

# UC BERKELEY CRANE/HOIST SAFETY PROGRAM

## Quick Start

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### Description:

UC Berkeley's Office of Environment, Health and Safety (EH&S) manages Crane Safety to ensure Cal/OSHA compliance by campus Departments, Field Stations, and Contractors using University-owned overhead cranes, hoists and rigging.

Administrative requirements, training requirements, recordkeeping requirements, inspection criterion and procedures, "Operator" and "Standby Person" safe-work procedures are included for [all types](#) of [cranes](#) and [hoists](#) that are used for lifting/moving equipment and materiel.

There are two classes of cranes/hoists defined according to rated load capacities: "Three Tons and Under ( $\leq 3\text{Ton}$ )" and "Over Three Tons ( $> 3\text{Ton}$ )". The larger cranes are subject to more-stringent inspections, load tests and scheduled maintenance. Smaller cranes / hoists must have initial load tests and documented inspections leading to routine maintenance. This program applies to any research, construction, and maintenance activities that utilize such lift equipment.

Click here for guidance about your or your department's [Roles and Responsibilities](#).

Click here for guidance about [Administrative and Operating Procedures](#).

Click here for [Inspection Forms](#) and other [Program Documentation](#).



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# UC BERKELEY CRANE/HOIST SAFETY PROGRAM

## Purpose/Introduction

The University of California, Berkeley (UCB) owns many cranes and hoists ranging from fractional ton chain-falls, come-a-longs and chain-hoists, to multi-ton overhead cranes. This Program assures compliance with Cal/OSHA regulations for Crane/Hoist Safety.

## Applicability/Scope

This program applies to any overhead lifting device that is attached to any building, research facility or equipment owned or operated by UC Berkeley, and outlines Cal/OSHA required load testing for all types of cranes, hoists and associated rigging/lift-gear at UCB. Cranes rated above three tons require quadrennial load testing; cranes rated 3-tons and less require load testing and certification upon installation or upon implementation of this program by owner departments. Load testing must be performed by a Cal/OSHA approved "Certificating Agency". Cranes may have their load rating reduced through a documented "derating" process.

This program also outlines the required "Qualification" documentation and procedures for crane operators; outlines training contents for becoming a "[Qualified Person](#)"; details "Administrative Procedures" to be followed by departments implementing the program; and "Operating Procedures" to be followed by qualified crane operators each time a crane is used. In addition, it outlines inspection criterion for lift equipment and record-retention requirements for all documentation associated with Crane/Hoist Safety Program activities.

## Roles/Responsibilities

### Departments

- Identify all cranes, hoists and rigging owned by the Department and falling under the requirements of this program.
- Designate one or more "[Qualified Person\(s\)](#)" to operate the crane or hoist.
- Provide for and document each Qualified Person's "operator training" prior to allowing them to inspect, maintain and/or operate specific department crane equipment.
- Keep records of training.
- Conduct documented quarterly inspections of all crane and hoist equipment.
- Conduct annual inspections of cranes/hoists/lift gear 3+ tons by a Certificating Agency, and a documented quadrennial load test conducted by a Certificating Agency.

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- Assure all cranes and hoists in the department have had an initial documented load test conducted by a Certifying Agency with results of the load test permanently posted on the equipment.
- Install and maintain permanent signage in sight of operators on any crane or hoist that has been “derated” for the reduction of the load rating.
- Inform department personnel of planned crane inspection/testing and coordinate these activities between crane owners, EH&S and the Certifying Agency.
- Ensure that University faculty, students and staff are not in the proximity of the load test activities during load testing performed by a Certifying Agency.

### Crane Operator/“Qualified Person”

- Must be trained on the contents of this program and understand how to apply it to the crane and hoist equipment they operate.
- Must be “Qualified” by their Supervisor through documentation using [Attachment 1](#) which is to be kept in their employee file.
- Must [follow the procedures outlined in this program](#) every time a lift is prepared and conducted, or during inspection and maintenance activities.
- Must stop all lifting work and bring to the attention of the department management any deficiencies, broken equipment or rigging needing repair/replacement and never use any deficient equipment.
- Must inform EH&S of any crane or hoist that is being permanently locked out due to equipment hazards, when the use of the crane is no longer needed, or due to lack of qualified personnel to operate the crane.
- May be responsible for procuring equipment or repair services as a department may deem appropriate.
- May be required to “Lock out and Tag out” any deficient equipment according to the procedures outlined in the [UCB “Energy Isolation Program”](#) to assure no unsafe condition.

### Stand-by/Load Positioning Person

- [Follow procedures outlined in this program.](#)
- Work under the direction of, and in constant communication with, the Crane Operator/“Qualified Person”.

### EH&S

- Coordinate with owner departments the load testing of cranes and hoists by a [Certifying Agency](#).
- Provide any load-testing protocols beyond Cal/OSHA requirements as University Risk Management and client need may dictate.
- Provide for operator training.
- Conduct periodic audits of Crane/Hoist Program compliance throughout all University operations.
- Update Crane/Hoist Safety Program as regulations or University requirements change.

## UC BERKELEY CRANE/HOIST SAFETY PROGRAM

### Definitions

#### Certifying Agency

Certifying agencies are qualified agencies and/or persons licensed by Cal/OSHA to examine, test, and certify cranes. EH&S maintains [a list of pre-qualified Certifying Agencies](#) as part of program compliance.

#### Crane

A machine for lifting or lowering a load, and moving it horizontally, in which the hoisting mechanism is an integral part of the machine. It may be driven manually or by power and may be a fixed or a mobile machine, but does not include stackers, hoist trolleys, lift trucks, power shovels, backhoes, or excavators.

#### Hoist

An apparatus for raising or lowering a load, but does not include a car or platform riding in guides or horizontal motion.

#### Qualified Person/Operator

A person designated by the department who, by reason of training and/or experience, has demonstrated the ability to [safely perform all assigned duties](#). Persons may be deemed “qualified” to operate all or only specific cranes and hoists within a department by their supervisor. “Qualifying” a crane operator is a documented process (see [Attachment 1](#)) as outlined in this program. A “Qualified Person/Operator” may also train a “[Stand-by Person](#)” to help them with the safe use of a crane/hoist. The “Stand-by Person” follows the direction of the “Qualified Person/Operator” and [specific procedures as outlined in the program](#).

#### Rigging

Collectively referred to as “below the hook devices”, are also called “lift gear”. May be any device used to carry, position, and secure a load while it is being hoisted or craned.



## **Types of Cranes/Hoists/Rigging**

### **Cranes and Components**

#### **Bridge Crane**

Type of crane which lifts objects by a hoist that is fitted in a trolley and can move horizontally on overhead rails riding on top of support beams located well above a floor and a permanent part of a building's structure.



#### **Gantry Crane**

Type of crane which lifts objects by a hoist that is fitted in a trolley and can move horizontally on a rail or pair of rails fitted under a beam. Unlike Bridge Cranes, Gantry Cranes have legs and rollers integral to the support structure and are supported on a flat surface or may roll on rails embedded into the surface upon which the crane sets.



