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Occupational Safety and Health Standards Board
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MINUTES OF THE ADVISORY COMMITTEE FOR
GENERAL INDUSTRY SAFETY ORDERS
ARTICLE 2 AND FALL PROTECTION
WALKING WORKING SURFACES

October 11 and 12, 2023

In-Person - Sacramento, CA Videoconference – Zoom

1. Call to Order

The videoconference and in-person meeting were called to order by the Committee Chair, Maryrose Chan, Senior Safety Engineer, Occupational Safety and Health Standards Board (OSHSB), in Sacramento, CA.

2. Opening remarks.

The Committee Chair welcomed members of the advisory committee meeting which is a continuation of the meeting held on February 22 and 23, 2003 to discuss proposed amendments to the General Industry Safety Orders (GISO), Article 2 and Fall Protection.

The meeting day was marked with words of remembrance by Thomas Kramer and a moment of silence to remember the victims of the Triangle Shirtwaist Factory Fire.

<https://rememberthetrianglefire.org/memorial/>

3. Brief Discussion on Section 3210

a) Proposal by PCI West

Presentation by PCI West

PCI West is a chapter of the Precast/Prestressed Concrete Institute. The chapter represents 16 producer members operating in 21 plants and several associate members involved in precast /

prestressed construction throughout California and Nevada. PCI West members produce precast products valued at approximately \$0.5 billion annually.

PCI West presented the reasons for proposing the exception to 3210(b) by showing pictures of the situations where they believe personal fall protection is infeasible. They modeled their proposed exception on the federal exception for docking operations.

Proposal:

§3210. Guardrails and Fall Protection at Elevated Locations

(b) Other Elevated Locations. The unprotected sides of elevated work locations that are not buildings or building structures where an employee is exposed to a fall of 4 feet or more shall be provided with guardrails. Where overhead clearance prohibits installation of a 42-inch guardrail, a lower rail or rails shall be installed. The railing shall be provided with a toeboard where the platform, runway or ramp is 6 ~~(4)~~ feet or more above places where employees normally work or pass and the lack of a toeboard could create a hazard from falling tools, material or equipment.

EXCEPTIONS:

14. Where the guardrails requirements of subsection(b) are impracticable or create a greater hazard for rigging and hoisting not on a mobile vehicle, guardrails are not required when:

- a. Access to elevated surface is solely for the purpose of rigging;
- b. Access to elevated surface is limited to authorized employees
- c. Employees engaged in the rigging are not exposed to fall hazards greater than 10 feet; and
- d. Those employees have been trained in accordance with section 3210.3

PCI provided examples where personal fall protection or guardrails is not feasible. Their reasons for the proposed exceptions are:

- The time required to rig is shorter than the time needed to install an engineered fall protection system
- Workers move away from the edge to do the rigging
- The exception does not require additional vehicles operating in the vicinity of worker foot traffic
- Eliminates the potential hazard of crane lines getting entangled with a guardrail for personal fall protection system.
- Workers are unprotected when guardrails do not work
- There is already an exception for unloading mobile vehicles

Discussion

Construction representative asked for additional information about the rolling stock exception.

PCI West representative replied that the proposed exception was modeled after the proposed Exception no. 3 of section 3210(b), which references section 3336. Loading Dock and Loading Rack Operations contains the details for working on unprotected edges and sides of dock plates.

Cal/OSHA stated the proximity of the stacks of material being too close to the edge is within the control of the fabricator. The stacks can be moved further apart from each other. The option of changing the access to the stack elevated materials, for example, using a scissor lift or rough terrain fork lift was not discussed in their presentation.

PCI West replied that moving stored material closer is difficult because of the limited real estate. Regarding using mobile vehicles (scissor lift and rough terrain), there is a hazard of employees getting hurt or struck by mobile vehicles. The letter they submitted contains more information. Adding more vehicles in congested spaces adds an additional hazard. In addition, there is the issue of the short amount of time spent rigging.

December 2, 2022 letter, page 3:

“During the period 2006-2015, the industry standard for fall protection in rigging operations was a fall protection plan. In that ten-year period, those 275 producers recorded 15 injuries of workers ascending or descending material for rigging purposes. That is 1.5 injuries in 2,406,250 rigging operations annually, an extremely low accident rate.

One could reasonably estimate a greater number of more serious injuries from the hazards added by guardrail or PFP systems for fall protection in rigging operations. The associated fall hazards, restrained movements, potential entanglements, and vehicle movements could easily contribute to a number of injuries exceeding 1.5 per year. For example, the Bureau of Labor Statistics reported 18,040 incidents of workers struck by vehicles in 2020 of which 9,240 (51%) were struck in non-roadway areas.”

Cal/OSHA asked two questions: is there an equivalent exception in the Federal WWS for the industry? Did the employer apply for a variance?

PCI West responded that the proposed exception was modeled after a federal exception for loading dock operation, not rigging operations. There is no specific exception for the precast industry.

Construction representative stated that the proposed exception could cover other industries, for example rebar fabrication. Precast is just one industry.

The **Chair** asked about the necessity for this proposal.

PCI West representative stated that the necessity is for situations where guardrails do not work, the proposed practices must be in use in order to qualify for the exception. They reiterated the reasons mentioned above.

Construction and food industry representatives stated that guardrails and fall protection are great when they are used in the right situations, but there are situations where it is not amendable to use a guardrail or fall protection, e.g. no good anchorage point, then a hazard is being created.

Construction representative stated that the time exposed to the hazard for installation and assembly versus the time doing the operation should not be ignored.

The **Chair** clarified that the practices listed to qualify for an exception are not the same as the requirements in a fall protection plan. Fed/OSHA's framework to addressing fall protection appears to be: guardrails, personal fall protection, covers, safety nets and when all else fails, a fall protection plan.

SME stated that Fed OSHA kicked the can further down the road for motor vehicles and rolling stock. They purposely did not include that in the regulation, so anything would be better than the federal regulation.

OSHA defines "rolling stock" as any locomotive, railcar, or vehicle operated exclusively on a rail or rails, or a trolley bus operated by electric power supplied from an overhead wire. "Motor vehicle" means any commercial bus, van, or truck, including tractor trailer, flatbed, tanker, and hopper trucks.

In the federal standards, there is an exception for precast construction:

1926.501(b)(12)

Precast concrete erection. Each employee engaged in the erection of precast concrete members (including, but not limited to the erection of wall panels, columns, beams, and floor and roof "tees") and related operations such as grouting of precast concrete members, who is 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems, unless another provision in paragraph (b) of this section provides for an alternative fall protection measure.

Exception: When the employer can demonstrate that it is infeasible or creates a greater hazard to use these systems, the employer shall develop and implement a fall protection plan which meets the requirements of paragraph (k) of § 1926.502.

