No Employee will be allowed under a suspended load and shall be kept clear of loads about to be lifted.

* Suspended loads must be kept clear of all obstructions.
* Stop a load from being lifted when it is unsafe.
* Stay in sight of the signal person. No movement shall be made without each acknowledging the other.
* Ensure safety latches are closed, shackle pins are screwed all the way in, and hooks

without latches are secured.

* Ensure all slings, shackles, spreader bars, etc. are in good condition and appropriate

for the load being handled. Any defective slings, shackles, spreader bars etc. that are damaged in any fashion are to be removed from service immediately.

* Ensure sling angles are not less than 30 degrees from the horizontal.
* Wear leather or other hard surface gloves when handling wire rope.
* Tag lines shall be used to control loads unless their use creates an unsafe condition.
* The hoist rope shall not be wrapped around the load.
* The load shall be secured and balanced before being lifted.
* Multiple part lines shall not be twisted while lifting/lowering.
* The hook shall be located over the lift center of gravity to prevent side loading and crane damage.
* Shackles shall be used with all pad eyes.
* When not in use, rigging equipment shall be stored away from the immediate work area so that they do not present a hazard to workers.
* Rigging equipment shall not be loaded in excess of its recommended safe working load.

1. **Chains and Slings**

* Chains and slings shall be stored so they are not subject to damage, corrosion, or

chemical exposure.

* All hooks and slings must be used in accordance with the manufacture’s recommendation.
* The rated capacity of a chain or sling shall never be exceeded. Depending upon the angle of the sling, the tension experienced by the chain or sling may greatly exceed the weight of the load. The capacity of each sling varies on the method to secure the sling to the load. The Basket method for lifting has the highest capacity.
* Improvised chains, slings and end attachments shall not be used for rigging.
* All slings shall be tagged with the manufacturer's name and maximum rated capacity and this tag must be clearly legible.
* Wire rope and slings should be inspected prior to use, and periodically for wear and

corrosion.

* Slings shall be protected from sharp edges with padding.
* Wire rope slings shall not be made in the field. Only certified manufactured wire rope

slings shall be used.

* Slings with hooks shall have a safety latch or shall be secured when safety latches are

missing.

* Shock loading is strictly prohibited and any wire rope or sling should be immediately discarded in the event they have been shock loaded.
* Slings that have been exposed to temperatures in excess of 200 degrees F shall be

removed from service.

* Slings, chains and/or wire ropes are not to be shortened in any fashion to include tying knots or using bolts or any other makeshift device.
* All slings used in a basket hitch or any similar type of configuration shall have the loads balanced to prevent slippage. All slings should be fastened in a manner to avoid slippage of any kind.
* Hands, fingers and all body parts must be kept clear of the sling, its load and any other piece of equipment being used during any lift.
* No sling is to be pulled under a load while the load is resting on the sling.
* Proof coil steel chain shall never be used for hoisting or lifting purposes.
* If wrought iron chains are in constant use. They shall be normalized or annealed every 6 months or at a time interval recommended by the manufacturer. The manufactures specifications must be adhered to. The chain manufacturer shall be consulted for the proper procedures for annealing and/or normalizing. Alloy chains are never to be annealed.
* If a hook or ring has been deformed, it shall be replaced or repaired. All repaired hooks and rings that have been reshaped, under proper metallurgical control, must be proof tested.
* Hooks that do not have an identified manufacturer recommendation shall not be used without prior consent of the Safety Director. Before the Safety Director can approve any hook that does not have an identified manufacturer recommendation it must be tested at twice the intended safe working load before initially use.
* If a custom designed hook, clamps, or other lifting device is necessary. These devices shall be marked to indicate their safe working loads and they shall be proof-tested to 150 percent of the rated load before being put into operation.

1. **Synthetic Web Slings**

* Each sling should be marked or color coded to indicate its rated capacity.
* Nylon slings should have a uniform thickness and width.
* Fittings should have a minimum breaking strength equal to that of the sling and should be free of sharp edges.
* Stitching should be the only method used to attach end fittings to the webbing or to form

eyes.

* Many slings have a colored warning core. If this can be seen, the sling must be removed

from service.

* Do not drag slings on the ground, this causes excessive wear and reduces the

capacity and life of the sling.

1. **Inspection**

Rigging equipment for material handling shall be inspected by a qualified person prior to use and on each shift and as necessary during its use to ensure that it is safe. Chains and slings shall periodically receive a documented, in-depth inspection by a competent person. This shall be performed at the following intervals:

* Chains - every 12 months.
* Wire Rope Slings - every 6 months.
* Web Slings - every 12 months.

It may be necessary to perform an in-depth inspection at more frequent intervals. The frequency of additional in-depth inspections shall be determined by:

* Frequency of use.
* Severity of service conditions.
* Nature of lifts.
* Experience gained on service-life of slings used in similar circumstances.

The inspection documentation should include:

* Serial number.
* Name of the manufacturer.
* Rated capacity.
* Type
* Grade of material
* Inspector name
* Date of inspection
* Nominal length
* Measured length
* Inspection results
* Chains and slings shall be visually inspected before each use.
* Damaged or defective chains and slings shall be immediately removed from service and

tagged: Danger-“ DO NOT USE”.

1. **Training**

Only those employees who have completed rigger training can attach or detach lifting equipment to loads. Training should incorporate familiarization with rigging, hardware, slings and safety issues associated with rigging, lifting loads and lift planning. Training should include classroom, hands-on training and exams. Hands-on training should include proper inspection, use, selection and maintenance of loose gear.