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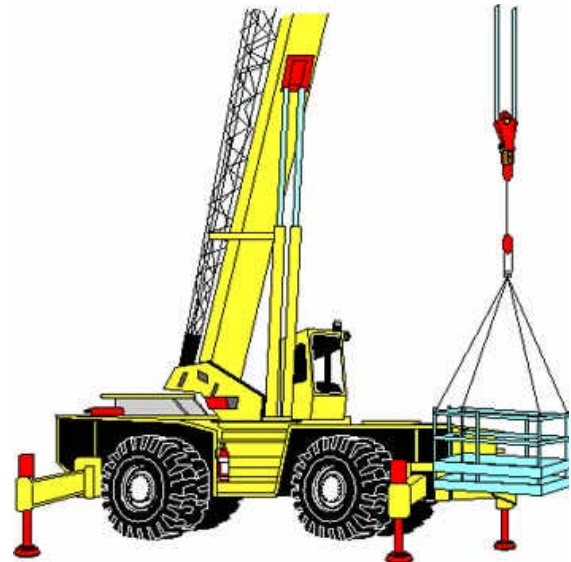
CRANE OR DERRICK SUSPENDED PERSONNEL PLATFORMS

By SeaBright Insurance Loss Control

The hoisting of personnel using a crane or derrick has always been considered a hazardous operation, posing a significant risk to those in the suspended platform even when appropriate precautions were followed. To help prevent employee injury or death from these operations, the Occupational Safety and Health Administration (OSHA) published its final rule on Crane or Derrick Suspended Personnel Platforms in 1996. Since then, various publications updating and clarifying the rule have been published, including industry developed information. Because of the level of detail 29CFR1926.550(g) provided, it has been used as a reference regularly in industry and will be used in this article as well. However, like all OSHA regulations, this standard should be considered *minimum*. Check with your company, industry associations or your state programs, as they may have in place more stringent policies and procedures.

Eagle Loss Control recognizes there may be times when a suspended personnel platform presents the safest access to a work area. But to use the equipment, it is important to understand when these platforms can be used, *and when they can not be used* to accomplish a job task.

In general, OSHA does not allow the hoisting of personnel by crane or derrick unless *no safe alternative is available*. For example, if it would be unsafe to use scaffolding or a ladder for a task, then hoisting personnel by crane or derrick would be permitted. However, if it *is* safe to use scaffolding or ladders, hoisting personnel is prohibited. Employee safety—not practicality, cost or convenience—must determine the company's choice of method. One exception to this rule are workers involved in structural steel erection. The steel erection standard 29CFR1926.753(c)(4) unconditionally allows the use of crane or derrick suspended personnel platforms during steel erection. However, steel erectors must still follow all of the requirements for suspended platforms.



The OSHA rules of personnel hoisting are “performance-oriented.” This language allows companies a level of flexibility in deciding how to provide the best protection for their employees against the hazards associated with hoisting operations. It also allows for self-determination as to how to bring work sites into compliance.

Safety Requirements for Crane and Derrick Operations:

- Cranes and derricks used to hoist personnel must be placed on firm ground.
- The crane or derrick must be uniformly level within 1% of level grade.
- Wire rope used for personnel lifting must have a minimum safety factor of seven for the load line of the crane or derrick. (This means it must be capable of lifting seven times the maximum intended load.) If rotation resistant rope is used on the crane or derrick the factor of safety must a minimum of ten.
- The crane operator must always have full control over the movement of the personnel platform. Any movement must be performed slowly and cautiously without any sudden jerking of the crane, derrick, or platform.
- All brakes and locking devices on the crane or derrick must be set when the occupied personnel platform is in a stationary position.
- The combined weight of the loaded personnel platform and its rigging must not exceed 50% of the rated capacity of the crane or derrick, for the radius and configuration of the crane or derrick.
- The crane operator *must always be at the controls* when the crane engine is running and the personnel platform is occupied.

Instruments and Components:

- Cranes and derricks with variable angle booms must have a boom angle indicator that is visible to the operator.
- Cranes with telescoping booms must be equipped with a device that clearly shows the boom's extended length, or the load radius to be used must be accurately determined before hoisting workers.
- Cranes and derricks also must be equipped with:
 - 1) An anti-two-blocking device. (This prevents contact between the load block and the boom tip, or the headache ball and the boom tip), or
 - 2) A two-block damage-prevention feature that deactivates the hoisting action before damage occurs.