Note: There is a presumption that it is feasible and will not create a greater hazard to implement at least one of the above-listed fall protection systems. Accordingly, the employer has the burden of establishing that it is appropriate to implement a fall protection plan which complies with § 1926.502(k) for a particular workplace situation, in lieu of implementing any of those systems.

The **Chair** asked what type of operations are unique to the general industry operations that the employer cannot abide by the requirement to have a fall protection plan?

Fed OSHA representative stated that OSHA does not allow fall protection plans in general industry except for 1910.28(b)(1)(ii) on residential roofs. There is an expectation that general industry employers have more control of their environment than construction.

The **Chair** asked for available options when guardrails and other means of fall protection are infeasible, a fall protection plan?

Construction representative stated that California does not accept infeasibility as a defense unless it is written into the regulation that if it is infeasible, then employer must do a, b, c. Infeasibility is a defense that is acceptable in Fed OSHA states. However, employers want something in writing, which is the reason for the proposed exception.

The **Chair** stated that the term “impracticable” is not a term that is permitted to be used in regulation. “Impracticable” is being replaced by “infeasible”.

Construction representative stated that “infeasible” is a high bar to reach in front of a judge.

Construction and food representatives asked why “impracticable” is no longer used.

The **Chair** replied that it has been determined that the term “impracticable” is not as effective as the federal standard.

Construction representative opined that the proposed exceptions are in line with the other existing exceptions.

SME (Engineering Firm) stated that the Federal register/OSHA states that it needs “more information about what employers are presently doing and any feasibility and cost concerns associated with a requirement to provide protection” for rolling stock and motor vehicles. It

appears that PCI West is trying to create that data. California can capture that data and report that.

Construction representative stated that someone is going to be at the edge repeatedly to install guardrails. Employees doing this rigging are interior to the edge for short duration of time. The employees who will install the railing will be exposed to falls for a longer duration of time.

General Industry representative stated in the other exceptions, it mentions a specific industry. In the proposal, a specific industry was not mentioned.

Cal/OSHA asked what other industries would use the proposed exception.

Construction representative answered, the rebar industry, where there is a similar yard. Rebar is removed from the truck and placed in the yard using a crane. There is a constant change in elevation of stock items. Guardrail cannot be used. There are other industries in a similar situation. Other examples are precast, steel fabrication shops, rebar. Some stacked materials are not higher than 4 feet. You cannot use personal fall protection or guardrails. The only time workers are on top of materials is to hook up and unhook the rigging for the crane.

PCI West representative stated the exception being proposed is far more specific, prescriptive and protective than the other existing exceptions to section 3210(b).

The **Chair** asked what does impracticable mean as written in the proposed exception by PCI?

Representatives from **construction and food industry** stated that infeasible means that you cannot reasonably do it, can't get it done. The "can't get it done" leaves out things like the hazard of installing fall protection, hazard created for installing the guardrails once they are installed. If the employee is loading unloading materials and must go over the guardrails, then that is not helpful. There are many things to take into consideration in deciding whether it shouldn't be done that way. Where the term "impractical" is a good term to use, which has been in the regulations for some time, it can be defined. If the word "infeasible" is not the right word, it should be confronted.

SME Engineering Firm representative stated that the term impracticable is not clear. Clients do not understand its meaning. Impracticable is defined online as impossible and that's generally how Cal/OSHA uses the term. An example of what is technically infeasible- disabled access, driving an access van for people with disability to a garage, but it is too low. Yes, it is possible to raise the entire structure so that the van can be driven, but it is technically infeasible, because it would require something almost impossible.

Representative **from construction and food industry** said there another term used in regulation “effective”. Ineffective can be used instead of impracticable. However, the final suggestion was to use a term impracticable or infeasible and flush it out and define it. Specific considerations such as creating a greater hazard can be considered in arriving at a conclusion.

The **Chair** asked if a fall protection plan can be an alternative to the proposed conditions listed by the PCI. The rulemaking process requires that an alternative be explored.

Representative from **construction and food industry** stated that a fall protection plan as listed in section 1671.1 may not be suitable, but some aspects of it may, such as training and procedures.

PCI representatives stated the proposed exceptions have limitations.

The **construction** representative stated that the proposed exception by PCI West is more protective than a fall protection plan. It gives the employer specifics as to what they have to comply with and is more narrowly construed. If a fall protection plan was used, then there would be no limit to the fall height.

The **construction** representative stated the use of fall protection plan would be infeasible because of the variety of structural members. Each one of those members could potentially need its own plan. Impractical as defined in the Merriam Webster dictionary as not wise to put into or keep in practice or effect.

The **construction** representative stated that the use of fall protection plan should be minimized because it can be abused. In residential fall protection, instead of using a fall protection plan, a regulation was written to inform how to do the work safely.

The **Chair** asked committee members who objects to the proposal by PCI West

The **General Industry** representative stated allowing an employee to work at a height of 10 feet without tying off is not a good idea. A question was asked, how the proposal by PCI West is more stringent than Fed/OSHA.

SME (Manufacturer) asked where the 10 feet came from, whether there is validation to support. On the federal side, the trigger height in general industry is 4 feet and 6 feet in construction. A question was asked if other products must be explored in order to qualify for the exception.

The **Chair** stated that the employer has the burden of proving that they meet the “infeasible” or “creates a greater hazard” standard.

Cal/OSHA objects to the proposal by PCI West because there are other ways to provide fall protection.

The **Chair** stated that if it is feasible or practical then the exception does not apply.

Fed/OSHA does not like to see exceptions in the regulation because the conditions that qualify for exception is not known or well defined.

The **Chair** stated the exception came from the federal standard (regulation regarding docking operations was on the screen)

Construction representative stated that the burden is on the employer to prove that it is infeasible.

Construction representative that stated that the feasibility standard must be adjudicated through the appeals board to determine whether it is feasible or infeasible. Docking operations (dock boards) is a specific industry and the proposal by PCI West would apply to multiple industries.

The **Chair** asked if the exception was intended to apply to specific industry or an activity.

PCI West and construction representatives answered that the exception applies to the activity.

Construction representative stated that the feasibility considerations such as the personal fall protection must not get caught up in the rigging or by the crane lifting operations. "Creates a greater hazard" consideration include the time the employee may be exposed to the hazard. The employee who might spend 20 to 30 minutes installing fall protection versus the few minutes required to do the rigging. The time at heights due to the work involved in installing the fall protection creates a greater hazard.

PCI West representative added, the exception is consistent with the other exceptions already in place.

b) Proposal by Len Welsh to add an exception to section 3210(c)

The **Chair** stated that subsection(a) applies to buildings and subsection(b) applies to other elevated work areas that are not buildings. The proposal by Len Welsh is in subsection(c).

