This course is intended as a basic introduction to OSHA's standard 29 CFR 1926 Subpart CC – Cranes & Derricks in Construction. Emphasis is placed on employer and employee duties and responsibilities. It is designed to address the most common compliance issues that employers will face.
OSHAcademy Course 158 Study Guide

Crane Safety: Basic

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Contact OSHAcademy to arrange for use as a training document.

This study guide is designed to be reviewed off-line as a tool for preparation to successfully complete OSHAcademy Course 158.

Read each module, answer the quiz questions, and submit the quiz questions online through the course webpage. You can print the post-quiz response screen which will contain the correct answers to the questions.

The final exam will consist of questions developed from the course content and module quizzes.

We hope you enjoy the course and if you have any questions, feel free to email or call:

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Modules and Learning Objectives

Module 1 - Duties, Responsibilities, and Inspections

Learning objectives in this module include:

- Describe the various types of cranes used on construction sites.
- Define "controlling employer" and describe duties related to the position.
- Describe the criteria for competent persons and qualified persons.
- Describe the basic duties of the crane operator, signal person, crew and rigger.
- List the various required and additional training and certification requirements for operators.
- Describe the shift/monthly inspection and the procedures for corrective actions.
- Describe the process for returning equipment to service after repair or adjustment.

Module 2 - Operations, Signaling, and Hoisting

Learning objectives in this module include:

- Define and give an example of "rated capacity."
- Discuss operator responsibilities while the load is lifted.
- Describe the four primary methods of signaling: hand, voice, audible, and new (e.g., video etc.).
- Describe the methods used to maintain work area control around crane operations.
- Describe requirements for personnel safety while a load is suspended.
- Describe the precautions to take and limitations when hoisting personnel.
Module 1: Duties, Responsibilities, and Inspections

Introduction

Moving large, heavy loads is crucial to today's manufacturing and construction industries. Much technology has been developed for these operations, including careful training and extensive workplace precautions. There are significant safety issues to be considered, both for the operators of the diverse "lifting" devices, and for workers in proximity to them. This course is a starting point for finding information about these devices and their operation.

OSHA's standard applies to power-operated equipment used in construction work that can hoist, lower and horizontally move a suspended load, unless such equipment is specifically excluded from coverage.

Cranes Types

The types of cranes and derricks in the next few tabs are the most commonly used in construction and covered by OSHA's crane standard.

**Mobile cranes:** These cranes use a lifting device incorporating a cable suspended latticed boom or hydraulic telescopic boom designed to be moved between operating locations by transport over the road. Mobile cranes include crawler mounted, wheel-mounted, rough terrain, all-terrain, commercial truck-mounted, and boom truck cranes.

Quiz Instructions

After each section, there is a quiz question. Make sure to read the material in each section to discover the correct answer to these questions. Circle the correct answer. When you are finished go online to take the final exam. This exam is open book, so you can use this study guide.

1. These cranes have cable suspended latticed booms or hydraulic telescopic booms and are designed to be moved between operating locations.
   a. Articulating cranes
   b. Derrick cranes
   c. Tower cranes
   d. Mobile cranes
**Tower cranes:** Lifting structures which utilize a vertical mast or tower to support a working boom (jib) in an elevated position. Loads are suspended from the working boom. While the working boom may be of the fixed type (horizontal or angled) or have luffing capability, it can always rotate to swing loads, either by rotating on the top of the tower (top slewing) or by the rotation of the tower (bottom slewing). The tower base may be fixed in one location or ballasted and moveable between locations. Tower cranes include those with a fixed jib (hammerhead boom), those with a luffing boom, and self-erecting tower cranes.

**Articulating cranes:** Also known as knuckle-boom cranes and loader cranes. These are cranes whose boom consists of a series of folding, pin-connected structural members, typically manipulated to extend or retract by power from hydraulic cylinders.

**All derricks** (except for gin poles used for the erection of communication towers): This crane is composed of a tower that doesn’t actually bend but instead pivots at the base. The tower is usually made up of crisscrossing steel pipes and braces. This gives the crane a great deal of strength using very little structure. Four lines are connected to the tower; the crane tower can move in every direction because the lines are independent of one another. Hanging over the end of the tower is a single fifth line that has a hook or other attachment on the end. This fifth line moves up and down and attaches to loads.