Design Specifications for Personnel Platforms:

- A qualified engineer or a qualified person who is competent in structural design must design the platforms used for lifting personnel.
- The designed personnel platform *must*:
 - 1) Support at least five times the maximum intended load, *plus* the platform's weight.
 - 2) Suspend the platform in a manner that minimizes tipping that may be caused when personnel move on the platform.
 - 3) Include a standard guardrail system that is enclosed from the toe board to the mid-rail, so tools, materials and equipment cannot fall out of the platform, creating a hazard to those below.
 - 4) Include an inside grab rail.
 - 5) Provide adequate headroom for the workers, and overhead protection for workers (if needed).
 - 6) Specify that all rough edges on the platform be ground smooth to prevent injuries to employees.
 - 7) Specify that a qualified welder perform all welding on the platform and its components. The qualified welder must be familiar with weld grades, types, and materials specified in the platform's design.
 - 8) Include a nameplate or other permanent marking, clearly stating the weight and rated load (either the capacity or maximum intended load) of the personnel platform.

- If the design includes an access gate, including sliding or folding gates, they must not swing outward during hoisting and must have a restraining device to prevent accidental opening.

Load Restrictions for Personnel Platforms:

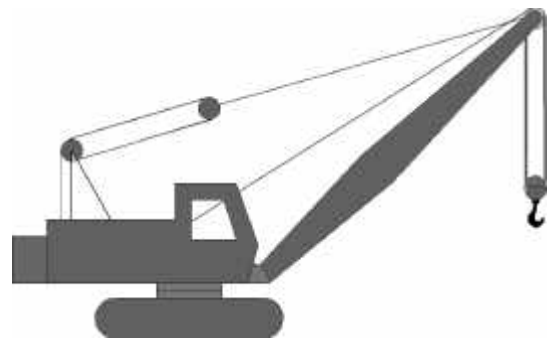
- Loads must not exceed the platform’s rated load capacity or maximum intended load, listed on the name plate.
- Only personnel trained in suspended personnel platforms and their responsibilities associated with platform, as well as instructed in the tasks to be performed are allowed in the platform. Additionally, any tools, equipment and materials needed by the workers for the completion of the task are allowed on the platform.
- All materials and tools must be secured and evenly distributed to balance the load while the platform is in motion.

Rigging for Personnel Platforms:

- When a wire rope bridle is used to connect the platform to the load line, the bridle legs must be connected to a master link or shackle so that the load is evenly positioned between the legs.
- Bridles used as a connection for the personnel platform cannot be used for any other purpose.
- Hooks and other attachment assemblies used as part of the platform must be closed and locked to keep the hook throat from opening. (An alloy anchor type shackle with a bolt, nut, and retaining pin may be used as an alternative.) “Mousing” (using wire rope to cover the hook opening) is *not* permitted.

Proof-Testing Platforms & Rigging, Before Hoisting Personnel:

- A platform and its rigging must be proof tested when initially brought to a job site, after any repairs or modifications are completed, or prior to lifting any personnel.
- The platform and rigging must be tested to 125% of the platform's rated capacity.
- The proof test must include:
 - 1) Loading the platform to 125% of its rated capacity;
 - 2) Holding the overloaded platform in a suspended position for 5 minutes;
 - 3) A re-inspection of the platform and rigging by a competent person (A “competent person” is one who can identify existing and predictable hazards in the workplace and is authorized to correct them.);
 - 4) Correcting any problems, if any are detected. Any corrections or modifications as a result of the proof test will require a proof test of the changes to be completed. This process is repeated until the competent person feels that it is safe to begin hoisting personnel.
- It is the operator’s responsibility not to hoist personnel until all proof testing requirements are met.



Inspection & Trial-Lift, Before Hoisting Personnel:

- Crane or derrick operators must conduct a trial lift of an *unoccupied* platform *immediately* before any employees are allowed to be hoisted.
- The personnel platform must be loaded at least to its anticipated lift weight. This test can directly follow the proof-testing process.

- The lift must start at ground level or at the location where employees will enter the platform, and proceed to each location where the personnel platform is to be hoisted and positioned.
- The crane or derrick operator must check all systems, controls, and safety devices to ensure that they are functioning properly and there are no interferences.
- Operators must ensure that all boom or hoisting configurations necessary to reach work locations will allow the operator to remain within the 50% load limit of the hoist's rated capacity.
- If a crane or derrick is moved to a new location or returned to a previously used one, the trial lift must be repeated before hoisting personnel.