Len Welsh was concerned that there is confusion in how the regulation was set up. Subsection (c) should stand on its own. Subsection(c) is a catch all and is intended to take care of items that

are left out in subsections(a)(b). During enforcement inspections, the focus has been where there are no guardrails, fall protection is expected and subsection(c) is not considered. In agriculture application, sometimes workers are under 4 feet and sometimes they are not. Loading and unloading situations are fairly short duration. Guardrails and fall protection don't work because the work to lift things on and off. They get in the way. The suggested text talks about practical solutions such as special training or procedures or a complete list of options and that whatever option is chosen would be effective.

Proposal by Len Welsh:

(c) Where the guardrail requirements of subsections (a) and (b) are impracticable due to machinery requirements or work processes and the exceptions in 3210 (a) and (b) do not apply, an alternate means of protecting employees from falling, such as ~~personal fall protection systems~~, training on procedural specifications to follow for fall prevention, shall be used.

Alternate Text by OSHSB:

(c) Where the guardrail requirements of subsections (a) and (b) are ~~impracticable~~ infeasible due to machinery requirements or work processes and the exceptions to 3210(a) and 3210(b) do not apply, an alternate means of protecting employees from falling, such as covers, safety net systems or personal fall protection systems, shall be used.

EXCEPTION to subsection (c): If the employer can demonstrate that cover(s), safety net systems or personal fall protection systems are infeasible or creates a greater hazard, then the employer shall develop and implement a fall protection plan in accordance with section 1671.1.

Discussion

Len Welsh does not agree with the alternate to require the use of fall protection when subsections (a) and (b), and covers, safety net or personal fall protection systems cannot be used. The words after "such as" are examples of alternate means. It is better to have language that states the following are acceptable alternatives. The fall protection plan is like fitting a round peg in a square hole. It requires a qualified and other involved things that are not practical in the real world. Many employers don't pour over Title 8 and they don't understand these nuances. They need something that can realistically prevent people from falling.

The **Chair** stated the alternate text proposed by OSHSB was modeled after 1910.28(b)(1)(i) regarding work on residential roofs.

Safety Consultant stated that a fall protection plan that mimics 1509 with a short list of items. The employer should have a fall protection plan, training, and a pre-meeting with employees before performing the job.

Cal/OSHA asked Len about the type of agricultural operations he was concerned about.

Len Welsh replied, it is when employees are standing on mobile platforms moving harvested materials at heights between 3.5 feet to 6 feet.

Construction representative suggested that instead of writing an exception, a new subsection(d) should be created to state where the requirements of subsection(c).

Fed/OSHA stated that they only allow the use of a fall protection plan only on residential roofs. For everything else, it is presumed that there is feasible means to provide fall protection.

Len Welsh said, what the Feds is saying is the employer is always going to be able to do some type of fall protection. In the federal model, there is always going to be way to provide fall protection. Welsh emphasized that “at least as effective” does not mean the same as.

Construction representative said stated that in Welsh’s proposal, such as does not mean it is prescriptive, but it is interpreted in the field as limited to what is listed. “Such as” is meant to exemplar of things, not just “fall protection systems” as listed in Title 8. The suggestion was to add to the exemplars after personal fall protections systems. Add training on procedural specifications, or other effective means.

Cal/OSHA strongly objected to the Len Welsh’s proposal to substitute “training on procedural specifications to follow for fall prevention”. The proposal is undercutting existing standard. Training is not a fall protection measure. He agrees with Fed/OSHA, stating that if fall protection plan is broadened to all industries, the orders may not be as effective as the federal standard.

GISO representative stated suggested, use OSHSB’s text without the exception and not add a subsection(d).

The **Chair** stated that based on Fed/OSHA’s comments, fall protection plans as a control measure cannot be used except for residential roofs. Residential roof will be covered in section 3212.

Construction representative stated that Len Welsh’s proposal is just to add some clarity to subsection(c) by adding additional remedies.

Len Welsh stated that existing section allowed the use of alternate means of protecting employees from falls and alternate means is not limited to just personal fall protection systems. It means anything that works.

Cal/OSHA replied that the standard listed that personal fall protection and usually after such as, it should list more. The standard alludes to something more, some positive means, not just training. The language suggested by Len Welsh is vague.

Len Welsh stated that catch all should be vague because the conditions that make guardrails and personal fall protection infeasible are unknown.

The **Chair** stated that there is a proposed section on fall protection training, section 3210.3, which would apply when fall protection training is mentioned in the proposal.

General Industry (Building Maintenance) representatives suggested structuring the text similar to section 3212 and listing acceptable means of protecting employees including fall protection plan. Based on the discussions “alternative means” is open ended and “such as” are examples.

Cal/OSHA representative added to the prior comment regarding training “training on specific procedures” cannot be a substitute for some positive means of protecting employees from falls. Perhaps developing language requiring implementation of procedures would be better.

Construction representatives clarified that the control measure is training and procedures.

Construction representative suggested:

(c) Where the guardrail requirements of subsections (a) and (b) are impracticable infeasible due to machinery requirements or work processes and the exceptions to 3210(a) and 3210(b) do not apply, an alternate means of protecting employees shall be protected from falls by covers, safety net systems or personal fall protection systems.

(d) Where the requirements of subsection(c) are infeasible, safe work procedures to prevent fall shall be implemented and employees shall be trained on those procedures.

The **Chair** is concerned that subsection(d) will apply to all heights. Subsection(d) will not be as effective as the federal standard. Subsection(c) appears to be the only workable solution. The employer may propose alternate means through the variance process.

Construction representatives stated that existing regulations already said that alternative means permitted so proposing subsection(c) by itself is eliminating something that is already allowed instead of clarifying subsection(c).

The **Chair** stated that section 3210 will be reviewed by federal OSHA and most likely the existing section 3210(c) will be flagged as not being as effective as the federal standard.

Construction representative said that the variance process timeline is too long, at least 6 months. If there is immediate need to perform the work in the field, for example, boxes of apples in an elevated location would rot because you do not have alternate mean to access them. The variance process may be more workable for a fixed site.

4. Brief Discussion on section 3212

a) Proposal by PG&E to add an exception to section 3212

The utility representative stated that their employees must access the residential roofs. Historically, access has been through bucket trucks or ladders. Access through ladders could arguably be less safe than being on the roof.

Under 3212, if conventional fall protection is not possible (guardrails, safety net, scaffolds and the like), then personal fall arrest or restraint system is required. The challenge is obtaining permission from residential owners to install an anchor on their property.

