OCCUPATIONAL SAFETY AND HEALTH
STANDARDS BOARD

BOARD STAFF'S REVIEW OF
PETITION FILE NO. 556

Petitioner: Mr. Scott McAllister
M&M Occupational Safety and Health Services

Submitted By: Maryrose Chan
Title: Senior Safety Engineer
Date: May 27, 2016

INTRODUCTION

On February 29, 2016, Scott McAllister, a consultant for M&M Occupational Safety & Health Services, submitted a petition regarding the use of portable platforms. The petitioner is asking the Board to revise the Telecommunication and Electrical Safety Orders to require the use of both the positioning device system and fall arrest system when employees are using portable elevated work platforms. The petitioner cited a specific accident as the reason for his petition, which is detailed in the Staff Evaluation section.

The petitioner proposed language to amend the safety orders:

§ 2940.6. Tools and Protective Equipment
(b) Fall Protection. When work is performed at elevated locations more than 4 feet (1.2 meters) above the ground on poles, towers or similar structures, the employer shall require the employees to use either fall arrest equipment, work positioning equipment, or travel restricting equipment, if other fall protection methods have not been provided (e.g., guardrails, safety nets, etc.). The use of body belts for fall arrest systems is prohibited. Where elevated work platforms utilizing rope for work positioning, a fall arrest system shall also be employed.

§8615. Overhead Lines
(g) Fall Protection. When work is performed at elevated locations more than 4 feet (1.2 meters) above ground on poles, towers or similar structures, the employer shall require the employees to use either fall arrest equipment, work positioning equipment, or travel restricting equipment, if other fall protection methods have not been provided (e.g., guardrails, safety nets, etc.). The use of body belts for fall arrest systems is prohibited. Where elevated work platforms utilizing rope for work positioning, a fall arrest system shall also be employed.

STAFF EVALUATION

Background Information

At approximately 2:30 p.m. on October 23, 2008, an employee was replacing a cross arm and installing open points for future construction. He was demonstrating to an apprentice lineman how to install and use a Safety Live Line Working Platform (i.e., "Diving Board"). According to the accident report, the employee fell while positioning himself on the working platform. The platform rope failed, causing him to lose his balance. He fell approximately 26 feet. Witnesses reported that he had installed the platform and attached his secondary climbing belt to the platform rope before disconnecting his primary rope from the pole. According to a coworker, the platform was used 4-5 times per year.

Discussion

Linemen use portable platforms to access overhead lines and associated electrical equipment. The platform must be raised from the ground by hand or by a winch. When attached to the pole, the platform is cantilevered and supported by a diagonal brace. One end of the platform is attached to the pole, typically by chain tighteners or binders. (See photo on page 3)

When working on the platform, fall protection is required. Employees typically use a work positioning system for fall protection, not a fall arrest system. A fall arrest system is a system used to arrest an employee in a fall from a working level. It consists of an anchor, connectors, body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. The anchorage is required to be able to support 5,000 lbs. and the system is setup in a manner that would prevent the free fall of an employee for more than 6 feet. In contrast, a positioning system requires that the anchorage be able to support 3,000 lbs. or twice the intended load, whichever is greater. The positioning system shall be set up in a manner that the employee cannot free fall for more than 2 feet. The lower the distance of free fall, the less the arresting force to the body.

Board staff does not recommend language proposed by the petitioner to prescribe the use of both the fall arrest system and positioning system for fall protection. The High Voltage Electrical Safety Order, Section 2940.6(b) and Telecommunications Safety Order, Section 8615(g) both require the use of fall arrest equipment, work positioning equipment, or travel restricting equipment at elevations greater than 4 feet. The employer is given the responsibility to determine how they will achieve fall protection, by choosing the type of fall protection: fall arrest system, work positioning system, or travel restricting equipment. The petitioner's proposal to mandate redundant systems is unnecessary and may create unforeseen hazards, for example tripping, lanyards getting caught, etc. A compliant fall arrest system or positioning device system in accordance with 1670(b) or 1670(c) respectively, will achieve fall protection.

According to the accident report, the cause of the accident was the failure of the rope. The employee was tied off to the rope that failed. National Electrical Safety Code (NESC), Section 411C3 and Section 1670(c)(2) requires that positioning device systems be inspected prior to use. The rope may have been defective or did not have adequate strength to sustain the force that would be created by a 2 foot free fall or twice the intended load, whichever is greater. Board staff recommends amending Section 2940.6 by adding a cross reference to the requirements of fall arrest, work positioning, or fall restraint systems specified in Construction Safety Order, Section 1670.

The process of evaluating the petition raised issues regarding the design and use of portable platforms. The design of the platform involved in the accident that occurred on October 23, 2008, is different from the photo shown. The fall positioning system involved in the accident consisted of a rope tied to the pole and an upright located on the far end of the platform. It did not have an epoxiglass or fiberglass railing as shown in the photo.