2. Which of the following cranes have booms that consist of a series of folding, pin-connected structural members?

   - a. Tower cranes
   - b. Articulating cranes
   - c. Derricks
   - d. Mobile cranes

**Controlling Employers**

The employer that is a prime contractor, general contractor, construction manager or any other legal entity which has the overall responsibility for the construction of the project (its planning, quality and completion) is considered the controlling employer, sometimes called the controlling entity.

- The controlling entity is responsible for seeing that the ground conditions are adequate to support the equipment.
• The controlling entity must also inform the user and the operator of the equipment of the location of hazards beneath the equipment set-up area (such as voids, tanks, utilities) if those hazards are identified in documents (such as site drawings, as-built drawings, and soil analyses) in the possession of the controlling entity (whether at the site or off-site) or of any other hazards known to the controlling entity.

• The controlling entity must also establish a system to coordinate the operations of two cranes that operate within each other's working radius.

The A/D Director

All assembly/disassembly operations must be directed by an individual who meets the criteria for both a competent person and a qualified person, or by a competent person who is assisted by one or more qualified persons. The A/D director must understand the applicable assembly/disassembly procedures. The A/D director must take the following precautions to protect against potential hazards associated with the operation.

3. Crane assembly/disassembly operations must be directed by one or more persons who meet the requirements for _____.
   a. competent and qualified person
   b. competent person
   c. qualified person
   d. competent person and engineer

Qualified Person

This is a person who has earned a recognized degree, certificate, or professional standing, or has extensive knowledge, training and experience. This is also a person that has successfully demonstrated the ability to solve/resolve problems relating to the subject matter, the work, or the project.

• Qualified person duties include conducting annual/comprehensive inspections of all equipment as well as inspections of modified equipment.

Competent Person
This is the person who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

- A competent person must conduct shift and monthly inspections of all equipment.
- A qualified crane operator who has the authority to take corrective measures will be considered a competent person.

Both qualified and competent persons may also be responsible for duties dealing with developing assembly/disassembly procedures, wire rope safety, fall protection, maintenance and repair, hoisting personnel, multiple crane/derrick lifts, equipment modifications, tower cranes, derricks, and floating cranes/derricks.

4. **Who is responsible for conducting shift and monthly crane inspections on a worksite?**

   a. The A/D Director
   b. A competent person
   c. A qualified person
   d. A registered engineer

**The Crane Operator**

Crane operators should be certified before they can operate a crane on their own. There are generally two options for certification:

1. certification by a nationally accredited crane operator testing organization, or
2. certification by an audited employer program.

**The Crew**

Before the operation begins, the A/D Director must ensure that the crew members understand all of the following:

- their tasks,
• the hazards associated with their tasks, and

• the hazardous positions/locations that they need to avoid.

Before a crew member goes to a location that is out of view of the operator and is either in, on, or under the equipment, or near the equipment (or load) where the crew member could be injured by movement of the equipment (or load), the crew member must inform the operator that he/she is going to that location.

Whenever the operator knows that a crew member is in such a potentially dangerous position, the operator must not move any part of the equipment (or load) until the operator is informed in accord with a pre-arranged system of communication that the crew member is in a safe position.

**The Rigger**

When rigging is used for assembly/disassembly, the employer must ensure that the rigging work is done by a rigger who meets the requirements as a qualified person and successfully demonstrates the ability to solve/resolve problems relating to rigging.

A rigger is required when:

• Rigging is part of assembly or disassembly work involving a crane.

• Workers are within the fall zone and are hooking, unhooking, or guiding a load.

5. **Before crane operations begin, the A/D Director must ensure that the crew members understand each of the following, EXCEPT _____.

   a. their tasks
   b. the hazards of the task
   c. the hazards/locations they need to avoid
   d. their duties as authorized employees

**Training**

The training requirements of the standard exist to help ensure your employees can go home at the end of the day. Training is essential.