Utility Representative is proposing to add language from 1910.28(b)(1)(ii):

When the employer can demonstrate that it is not feasible or creates a greater hazard to use guardrail, safety net, or personal fall protection systems on residential roofs, the employer must develop and implement a fall protection plan that meets the requirements of 29 CFR 1926.502(k) and training that meets the requirements of 29 CFR 1926.503(a) and (c). In California, the equivalent cross reference is section 1671.1 and training requirements section 3210.3.

Utility stated that their suggestion is not unprecedented. In CSO, 1670(c), there is an exception where it talks about alternate means via fall protection plan. California has an exception around skylights where fall protection isn't practical. Ideally, there are situations where residences have been converted to small businesses and hope to capture that as well.

No such reference in section 1670(c). There is a reference to 3212(e) that states:

EXCEPTION: to subsection (e): When the work is of short duration and limited exposure such as measuring, roof inspection, electrical/mechanical equipment inspection, etc., and the time involved in rigging and installing the safety devices required in subsections (e)(1) through (e)(6) equal or exceed the performance of the designated tasks of measuring, roof inspection, electrical/mechanical equipment inspection, etc., these provisions may be temporarily suspended provided that adequate risk control is recognized and maintained.

Action Item:

The Chair will update section 3212 and add an exception similar to what is proposed in section 3210(c), which contains elements of federal standard 1910.28(b)(1)(ii).

Cal/OSHA asked if there are products that allow for installation of anchorage on roofs that are non-penetrating. The exception pertains to feasibility and if there are products out there then the use of personal fall protection may be feasible.

Subject Matter Expert (Manufacturer) stated that 3M manufactures several non-penetrating anchors however they are going to require structure to clamp or be withstand a certain amount of x amount of pounds (force) such as 725 pounds, which is a requirement for 3M's standing non-penetrating anchor. Giving the employee the means to implement a fall protection system does not necessarily mean that the structure (anchor) must be on the residential rooftop. For example, using a 300 ft rope and tie to a tree over the pitch of the roof. If the work is happening at a very specific location, the employee can be equipped with some sort of fall restraint or fall positioning. It may take a lot of time. There are ways that a competent may be able to figure out an option that does not require anchors that penetrate the roof. Cal/OSHA currently has a 4:1 fall restraint anchorage option. If you can find something that can support 4 times the load of that person, then you can have a restraint system. One of the best tools in the are a bucket, a rope and a rope grab. There are other ways to provide fall protection. It gets more complicated for roof pitches that are 3:12 or 4:12 in slope.

The **Chair** stated that the proposal considers feasibility.

The Note under 1910.28(b)(1)(ii) states:

There is a presumption that it is feasible and will not create a greater hazard to use at least one of the above-listed fall protection systems specified in paragraph (b)(1)(i) of this section. Accordingly, the employer has the burden of establishing that it is not feasible or creates a greater hazard to provide the fall protection systems specified in paragraph (b)(1)(i) and that it is necessary to implement a fall protection plan that complies with § 1926.502(k) in the particular work operation, in lieu of implementing any of those systems.

The fall protection plan is only permitted when the employer can claim that conventional fall protection systems were not feasible, leaving no choice but for the employer to resort to a fall protection plan.

The **construction** representative stated that the committee should consider PG&E's comment that employees and employer work on ladders, because it is easier to comply. Fall protection is not required when working on ladders. However, working on a ladder is more unsafe. Most of the high-level falls are from working from ladders. The committee was asked to explore ways to provide safety, but not have workers default to working on ladders.

The **utility** representative stated the feasibility requirement is there. They are not looking for a blank check. Employees work in a hazardous situation, using backside anchors that tie into an eave traversing back and forth over roofs. They are spending more time in a hazardous situation than getting up on the roof and sitting down, doing the work, and getting off the roof. Some of the work is short duration and this is not days and days of work. Cal/OSHA has in several instances defined what they consider as short duration work.

Another **utility** representative agrees with adding language similar to the Federal standard. They want the option to assess the situation to determine the feasibility of installing fall protection systems.

Construction representative stated based on prior experience working as an electrician, the location of where service drops to the weather head is usually at the corner of the roof of a residential home. This makes it almost impossible to use fall restraint, because you have to protect from both corners.

SME (Manufacturer) stated working on a corner is a challenge. The frequency of the work and evaluating if there is anything that can be done should be considered.

Utility representative stated that it is frequent work, but not on the same address. The work is frequent on residential roofs at different addresses.

Cal/OSHA stated that if the committee is going to work adding language similar to the federal standard, but there should be a limitation on the height of the residential roof.

5. Discussion of Proposed Draft Text

The Committee Chair referred to the discussion draft, which includes the post-AC proposal. The Committee Chair reviewed the bold text underline, which reflects the consensus reached during the last meeting. After the review, the format of the text will be changed from bold to normal and outstanding items will have comments in braces.

a) Review of Post AC Text including Post AC Action Items.

Normal strike out and underline format was the format of the proposal when Article 2 was first released.

Bold strike out and underline was the proposed changes after the advisory committee meeting. The bold and strike out and underline will be changed to normal strike out and underline after the post-AC text is reviewed by the committee.

Red text and purple text are unsettled text proposed by an advisory committee member.

Blue text are new proposed changes to the proposal by OSHSB to be reviewed.

Green text is where CA differs from the federal standard - Appendix.

Bold black text reflects the outcome of the discussions.

The goal is for the proposal to be entirely normal strike out and underline.

Proposal

§3210.1. Personal Fall Protection Systems

(c) General Requirements. The employer shall ensure that personal fall protection systems meet the following requirements. Additional requirements for personal fall arrest systems and positioning systems are contained in subsections (d) and (e), respectively.

(6) All self-retracting lifelines and lanyards ~~that automatically limit free fall distance to 2 feet or less~~ shall have components capable of sustaining a minimum tensile load of 3,600 pounds applied to the device with the lifeline or lanyard in the fully extended position. [From T8 Appendix C, Section I (c)(4), §1910.140(c)(5), *technical correction, see 3.2 of ANSI Z359.14-2021*]

(A) Webbing used as a line constituent shall have a minimum breaking strength of 4,500 pounds for Class 1 devices and 5,000 pounds for Class 2 devices. [ANSI Z359.14-2021, 3.1.6.1]

(B) Class 1 self-retracting devices (SRDs) shall only be anchored above the dorsal attachment. [ANSI Z359.14-2021, 1.4.1 Class 1 and Appendix B, B4.1.1 Anchorage, *moved from subsection (c)(8)*]

Outcome

The proposed changes were accepted.

Discussion

The committee accepted the proposed changes, which were technical corrections.

Cal/OSHA asked if Class 1 and Class 2 are defined.

The Chair replied that it is under SRD.

