

**DEPARTMENT OF LABOR
Occupational Safety and Health Administration
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(Docket No. S-409)

Crane or Derrick Suspended Personnel Platforms

TITLE 29 - LABOR

CHAPTER XVII - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION,
DEPARTMENT OF LABOR

PART 1926 - SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION--
Table of Contents

Subpart N - Cranes, Derricks, Hoists, Elevators, and Conveyors

Authority: Sec. 107, Contract Work Hours and Safety Standards Act (Construction Safety Act) (40 U.S.C. 333); secs. 4, 6, 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order No. 12-71 (36 FR 8754), 8-76 (41 FR 25059), or 9-83 (49 FR 35736), as applicable. Section 1926.550 also issued under 29 CFR Part 1911.

Sec. 1926.550 Cranes and derricks.

(g) Crane or derrick suspended personnel platforms--(1) Scope, application and definitions--(i) Scope and application. This standard applies to the design, construction, testing, use and maintenance of personnel platforms, and the hoisting of personnel platforms on the load lines of cranes or derricks.

(ii) Definitions. For the purposes of this paragraph (g), the following definitions apply:

(A) Failure means load refusal, breakage, or separation of components.

(B) Hoist (or hoisting) means all crane or derrick functions such as lowering, lifting, swinging, booming in and out or up and down, or suspending a personnel platform.

(C) Load refusal means the point where the ultimate strength is exceeded.

(D) Maximum intended load means the total load of all employees, tools, materials, and other loads reasonably anticipated to be applied to a personnel platform or personnel platform component at any one time.

(E) Runway means a firm, level surface designed, prepared and designated as a path of travel for the weight and configuration of the crane being used to lift and travel with the crane suspended platform. An existing surface may be used as long as it meets these criteria.

(2) General requirements. The use of a crane or derrick to hoist employees on a personnel platform is prohibited, except when the erection, use, and dismantling of conventional means of reaching the worksite, such as a personnel hoist, ladder, stairway, aerial lift, elevating work platform or scaffold, would be more hazardous, or is not possible because of structural design or worksite conditions.

(3) Cranes and derricks--(i) Operational criteria. (A) Hoisting of the personnel platform shall be performed in a slow, controlled, cautious manner with no sudden movements of the crane or derrick, or the platform.

(B) Load lines shall be capable of supporting, without failure, at least seven times the maximum

intended load, except that where rotation resistant rope is used, the lines shall be capable of supporting without failure, at least ten times the maximum intended load. The required design factor is achieved by taking the current safety factor of 3.5 (required under paragraph (b)(2)) of this section and applying the 50 per cent derating of the crane capacity which is required by paragraph (g)(3)(i)(F) of this section.

(C) Load and boom hoist drum brakes, swing brakes, and locking devices such as pawls or dogs shall be engaged when the occupied personnel platform is in a stationary working position.

(D) The crane shall be uniformly level within one percent of level grade and located on firm footing. Cranes equipped with outriggers shall have them all fully deployed following manufacturer's specifications, insofar as applicable, when hoisting employees.

(E) The total weight of the loaded personnel platform and related rigging shall not exceed 50 percent of the rated capacity for the radius and configuration of the crane or derrick.

(F) The use of machines having live booms (booms in which lowering is controlled by a brake without aid from other devices which slow the lowering speeds) is prohibited.

(ii) Instruments and components. (A) Cranes and derricks with variable angle booms shall be equipped with a boom angle indicator, readily visible to the operator.

(B) Cranes with telescoping booms shall be equipped with a device to indicate clearly to the operator, at all times, the boom's extended length, or an accurate determination of the load radius to be used during the lift shall be made prior to hoisting personnel.

(C) A positive acting device shall be used which prevents contact between the load block or overhaul ball and the boom tip (anti-two- blocking device), or a system shall be used which deactivates the hoisting action before damage occurs in the event of a two-blocking situation (two block damage prevention feature).

(D) The load line hoist drum shall have a system or device on the power train, other than the load hoist brake, which regulates the lowering rate of speed of the hoist mechanism (controlled load lowering.) Free fall is prohibited.

(4) Personnel platforms

(i) Design criteria.

(A) The personnel platform and suspension system shall be designed by a qualified engineer or a qualified person competent in structural design.