#### **Floor Mounted Jib Crane/Boom Crane**

Jib Cranes consist of a horizontal load supporting boom, which is attached to a pivoting vertical column that is either free standing or building mounted. They enable lifting and lowering of a load within a fixed arc of rotation.





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### Wall Mounted Jib Crane/Boom Crane

A Jib crane permanently mounted to a structure.



### Monorail Crane

A crane that travels on a single runway beam permanently attached to a structure.



### Anchor Plate (in ceiling)



Rail, Track or Beam



Trolley



Hoists

Electric-powered Hoist



Air-powered Hoist



### **Manual-powered Hoist**

(Also known as a “Chain-fall” or “Chain Hoist”)

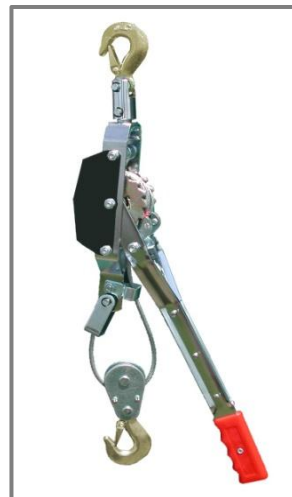


### **Ratchets and Come-Alongs**

#### **Ratchet Hoist**



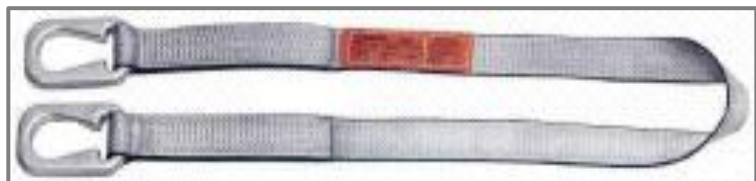
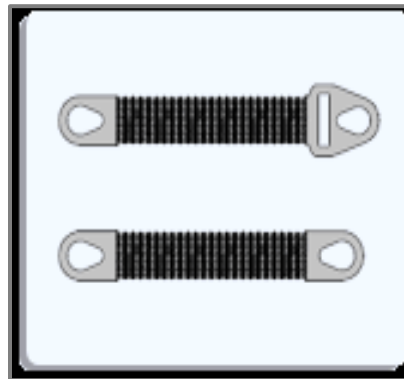
#### **Come-Along Hoist**



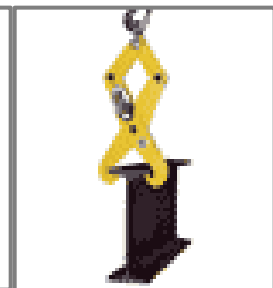
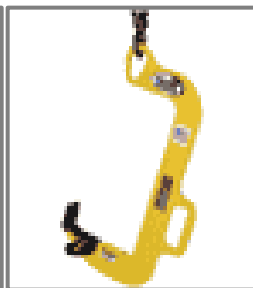
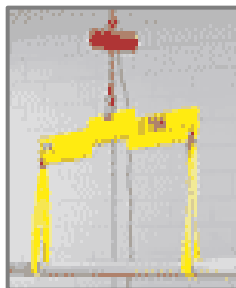
## Rigging

### Slings

(May be constructed of chain, nylon webbing, mesh steel webbing, wire ropes, other types of ropes and braided materials.)



### Structural and Mechanical Lifting Devices



**UC BERKELEY**  
**CRANE/HOIST SAFETY PROGRAM**

## **Program Requirements and Procedures**

### **Administrative Requirements**

#### **Program Activities**

The Department owning the Crane or Hoist designates all person(s) within their Department who are responsible for the following actions:

- Identifies all cranes owned by the department that must comply with these program requirements.
- Identifies cranes rated over three tons and manages load testing every four years.
- Identifies cranes rated three tons or less and manages their quarterly and annual inspections.
- Designates "[Qualified Person\(s\)](#)" who may use Crane/Hoist equipment and documents their timely training and application of this program by completing [Attachment 1](#) for each Qualified Person.
- Identifies and inventories using [Attachment 5](#) all crane(s), hoist(s) and rigging owned by the Department that is regulated by this program.
- Periodically audits departmental compliance with the program.
- Ensures "Operator" and "Stand-by Person" training.
- For Cranes/Hoists 3-tons or less, implements crane, hoist and rigging inspections and testing. These are conducted visually daily or before each use following criteria in [Attachment 2](#), and documented quarterly at minimum using [Attachment 2](#).
- Assures that the load rating signage is attached to the crane or hoist and that rigging capacity signage can be easily determined according to Inspection and Lift Equipment Requirements
- Performs annual inspections of lift equipment following [Attachment 3](#) and documents these inspections using [Attachment 4](#).
- For Cranes/Hoists greater-than 3-tons, implements annual crane, hoist and rigging inspections and testing by a Certifying Agency and documented using [Attachment 4](#) and [Attachment 7](#).

#### **Load Test Requirements**

Upon program inception, initial equipment installation, or when conducting load tests every four years, the department's designated responsible person must:

- Assure that all crane and hoist components and their attachments to a structure are engineered to support 125% of maximum load capacity of the equipment component with the lowest load rating. The design of attachment to structure may require a stamp by a Structural Professional Engineer.
- Arrange for an initial load test of 125% rated capacity and performed by a Certifying Agency ([Attachment 6](#)).

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- Arrange for initial testing of rigging at 110% - 125% maximum load capacity (to be determined by the [Certificating Agency](#) based upon type and use of crane).
- Ensure rigging is tagged or otherwise marked with load capacities (unless it is an alloy chain when tabulated data may be used).

### Load testing by a Certificating Agency

Representative(s) of the Department work with [EH&S Crane/Hoist Safety Program Lead](#) to coordinate the timing, space required, and access to the site with the Principal Investigator (PI) or owner of the crane or hoist. Prior to the load test, a meeting is held with representatives of the [Certificating Agency](#) and the Department personnel associated with the use of the crane or hoist. In that meeting the following topics are discussed and documented:

- How the area of the load test is isolated from access by faculty, students, staff, or public.
- The inspection procedures the Certificating Agency will be using.
- The load testing procedures the Certificating Agency will be using.
- How the Certificating Agency will be transporting load weights and other equipment to and from the testing site.
- The general types of PPE the Certificating Agency will be using.
- During the load tests, a representative of the Department or EH&S visits the site to verify that the procedures determined in the meeting prior to the load test are being used.

### Load Rating Reduction

- Load rating reduction is performed by a Certificating Agency and managed as a load test.
- Permanent signage must be installed that clearly identifies the reduced-load rating of the crane or hoist, and is securely attached to the hoist near the hook and maintained by the Department.

### Quarterly Program Requirements

- Perform and document in-house inspection of lift equipment using [Attachment 2](#).
- Remove and/or "Lock Out" deficient cranes or hoists per requirements of the UCB [Energy Isolation – Lockout Tagout Program](#).
- Removes damaged/deficient rigging from service until repaired or rendered unusable prior to disposal.