OSHA [1926.1430](#) requires training in specific topics. Below is a list of the training requirements:
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- **Overhead powerlines.** See Sections 1408(g) and 1410(m).

- **Signal persons.** See Section 1428(c)

- **Operators.** See Section 1427 for the training required for operators during the four-year transitional period for operator qualification/certification, for operators of equipment that does not require qualification/certification, and for operators-in-training.

**Additional Training Requirements for Operators**

Operators must also receive training on the following topics:

- **Boom movement.** On friction equipment, whenever moving a boom off a support. See 1926.1417(f) and (j).

- **Emergency procedures.** The manufacturer's emergency procedures for halting unintended equipment movement.

- **Competent persons and qualified persons.** The employer must train each competent person and each qualified person regarding the requirements of this subpart applicable to their respective roles.

- **Crush/pinch points.** The employer must train each employee who works with the equipment to keep clear of holes, and crush/pinch points and the hazards addressed in 1926.1424.

- **Tagout.** If authorized to start/energize equipment or operate equipment controls (such as maintenance and repair employees), operators and additional authorized employees must be trained in proper tag-out and start-up procedures in 1926.1417(f) and (g).

**Training Administration**

For each employee who must be trained the employer must:

- Evaluate each employee to confirm that the employee understands, has adequate skills, and abilities (KSAs) related to the information provided in the training.
• Provide refresher training in relevant topics for each employee when, based on the conduct of the employee or an evaluation of the employee's knowledge, skills, or ability, there is an indication that retraining is necessary.

• Provide the training at no cost to the employee.

6. Those employees who are authorized to start/energize equipment must be trained in _____.
   a. basic safety orientation
   b. tagout procedures
   c. how to prevent unnecessary boom movement
   d. hazardous weather conditions

Qualification and Certification

An operator will be deemed qualified to operate a particular piece of equipment if the operator is certified under paragraph 1926.1427(b) for that type and capacity of equipment or for higher-capacity equipment of that type.

If no accredited testing agency offers certification examinations for a particular type and/or capacity of equipment, an operator will be deemed qualified to operate that equipment if the operator has been certified for the type/capacity that is most similar to that equipment and for which a certification examination is available. The operator's certificate must state the type/capacity of equipment for which the operator is certified.

Getting Certified or Qualified

There are four qualification or certification options for crane operators.

Option 1 - Certification after passing both a written and practical test administered by an accredited testing organization. Certification is valid for 5 years.

Option 2 - Qualification after passing a written and practical test by an audited employer program. Qualification is valid for 5 years.

Option 3 - Qualification by the U.S. Military (limited to employees of the Department of Defense or members of the Armed Forces). The qualification is valid for the period of time stipulated by the issuing authority.
Option 4 - Licensing by a government entity. If the crane operator is working in a jurisdiction that requires a state or local crane license and the licensing process meets the requirements of this standard, the operator must obtain such a license. Licensing is valid for the period of time stipulated by the licensing department/office, but no longer than 5 years.

7. An operator may become certified to operate equipment through each of the following options, EXCEPT _____.

   a. completion of a college degree program
   b. audited employer program examination
   c. U.S. Military (Limited to DoD employees)
   d. accredited testing organization examination

Shift and Monthly Inspections

A competent person must visually inspect the equipment each shift the equipment is used. Taking apart equipment components and booming down is not required as part of this inspection unless the results of the visual inspection or trial operation indicate that further investigation is needed. The monthly inspection is the same for most equipment.

- If the inspection shows a safety device is not working properly, the equipment must not be used.

- If it shows an operational aid is not working properly, the equipment may be used for a limited period (7 or 30 calendar days depending on the type of operational aid) as long as specified temporary alternative precautions are taken.

- For the other items covered by the inspection, if the deficiency is serious enough to be a safety hazard, it must not be used until the deficiency is corrected.

Shift inspections need not be documented, however monthly inspection do need to be properly documented and maintained for a minimum of three months.

Before the equipment can be used, it must be inspected by a qualified person to ensure it is configured in accord with manufacturer equipment criteria.