Required Actions *Immediately Following A Trial-Lift:*

- The personnel platform must be hoisted a few inches off of the ground and inspected to ensure that it is secure and is properly balanced.
- A thorough visual inspection of the personnel platform, the crane or derrick, and the base support or ground must be performed by an company-designated competent person to determine if the lift test produced any adverse effect on any component or structure.
- Any defects found during inspections must be corrected before personnel are hoisted.
- Before employees are hoisted, a designated person must perform a check to ensure the following:
 - 1) Hoist ropes are free of kinks.
 - 2) Multiple part lines are not twisted.
 - 3) The primary attachment is centered over the platform.
 - 4) There is no slack in the wire rope. If the rope is slack, the hoisting system must be inspected.
 - 5) All ropes are properly seated on drums and in sheaves.

Pre-Lift Meeting:

- The company must hold a meeting with all employees involved in personnel hoisting, prior to the trial-lift. The purpose of the meeting is to review the requirements and procedures that will be followed during the operation. Involved employees include:
 - 1) Crane or derrick operator;
 - 2) Signal person(s);
 - 3) Employees to hoisted;
 - 4) The person responsible for the hoisting operation;
- A pre-lift meeting must take place before the trial lift at each new worksite and must be repeated for any new employees assigned to the operation. A new worksite, includes any time the crane is moved to a new location on a job.

Safe Work Practices for Employees Being Hoisted:

- Employees can contribute to safe personnel hoisting operations. By following safe work practices for the operation, they can help to reduce the number of accidents and injuries associated with personnel hoisting operations. Personnel hoisting safe work practices include:
 - 1) Always wear hard hats and ensure there is overhead protection on the platform when exposed to falling objects.
 - 2) Never "ride the load".

- 3) Only use platforms specifically designed for personnel lifting.
- 4) Use tag lines during the operation, unless their use creates an unsafe condition.
- 5) Keep all body parts inside the platform during the process of raising, lowering, and positioning.
- 6) Take responsibility to ensure the platform is secured to the structure where work is to be performed before exiting or entering it, unless such securing would create an unsafe condition.
- 7) Use a personal fall arrest system (PFAS). The lanyard from the PFAS must be attached to the lower load block, headache ball, or to a structural member within the personnel platform. If the hoisting operation is performed totally over water, wear a USCG approved life jacket or buoyant work vest in lieu of a PFAS.

Safe Work Practices for Crane and Derrick Operators:

- 1) Never leave crane or derrick controls when the engine is running or when the platform is occupied.
- 2) Stop all hoisting operations if there are any indications of danger, including severe weather conditions.
- 3) Stay in view of, or in direct communication with, the signal person.
- 4) Do not make any lifts on another load line of a crane or derrick that is being used to hoist personnel. Even if the operation would be in support of the personnel in the suspended platform.

Movement of Cranes:

- Personnel hoisting is prohibited while the crane is traveling except when it can be demonstrated that this is the least hazardous way to accomplish the task. Traveling is also acceptable when portal, tower, or locomotive cranes are used.
- When cranes are moving while hoisting personnel, the following practices apply:
 - 1) Travel must be restricted to a fixed track or runway.
 - 2) Travel also must be limited to the radius of the boom during the lift.
 - 3) The boom must be parallel to the direction of travel.
 - 4) There must be a complete trial run before employees occupy the platform.
 - 5) If the crane has rubber tires, the condition and air pressure of the tires must be checked and the chart capacity for lifts must be applied to remain under the 50% limit of the hoist's rated capacity.
 - 6) Outriggers may be partially retracted as necessary for travel.

Compliance with the common-sense requirements of the OSHA standard is designed to greatly reduce or eliminate the injuries and accidents that happen during personnel hoisting operations.

The information in this publication is not intended to cover all regulatory standards issued by OSHA or best practices developed by industry. It has been provided to assist you as a supervisor to become more familiar with the responsibilities and requirements of crane or derrick suspended personnel platforms.

For further detailed information see:

Construction: Crane, Derrick and Hoist Safety

<http://www.osha.gov/SLTC/cranehoistsafety/index.html>

Crane or Derrick Suspended Personnel Platforms

<http://www.osha.gov/Publications/osh3100.pdf>

OSHA Website HomePage.

<http://www.osha.gov/>

Laws and Regulations, Construction, (Standards - 29 CFR)

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- Cranes and derricks. - 1926.550
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