## UC BERKELEY CRANE/HOIST SAFETY PROGRAM

### Operator Safe-Work Procedures

Only persons who have been “[Qualified](#)” by their department through a [training process](#) that is documented using [Attachment 1](#) may conduct the following work procedures:

#### Work Practices, Hazard Evaluation and Control

- Perform daily or prior to each use visual safety inspections of the crane/hoist equipment following the checklist in [Attachment 2](#).
- If a crane/hoist has sat idle for more than one week, or the operator does not know when the crane/hoist was last used, document the pre-use inspection using [Attachment 2](#).
- Document quarterly inspections using [Attachment 2](#) and keep these inspections on file.
- Do not use deficient cranes or hoists and report deficiencies to designated person(s) within the Department that are responsible for the ownership and maintenance of the crane or hoist.
- Operate cranes safely.
- Do not proceed with lifting operations until all known hazards have been eliminated or controlled.
- Plan the lift, calculate the crane or hoist load capacity, and ensure that the crane or hoist is used within its limits.
- Monitor for rigging deficiencies during each lift.
- Stop and do not proceed with lifting operations until newly identified hazards have been eliminated.
- Coordinate the lift with the Stand-by/Load Positioning Person with a pre-lift planning discussion.
- Stay in view of the Stand-by/Load Positioning Person at all times during the lift.
- Assure clear communication method(s) with Stand-by/Load Positioning Person.
- NEVER travel on or stand under a suspended load.

#### Rigging and Other Below-the-Hook Devices

- Perform daily or pre-use visual inspections according to the requirements of [Attachment 3](#) and document these inspections annually using the checklists in [Attachment 4](#).
- Protect rigging from damage while in use.
- Properly store rigging to prevent deterioration and damage.
- Render unusable and then dispose of deficient rigging.

#### Housekeeping

- Assure the floor space is kept clear of obstacles and slippery surfaces for the operators, riggers, and load positioning personnel.

#### Restricted areas

- Set up “Restricted Areas” that include the locations of, and adjacent to, the lift/travel path.

## UC BERKELEY CRANE/HOIST SAFETY PROGRAM

- The lift/travel path of the load is marked by orange cones, yellow tape or other means, to alert persons not aware of the hazards to keep away.
- No one is allowed under a suspended load EVER!

### Standby And Load Positioning Person's Procedures

- Follow the direction of the operator.
- Warn persons nearby to stay out of "Restricted Areas".
- Assure clear communication method(s) with crane or hoist operator.
- Alert the Crane Operator immediately of any hazards when identified.
- Do not interfere with the lifting operation unless the operator permits it.
- Stay in view of the operator.
- NEVER travel on or put any part of your body under a suspended load.
- May guide the load during lift through rigging rope tied to the load or push bars; use gloves and do not wrap the rope around the hand or arm.
- NEVER come in direct contact with the load during a lift.

### Training Requirements

[Qualified Crane Operators](#) receive documented training on the operation of the Crane/Hoist and associated rigging they use before they are allowed to use the equipment. A "Qualified Person/Operator" may train a [Stand-by Person](#) for a specific and designated lift as long as the Operator discusses all safe-lift aspects and known hazards concerning the lift with the Stand-by Person, and coordinates their lift/rigging planning, prior to conducting the lift.

The Department owning the crane or hoist has the option of providing training through:

- A [training provider](#) outside the University.
- Training within the department by a ["Qualified Person"](#).
- Training provided by EH&S. Contact EH&S at 642-3073 to be directed to the EH&S training provider.

Regardless of the source, training content and attendance is documented using [Attachment 1](#) and kept in a readily accessible location by the Department and the Crane Operator Supervisor, and must be provided upon request to Department management, EH&S, or regulatory agency (e.g. CalOSHA).

## **Record Keeping Requirements**

### **Department Requirements**

#### **Training**

- Retain Qualifications and Training records for Operators and Stand-by Persons at least ten years after the person has retired or left University employment.

#### **Equipment Inspections**

- Retain any written evidence of daily/pre-use inspections for the last year.
- Retain “Quarterly Inspections” for the last three years.
- For Crane/Hoist and rigging, initial load tests for less than three ton rated cranes, and quadrennial load tests for over three ton rated cranes, tests for all cranes and “job-made” rigging, retain records for the life of the crane or hoist.

### **EH&S Record Retention Requirements**

- Retain indefinitely records of annual shop inspections that include cranes or hoists.
- Retain indefinitely records of training provided by EH&S and other entities.
- Retain indefinitely copies of load testing and load rating reduction tests until equipment is dismantled or destroyed.

## **References**

Cal/OSHA Subchapter 7. General Industry Safety Orders, Group 13. Cranes and Other Hoisting Equipment: <http://www.dir.ca.gov/Title8/sb7g13.html>

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**UC BERKELEY  
CRANE/HOIST SAFETY PROGRAM**

**Issued By and Next Review Date**

Issued by: Jim Gilson, Senior Safety Engineer  
Gary Bayne, Health and Safety Specialist

Approved by: Brandon DeFrancisci, Associate Director      Date: August, 2012

Review Date: Three years from publish date

**Attachments**

Attachment 1: [Crane Operator Qualification Documentation](#)  
Attachment 2: [Daily/Pre-Use Checklist and Quarterly Inspection](#)  
Attachment 3: [Rigging and Equipment Annual Inspection Criteria](#)  
Attachment 4: [Annual Below-hook Equipment Inspection forms](#)  
Attachment 5: [Crane/Hoist/Lift Gear - Equipment Inventory - Template](#)  
Attachment 6: [Certificating Agency - Vendor List](#)  
Attachment 7: [Annual 3+ Ton Crane Inspection Form](#)  
Attachment 8: [FAQ/Fact Sheet – Crane/Hoist Safety Program](#)

## Attachment 1 – Crane Operator Qualification Documentation

To: Personnel File for: \_\_\_\_\_  
(Print Employee name)

From: \_\_\_\_\_ Date: \_\_\_\_\_  
(Print Supervisor name)

**This document confirms the Qualification of the above named employee to perform:**  
(Check all that apply)

- ☐ Maintenance or repair on the following crane/hoist equipment within their department  
(T8CCR§3328)

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(Attach an additional page if more space is needed)

- ☐ Operate/inspect overhead cranes and hoists within their department (T8CCR§5006, 5031)
- ☐ Inspect rigging and rig loads to be suspended within their department (T8CCR§5043)
- ☐ Other: \_\_\_\_\_

**This designation is based on evidence of safe performance of all duties related to crane/hoist operation and verification by another “Qualified Person” through:** *(Check all that apply)*

- ☐ Training – Appropriate training records<sup>1</sup> (including any skill checks or tests) are attached.
- ☐ Experience – This employee has been safely performing and has demonstrated skill in crane/hoist operation for \_\_\_\_\_ years (minimum of five years).
- ☐ Instruction – This employee has received on the job instruction from me or another employee who is qualified, has observed this employee’s work while performing this operation, and confirms that the employee has the knowledge to perform crane/hoist work safely.

If, for any reason, as their supervisor, I think that this employee is not performing this operation safely, this qualification will be revoked. Below are signature(s) of responsible person(s) verifying training, experience and/or providing instruction:

Supervisor Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Qualifying Person (if not supervisor): \_\_\_\_\_ Date: \_\_\_\_\_

Employee Signature \_\_\_\_\_ Date: \_\_\_\_\_

cc: EH&S; Supervisor file; Employee and their Personnel File

<sup>1</sup> If training is part of the evidence used to qualify this employee, attach records relevant to this qualification.

