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Morenci Safe Production Standard	Standard # 3.6.1	
	OHSAS 18001:2007	4.4.6
Crane Suspended Work Platforms (Personnel platforms suspended from the load line)	Revision #	02
	Revision Date	06/24/2013
	Effective Date	04/30/2012
	Document Owner	Maintenance Services
Approvals:		
<i>Senior VP Morenci Operations: 10/28/2011</i>		<i>Safety Steering Committee: Approved 10/28/2011</i>

1.0 PURPOSE:

Using cranes to hoist personnel poses a significant risk to employees being lifted. To help prevent employee injury or death, this standard limits the use of personnel hoisting and prescribes the proper control measures that must be taken for these operations.

2.0 SCOPE:

2.1 This standard addresses minimum requirements applicable to the use and maintenance of personnel platforms, and the hoisting of personnel platforms on the load lines of cranes.

2.2 This standard applies to:

- a) Employees and other individuals (including temporary employees and contractor personnel), vendors, or any other person(s) who work and/or are present in the workplace.

3.0 TERMS, DEFINITIONS AND ABBREVIATIONS

Terms, definitions and abbreviations which apply to this standard are:

3.1 Administrative Control – controls that reduce exposure to employees (i.e. employee’s exposures by scheduling reduced work time, application of appropriate PPE, etc. in contaminant or hazardous areas). Also included here is employee training that includes hazard recognition and specific work practices that help reduce risk of an injury.

3.2 Failure – means load refusal, breakage, or separation of components.

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

3.4 Load refusal – means the point where the ultimate strength is exceeded.

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3.5 Maximum intended load – 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.

3.6 Crane Pad – a firm, level surface designed, prepared and designated as a path of travel and or stationary position for the weight and configuration of the crane being used to lift crane suspended platform. An existing surface may be used as long as it meets these criteria.

4.0 RESPONSIBILITIES:

4.1 Supervisors will ensure that their employees understand and follow this standard, including training on the use and care of rigging and PPE applicable to their work duties. Employees will be provided with the P.P.E. and equipment necessary to complete all work in compliance with this standard. Supervisor’s duties include evaluation of the work to be preformed, determination of the means of protection that will be used, and adherence to this standard.

4.2 Employees will follow this standard and notify their supervisor of any situations that do not comply with this standard. Employees will be responsible for learning when PPE is necessary and how to properly inspect and use forms of personal protective equipment and rigging.

4.3 Management will provide resources for supervisors and employees to comply with this standard. Resources may include information, training, time, money and PPE.

4.4 Health and Safety Manager will provide OH&S advice for all Morenci Operations Personnel, and Contractor Companies to ensure that they meet their responsibilities and accountabilities relevant to the implementation of this standard.

4.5 Project Managers will ensure that contractors are informed of the standard and that contractors understand the requirement for compliance with the standard, including day to day oversight.

4.6 Training Department will provide course material and training programs related to this standard.

4.7 Attendant is responsible for evaluating (watching) the crane suspended work platform throughout the duration of the job.

5.0 STANDARDS OF PERFORMANCE

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General Requirements

- 5.1 The use of a crane 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. Hoisting personnel with crane suspended personnel platforms constitutes a significant hazard to hoisted employees and must not be permitted unless conventional means of transporting employees are not feasible. Morenci Operations has determined that compliance with the provisions of this standard will provide the best available protection for personnel being hoisted by these platforms in those limited situations where such hoisting is necessary.
- a. Where conventional means (e.g., man lifts, scaffolds, ladders) of access would not be considered safe, personnel hoisting operations, which comply with the terms of this standard, would be authorized. Employee safety—not practicality or convenience—must be the basis for managements choice of method.
 - b. When cranes other than mobile cranes are used to hoist personnel under the provisions of this standard and have been determined to provide a safer means of access and protection to personnel than conventional means; a JSA must be developed and the work approved and reviewed by a safety and health professional and superintendent.

5.2 Crane Operations

Due to the high risk of hoisting personnel using cranes all operations must conform to the following:

- a. 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.
- b. The crane operator must always be at the controls when the crane engine is running and the personnel platform is occupied. The crane operator also must have full control over the movement of the personnel platform. Any movement of the personnel platform must be performed slowly and cautiously without any sudden jerking of the crane or the platform.
- c. 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. When the occupied personnel platform is in a stationary position, all brakes and locking devices on the crane or derrick must be set.
- d. The combined weight of the loaded personnel platform and its rigging must not exceed 50 percent of the rated capacity of the crane for the radius and configuration of the crane.
- e. Personnel hoisting is prohibited while the crane is traveling.