(B) The suspension system shall be designed to minimize tipping of the platform due to movement of employees occupying the platform.

(C) The personnel platform itself, except the guardrail system and personal fall arrest system anchorages, shall be capable of supporting, without failure, its own weight and at least five times the maximum intended load. Criteria for guardrail systems and personal fall arrest system anchorages are contained in subpart M of this Part.

(ii) Platform specifications.

(A) Each personnel platform shall be equipped with a guardrail system which meets the requirements of subpart M, and, shall be enclosed at least from the toeboard to mid-rail with either solid construction or expanded metal having openings no greater than $\frac{1}{2}$ inch (1.27 cm).

(B) A grab rail shall be installed inside the entire perimeter of the personnel platform.

(C) Access gates, if installed, shall not swing outward during hoisting.

(D) Access gates, including sliding or folding gates, shall be equipped with a restraining device to prevent accidental opening.

(E) Headroom shall be provided which allows employees to stand upright in the platform.

(F) In addition to the use of hard hats, employees shall be protected by overhead protection on the personnel platform when employees are exposed to falling objects.

(G) All rough edges exposed to contact by employees shall be surfaced or smoothed in order to prevent injury to employees from punctures or lacerations.

(H) All welding of the personnel platform and its components shall be performed by a qualified welder familiar with the weld grades, types and material specified in the platform design.

(I) The personnel platform shall be conspicuously posted with a plate or other permanent marking which indicates the weight of the platform and its rated load capacity or maximum intended load.

(iii) Personnel platform loading. (A) The personnel platform shall not be loaded in excess of its rated load capacity. When a personnel platform does not have a rated load capacity then the personnel platform shall not be loaded in excess of its maximum intended load.

(B) The number of employees occupying the personnel platform shall not exceed the number required for the work being performed.

(C) Personnel platforms shall be used only for employees, their tools, and the materials necessary to do their work, and shall not be used to hoist only materials or tools when not hoisting personnel.

(D) Materials and tools for use during a personnel lift shall be secured to prevent displacement.

(E) Materials and tools for use during a personnel lift shall be evenly distributed within the confines of the platform while the platform is suspended.

(iv) Rigging. (A) When a wire rope bridle is used to connect the personnel platform to the load line, each bridle leg shall be connected to a master link or shackle in such a manner to ensure that the load is evenly divided among the bridle legs.

(B) Hooks on overhaul ball assemblies, lower load blocks, or other attachment assemblies shall be of a type that can be closed and locked, eliminating the hook throat opening. Alternatively, an alloy anchor type shackle with a bolt, nut and retaining pin may be used.

(C) Wire rope, shackles, rings, master links, and other rigging hardware must be capable of supporting, without failure, at least five times the maximum intended load applied or transmitted to that component. Where rotation resistant rope is used, the slings shall be capable of supporting without failure at least ten times the maximum intended load.

(D) All eyes in wire rope slings shall be fabricated with thimbles.

(E) Bridles and associated rigging for attaching the personnel platform to the hoist line shall be used only for the platform and the necessary employees, their tools and the materials necessary to do their work, and shall not be used for any other purpose when not hoisting personnel.

(5) Trial lift, inspection, and proof testing.

(i) A trial lift with the unoccupied personnel platform loaded at least to the anticipated lightweight shall be made from ground level, or any other location where employees will enter the platform, to each location at which the personnel platform is to be hoisted and positioned. This trial lift shall be performed immediately prior to placing personnel on the platform. The operator shall determine that all systems, controls and safety devices are activated and functioning properly; that no interferences exist; and that all configurations necessary to reach those work locations will allow the operator to remain under the 50 percent limit of the hoist's rated capacity. Materials and tools to be used during the actual lift can be loaded in the platform, as provided in paragraphs (g)(4)(iii) (D), and (E) of this section for the trial lift. A single trial lift may be performed at one time for all locations that are to be reached from a single set up position.

(ii) The trial lift shall be repeated prior to hoisting employees whenever the crane or derrick is moved and set up in a new location or returned to a previously used location. Additionally, the trial lift shall be repeated when the lift route is changed unless the operator determines that the route change is not significant (i.e. the route change would not affect the safety of hoisted employees.)