## Attachment 2 – Daily/Pre-use Checklist and Quarterly Inspection

CRANE/HOIST ID: \_\_\_\_\_ LOAD RATING \_\_\_\_\_

OPERATOR/INSPECTOR \_\_\_\_\_

DEPT./OWNER: \_\_\_\_\_ DATE/TIME \_\_\_\_\_

DESCRIBE TASK/PLANNED LIFT: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

### Crane/Hoist Operator's Daily / Pre-use Checklist

(Check off as appropriate)

YES	NO	N/A	
			Has the crane/hoist and rigging been visually inspected and found to be safe for use prior to the beginning of any lifting work?
			Are all electrically operated cranes effectively grounded?
			Is the load chart clearly visible to the operator?
			Is the rated capacity visibly marked on the crane?
			Has the load been calculated and verified to be below the limits of the hoist and rigging?
			Are operating controls clearly identified?
			Is sufficient illumination provided for the operator to perform the work safely?
			Has a lift-plan of action been agreed to by the personnel involved?
			Is the path of the operator and stand-by/load positioning person been cleared of slip, trip, and fall obstacles?
			Has the lift/travel path been secured or visually marked to prevent entry by anyone?

Quarterly Inspection or when idle more than one month. (In addition to Daily/Pre Use Inspection)	Pass	Fail
Functional operating mechanisms have been checked for excessive wear.		
Readily accessible ropes, brakes, friction clutches, chain drives, and other parts subject to wear have been inspected.		
Wire rope that has been idle for a period of a month or more due to shut-down or storage of a crane is given a thorough inspection before it is placed in service. This inspection is for all types of deterioration and is performed by a qualified person whose approval is required for use of the crane.		



## **Attachment 3 – Rigging and Equipment Annual Inspection Criteria**

*To “Pass Annual Inspection”, Departments must assure that all their “Below-the-Hook Lifting Devices” and associated rigging either are immediately removed from service for repair/replacement or meet the following requirements:*

### **Structural and Mechanical Lifting Devices**

The rated capacity of each lifting device must be marked on the main structure where it is visible and legible. If the lifting device comprises several items, each detachable from the assembly, each lifting device must be marked with its rated capacity. At a minimum, a nameplate, name tag, or other permanent marker must be affixed displaying the following data:

- Manufacturer or contractor’s name if fabricated on-site
- Lifting device weight, if over 100 lbs.
- Serial number (if available)
- Rated capacity
- Proof of inspection label by hoist and rigging inspector

### **Rigging Hooks**

#### **Marking**

The manufacturer’s identification must be forged, cast, or die-stamped on a low-stress and non-wearing area of the hook.

#### **Inspecting**

The operator or qualified person must visually inspect hooks daily or prior to first use, or if the hook is not in regular service. If any of the following conditions are found, remove the hook from service:

- Cracks, nicks, gouges
- Deformation
- Damage from chemicals
- Damage, engagement, or malfunction of latch (if provided)
- Evidence of heat damage
- Wear
- Hook attachment and securing means

## Slings

### Wire Rope Sling

#### Marking

Wire-rope slings must be marked with the following information:

- Name of trademark of manufacturer
- Work load limit (WLL)
- Diameter or size
- Purchase order or serial number

#### Fabricating

Wire rope purchased to fabricate slings must be made in the United States by a member of Wire Rope Technical Board (except stainless steel). Stainless steel wire rope must be made in the United States and must be 302 or 304 grade stainless steel.

#### Inspecting

Wire-rope sling users must visually inspect all slings each day that they are used or prior to use if the sling has not been in regular service (records are not required). Users must carefully note any deterioration that could result in an appreciable loss of original strength and determine whether further use of the sling would constitute a safety hazard. Slings must be immediately removed from service if any of the following conditions are present:

- Missing or illegible sling identification
- Ten randomly distributed broken wires in one rope lay or five broken wires in one strand in one rope lay
- Wear or scraping of one-third the original diameter of the outside individual wire
- Kinking, crushing, bird caging or any other damage resulting in distortion of the rope structure
- Evidence of heat damage
- End attachments that are cracked, deformed, or worn
- Corrosion of the rope or end attachments

## Metal-mesh Slings

### Inspecting

Metal-mesh slings must be visually inspected before each use. They must be removed from service if any of the following defects are present:

- A broken weld or brazed joint along the sling edge
- A broken wire in any part of the mesh
- Reduction in wire diameter of 25 percent due to abrasion or 15 percent due to corrosion
- Lack of flexibility due to distortion of the mesh
- Distortion of the female handle so the depth of the slot is increased by more than 10 percent
- Distortion of either end fitting so the width of the eye opening is decreased by more than 10 percent
- A 15 percent reduction of the original cross-sectional area of metal at any point around a handle eye
- Any distortion or twisting of either end fitting out of its plane
- Cracked end fitting
- Evidence of heat damage

## Synthetic-web Slings

### Marking

Hand written or ink embossed markings are not acceptable. Sling tags must be indelibly marked and the lettering must not wear off with use. The markings must remain legible for the life of the sling. Each sling must be marked with the following:

- Manufacturer's name or trademark
- Manufacturer's code or stock number
- Type of synthetic web material
- Rated loads for the type of hitches used

### Inspecting

Synthetic-web slings must be visually inspected before each use. Slings must be removed from service if any of the following defects are visible:

- Acid or caustic burns
- Melting or charring of any part of the surface
- Snags, punctures, tears or cuts
- Broken or worn stitches
- Wear or elongation exceeding the amount recommended by the manufacturer
- Distortion of fittings
- Knots in any part
- Missing or illegible sling identification

## **Synthetic Round-slings**

### **Marking**

Each polyester round-sling must be permanently marked or labeled showing the following:

- Name or trademark of manufacturer
- Manufacturer's code or stock number
- Rated capacities for the three basic hitches (vertical, choker, vertical basket)
- Core fiber type – if cover(s) is of a different fiber type, both fiber types must be identified
- Length (reach) – bearing point to bearing point
- Each manufacturer must internally identify their product with name or trademark for traceability

### **Inspecting**

Synthetic round-slings must be visually inspected before each use and may not exhibit any of the following in order to pass inspection:

- Missing or illegible sling identification
- Acid or caustic burns
- Melting or charring of any part of the surface
- Snags, punctures, tears, cuts or abrasive wear that expose the core yarns
- Broken or worn stitches in the cover which exposes the core yarns
- Wear or elongation exceeding the amount recommended by the manufacturer
- Stretched, cracked, worn, pitted or distortion of fittings
- Knots in any part

## **Alloy Steel-chain Slings**

The following applies to slings made from grade 80 and 100 alloy chain manufactured and tested in accordance with National Association of Chain Manufacturers welded steel chain specifications – 1990. If chain other than this is used, it must be used in accordance with the recommendations of the chain manufacturer.

## Marking

The following information may be stenciled or stamped on a metal tag or tags affixed to the sling. Where slings have more than one leg, ensure that the tag is affixed to the master link. Ensure that the working load does not exceed the rated capacity of the sling.