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- f. 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.
- g. 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.

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.

5.3 Instruments and Components

Cranes 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 to clearly indicate the boom's extended length and accurate determination of the load radius to be used during the lift must be made prior to hoisting personnel. Cranes also must be equipped with all of the following functional protective devices:

- I. A anti-two-blocking device that prevents contact between the load block and overhaul ball and the boom tip; and
- II. 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.
- III. Personnel hoisting operations must not begin unless the devices listed in this section are in proper working order. If a device stops working properly during such operations, the operator must safely stop operations. Personnel hoisting operations must not resume until the device is again working properly.

NOTE: Free fall of the load line hoist is prohibited (Reference OSHA 1926.1426(d); the use of equipment in which the boom hoist mechanism can free fall is also prohibited

5.4 Personnel Platform Criteria

A qualified person familiar with structural design must design the personnel platform and attachment/suspension system used for hoisting personnel.

- I. The system used to connect the personnel platform to the equipment must allow the platform to remain within 10 degrees of level, regardless of boom angle.
- II. The suspension system must be designed to minimize tipping of the platform due to movement of employees occupying the platform.
- III. The personnel platform itself (excluding the guardrail system and personal fall arrest system anchorages), must be capable of supporting, without failure, its own weight and at least five times the maximum intended load.
- IV. All welding/modifications of the personnel platform and its components must be performed in conjunction with a qualified engineer and by a certified welder familiar with the weld grades, types and material specified in the platform design. Note:

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Personnel platforms shall be modified only to the extent allowed by the manufacturer of the unit.

- V. The personnel platform must be equipped with a guardrail system which meets applicable legal requirements, and must be enclosed at least from the toeboard to mid-rail with either solid construction material or expanded metal having openings no greater than ½ inch. Points to which personal fall arrest systems are attached must meet the anchorage requirements outlined within the Morenci Fall Protection Policy.
- VI. A grab rail must be installed inside the entire perimeter of the personnel platform except for access gates/doors.

5.4.1 Access gates/doors

- I. Access gates/doors of all types (including swinging, sliding, folding, or other types) must:
 - a. Not swing outward: If due to the size of the personnel platform, such as a 1-person platform, it is infeasible for the door to swing inward and allow safe entry for the platform occupant, then the access gate/door may swing outward.
 - b. Be equipped with a device that prevents accidental opening.
- II. Headroom must be sufficient to allow employees to stand upright in the platform
- III. In addition to the use of hard hats, employees must be protected by overhead protection on the personnel platform when employees are exposed to falling objects. The platform overhead protection must not obscure the view of the operator or platform occupants (such as wire mesh that has up to ½ inch openings), unless full protection is necessary.
- IV. All edges exposed to employee contact must be smooth enough to prevent injury.
- V. The weight of the platform and its rated capacity must be conspicuously posted on the platform with a plate or other permanent marking.

5.4.2 Personnel Platform Loading

- I. The personnel platform must not be loaded in excess of its rated capacity.
- II. Materials and tools must be:
 - 1) Secured to prevent displacement.
 - 2) Evenly distributed within the confines of the platform while it is suspended.
- III. The number of employees occupying the personnel platform must not exceed the maximum number the platform was designed to hold or the number required to perform the work, whichever is less.

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5.4.3 Attachment and rigging (*Hooks Rigging and other detachable devices.*)

- I. Hooks used in the connection between the hoist line and the personnel platform (including hooks on overhaul ball assemblies, lower load blocks, bridle legs, or other attachment assemblies or components) must be:
 - a. Of a type that can be closed and locked, eliminating the throat opening.
 - b. Closed and locked when attached.
 - c. Shackles used in place of hooks must be of the alloy anchor type, with either: A bolt, nut and retaining pin, in place; or of the screw type, with the screw pin secured from accidental removal.
 - d. If no safety latch is present (and the hook assembly was designed by the manufacturer without a safety latch) the master link of the suspension rigging must be “moused” to the hook of the crane using , at minimum, 8 gauge wiring.
- II. When a rope bridle is used to suspend the personnel platform, each bridle leg must be connected to a master link or shackle in a manner that ensures that the load is evenly divided among the bridle legs.
- III. Rigging hardware (including wire rope, shackles, rings, master links, and other rigging hardware) and hooks 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 must be capable of supporting without failure at least ten times the maximum intended load.
- IV. Bridles and associated rigging for suspending the personnel platform must be used only for the platform and the necessary employees, their tools and materials necessary to do their work. The bridles and associated rigging must not have been used for any purpose other than hoisting personnel.
- V. A secondary safety lines capable of withstanding at least 5 times the intended load must be installed from the primary connection point of the work platform and secured above the block of the crane
- VI. Each leg of the suspension rigging must be equipped with its own Load rating tag.
- VII. The platform must be equipped with a placard displaying the following information:
 1. the maximum weight capacity; or
 2. the maximum number of personnel allowed in the work platform; and
 3. the empty weight of the personnel platform