Proposal

§3210.1. Personal Fall Protection Systems

(c) ~~(9)~~(8) D-rings, snaphooks, connectors and carabiners shall be capable of sustaining a minimum tensile load of 5,000 pounds. [From T8 Appendix C of Article 6, Section I (c)(6), §1910.140(c)(7), ANSI Z359.12-2019, Section 3.1.3.1].

Cal/OSHA's proposed (c)(10)

(c)(10) Components of a personal fall protection system shall be capable of sustaining a minimum tensile load of 5,000 pounds. Components of a fall protection system may work in conjunction to sustain a minimum tensile load of 5,000 pounds.

EXCEPTION to (c)(10): Self-retracting lanyards in 3210.1 (c)(6)

~~(15)~~(14) Anchorage system shall be capable of supporting at least 5,000 pounds for each employee attached or designed, installed and used, under the supervision of qualified person, as part of a complete personal fall protection system that maintains a safety factor of at least two. [From T8 Appendix C to Article 6, Section I (c)(10), §1910.140(c)(13), ANSI Z359.2-2017, 9.3.2]

EXCEPTION to subsection (c)(15): Window cleaners anchors and fittings covered by section 3283.

Outcome

The committee accepted the proposed change to add connectors in subsection(c)(8). Cal/OSHA's was satisfied with the proposal to add "connectors" and agreed to delete their proposed subsection (c)(10).

~~(15)~~(14) Anchorage ~~system~~ and anchorage connectors shall be capable of supporting at least 5,000 pounds for each employee attached or designed, installed and used, under the supervision of qualified person, as part of a complete personal fall protection system that maintains a safety factor of at least two. [From T8 Appendix C to Article 6, Section I (c)(10), §1910.140(c)(13), ANSI Z359.2-2017, 9.3.2]

EXCEPTION to subsection (c)(15): Window cleaners anchors and fittings covered by section 3283.

Action Item

Chair to propose text to state that the term connector means connectors as defined by ANSI

Discussion

The **Chair** stated that proposed changes to subsection (c)(14) is to address Cal/OSHA's concerns regarding the capacity of the components of the fall protection system. The red subsection(c)(10) unsettled text was proposed Cal/OSHA at the prior advisory committee meeting. There were discussions regarding the components in line along the anchorage. To address the issue, there are proposed changes to subsection (c)(14).

After the proposed subsection (c)(14) was displayed, the Chair asked if the proposed changes to subsection(c)(14) addresses Cal/OSHA's concerns? In the minutes that was sent to the AC members, there were discussions about various components such as turn buckles, clamps, shackles.

SME interjected by clarifying that subsection (c)(10) refers to the individual products that can be purchased from 3M or fall protection manufacturers, whereas (c)(14) is giving some flexibility to the qualified person designing the system to make sure that there is an adequate factor of safety. It requires a factor of safety, maybe not quite the 5,000-pound capacity. The federal language states anchorage, which is just part of the building structure regardless of fall protection. The proposal broadens the 5,000 pound to anchorage system where a structural engineer is required to design something that may not necessarily be 5,000 pounds when it may not be needed.

Construction representative said that subsection (c)(14) must be viewed in combination with subsection (c)(8). Cal/OSHA's original proposal that all components must meet 5,000 lbs. Subsection (c)(8) is on connectors, subsection (c)(14) is on anchorage, and another subsection on lanyards. The proposed subsection (c)(10) is too broad and over reaching. The representative stated the term connectors in subsection(c)(8) should remain.

SME stated that the connectors in (c)(8) should mean connectors as used in ANSI Z359 definition. It includes connectors that are in ANSI Z359.12, such as D-ring, buckles. It shouldn't include anchorage connectors, such as anchorage connector straps.

Construction representative asked if Cal/OSHA proposed subsection (c)(10) goes away.

The **Chair** replied, not necessarily, because the issue regarding anchorage connectors was raised. Proposed subsection (c)(14) is meant to address that.

Construction representative stated that lanyards are mentioned in other subsections.

General Industry (Exterior Building Maintenance) representative was concerned about changing anchorage to anchorage system, because it may confuse the nature of an anchor. Anchorage is defined as a secure point of attachment for equipment such as lifelines, lanyards or deceleration devices and by calling it an anchorage system, he asked if the language is being opened up to combined anchors. Anchorage is a single thing and I am wondering if we are opening it up to more than one thing.

The **Chair** asked Cal/OSHA to clarify the intent of subsection(c)(10)

Cal/OSHA replied stating that during the last AC, we looked at a horizontal lifeline. We reviewed all the components and one of the components had a capacity of 750 pounds. The horizontal lifeline is meant to be able to support 5,000 pounds force for a fall arrest, yet there is one component on this chain of load carrying components that can only support 750 lbs. So

Cal/OSHA proposed that all components including the webbing and soft ropes, or whatever is used should be able to support 5,000 pounds, because it is only as good as its weakest link.

SME (Manufacturer) stated that manufacturers use U shackle that didn't meet the 5,000 pounds as referenced, but as a system, components may not meet the 5,000 pounds, such as the aluminum ferrules, shackles, thimbles. They are not going to meet 5,000 pounds, because the manufacturer does not sell those as individual components. The manufacturer is selling a system, which is designed to reflect certain numbers and values as a system. SME manufacturer agrees with subsection(c)(8), but the unsettled subsection(c)(10) needs to be deleted. SME(Manufacturer) suggested that instead of anchorage system, designate that as anchorage connectors. That is how most fall protection manufacturers in the industry reference anchorage connectors. They are the individual anchorage connector that are sold and manufactured so that the end user can clamp that on to their structure and attach that onto their personal fall arrest system.

The **Chair** verified if the SME (Manufacturer) comment was to change "anchorage system" to "anchorage and anchorage connectors"

The **Chair** solicited comments from the committee.

SME (Manufacturer) stated yes and added that anchorage would be the structure and anchorage connector would be what the manufacturer designs or an independent party designs and attaches to the structure.

Another **SME (Engineering Firm)** agreed with the **SME (Manufacturer)**, with the proposed changes to the horizontal lifelines, the proposed changes to subsection(c)(14) will clean it up, because it will allow the qualified person to design the structure.

SME (Engineering Firm) stated if the anchorages are permanent they have to be designed per building code, which has different requirements.

The **Chair** stated that compliance with the Title 8 regulations does not exempt employers from building code requirements.

SME (Engineering Firm) replied that the second half is not allowed if it is a permanent part of the structure. Unfactored live load of 3,100 pounds times a live load factor of 1.6 is approximately 5,000 pounds as the factored design load. The building code does not state "designed and used under the supervision of a qualified person". A licensed structural, civil or mechanical engineer is required to design and connect to the anchorage.