Wire-rope slings must be marked with the following:

- Size
- Manufacturer's grade
- Rated load and angle on which the rating is based
- Reach
- Numbers of legs
- Sling manufacturer
- Inspection due date label by hoist and rigging inspector

## Inspecting

Steel-chain sling users must visually inspect all slings before they are used as follows:

- Conduct a link-by-link inspection for the following defects: nicks, cracks, gouges, wear, bent links, stretched links, shearing of links, cracks in any section of link, scores, abrasions, heat damage, rust, corrosion or markings tending to weaken the links. Reject damaged items.
- Check steel-chain slings for uneven lengths when sling legs are hanging free.
- Check rings and hooks for bends, distortion, cracks in weld areas, corrosion, and scores, heat damage, or markings tending to weaken the links. Reject damaged items.
- Perform inspection on an individual-link basis. If any link does not hinge freely with the adjoining link, remove the assembly from service.
- Remove from service assemblies with deformed master links or coupling links.
- Remove from service assemblies if hooks have been opened more than 15% of the normal throat opening measured at the narrowest point or twisted more than 10 degrees from the plane of the unbent hook.
- Do not straighten deformed hooks or other attachments on the job. Assemblies with such defects must be reconditioned by the manufacturer or discarded.
- Remove from service assemblies with cracked hooks or other end attachments; assemblies with such defects must be reconditioned or repaired prior to return to service.
- Do not use homemade links, makeshift fasteners formed from bolts, rods, and the like, or other nonstandard attachments. Reject if discovered.
- Do not use makeshift or field-fabricated hooks on steel-chain slings. Reject if discovered.

## **Rigging Hardware and Accessories**

### **Eyebolts**

#### **Marking**

- Carbon steel eyebolts must have the manufacturer's name or identification trademark forged in raised characters on the surface of the eyebolt.
- Alloy steel eyebolts must have the symbol "A" (denoting alloy steel) and the manufacturer's name or identification mark forged in raised characters on the surface of the eyebolt.
- Eyebolts used for hoisting must be fabricated from forged carbon or alloy steel.
- Carefully inspect each eyebolt before use.
- Visually inspect the hole to ensure that there has been no deformation.
- Check the condition of the threads in the hole to ensure that the eyebolt will secure and the shoulder can be brought down snug.
- Ensure that the shank of the eyebolt is not undercut and is smoothly radiused into the plane of the shoulder or the contour of the ring for non-shouldered eyebolts.
- Destroy eyebolts that are cracked, bent, or have damaged threads.

### **Shackles**

#### **Marking**

Each shackle body must be permanently and legibly marked in raised letters by the manufacturer. Raised or stamped letters on the side of the bow must be used to show the following:

- Manufacturer's name or trademark
- Size
- Rated capacity, recommended safe working load
- Grade A shackles (regular strength) - together with their pins and bolts must be forged from carbon steel
- Grade B shackles (high strength) - together with their pins and bolts must be forged from alloy steel
- Shackle pins must fit freely (without binding) and seat properly



## Turnbuckles

Turnbuckles may be used in sling systems provided that they are engineered, designed, and approved as a part of the sling system. Approved turnbuckles must be marked and identified for use with the sling set for which they were designed and must be load-tested as part of the sling set.

### Marking

- Manufacturer's name or trademark and turnbuckle size must be permanently marked on the turnbuckle body
- Eyebolts must be fabricated from forged alloy steel
- Eyebolts must be provided with a jam nut of a type that does not depend upon deformation of the threads for security
- Turnbuckles must be inspected for damage before each use. Damaged threads, jamb nuts, or bent frame members make the unit unsuitable for use.

## Links and Rings

Links and rings are usually designed and manufactured as a part of the lifting hardware for a specific purpose, such as the peak link on multiple-leg slings; however, the rings and links may also be found on the load-attachment end of slings.

### Marking

- Rings or links should be marked by the manufacturer with the manufacturer's name or trademark and ring or link size
- Rings must be forged or welded from low alloy steel
- Welded rings or links must be subjected to a nondestructive weld test (NDT) and the results must be documented. (NDT is not required for forged rings or links.)

## Swivel Hoist Rings

### Marking

- Swivel hoist rings must have the manufacturer's name or trademark, working load limit (WLL), and recommended torque value permanently marked (forged, stamped, or inscribed) by the manufacturer on the swivel hoist ring. Permanently attached metal tag bearing the same information may also be used.
- Check that swivel hoist rings for hoisting are fabricated from forged carbon or alloy steel.
- Inspect permanently installed hoist rings before each use to ensure free movement of bail and swivel.
- Inspect swivel hoist rings thoroughly each before use.




- Inspect the hole to ensure that there has been no deformation.
- Check the condition of the threads in the hole to ensure that the hoist ring will secure and the bushing can be brought down for a snug fit.
- Destroy hoist rings that are cracked, bent, have damaged threads, or do not operate freely.

## **Wire Rope Clips (Clamps)**


### **Marking**

- Wire rope clips must be permanently and legibly marked with the size and manufacturer's identifying mark.


## Attachment 4 – Annual Below-hook Equipment Inspection Forms

Inspection Date	Inspector (print/sign name)				
<b>Structural and Mechanical Lifting Devices</b>					
Each device displays the following: (List details below)				Accept	Reject
	Rated capacity is marked and legible.				
	Rated capacity				
	Lifting device weight, (if over 100 lbs.)				
	Manufacturer or contractor's name if fabricated on-site				
	Serial number (if available)				
	Proof of inspection label by hoist and rigging inspector				

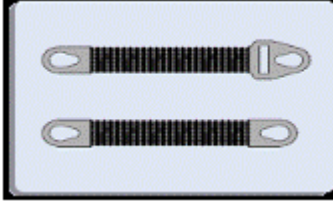
Attachment 4  
Equipment Inspection Forms (cont'd)

Inspection Date	Inspector (print/sign name)		
<i>Rigging Hooks</i>			
The manufacturer's identification is permanently marked. (List details below)		Accept	Reject
	Cracks, nicks, gouges		
	Deformation		
	Damage from chemicals		
	Damage, engagement, or malfunction of latch (if provided)		
	Evidence of heat damage		
	Wear		
	Hook attachment and securing means		

Attachment 4  
Equipment Inspection Forms (cont'd)


Inspection Date	Inspector (print/sign name)		
<i>Wire Rope Sling</i>			
Wire-rope slings are marked with the following information: (List details below)		Accept	Reject
	Name of trademark of manufacturer		
	Work load limit		
	Diameter or size		
	serial number		
Slings must be immediately removed from service if any of the following conditions are present:		Accept	Reject
	Missing or illegible sling identification		
	Ten randomly distributed broken wires in one rope lay or five broken wires in one strand in one rope lay		
	Wear or scraping of one-third the original diameter of the outside individual wire		
	Kinking, crushing, bird caging or any other damage resulting in distortion of the rope structure		
	Evidence of heat damage		
	End attachments that are cracked, deformed, or worn		
	Corrosion of the rope or end attachments		

Attachment 4  
Equipment Inspection Forms (cont'd)