5.5 Trial Lift and Inspection

A trial lift with the unoccupied personnel platform loaded to 125% of the intended lift weight 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,

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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.

- I. When initially brought to the job site, after any significant task modification, and prior to hoisting personnel, the platform and rigging must be proof tested to 125 percent of the platform's rated capacity. This is achieved by holding the loaded platform-with the load evenly distributed-in a suspended position for 5 minutes. Then a competent person must inspect the platform and rigging for defects. If any problems are detected, they must be corrected and another proof test must be conducted. Personnel hoisting must not be conducted until the proof testing requirements are satisfied.

The trial lift must be performed immediately prior to each shift in which personnel will be hoisted. In addition, the trial lift must be repeated prior to hoisting employees in each of the following circumstances:

- I. The equipment is moved and set up in a new location or returned to a previously used location.
- II. The lift route is changed, unless the competent person determines that the new route presents no new factors affecting safety.

The supervisor or designated competent person in conjunction with the crane operator and employees of the job must determine that:

- I. Safety devices and operational aids required by this section are activated and functioning properly. Other safety devices and operational aids must meet the requirements of this standard.
- II. Nothing interferes with the equipment or the personnel platform in the course of the trial lift.
- III. The lift will not exceed 50 percent of the equipment's rated capacity at any time during the lift.
- IV. The load radius to be used during the lift has been accurately determined.

Immediately after the trial lift, the supervisor/competent person must:

- I. Conduct a visual inspection of 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.
- II. Confirm that, upon the completion of the trial lift process, the test weight has been removed.

Immediately prior to each lift the platform must be hoisted a few inches with the personnel and materials/tools on board and inspected by a competent person to ensure that it is secure and properly balanced. The following conditions must be determined by a competent person to exist before the lift of personnel proceeds:

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- a. Hoist ropes must be free of deficiencies
- b. Multiple part lines must not be twisted around each other.
- c. The primary attachment must be centered over the platform.
- d. If the load rope is slack, the hoisting system must be inspected to ensure that all ropes are properly seated on drums and in sheaves.

Any condition found during the trial lift and subsequent inspection(s) that fails to meet a requirement of this standard or otherwise creates a safety hazard must be corrected before hoisting personnel.

5.6 Work Practices

Hoisting of the personnel platform must be performed in a slow, controlled, cautious manner, with no sudden movements of the equipment or the platform. An attendant must be designated by the supervisor of the job and assigned with the sole responsibility of continuous monitoring of the crane suspended work platform. The attendant is responsible for assessing conditions of the task as it relates to weather, proximity from hazardous areas and equipment, fall of person and fall of material hazards. If at any point the attendant (or another employee) identifies an unsafe condition or practice the job must be immediately stopped and the crane suspended platform returned to ground level.

Platform occupants must:

- I. Keep all parts of the body inside the platform during raising, lowering, and horizontal movement. This provision does not apply to an occupant of the platform when necessary to position the platform, while conducting work from within the platform or while performing the duties of a signal person. Fall of material hazards shall be controlled through the use of flagging and or barricading of areas below overhead work. At no time shall an occupant's center of gravity be positioned through or over the handrail of the work platform.
- II. Not stand, sit on, or work from the top or intermediate rail or toeboard, or use any other means/device to raise their working height.
- III. Not pull the platform out of plumb in relation to the hoisting equipment.
- IV. Employees are prohibited from entering or exiting a hoisted (suspended) personnel platform. Prior to entering or exiting the personnel platform the following controls must be adhered to:
 - i. it must be securely positioned on the ground or work area
 - ii. if upon exiting the work platform a fall hazard exists 100% fall protection must be provided prior to exiting the platform.
 - iii. positive communication must be made between the crane operator and occupants of the personnel platform prior to entering/exiting.
 - iv. Movement of the personnel platform must not begin until all ground personnel are a minimum of 7ft away.