During Board staff research in to this work practice, it came to light that:

- There is currently no consensus standard specifying design, performance, inspection, and testing requirements for the insulated portable platforms.
- The NESC standard regarding the safety rules for the installation and maintenance of overhead electric supply states that the platform should be rated to 600 lbs. The platforms that are typically available in the market have a maximum rated load of 500 lbs.
- There are no testing requirements to test the insulating properties of the platform.

- In practice, employees occasionally tie to the railing (see videos). Product literature states that the railing is used as belt on restraining guides. Other product literature clearly states that the tripod rail is not to be considered as the shock load anchor point or a side load anchor point. Board staff is interested in reviewing the various ways fall protection is achieved while using portable platforms.

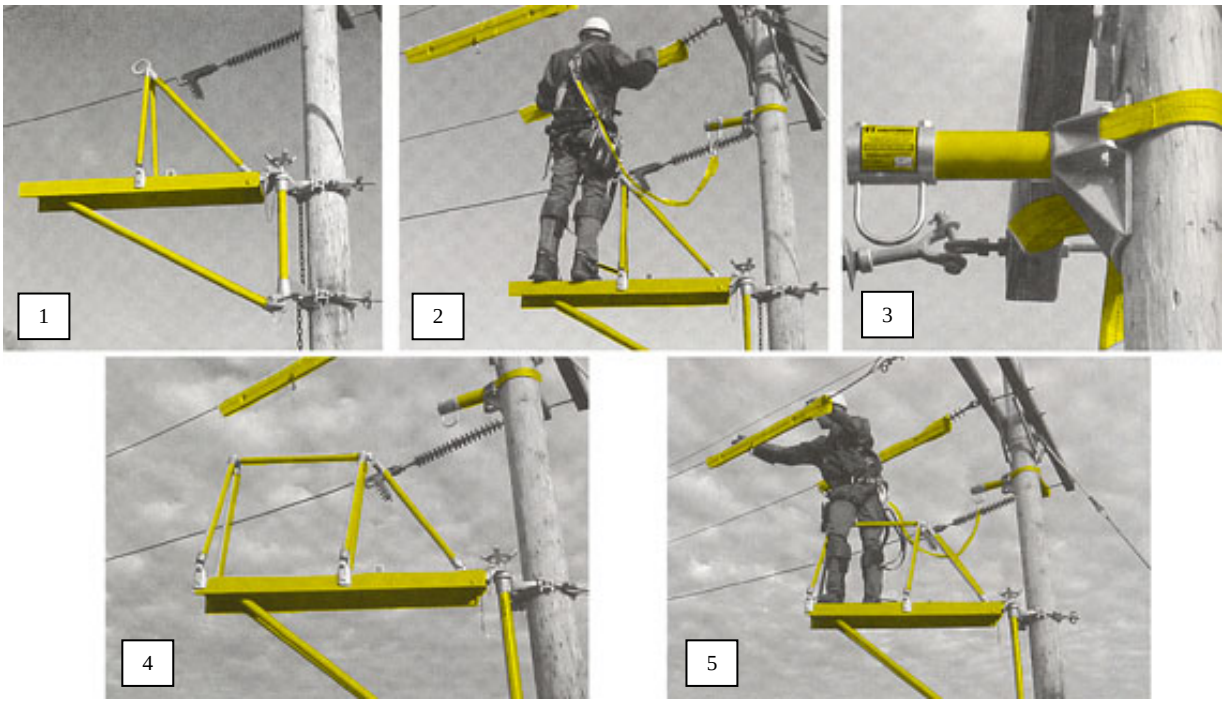

Photo description from left to right

1. Portable work platform with tripod fiberglass rail assembly designed to be used with 42" and 48" platforms.
2. Employee work position using while using 42" and 48" platforms.
3. Fall protection anchor point.
4. Portable work platform with horizontal fiberglass rail assembly designed to be used with 4 ft., 6 ft., 8 ft., and 10 ft. long platforms.
5. Employee work position while using platform with horizontal fiberglass rail.

Videos of employees using the platform:

https://www.youtube.com/watch?v=5XvOlJxXx0M
time stamped 8:32

https://www.youtube.com/watch?v=csIeKr08U0I
time stamped 7:39

https://www.youtube.com/watch?v=ovbPIZAUxII

Attached to this evaluation is a list (Attachment 1) of relevant consensus, Federal OSHA and California standards that have application if only in a general sense to the portable platforms described by the Petitioner. These standards address only one platform-related criterion and that is platform strength as measured in load bearing capacity. Aside from that, consensus and state and Federal OSHA standards do not specifically address the erection/dismantling, use care and maintenance of "diving board" type platforms described by the Petitioner.