Inspection Date	Inspector (print/sign name)			
<b>Metal-Mesh Slings</b>				
Metal-mesh slings must be removed from service if any of the following defects are present: (List details below)			Accept	Reject
	A broken weld or brazed joint along the sling edge			
	A broken wire in any part of the mesh			
	Reduction in wire diameter of 25% due to abrasion or 15% due to corrosion			
	Lack of flexibility due to distortion of the mesh			
	Distortion of the female handle so the depth of the slot is increased by more than 10%			
	Distortion of either end fitting so the width of the eye opening is decreased by more than 10%			
	A 15% reduction of the original cross-sectional area of metal at any point around a handle eye			
	Any distortion or twisting of either end fitting out of its plane			
	Cracked end fitting			
	Evidence of heat damage			




Attachment 4  
Equipment Inspection Forms (cont'd)

Inspection Date	Inspector (print/sign name)		
<i>Synthetic-web Slings</i>			
Each sling is marked with the following: (List details below)		Accept	Reject
	Manufacturer's name or trademark		
	Manufacturer's code or stock number		
	Type of synthetic web material		
	Rated loads for the type of hitches used		
Slings must be removed from service if any of the following defects are visible:			
	Acid or caustic burns		
	Melting or charring of any part of the surface		
	Snags, punctures, tears, or cuts		
	Broken or worn stitches		
	Wear or elongation exceeding the amount recommended by the manufacturer		
	Distortion of fittings		
	Knots in any part		
	Missing or illegible sling identification		



Attachment 4  
Equipment Inspection Forms (cont'd)

Inspection Date	Inspector (print/sign name)		
<b>Synthetic Round-slings</b>			
Each polyester round-sling is permanently marked or labeled showing the following: (List details below)		Accept	Reject
	Name or trademark of manufacturer		
	Manufacturer's code or stock number		
	Rated capacities for the three basic hitches (vertical, choker, vertical basket)		
	Core fiber type – if cover(s) is of a different fiber type, both fiber types must be identified		
	Length (reach) – bearing point to bearing point		
	Each manufacturer must internally identify their product with name or trademark for traceability		
Slings are removed from service if any of the following defects are visible:			
	Missing or illegible sling identification		
	Acid or caustic burns		
	Melting or charring of any part of the surface		
	Snags, punctures, tears, cuts or abrasive wear that expose the core yarns		
	Broken or worn stitches in the cover which exposes the core yarns		
	Wear or elongation exceeding the amount recommended by the manufacturer		
	Stretched, cracked, worn, pitted or distortion of fittings		
	Knots in any part		

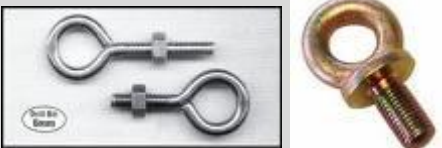

Attachment 4  
Equipment Inspection Forms (cont'd)

Inspection Date	Inspector (print/sign name)		
<i>Alloy Steel-Chain, and Wire Rope Slings</i>			
Alloy Steel-chain slings must be marked with the following: (List details below)		Accept	Reject
	Size		
	Manufacturer's grade		
	Rated load and angle on which the rating is based.		
	Reach		
	Numbers of legs		
	Sling manufacturer		
	Inspection due date label by hoist and rigging inspector		
Inspection			
	Link-by-link inspection		
	Uneven lengths when sling legs are hanging free		
	Rings and hooks		
	Deformed master links or coupling links		
	Hooks, twisted more than 10° or opened more than 15%		
	Hooks, Cracked		
	Homemade links, makeshift fasteners formed from bolts, rods, and the like, or other nonstandard attachments		
	Makeshift or field-fabricated hooks on steel-chain slings		





Attachment 4  
Equipment Inspection Forms (cont'd)

Inspection Date	Inspector (print/sign name)			
<b>Shackles</b>				
Raised or stamped letters on the side of the bow show the following: (List details below)			Accept	Reject
	Manufacturer's name or trademark			
	Size			
	Rated capacity, recommended safe working load			
	Shackle pins fit freely (without binding), and seat properly			

Attachment 4  
Equipment Inspection Forms (cont'd)

Inspection Date	Inspector (print/sign name)			
<b>Eyebolts</b> (List details below)			Accept	Reject
	The manufacturer's name or identification trademark is forged in raised characters on the surface of the eyebolt.			
	There has been no deformation of the eye			
	The shank of the eyebolt is not undercut and is smoothly radiused into the plane of the shoulder or the contour of the ring for non-shouldered eyebolts			
	The threads are secure and the shoulder can be brought down snug			
<b>Turnbuckles</b> (List details below)			Accept	Reject
	Manufacturer's name or trademark and turnbuckle size is permanently marked on the turnbuckle body.			
	Eyebolts are provided with a jam nut of a type that does not depend upon deformation of the threads for security.			
	Damaged threads, jamb nuts, or bent frame			

Attachment 4  
Equipment Inspection Forms (cont'd)

Inspection Date	Inspector (print/sign name)			
<b>Links and Rings</b>			Accept	Reject
	Rings or links are marked by the manufacturer with the manufacturer's name or trademark and ring or link size			
<b>Wire Rope Clips (Clamps)</b>			Accept	Reject
	Permanently and legibly marked with the size and manufacturer's identifying mark			
<b>Swivel Hoist Rings</b>			Accept	Reject
	The manufacturer's name or trademark, working load limit (WLL), and recommended torque value permanently marked (forged, stamped, or inscribed) by the manufacturer on the swivel hoist ring			
	Hoist rings have free movement of bail and swivel			
	There has been no deformation of the hole			
	The threads in the hole are in a condition that ensure that the hoist ring will secure and the bushing can be brought down for a snug fit			

## Attachment 5 – Crane/Hoist/Lift Gear Equipment Inventory

Hoist			
Type	Quantity		
Manufacturer	Model Number	Serial Number	Load Rating
Crane			
Type	Quantity		
Manufacturer	Model Number	Serial Number	Load Rating
Structural and Mechanical Lifting Devices			
Type	Quantity		
Manufacturer	Model Number	Serial Number	Load Rating
Rigging Hooks			
Type	Quantity		
Manufacturer	Model Number	Serial Number	Load Rating
Wire Rope Sling			
Type	Quantity		
Manufacturer	Model Number	Serial Number	Load Rating
Metal-Mesh Slings			
Type	Quantity		
Manufacturer	Model Number	Serial Number	Load Rating
Synthetic-web Slings		Quantity	
Type	Quantity		
Manufacturer	Model Number	Serial Number	Load Rating

Synthetic Round-slings			
Type	Quantity		
Manufacturer	Model Number	Serial Number	Load Rating
Alloy Steel-Chain , and Wire Rope Slings			
Type	Quantity		
Manufacturer	Model Number	Serial Number	Load Rating
Shackles			
Type	Quantity		
Manufacturer	Model Number	Serial Number	Load Rating
Eyebolts			
Type	Quantity		
Manufacturer	Model Number	Serial Number	Load Rating
Turnbuckles			
Type	Quantity		
Manufacturer	Model Number	Serial Number	Load Rating
Links and Rings			
Type	Quantity		
Manufacturer	Model Number	Serial Number	Load Rating
Swivel Hoist Rings			
Type	Quantity		
Manufacturer	Model Number	Serial Number	Load Rating
Wire Rope Clips (Clamps)			
Type	Quantity		
Manufacturer	Model Number	Serial Number	Load Rating