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- V. Tag lines must be used when necessary to control the platform. Ground personnel shall remain clear of suspended loads.
- VI. The crane operator must remain at the equipment controls, on site, and in view of the hoisted personnel, at all times while the platform is occupied or while work involving personnel hoisting is being conducted.
- VII. Employees being hoisted must remain in direct communication with the signal person (where used), or the operator.
- VIII. No lifts must be made on any other of the equipment's load lines while personnel are being hoisted, except in pile driving operations.
- IX. Hoisting of employees while the equipment is traveling is prohibited. The movement of mobile cranes (other than that movement allotted by the hoist cables and boom of the crane necessary for access) increases the overall risk of the job.

5.6.1 Hoisting personnel near power lines

Hoisting personnel within a booms length of a power line is prohibited unless the energy source is Locked Out Tagged Out and Tried Out or effectively controlled by other means.

5.6.2 Fall protection

Employees occupying the personnel platform must be provided and use a personal fall arrest system. The system must be attached to a structural member within the personnel platform designed to withstand 5000lbs.

- I. The fall arrest system, including the attachment point (anchorage) must meet the requirements outline within the Morenci Fall Protection Policy.

5.7 Environmental Conditions

- II. When wind speed (sustained or gusts) exceeds 15 mph at the personnel platform the lifting operation must not begin (or, if already in progress, must be terminated).
- III. A competent person must determine if, in light of indications of dangerous weather conditions (i.e. rain, lightning, sleet, snow, wind) or other impending or existing danger, it is not safe to lift personnel. If it is not, the lifting operation must not begin (or, if already in progress, must be terminated).

5.8 Pre-lift meeting

A pre-lift meeting must be held to review the applicable requirements of this standard 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. The meeting shall be held prior to the trial lift at each new work location, and must be repeated for any employees newly assigned to the operation. During the pre-lift meeting or directly before a Pre-Lift Meeting Form must be completed and reviewed by the workgroup (*refer to Morenci Operations Rigging equipment, material handling and hoisting Standard*)

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6.0 REFERENCE DOCUMENTS

- 6.3 Mine Safety and Health Administration (MSHA) 56.15005 Safety belts and lines.
- 6.4 Occupational Safety and Health Administration (OSHA) 29 CFR 1926.550(g).
- 6.5 Morenci Operations Rigging Equipment, Material Handling and Hoisting Standard (Critical Lift Permit)
- 6.6 Morenci Operations Fall Protection Policy

7.0 RECORDS

Name of the Document	Responsible for Control	Records Retention
Approved Copy of this Standard	Health and Safety	Permanent
Training Certificates	Division / Area or Training Department	Duration of employment + 10 years
Crane Suspended Work Platform Checklist	Division / Area	10 Years

8.0 APPENDICES

- 8.1 HS-SPS-3.6.1-001 Crane Suspended Work Platform Checklist

9.0 REVIEW AND CHANGE

All changes, modifications and/or revisions must be documented on the table below:

<i>Description of Changes to this Document</i>
Included Crane Suspended work platform checklist – based on feedback from workforce (9/4/2012 – BL)
Included Pre-Lift Meeting Form based on feedback from workforce (9/4/2012 – BL)
The above mentioned Pre-lift meeting form is part of the Mobile Crane Operation Standard (3.8)
Updated records table – S. Elias – 06/24/2013 Rev. 02

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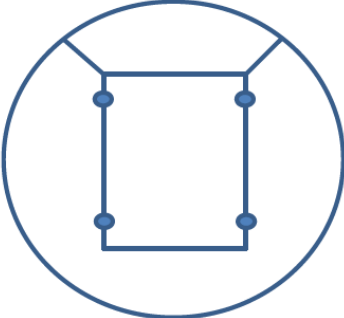
Crane Suspended Work Platform

Crane Rated Capacity _____ X .25 = _____
(In lifting Quadrant)

Crane Number: _____ Man Basket ID _____

LIFTING QUADRANT
(Mark boom in quadrant used)

% Angle _____



Trial Lift Successfully Completed: (Initial in Box)

Test Weight Used: _____

Outriggers Used: Yes No

If no explain: _____

Number of personnel being lifted: _____

Combined Calculated Weight:

of Personnel: _____ X 250lbs = _____

Weight of Tools/Equipment: _____

Man Basket Weight: _____

Total below the hook weight: _____

Man Basket Meets OSHA Requirements and Inspected (Initial in Box)

Crane Operator Name: _____

User Name(s): _____

Date: _____ Supervisor: _____

HS-SPS-3.6.1-001 (Appendix 8.1 Crane Suspended Work Platforms)

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