SME (Engineering Firm) clarified that anchorage is the structure that is there regardless of fall protection. The anchorage connector is anything that you have for the fall protection system.

Construction representative asked a question, how about a stanchion and a hoop?

SME (Engineering Firm) replied that it is an anchorage connector

SME (Engineering Firm) stated, the anchorage connector has to be designed for 5,000 pounds factored load.

SME (Engineering Firm) added that this is something that the ANSI Z359.6 is trying to harmonize

Construction representative stated that years ago, Cal/OSHA and the building code disconnected from each other. Employers are required to follow Cal/OSHA and building owners are required to follow the building code.

Cal/OSHA representative stated that they agree with removing subsection(c)(10), because it will be addressed in 3299 later on.

Proposal

Unsettled Text

Option 1 Cal/OSHA's Proposal

§3210.1(c)(12) Horizontal Lifeline (HLL)

- (A) Horizontal lifeline systems shall be designed by a qualified professional engineer registered in the state of California-experienced in the design of horizontal lifelines as part of a complete personal fall protection system with a safety factor of at least two. The HLL system shall be installed by a qualified person and used under the supervision of a competent person.
- (B) The safety factor of two shall be based on forces determined using analytical methods of section 8.3 of ANSI Z359.6-2016 Specifications and Design Requirements for Active Fall Protection Systems, which is hereby incorporated by reference.
- (C) Drawings and specifications in accordance with section 3.2 of ANSI Z359.6-2016 Specifications and Design Requirements for Active Fall Protection Systems applicable to each HLL shall be maintained and readily available at the location where the HLL is used.

Note: Additional requirements for horizontal lifelines used for building maintenance are included in title 8 section 3299.

§3299. Personal Fall Protection.

(a) Employees on working platforms shall be protected by a personal fall arrest system meeting the requirements of Section 3210.1 of the General Industry Safety Orders, Appendix C, Section 4 of this article and as otherwise provided by these orders.

(b) The qualified person required by title 8 subsection 3210.1(c)(13)(A) for the design, installation, use and supervision of horizontal lifelines to be used by employees performing building maintenance shall be a professional engineer currently registered in the State of California.

Reasoning:

- Temporary vs Permanent designation un-enforceable. It is better to differentiate between a Pre-design/Pre-engineered HLL versus a custom designed HLL.
- The language does not differentiate between Pre-engineered HLLs versus a custom designed HLL.
- Accomplishes the goal that all HLLs are designed by a PE.
- Gives direction to HLL engineers on acceptable methods of design.

Option 2 are additional changes proposed by Mike Donlon and others to Option 1
Red text from Cal/OSHA. Purple text from Mike Donlon

(c)(12) Horizontal lifeline systems:

(A) Each horizontal lifeline shall be designed, installed and used, under the supervision of a qualified person, as part of a complete personal fall protection system that maintains a safety factor of at least two.

(1) Horizontal lifelines in place at a single location for more than 6 months shall be designed under the supervision of a professional engineer currently registered in the State of California and installed as part of a complete personal fall arrest system, which maintains a safety factor of at least two.

(B) The safety factor for horizontal lifelines shall be based on installation in accordance with the manufacturer's instructions or forces that are determined using the analytical methods included in Section 8.3 of ANSI Z359.6-2016 Specifications and Design Requirements for Active Fall Protection Systems, which is hereby incorporated by reference.

(C) Drawings and specifications in accordance with Section 3.2 of ANSI Z359.6-2016 Specifications and Design Requirements for Active Fall Protection Systems or the manufacturer's instructions applicable to each horizontal lifeline shall be ~~maintained and~~ readily available at the location where it is to be used.

Note: Additional requirements for horizontal lifelines used for building maintenance are included in title 8 section 3299.

§3299. Personal Fall Protection.

(a) Employees on working platforms shall be protected by a personal fall arrest system meeting the requirements of Section 3210.1 of the General Industry Safety Orders. Appendix C, Section I of this article and as otherwise provided by these orders.

~~(b) The qualified person required by title 8 subsection 3210.1(c)(13)(A) for the design, installation, use and supervision of horizontal lifelines to be used by employees performing building maintenance shall be a professional engineer currently registered in the State of California.~~

(b) Horizontal safety lines, to be used by employees performing building maintenance, shall be designed under the supervision of a professional engineer currently registered in the State of California and installed as part of a complete personal fall arrest system, which maintains a safety factor of at least two.

Outcome:

(12) The employer shall ensure that each horizontal lifeline system: *[From T8 Appendix C of Article 6, Section I (c)(9), §1910.140(c)(11), ANZI Z359.2, Section 9.3.5]*

(A) Horizontal lifeline systems shall be designed by a qualified professional engineer experienced in the design of horizontal lifelines as part of a complete personal fall protection system with a safety factor of at least two. The HLL system shall be installed by a qualified person and used under the supervision of a competent person.

(B) The forces used for horizontal lifeline designs shall be based on empirically determined test data shown in documentation associated with the manufacturer's instructions or forces that are determined using the analytical methods included in Section 8.3 of ANSI Z359.6-2016 Specifications and Design Requirements for Active Fall Protection Systems, which is hereby incorporated by reference.

(C) Drawings and specifications in accordance with Section 3.2 of ANSI Z359.6-2016 Specifications and Design Requirements for Active Fall Protection Systems applicable to each horizontal lifeline shall be maintained and readily available when the HLL is in use

(D) As an alternative to (C), the employer shall have documentation from the manufacturer or other sources that provides at least the following:

1. Type of active systems being used (i.e., fall arrest or fall restraint)*

2. Maximum number of users on the system and the corresponding maximum load capacity for each user, including clothing and tools*

Maximum factored loads (design loads) on each type of anchorage of the horizontal lifeline

3. Maximum personal fall arrest loads permitted on the HLL

Clearances based on the span(s), number and weight of users, type of connecting device and other relevant variables

4. Required sag (if any) or required tension in the HLL

5. Specification for each component of the system*

6. Any testing or inspection required prior to initial and daily use of the system*

7. A drawing or written description detailing how and where the horizontal lifeline is to be supported

Note 1: Items in the above list noted by * are often provided in the manufacturer's instructions.

Note 2: Additional requirements for horizontal lifelines used for building maintenance are included in title 8 section 3299.

Discussion

In the last advisory committee meeting, the subject horizontal lifeline was discussed at great lengths, but the committee was not able to reach a consensus. Prior to this meeting, the Chair had asked Mike Donlon and Cal/OSHA to meet to see if they can come to some understanding regarding horizontal lifelines. The **Chair** asked if they were able to reach some kind of agreement.