## Attachment 6 – Crane/Hoist Certifying Agency – Vendor List

<b><u>Crane Load test / Inspection Service – Contracted through EH&amp;S</u></b>	<b><u>Crane Operator Training Services</u></b>
<p>Konecranes 5637-B La Ribera Street Livermore, CA 94550 <a href="http://www.konecranesamericas.com">www.konecranesamericas.com</a> Phone: 925-273-0140 Fax: 925-273-0145</p> <p><b><u>Other Crane Load-test / Inspection Services</u></b></p> <p>All-Cal Equipment Services 3724 S Highway 99 Stockton, CA 95215 <a href="http://allcales.com/">http://allcales.com/</a> 209-464-1472 Fax 209-464-2314</p> <p>Crane America Services 6336 Patterson Pass Road Livermore, CA 94550-9577 <a href="http://www.craneamerica.com">www.craneamerica.com</a> Phone: 925- 960-8830 Fax: 925-960-8836</p>	<p>California Crane School 16325 State Highway 49 Grass Valley, California 95949 (800) 496-3648 <a href="mailto:pass@californiacraneschool.com">pass@californiacraneschool.com</a> <a href="http://www.californiacraneschool.com/contact.asp">http://www.californiacraneschool.com/contact.asp</a></p> <p>All Crane Training USA Stephanie Bailey Phone: 510-638-6243 Fax: 510-638-7438 Email: <a href="mailto:dbce_inc@yahoo.com">dbce_inc@yahoo.com</a> Website: <a href="http://www.allcranetrainingusa.com">www.allcranetrainingusa.com</a></p> <p>Industrial Training Solutions, LLC Sandy Phelps Headquarters: San Jose Phone: 408-489-0526 Email: <a href="mailto:sphelps@callits.biz">sphelps@callits.biz</a></p>

## Attachment 7 – Annual 3+ Ton Crane Inspection Form

If the crane has more than one hoist, a separate annual inspection form  
is filled out for each hoist.

**Crane Inspected** \_\_\_\_\_ **Load Rating** \_\_\_\_\_

**Date** \_\_\_\_\_

If more than one hoist on the crane, specific hoist inspected:

\_\_\_\_\_

**1. Crane hooks have been inspected for the following:**

**Cracks; Deformation of throat opening more than 15% in excess of normal opening;  
More than 10 degree twist from plane of unbent hook.**

The following hook(s) has been removed from service on this date: \_\_\_\_\_

\_\_\_\_\_

**2. Wire ropes have been inspected for proper lubrication, excessive wear, broken strands, and proper reeving:**

The following rope(s) has been removed from service on this date: \_\_\_\_\_

\_\_\_\_\_

Conditions such as the following are sufficient reason for replacement:	Pass	Fail
In running ropes, six randomly distributed broken wires in one rope lay, or three broken wires in one strand in one lay.		
Wear of 1/3 the original diameter of outside individual wires.		
Kinking, crushing, bird caging, or other damage resulting in distortion of the rope structure.		
Evidence of any heat damage.		
Reductions from nominal diameter of more than: 1/64 inch for diameters up to 5/16 inch 1/32 inch for diameters 3/8 inch to 1/2 inch 3/64 inch for diameters 9/16 inch to 3/4 inch 1/16 inch for diameters 7/8 inch to 1 1/8 inch 3/32 inch for diameters 1 1/4 inch to 1 1/2 inch		
In standing ropes, more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection.		
Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.		

- 3. Examination of structure or parts by electronic, ultrasonic, or other nondestructive methods has been conducted by a State Certifying Agency, if necessary.**

State Certifying Agency \_\_\_\_\_

Print Name of Inspector \_\_\_\_\_

Signature \_\_\_\_\_

Date of Inspection \_\_\_\_\_

- 4. Wire rope which has been idle for a period of a month or more due to shut-down or storage of a crane is given a thorough inspection before it is placed in service. This inspection is for all types of deterioration and is performed by a qualified person whose approval is required for further use of the rope.**

Qualified person who conducted the inspection \_\_\_\_\_

Signature \_\_\_\_\_

Date of Inspection \_\_\_\_\_

Specific rope inspected \_\_\_\_\_

## FAQ/FACT SHEET – UCB CRANE/HOIST SAFETY PROGRAM

# EH&S FACT SHEET Crane/Hoist Safety Program



The UC Berkeley Crane/Hoist Safety Program ensures compliance with Cal/OSHA regulations for Crane/Hoist Safety. The program applies to any overhead lifting device that is attached to any building, research facility or equipment owned or operated by UC Berkeley, and to anyone who operates the device.

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## **EH&S FAQ/Fact Sheet – Crane Safety Program**

### **What is a Crane?**

A machine for lifting or lowering a load and moving it horizontally, in which the hoisting mechanism is an integral part of the machine. It may be driven manually or be powered and may be a fixed or a mobile machine, but does not include stackers, industrial lift trucks, power shovels, backhoes or excavators.

### **What is a Hoist?**

An apparatus for raising or lowering a load by the application of a pulling force, but does not include a car or platform riding in guides, a monorail or any other type of horizontal moving device. Note that a hoist is an integral part of any crane but also may be used alone and not part of a crane.

### **Does this Program apply to my department?**

If your department owns, uses, or has in place a crane or hoist of any load rating, whether in use or not used, then this Program applies to your department.

### **We have a crane/hoist that is no longer used. What do we have to do?**

If your department owns, but no longer uses a crane or hoist, EH&S will upon request come out to your department and “lock out and tag out” your crane or hoist so that it can no longer be used. If your department chooses to have this done, then inspections and load testing of the “moth-balled” equipment and rigging is no longer required by Cal/OSHA or this program; however, if the equipment is to be used again, it will need to be re-load tested and inspected by a Certifying Agency before use. Contact EH&S at 642-3073 should you wish to ‘mothball’ your crane and hoist equipment.

### **Does this program apply to all overhead lifting equipment we operate?**

Equipment attached to building structure that lifts, or equipment that is mobile or moveable and lifts but is not classed as an “industrial lift truck”, rigging equipment selection, inspection, maintenance and use are all governed under this program. Learn more about equipment governed under this program by reviewing the “Types of Cranes/Hoists/Rigging” section of the program.

### **We have equipment regulated by the Crane / Hoist Safety Program. What do we do to comply?**

1. Conduct an initial inventory of all crane and hoist equipment under Department ownership.
2. Determine which equipment stays “in use” and which is to be permanently “locked out” by EH&S and/or disposed of.
3. Arrange for EH&S to permanently “lock out” unused crane/lift equipment or remove to “Overstock and Surplus”.