- qualified person may be the A/D director
• where manufacturer equipment criteria are unavailable, a qualified person must determine if a registered professional engineer (RPE) is required to assist

Corrective Action

If a qualified person who conducts an inspection identifies any deficiency in any of the items inspected and determines the deficiency constitutes a safety hazard, the equipment must be taken out of service until the deficiency is corrected.

If a qualified person determines, even though not presently a safety hazard, the deficiency needs to be monitored, the employer must ensure the deficiency is checked in the monthly inspections.

8. Crane equipment must be visually inspected by _____ each shift the equipment is used.
   a. the A/D Director
   b. a competent person
   c. an operator
   d. a member of the crew

Severe Service Inspections

Where the severity of use/conditions is such that there is a reasonable probability of damage or excessive wear (such as loading that may exceed rated capacity, shock loading exceeding the rated capacity, or prolonged exposure to a corrosive atmosphere), the employer must stop using the equipment and a qualified person must:

• Inspect the equipment for structural damage to determine if the equipment can continue to be used safely.

• Determine if any items/conditions must be inspected during an annual inspection (if so, a qualified person must inspect those items/conditions).

Inspection of Non-Regular Equipment

Equipment which has been idle for three months or more must be inspected by a qualified person in accord with the requirements for monthly inspections before being used.
Inspection of Modified Equipment

Equipment with modifications or additions which affect the safe operation of the equipment (such as a safety device or operational aid, critical part of a control system, power plant, braking system, load-sustaining structural components, load hook, or in-use operating mechanism) or capacity must be inspected by a qualified person, prior to initial use.

Note: Under Standard 1434, any such modification/addition must be approved by either the manufacturer or a RPE. The inspection must assure the modifications or additions have been made in accord with the approval and must include functional testing of the equipment.

9. What must be done if you have a crane that has been idle for four months?
   a. Have an operator energize and test the equipment
   b. Take it in to the maintenance facility for an overhaul
   c. Have a qualified person inspect the crane
   d. Nothing, since it has to be idle for six months

Inspection of Repaired/Adjusted Equipment

Equipment with a repair or adjustment to ensure safe operation must be inspected by a qualified person, prior to initial use. This requirement applies to adjustment to a safety device or operator aid, critical part of a control system, power plant, braking system, load-sustaining structural components, load hook, or in-use operating mechanism.

A qualified person must determine if the repair/adjustment meets manufacturer equipment criteria (where applicable and available). Where manufacturer equipment criteria are unavailable or inapplicable, a qualified person must determine if a registered professional engineer (RPE) is needed to develop criteria for the repair/adjustment.

If an RPE is not needed, the employer must ensure the criteria is developed by a qualified person. If an RPE is needed, the employer must ensure criteria is developed by the RPE. The inspection must determine if the repair/adjustment meets the criteria developed by the RPE or qualified person and must include functional testing.
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<td><strong>10. What must occur to verify repair or adjustment of crane equipment meets developed criteria?</strong></td>
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<tr>
<td>a.</td>
<td>Determination of the adequacy of criteria</td>
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<td>b.</td>
<td>On-the-job verification and validation</td>
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<td>c.</td>
<td>Follow-up inspection by a competent person</td>
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<td>d.</td>
<td>Conduct functional testing</td>
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Module 2: Operations, Signaling, and Hoisting

Rated Capacity

One of the most serious hazards that cranes present is collapse of the equipment caused by exceeding the crane's rated capacity. The term "rated capacity" is defined as:

the maximum working load permitted by the manufacturer under specified working conditions. Such working conditions typically include a specific combination of factors such as equipment configuration, radii, boom length, and other parameters of use.

The combination of factors that enter into rated capacity is set forth in a load chart that must be on the equipment. In general, the load chart states the weight of the load that the crane can lift at different boom radii. The longer the radius at which the lift occurs, the smaller amount of weight the crane can lift.

Cranes must not be operated in excess of its rated capacity. Some crane users believe they can safely exceed the rated capacity because the manufacturer includes a safety factor in the load chart. However, any safety factor included by the manufacturer is not intended to be treated as excess capacity. It is included because a variety of variable worksite conditions, such as swinging of the load caused by wind or other factors, can reduce the capacity of the crane from that which exists under ideal conditions.