Mike Donlon stated that there was agreement in Option 1 subsection (c)(12)(A)(B) and difference in (C). Donlon is in favor of Option 2, subsection(c)(12)(C) includes manufacturer's instruction. In Option 1 subsection(c)(12)(C), the Division is asking for something that is not provided to the end user. The manufacturer instructions may not include everything that is required per ANSI, but the manual contains sufficient instructions to install the system safely.

The **Chair** asked if manufacturers design systems using ANSI Z359.6-2016.

The **SME (Manufacturer)** stated yes.

The **Chair** stated that both proposals maybe saying the same thing, since the manufacturer uses ANSI Z359.6 as reference for their manufactured product.

Mike Donlon stated that during the last meeting, there were items that we could not find items in the manual. ANSI requires a lot of things. If an employer purchased one hundred of these systems and then finds that the manufacturer's instruction does not contain everything that

ANSI requires then the product would be non-compliant because it is missing something that ANSI required. The manual is what the end user will have.

SME (Manufacturer) stated that the difference between the two Options is employer or self-engineered systems versus manufactured systems. As the manufacturer, they have to do all that math and all the tests. Our professional engineers sign off on those systems. There is no testing standard under ANSI, but the committee is working on it. ANSI Z359.17 is in the draft stage.

SME (Engineering Firm) stated there were discussions regarding temporary systems and permanent systems. It's been a discussion for over 10 years. Option 2 by Donlon seems to be the most reasonable. It included analytical methods by ANSI Z359.6-2016 and allows manufacturer's instructions for manufactured system. It seems to cover both permanent and temporary systems. It states in(c)(12)(A)(1) that if it is a permanent, it must be designed under the supervision by a PE in California.

Cal/OSHA disagrees with Option 2 because is because you can use manufacturer's installation manual to take the place of the method of design. These are two different things. Secondly, as a regulator, we want to be able to go to the jobsite and be able to verify that what is installed in the jobsite and that is what ANSI Section 3 is about.

The **Chair** stated that we are not limited to the Options, there could be one set of requirements for manufactured systems and another for permanent systems.

SME (Engineering Firm) stated that Z359.6 allows test data to be used as their documentation for an engineer. Because the installation instructions are based on based on their test data, it appears to be saying the same thing.

SME (Engineer Firm) asked what does Option 2, subsection (c)(12)(B), "The safety factor for horizontal lifeline shall be based on installation in accordance with manufacturer's instructions" mean. It does not seem to make sense. It is grammatically incorrect.

SME (Engineering Firm) stated that it is based the forces for documentation. Manufacturers will have documentation regarding the forces depending on how it is supposed to be installed. It is based on the information that the manufacturer has given to the end user based on the test data that they have or based on an analytical model that the engineer has performed in accordance with Z359.6.

SME (Engineering Firm) suggested draft language "Safety factor for horizontal lifelines shall be based on the forces that are determined using the analytical methods using section 8 of ANSI or test data obtained whatever section of ANSI Z359".

Construction representative reiterated that the employer is going to have the manufacturer's instruction or manual. They are not going to have the test data that the manufacturers used to write the manufacturer's instruction.

Construction representative stated that hardware purchased from Lowe's or similar store will include instructions with a prescriptive method on how to install them to meet the rating that it was designed for, e.g. anchor bolts or similar hardware. So, if a manufacturer has instructions to use 3/8 cable on this much center on this much, on this type of anchorage, then you are installing it based on the method the manufacturer described. If you are going outside the instructions, then you are taking a risk, because you are going outside their design and testing.

SME (Manufacturer) stated that information regarding the use of that system including the installation and user instruction must be stated in the manual. They are all based on certifications requirements that the manufacturers apply to the system. Currently, they are based on the Fed OSHA for a 2:1 safety factor. As mentioned, there is no testing standard, so manufacturers develop their own testing methods and have the data. In February advisory committee meeting, we reviewed the instructions of a few manufacturers and they were sufficient for an end user who has been trained to install that system. The instructional manual contains the design load, the clearance requirements, and personal fall arrest systems to be used.

The proposed text should not require manufacturers to provide design drawings and design information. If manufacturer's do that, then they are not going to buy the manufactured system, people will just build their own.

The **Chair** stated that there is agreement in Option 1 (c)(12)(A)(B), but not on (C). The Chair asked if the committee could postpone the discussion until a new ANSI standard on testing of horizontal lifelines is released, the Chair did not want this topic to take up most of the time of the October 2023 meeting.

Construction representative stated that the design information from the manufactured system is something that can be requested if there is litigation due to an accident whereas the one that was put together from parts purchased from Lowe's wouldn't have the data to support that system.

Construction representative stated that there might not be consensus on (c)(12)(B).

Petroleum representative safety factors shall be based on the installation instruction in accordance with the manufacturer's manual.

The **Chair** stated the safety factors are not based on the manufacturer's instructions.

SME (Engineering Firm) stated that the safety factors should be based on the testing or analytical method, installed and use based on manufacturer's instructions.

The Chair stated that the safety factor sentence should not be in the proposed text because there is a separate section on systems criteria.

Cal/OSHA's Option 1 does not preclude the use of a manufactured system. Section 3328 requires that you follow the manufacturer's instructions. Components built in accordance with

engineered plan or a manufactured system like a 3M. In a construction site, there are parts that break to make sure that it is replaced by an equivalent strength material.

Alternative 3 for 3210.1 (c)(12)(B)

(B) The forces or tensions used for horizontal lifeline designs shall be based on empirically determined data shown in documentation associated with the manufacturer's instructions or forces that are determined using the analytical methods included in Section 8.3 of ANSI Z359.6-2016 Specifications and Design Requirements for Active Fall Protection Systems, which is hereby incorporated by reference.

Outcome

(B) The forces ~~or tensions~~ used for horizontal lifeline designs shall be based on empirically determined ~~test~~ data shown in documentation associated with the manufacturer's instructions or forces that are determined using the analytical methods included in Section 8.3 of ANSI Z359.6-2016 Specifications and Design Requirements for Active Fall Protection Systems, which is hereby incorporated by reference.

Discussion

SME (Engineering Firm) suggested deleting "or tensions".

SME (Engineering Firm) stated that the reason for "or tensions" is often times, documents state the forces or tensions is X pounds.

There was a suggestion to use forces.

SME (Engineering Firm) and Cal/OSHA replied that tension is a type of force.

SME (Engineering Firm) agreed to the striking out of "or tensions"

SME (Engineering Firm) asked if there is a standard on how to empirically determined data is obtained.

The **Chair** replied not yet.

SME (Engineering Firm) replied that in section 3210.1(c)(12)(A) requires that the HLL be designed by a qualified professional engineer experienced in the design of a complete personal fall protection system with a safety factor of at least two. There is no standard on it yet, but hopefully there will be one soon.