(iii) After the trial lift, and just prior to hoisting personnel, the platform shall be hoisted a few inches and inspected to ensure that it is secure and properly balanced. Employees shall not be hoisted unless the following conditions are determined to exist:

(A) Hoist ropes shall be free of kinks;

(B) Multiple part lines shall not be twisted around each other;

(C) The primary attachment shall be centered over the platform; and

(D) The hoisting system shall be inspected if the load rope is slack to ensure all ropes are properly stated on drums and in sheaves.

(iv) A visual inspection of the crane or derrick, rigging, personnel platform, and the crane or derrick base support or ground shall be conducted by a competent person immediately after the trial lift to determine whether the testing has exposed any defect or produced any adverse effect upon any component or structure. (v) Any defects found during inspections which create a safety hazard shall be corrected before hoisting personnel.

(vi) At each job site, prior to hoisting employees on the personnel platform, and after any repair or modification, the platform and rigging shall be proof tested to 125 percent of the platform's rated capacity by holding it in a suspended position for five minutes with the test load evenly distributed on the platform (this may be done concurrently with the trial lift). After proof testing, a competent person shall inspect

the platform and rigging. Any deficiencies found shall be corrected and another proof test shall be conducted. Personnel hoisting shall not be conducted until the proof testing requirements are satisfied.

(6) Work practices.

(i) Employees shall keep all parts of the body inside the platform during raising, lowering, and positioning. This provision does not apply to an occupant of the platform performing the duties of a signal person.

(ii) Before employees exit or enter a hoisted personnel platform that is not landed, the platform shall be secured to the structure where the work is to be performed, unless securing to the structure creates an unsafe situation.

(iii) Tag lines shall be used unless their use creates an unsafe condition.

(iv) The crane or derrick operator shall remain at the controls at all times when the crane engine is running and the platform is occupied.

(v) Hoisting of employees shall be promptly discontinued upon indication of any dangerous weather conditions or other impending danger.

(vi) Employees being hoisted shall remain in continuous sight of and in direct communication with the operator or signal person. In those situations where direct visual contact with the operator is not possible, and the use of a signal person would create a greater hazard for that person, direct communication alone such as by radio may be used.

(vii) Except over water, employees occupying the personnel platform shall use a body belt/harness system with lanyard appropriately attached to the lower load block or overhaul ball, or to a structural member within the personnel platform capable of supporting a fall impact for employees using the anchorage. When working over water, the requirements of Sec. 1926.106 shall apply.

(viii) No lifts shall be made on another of the crane's or derrick's loadlines while personnel are suspended on a platform.

(7) Traveling. (i) Hoisting of employees while the crane is traveling is prohibited, except for portal, tower and locomotive cranes, or where the employer demonstrates that there is no less hazardous way to perform the work.

(ii) Under any circumstances where a crane would travel while hoisting personnel, the employer shall implement the following procedures to safeguard employees:

(A) Crane travel shall be restricted to a fixed track or runway; (B) Travel shall be limited to the load radius of the boom used during the lift; and

(C) The boom must be parallel to the direction of travel.

(D) A complete trial run shall be performed to test the route of travel before employees are allowed to occupy the platform. This trial run can be performed at the same time as the trial lift required by paragraph (g)(5)(i) of this section which tests the route of the lift.

(E) If travel is done with a rubber tired-carrier, the condition and air pressure of the tires shall be checked. The chart capacity for lifts on rubber shall be used for application of the 50 percent reduction of rated capacity. Notwithstanding paragraph (g)(3)(i)(E) of this section, outriggers may be partially retracted as necessary for travel.

(8) Pre-lift meeting.

(i) A meeting attended by the crane or derrick operator, signal person(s) (if necessary for the lift), employee(s) to be lifted, and the person responsible for the task to be performed shall be held to review the appropriate requirements of paragraph (g) of this section and the procedures to be followed.

(ii) This meeting shall be held prior to the trial lift at each new work location, and shall be repeated for any employees newly assigned to the operation.

[44 FR 8577, Feb. 9, 1979; 44 FR 20940, Apr. 6, 1979, as amended at 52 FR 36382, Sept. 28, 1987; 53 FR 29139, Aug. 2, 1988; 54 FR 15406, Apr. 18, 1989; 54 FR 24334, June 7, 1989; 58 FR 35183, June 30, 1993; 59 FR 40730, Aug. 9, 1994; 61 FR 5510, Feb. 13, 1996]