To comply with the rated capacity, the weight of the load must be known. Before beginning a lift, you must determine the load weight by using a reliable means.

1. The combination of factors that enter into rated capacity is _____.
   a. set forth in a load chart
   b. located in the contractors’ office
   c. indicated on the capacity plate
   d. calculated by the operator

Other Manufacturer Procedures

In addition to complying with the rated capacity, the operator must comply with all other manufacturer procedures applicable to the operation of the equipment. If the manufacturer's procedures are unavailable, procedures for the operational controls must be developed by a
qualified person. Procedures related to the capacity of the equipment must be developed and signed by a registered professional engineer familiar with the equipment.

All procedures applicable to the operation of the equipment, including rated capacities (load charts), recommended operating speeds, special hazard warnings, instructions, and operator's manual, must be readily available in the cab at all times for use by the operator.

**Operator Attention**

The operator must not engage in any practice or activity that diverts their attention while engaged in operating the equipment, such as the use of a cell phone (except when used for signal communications).

**Operator Responsibility While the Load is Suspended**

The operator must not leave the controls while the load is suspended except where ALL of the following criteria are met:

- The operator remains adjacent to the equipment and is not engaged in any other duties.
- The load is to be held suspended for a period of time exceeding normal lifting operations.
- The competent person determines that it is safe to do so and implements measures necessary to restrain the boom hoist and telescoping, load, swing, and outrigger or stabilizer functions.
- Barricades or caution lines and notices are erected to prevent all employees from entering the fall zone. No employees are permitted in the fall zone.

The four criteria immediately above do not apply to working gear (such as slings, spreader bars, ladders, and welding machines) where the weight of the working gear is negligible relative to the lifting capacity of the equipment as positioned, and the working gear is suspended over an area other than an entrance or exit.
2. Which of the following actions is NOT allowed if the operator leaves the crane controls while a load is suspended?

   a. The load is required to be suspended longer than normal lifting operations
   b. The operator assists in maneuvering another suspended load
   c. The competent person determines it is safe to keep the load suspended
   d. Barricades or caution lines and warning notices are erected

Tagging Out-of-Service Equipment and Functions

When the equipment is out of service, a tag must be placed in the cab stating that the equipment is out of service and is not to be used. Where a function is out of service, a tag must be placed in a conspicuous position stating that the function is out of service and is not to be used. The equipment or function may not be used until the tag is removed by an authorized person.

Precautions During Startup

Before starting the engine, the operator must verify that all controls are in the proper starting position and that all personnel are in the clear.

Bad Weather Precautions

When a local storm warning has been issued, the competent person must determine whether it is necessary to implement manufacturer recommendations for securing the equipment. The competent person must adjust the equipment and/or operations to address the effect of wind, ice, and snow on equipment stability and rated capacity.

Sidelading Prohibited

The equipment must not be used to drag or pull loads sideways.

3. What is required if a crane is placed out of service?

   a. A warning line must be placed around the crane
   b. The start/stop switches must be physically locked
   c. All crane operators must be notified verbally
   d. An "Out of Service" tag must be placed in the cab
Brake Test

The operator must test the brakes each time a load that is 90% or more of the maximum line pull is handled by lifting the load a few inches and applying the brakes. In duty cycle and repetitive lifts where each lift is 90% or more of the maximum line pull, this requirement applies to the first lift but not to successive lifts.

Protection Against Rope Detachment

To prevent rope from becoming detached from a drum, neither the load nor the boom must be lowered below the point where less than two full wraps of rope remain on their respective drums.

Traveling with a Load

Traveling with a load is prohibited if the practice is prohibited by the manufacturer. Where it is not prohibited, you must take precautions to prevent hazardous movement of the load and avoid excessive movement of the load that could overload the crane.

Authority to Stop Operation

Section 1418 provides that, whenever there is a concern about safety, the operator must have the authority to stop and refuse to handle loads until a qualified person has determined that safety has been assured.