CONCLUSION

Board staff recommends that the Board grant the petition, to the extent that an advisory committee is convened by Board staff. Board staff disagrees with the remedy proposed by the petitioner, but the work practices regarding the use of these platforms warrants further review. The advisory committee should review the application and various designs of portable platforms, in conjunction with any associated fall positioning system or fall arrest systems. Board staff also recommends the advisory committee to consider additional language clarifying that the fall protection requirements of Section 1670 apply to the Electrical and Telecommunication Safety Orders.

Attachment 1.

NATIONAL CONSENSUS STANDARDS

National Electrical Safety Code (NESC) C2-2012

Part 2: Safety Rules for the Installation and Maintenance of Overhead Electric Supply
261N
The strength required for all devices (includes steps, ladders, platforms, and their attachments) shall be capable of supporting 2.0 times the maximum intended load. Unless otherwise quantified by the owner, the maximum intended load shall be assumed to be 136 kg (300 lb), which includes the weight of the lineman, harness, tools, and equipment being supported by the lineman.

Part 4: Work Rules for the Operation of Electric Supply and Communication Lines and Equipment

411C3
Before use, the climbing and fall protection equipment shall be inspected to ensure that they are in safe working condition.

441 A3c
When the Rubber Glove Work Method is employed at voltages above 15kV phase to phase, the supplementary insulation (e.g. insulated aerial device or structure-mounted insulating work platform), tested for the voltage involved shall be used to support the worker.

FEDERAL OSHA STANDARDS

Fall Protection

1910.269(g)(2)(iv)(C)(2)
Except as provided in paragraph (g)(2)(iv)(C)(3) of this section, each employee in elevated locations more than 1.2 meters (4 feet) above the ground on poles, towers, or similar structures shall use a personal fall arrest system, work-positioning equipment, or fall restraint system, as appropriate, if the employer has not provided other fall protection meeting Subpart D of this part.

1910.269(g)(2)(iv)(C)(3)
Until March 31, 2015, a qualified employee climbing or changing location on poles, towers, or similar structures need not use fall protection equipment, unless conditions, such as, but not limited to, ice, high winds, the design of the structure (for example, no provision for holding on with hands), or the presence of contaminants on the structure, could cause the employee to lose his or her grip or footing. On and after April 1, 2015, each qualified employee climbing or changing location on poles, towers, or similar structures must use fall protection equipment unless the employer can demonstrate that climbing or changing location with fall protection is infeasible or creates a greater hazard than climbing or changing location without it.

Note 1 to paragraphs (g)(2)(iv)(C)(2) and (g)(2)(iv)(C)(3): These paragraphs apply to structures that support overhead electric power transmission and distribution lines and equipment. They do not apply to portions of buildings, such as loading docks, or to electric equipment, such as transformers and capacitors. Subpart D of this part contains the duty to provide fall protection associated with walking and working surfaces.

Note 2 to paragraphs (g)(2)(iv)(C)(2) and (g)(2)(iv)(C)(3): Until the employer ensures that employees are proficient in climbing and the use of fall protection under paragraph (a)(2)(viii) of this section, the employees are not considered "qualified employees" for the purposes of paragraphs (g)(2)(iv)(C)(2) and (g)(2)(iv)(C)(3) of this section. These paragraphs require unqualified employees (including trainees) to use fall protection any time they are more than 1.2 meters (4 feet) above the ground.

Portable ladders and platforms.

1910.269(h)(1)
General. Requirements for portable ladders contained in Subpart D of this part apply in addition to the requirements of paragraph (h) of this section, except as specifically noted in paragraph (h)(2) of this section.

1910.269(h)(2)
Special ladders and platforms. Portable ladders used on structures or conductors in conjunction with overhead line work need not meet § 1910.25(d)(2)(i) and (d)(2)(iii) or § 1910.26(c)(3)(iii). Portable ladders and platforms used on structures or conductors in conjunction with overhead line work shall meet the following requirements:

1910.269(h)(2)(i)
In the configurations in which they are used, portable ladders and platforms shall be capable of supporting without failure at least 2.5 times the maximum intended load.

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1910.269(h)(2)(iv)
Portable ladders and platforms may be used only in applications for which they are designed.

CALIFORNIA STANDARDS

Fall Protection

§2940.6. Tools and Protective Equipment.
(b) Fall Protection. When work is performed at elevated locations more than 4 feet (1.2 meters) above the ground on poles, towers or similar structures, the employer shall require the employees to use either fall arrest equipment, work positioning equipment, or travel restricting equipment, if

other fall protection methods have not been provided (e.g., guardrails, safety nets, etc.). The use of body belts for fall arrest systems is prohibited.