## EH&S FAQ/Fact Sheet – Crane Safety Program

4. Determine what program requirements apply to each piece of functioning equipment based upon lift capacity ( $\leq 3$ Ton or  $> 3$ Ton).
5. Schedule with EH&S and contract with a “Certificating Agency” an initial Inspection/Maintenance/Load Testing of your department’s equipment and rigging. (Matching funds may be available for this service.)
6. Identify “Qualified Operators and Stand-by Persons” within Department for training.
7. Schedule training of “Qualified Operators” with EH&S.
8. Document Operator Qualifications and successful completion of training and insert into personnel file with copies sent to EH&S.
9. Destroy and dispose of unwanted or damaged-beyond-repair lift equipment and rigging.
10. Set up and maintain Records of all Crane/Hoist Safety Program activities.
11. For all Cranes/Hoists - Conduct quarterly documented inspections and annual documented inspections per guidance in the program.
12. For “Cranes Over 3 Ton Capacity” - Arrange for documented annual inspections and quadrennial load testing, and required maintenance which must be completed by a Cal/OSHA approved “Certificating Agency”.

### The crane is rated more than three tons. What do we have to do?

The [Administrative Requirements](#) section of the Crane Program describes how the crane’s Owner-Department must document the following activities for cranes rated more than three tons:

- Schedule an initial load test performed by a [Certificating Agency](#).
- Perform daily (or before use) inspections ([Attachment 2](#)).
- Perform thorough quarterly in-house inspections ([Attachment 2](#) & [Attachment 4](#)).
- Arrange for annual inspection by a Certificating Agency (this can serve as one of the quarterly inspections and documentation is provided by the Certificating Agency).
- Arrange for quadrennial load tests by a Certificating Agency. (This can serve as one of the quarterly and annual inspections and documentation is provided by the Certificating Agency).
- Remove deficient cranes and/or lift gear from service until they are repaired.
- Identify Owner-Department person(s) who are “[Qualified Operators](#)” to inspect and operate cranes.
- Assure “Qualified Operators” are properly trained on crane safe-work practices and procedures according to the program [training requirements](#).
- Maintain [records of program activities](#) relating to each Department-Owned crane.

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### The Crane is rated three tons or less. What do we have to do?

The [Administrative Requirements](#) section of the Crane Program describes how the crane's Owner-Department must document the following activities for cranes rated 3-tons or less:

- Arrange for an initial load test performed by a Certifying Agency.
- Perform daily (or before use) inspections following an Operator checklist outlined in [Attachment 2](#).
- Perform and keep on file documented quarterly in-house inspections using [Attachment 2](#).
- Remove deficient cranes from service until they are repaired.
- Identify Owner-Department person(s) who are "[Qualified Operators](#)" to inspect and operate cranes.
- Assure "Qualified Operators" are properly trained on crane safe-work practices and procedures according to the program [training requirements](#) and documented using [Attachment 1](#).
- Maintain [records of program activities](#) relating to each Department-Owned crane.

### If we only have a hoist, what do we have to do?

- Perform daily inspections each day the hoist is used following the checklist in [Attachment 2](#).
- Perform and keep on file documented quarterly in-house inspections using [Attachment 2](#).
- Remove deficient hoists from service until they are repaired.
- Identify Owner-Department person(s) who are "[Qualified Operators](#)" to inspect and operate hoists.
- Assure "Qualified Operators" are properly trained on crane safe-work practices and procedures according to the program [training requirements](#) and documented using [Attachment 1](#).
- Maintain [records of program activities](#) relating to each Department-Owned hoist.

### Can we change the manufactured load-rating of a crane/hoist?

Any crane or hoist may be "derated" to a lesser load rating, but deration must be done by a Certifying Agency with appropriate documentation kept on file. The derated load-rating must be plainly posted on the lifting-device with permanent signage.

If the load rating is to be increased beyond the manufactured load rating, such a system must be engineered by a structural engineer who signs-off and "stamps" the higher load-rating for the lifting-device. The re-engineered system must be load-tested by a Certifying Agency with appropriate documentation kept on file. The higher-rated load-rating must be plainly posted on the lifting-device with permanent signage. Significant cost in engineering/rebuilding the crane or hoist and its support

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structure are likely to be incurred to re-rate a crane/hoist system to a higher load capacity than originally designed.

### Who do we contact for Load Testing?

Each Owner-Department is responsible to assure their cranes and hoists are current in Certifying/inspection by contracting with a Cal/OSHA approved “Certificating Agency”. For cranes larger than 3-tons capacity, initial load testing and annual inspection services combined with quadrennial load testing must be performed by a Cal/OSHA qualified Certificating Agency. Owner departments of this equipment are required to arrange for the initial and quadrennial load testing and annual inspections of this equipment directly with a Certificating Agency. See [Attachment 6](#) of the Crane Program for a list of Crane/Hoist Load test/Inspection Certifying Agencies approved by EH&S for campus use.

For cranes / hoist 3 tons or less in capacity, contact EH&S (642-3073) for further information and to obtain possible funding for crane / hoist inspections for newly installed or existing equipment.

### What do we have to do concerning Rigging and Lift gear?

“Below-the-Hook” rigging requires pre-use visual inspections by trained “Qualified Operators”, must be inventoried, and must have a load rating label on the device by the manufacturer. This process is documented annually by owner departments using [Attachments 3, 4, and 5](#).

### Who needs to be trained?

[Qualified Operators](#) and [Stand-by Persons](#) must be trained on the safe use and inspection of the crane/hoist(s) they work with through a documented training process. As an option, a person may be designated “Qualified Operator” by their supervisor, PI, or Department Manager who have the qualifications and experience themselves to understand the hazards associated with the lift equipment, and the “Qualified Operator’s” skills/knowledge to safely work around those hazards. Either way, a “Qualified Operator” is [documented by completing Attachment 1](#) and keeping it in the person’s file and the crane log book.

### Who do we contact to get training or program support?

Operator Training can be conducted by EH&S or a contractor. See [Attachment 6](#) for a list of Training Service providers, or contact an EH&S Crane Specialist through the EH&S Front Desk, 642-3073, for scheduling EH&S training, finding a qualified trainer or to seek other program support.



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### How do we get Cranes, Rigging Inspections and Load Testing done?

1. For cranes/hoists 3 tons or less, EH&S has prequalified a “Certifying Agency Contractor” through an RFP that is available for hire as noted in [Attachment 6](#) of this program.
2. For the known cranes/hoists rated three tons or less, and for a limited time after the implementation of this program, EH&S is scheduling and funding load tests for this equipment at no cost to owner departments. EH&S will be contacting the responsible parties in the departments that own the cranes and arranging scheduling for the load testing and inspections. Departments may also contact EH&S (642-3073) and ask to have their cranes/hoists load tested and inspected.
3. EH&S will continue to fund load tests and inspections of new cranes/hoists three tons and less until the funds are exhausted. Once these funds are exhausted, the owner department is still required to have the load testing/inspection of cranes/hoists three tons and less completed by a Certifying Agency, but cost of these activities must be borne by the owner department.
4. For new equipment, and cranes/hoists in excess of three ton capacity, owner departments contact EH&S when a crane/rigging inspection need is identified. EH&S partners with the crane-owner department to guide inspections/load testing, and is on site for initial inspection and load testing along with the department’s responsible person.
5. For existing and new crane/hoist equipment that is greater than three ton capacity, the equipment must be enrolled by the owner department in an annual inspection contract with a Certifying Agency, and have quadrennial load testing completed on the equipment by the Certifying Agency. All costs associated with the ownership and operation of cranes/hoists in excess of 3 tons are borne by the owning department.