4. What must the crane operator do if a load is 90% or more of the maximum line pull is to be lifted?
   a. Nothing is required until line pull is exceeded
   b. Check all knots on the line
   c. Lift the load a few inches and apply brakes
   d. Ensure the load is properly tied off

Signals

A crane operator often needs a signal person to operate safely. A signal person must be provided:

   • when the point of operation, meaning the path the load travels or the area where the load is placed, is not in full view of the operator;
• when the equipment is traveling and the operator's view in the direction of travel is obstructed; or

• when, due to site-specific safety concerns, either the operator or the person handling the load determines that it is necessary.

During operations requiring signals, the ability to transmit signals between the operator and signal person must be maintained. If that ability is interrupted at any time, the operator must safely stop operations until signal transmission is reestablished and a proper signal is given and understood.

Only one person may give signals to a crane/derrick at a time, though any person may give an emergency stop signal.

5. What is required when the point of operation is not in full view of the crane operator?
   a. A correctly adjusted mirror
   b. A signal person
   c. A second operator
   d. A remote camera

Types of Signals

Hand, voice, audible, or new signals are allowed. The type of signals used and means of transmitting the signals to the operator (such as direct line of sight, video, radio, etc.), must be appropriate for the site conditions. All directions given to the operator by the signal person must be given from the operator's perspective.

Hand Signals

This is the most common method of signaling on worksites. When using hand signals, the Standard Method must be used.

Hand signal charts must be either posted on the equipment or conspicuously posted in the vicinity of the hoisting operation.

Voice Signals

These are signals given by oral communication, with or without amplification or electronic transmission. If this type of signal is used, the operator, signal person, and lift director (if there is
one) must, before beginning operations, contact each other and agree on the voice signals that will be used.

Audible Signals

These are signals made by a distinct sound or series of sounds, such as sounds made by a bell, horn, or whistle. As with other types of signals, the signal person and operator must clearly understand the meaning of the signals being used.

New Signal Methods

If appropriate, new methods for signaling may be used such as video monitoring, as long as it meets all OSHA requirements for signaling.

6. What is the most common form of signaling for crane operations on construction sites?
   a. Hand signals
   b. Audible signals
   c. Voice signals
   d. Tactile signals

Work Area Control

Section 1424 is designed to protect employees who work near a crane from being struck or crushed by the crane's rotating superstructure. To prevent employees from entering an area where they could be struck/crushed, the employer must:

- Train each employee assigned to work on or near the equipment in how to recognize struck-by and pinch/crush hazard areas posed by the rotating superstructure.

- Erect and maintain control lines, warning lines, railings, or similar barriers to mark the boundaries of the hazard areas.

- **Exception:** When you can demonstrate that it is neither feasible to erect such barriers on the ground nor on the equipment, the hazard areas must be clearly marked by a combination of warning signs (such as "Danger – Swing/Crush Zone") and high visibility markings on the equipment that identify the hazard areas. In addition, you must train each employee to understand what these markings signify.
Before an employee goes to a location in the hazard area that is out of view of the operator, the employee (or someone instructed by the employee) must ensure that the operator is informed that he/she is going to that location.

Where the operator knows that an employee went to such a location, the operator must not rotate the superstructure until the operator is informed in accord with a pre-arranged system of communication that the employee is in a safe position.

7. **Why is it important to erect and maintain warning lines, railings, and other barriers around an operational crane?**

   a. Because you can't trust employees to use common sense
   b. To keep employees from falling off the crane
   c. Because OSHA requires it
   d. To prevent employees from being struck/crushed

### Keeping Clear of the Load

**Section 1425** seeks to protect employees against being struck by a moving or falling load.

### Safe Hoisting Routes

Where available, hoisting routes that minimize the exposure of employees to hoisted loads must be used, to the extent consistent with public safety.

### Stationary Suspended Load

While the operator is not moving a suspended load, no employee may be within the fall zone, except for employees:

- engaged in hooking, unhooking, or guiding the load;
- engaged in the initial attachment of the load to a component or structure; or
- operating a concrete hopper or concrete bucket.