Exception: Point to point travel by a qualified person, unless conditions such as ice, high winds, design of the structure, or other condition (e.g., chemical contaminants) prevents the employee from gaining a firm hand or foothold while traveling.

§8615. Overhead Lines
(g) Fall Protection. When work is performed at elevated locations more than 4 feet (1.2 meters) above ground on poles, towers or similar structures, the employer shall require the employees to use either fall arrest equipment, work positioning equipment, or travel restricting equipment, if other fall protection methods have not been provided (e.g., guardrails, safety nets, etc.). The use of body belts for fall arrest systems is prohibited.

EXCEPTION: Point to point travel by a qualified person, unless conditions such as ice, high winds (as defined in Section 2951(f) of the High Voltage Electrical Safety Orders), design of the structure, or other conditions (e.g., chemical contaminants) prevent the employee from gaining a firm hand or foothold while traveling.

* There is currently proposed rulemaking to remove the exception for point to point travel in the California safety orders in order to be as effective as the federal standard.

§1670. Personal Fall Arrest Systems, Personal Fall Restraint Systems and Positioning Devices.

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(b) **Personal fall arrest systems** and their use shall comply with the provisions set forth below. Effective January 1, 1998, except as permitted in subsections (c) and (d), body belts shall not be used as part of a personal fall arrest system.
(1) On suspended scaffolds or similar work platforms with horizontal lifelines which may become vertical lifelines, the devices used to connect to a horizontal lifeline shall be capable of locking in both directions on the lifeline.
(2) Horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.
(3) Lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds.
(4) Except as provided in Section 1670(b)(5), when vertical lifelines are used, each employee shall be attached to a separate lifeline.
(5) During the construction of elevator shafts, two employees may be attached to the same lifeline in the hoistway, provided both employees are working atop a false car that is equipped with guardrails; the strength of the lifeline is 10,000 pounds [5,000 pounds per employee attached]; and all other criteria specified in this section for lifelines have been met.
(6) Lifelines shall be protected against being cut or abraded.

(7) Self-retracting lifelines and lanyards which automatically limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.
(8) Self-retracting lifelines and lanyards which do not limit free fall distance to 2 feet or less, ripstitch lanyards, and tearing and deforming lanyards shall be capable of sustaining a minimum tensile load of 5,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.
(9) Ropes and straps (webbing) used in lanyards, lifelines, and strength components of body belts and body harnesses shall be made from synthetic fibers except for when they are used in conjunction with hot work where the lanyard may be exposed to damage from heat or flame.
(10) Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached, or shall be designed, installed, and used as follows:
(A) as part of a complete personal fall arrest system which maintains a safety factor of at least two; and (B) under the supervision of a qualified person.
(11) Personal fall arrest systems, when stopping a fall, shall:
(A) limit maximum arresting force on an employee to 1,800 pounds when used with a body harness;
(B) be rigged such that an employee can neither free fall more than 6 feet, nor contact any lower level, and, where practicable, the anchor end of the lanyard shall be secured at a level not lower than the employee's waist;
(C) bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet; and
(D) have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 6 feet, or the free fall distance permitted by the system, whichever is less.
(12) The attachment point of the body belt shall be located in the center of the wearer's back. The attachment point of the body harness shall be located in the center of the wearer's back near shoulder level, or above the wearer's head.
(13) Body belts, harnesses, and components shall be used only for employee protection and not to hoist materials. Body belts used in conjunction with fall restraint systems or positioning devices shall limit the maximum arresting force on an employee to 900 pounds.
(14) The employer shall provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves.
(15) Personal fall arrest systems shall be inspected prior to each use for wear, damage, and other deterioration, and defective components shall be removed from service.
(16) Body belts shall be at least one and five-eighths (1 5/8) inches wide.
(17) Personal fall arrest systems shall not be attached to hoists, except as specified in these Orders, nor shall they be attached to guardrails.
(18) When a personal fall arrest system is used at hoist areas, it shall be rigged to allow the movement of the employee only as far as the edge of the working level or working area.
(19) Each personal fall arrest system shall be inspected not less than twice annually by a competent person in accordance with the manufacturer's recommendations. The date of each inspection shall be documented.

(c) **Positioning device systems.** Positioning device systems and their use shall conform to the following provisions:

(1) Positioning devices shall be rigged such that an employee cannot free fall more than 2 feet.
(2) Positioning device systems shall be inspected prior to each use for wear, damage, and other deterioration, and defective components shall be removed from service.
(3) The use of non-locking snaphooks shall be prohibited after January 1, 1998.
(4) Anchorage points for positioning device systems shall be capable of supporting two times the intended load or 3,000 pounds, whichever is greater.

Portable ladders and platforms
There is currently proposed rulemaking to add federal provisions to the California safety orders.