### Hooking, Unhooking, or Guiding the Load

When employees in the fall zone are engaged in hooking, unhooking, or guiding the load, or are connecting a load to a component or structure, all of the following criteria must be met:
• The materials being hoisted must be rigged to prevent unintentional displacement.

• Hooks with self-closing latches or their equivalent must be used. Exception: "J" hooks may be used for setting wooden trusses so that a worker need not go onto the truss to open the hook.

• The materials must be rigged by a qualified rigger.

Receiving a Load

Only employees needed to receive a load are permitted to be within the fall zone when a load is being landed.

8. Which of the following activities is NOT allowed under a stationary hoisted load?

   a. Hooking, unhooking, or guiding the load
   b. Initial attachment of the load to a component
   c. Taking photographs of the load suspension
   d. Operating a concrete hopper or bucket

Hoisting Personnel

Employers may not use cranes and derricks to hoist employees, unless:

1. the erection, use, and dismantling of conventional means of reaching the work area, such as a personnel hoist, ladder, stairway, aerial lift, elevating work platform, or scaffold, would be more hazardous, or

2. the erection, use, and dismantling of conventional means of reaching the work area is not possible because of the project's structural design or worksite conditions.

Use of Personnel Platform

A personnel platform is not required for hoisting employees:

• Into and out of drill shafts that are up to and including 8 feet in diameter;

• in pile driving operations;
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- solely for transfer to or from a marine worksite in a marine-hoisted personnel transfer device; or
- in storage tank (steel or concrete), shaft, and chimney operations.

**Pre-Lift Meeting**

A pre-lift meeting must be held before the trial lift to review the applicable requirements of Section 1431 and the procedures that will be followed. The meeting must be attended by the equipment operator, signal person (if used for the lift), employees to be hoisted, and the person responsible for the task to be performed.

**9. The use of cranes and derricks to hoist personnel is not allowed _____**.

a. when hoisting personnel into a 7-foot drill shaft
b. when conventional means of reaching the work area can be used
c. when conducting pile driving operations
d. when hoisting personnel into a steel storage tank

**Trial Lift and Inspection**

A trial lift with the unoccupied personnel platform loaded at least to the anticipated liftweight must be made from ground level, or any other location where employees will enter the platform, to each location at which the platform is to be hoisted and positioned.

Where there is more than one location to be reached from a single set-up position, either individual trial lifts for each location, or a single trial lift, in which the platform is moved sequentially to each location, must be performed; the method selected must be the same as the method that will be used to hoist the personnel.

Immediately after the trial lift, a competent person must visually inspect the equipment, base support or ground, and personnel platform to determine whether the trial lift has exposed any defect or problem or produced any adverse effect. Any condition found during the trial lift and subsequent inspection that fails to meet a requirement of this standard or otherwise creates a safety hazard must be corrected before hoisting personnel.

**Proof Testing**

Prior to hoisting employees on the personnel platform, and after any repair or modification, the platform and rigging must be proof tested to 125 percent of the platform's rated capacity. The
proof test may be done concurrently with the trial lift. Personnel hoisting must not be conducted until a competent person determines that the platform and rigging have successfully passed the proof test.

**Hoisting Personnel near Power Lines**

Hoisting personnel within 20 feet of a power line that is up to 350 kV, and hoisting personnel within 50 feet of a power line that is more than 350 kV, is prohibited (except for power transmission and distribution work).

<table>
<thead>
<tr>
<th>10. What action must be taken prior to hoisting employees using a platform that has been repaired?</th>
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<tbody>
<tr>
<td>a. A trial lift with three personnel hoisted in the platform</td>
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<tr>
<td>b. Certification of the repair by a registered professional engineer</td>
</tr>
<tr>
<td>c. Proof testing to 125 percent of the platform’s rated capacity</td>
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<tr>
<td>d. Lift the platform a few inches and apply the brakes</td>
</tr>
</tbody>
</table>
Additional Resources

- OSHA Instruction CPL 02-01-057
- Crane Derrick and Hoist Safety
- British Columbia Association for Crane Safety
- Crane Safety, OR-OSHA