General Industry representative asked if it was necessary to incorporate ANSI by reference.

Fed/OSHA stated that a consensus standard with an edition year and is incorporated by reference has the same effect as a regulation.

SME (Engineering Firm) empirically determined data is gathered by testing versus analytical methods, which are calculations to determine the forces.

Cal/OSHA asked if “test data” can be added to the text.

SME (Engineering Firm) suggested how about “empirically determined test data”

Cal/OSHA asked, why would a manufacturer not use ANSI?

SME (Engineering Firm) said that ANSI Z359.6 is not a standard for testing. It is a standard that engineers use to design an active fall protection system. It gives test methods that can be used to analytically determine cable tensions. Test data can be used as one method. The purpose of the phase is, for an HLL, the user can obtain the data from the manufacturer, the tensions are this and the forces are this, then you can design an anchorage for that HLL. The ANSI Z359.6 provides all the different methods for designing a system: static, dynamic method.

The **Chair** added that the testing standard is not yet published. Manufacturers use their own testing procedures.

Cal/OSHA asked, since one of the methods is the testing then isn’t the proposed text redundant?

SME (Engineering Firm) said that the proposed text is intended to address that when Cal/OSHA comes to the work site and Cal/OSHA asked for documentation, the employer can either provide the manufacturer’s instruction manual or Z359.6 documentation at the site.

Proposal

Combined Proposal by the Cal/OSHA and Mike Donlon (Construction), §3210.1(c)(12)(C)

Red text was from Cal/OSHA, purple were edits by Mike Donlon

(C) Drawings and specifications in accordance with Section 3.2 of ANSI Z359.6-2016 Specifications and Design Requirements for Active Fall Protection Systems or the manufacturer’s instructions applicable to each horizontal lifeline shall be ~~maintained and readily available.~~ at the location where it is to be used.

Outcome

(C) Drawings and specifications in accordance with Section 3.2 of ANSI Z359.6-2016 Specifications and Design Requirements for Active Fall Protection Systems applicable to each horizontal lifeline shall be maintained and readily-available when the HLL is in use at the location where it is to be used

Discussion

Cal/OSHA commented that it states “or the manufacturer’s instruction” may be different from section 3.2 of the ANSI Z359.6-2016.

The **Chair** asked, if the employer buys a manufactured HLL lifeline fall protection system, what kind of documentation can the employer present that would satisfy Cal/OSHA?

Cal/OSHA stated that the effect of the proposed text would be that Cal/OSHA would have to accept the manufacturer’s instruction regardless of its quality.

General Industry representative suggested language that states that the drawings and specifications in accordance with ANSI shall be confirmed as present and the manufacturer’s instructions shall be maintained as readily available. The employer should possess the drawings and specifications, but not necessarily on-site.

SME (Manufacturer) said there is a need to have testing standard published to differentiate between a reputable manufacturer and non-reputable manufacturer. They have a testing standard in Canada and Europe, but US does not have one here. In the interim, there will be challenges. However, generally, the manufacturers here in the US are reputable. The employer has the right to request the Declaration of Conformity (DOC), not just the instructional manual. 3M will provide customers with instructions, for example, it will instruct the user how to set up the HLL system that is rated for 2 people to anchor points that satisfy 3,800 pounds. Based on testing, as long as it meets the 2:1 safety factor, a 3,800 pound number is achievable and compliant. If the employer asks 3M for a declaration of conformity, we should be able to provide the employer with the DOC stating that we have tested it in a laboratory that comply with ISO 17025. There are manufacturers that import equipment that are not of quality, but the language of requiring specifications and design requirement is not going to solve the problem. Manufacturers are not going to give up their design requirements and specifications.

General Industry representative asked the reason why the manufactures will not provide their specifications and design requirements.

Construction representative clarified that an engineering firm that designs a permanent system will provide the employer with section 3.2 of ANSI Z359, but not the manufacturer to protect their business.

SME (Manufacturer) further clarified that for systems that are designed for specific permanent location, the information specified in section 3.2 is part of the delivery package. For temporary HLL systems that are off the shelf and can be installed multiple times at various locations, the manufacturer is not going to disclose specific information about their design.

Cal/OSHA representative stated that the manual should state:

- whether the system is an arrest or restraint system

- maximum number of users permitted
- arrest loads that are applied to the anchorages
- layout of the system and complete assembly of components

The construction representative stated that the information that Cal/OSHA is asking for is in the manual.

Cal/OSHA replied that it may not all be in the manual.

SME (Manufacturer) stated that if the manual does not have that level of information, then the employer should not buy that type of system or contact the manufacturer to provide the information.

SME (Engineering Firm) the proposed text that provides the option for manufacturer's instructions is a good step forward.

Construction representative said that manufacturers will have the information to protect themselves from liability.

General industry is requesting that the "readily available" should be retained because they do not work at fixed sites.

Proposal by Thomas Kramer, §3210.1(c)(12)(C)

(C) Drawings and specifications in accordance with Section 3.2 of ANSI Z359.6-2016 Specifications and Design Requirements for Active Fall Protection Systems applicable to each horizontal lifeline shall be maintained and readily available at the location where it is to be used.

(D) As an alternative to (C), the employer shall have documentation from the manufacturer or other sources that provides at least the following:

- Type of active systems being used – fall arrest or fall restraint*
- Maximum number of users on the system and the corresponding maximum weight of each user, including clothing and tools*
- Loads to the anchorages from the horizontal lifeline
- Clearances based on the span, number and weight of users, type of connecting device and other relevant variables
- Specification for each component of the system*
- Any testing or inspection required prior to initial and daily use of the system*
- A drawings layout or written description showing how and where the horizontal lifeline is to be supported

Note 1: Items in the above list noted by * are often provided in the manufacturer's instructions and should be verified by the qualified person

Note 2: Additional requirements for horizontal lifelines used for building maintenance are included in title 8 section 3299.

Discussion

SME (Engineering Firm) stated that here were comments that “or manufacturer instruction” was too vague. Rather than referencing section of 3.2 of ANSI Z359.6, subsection (c)(12)(D) is an attempt to list the minimum amount of information required in manufacturer’s instructions. The listed items include some of the items in section 3.2 of ANSI Z359.6.

Construction representative asked about possible conflicting information that may come from the manufacturer. For e.g. for hardhats, one may throw away after 5 years and other may say as long as it passes inspection.

SME (Engineering Firm) replied that proposed text allows for “or other sources” of information.

The **construction** representative stated that employees should be encouraged to use manufactured systems. If the employer has the manual, then that should be the requirement.

The **Chair** replied that by having the list of information that should be in the manual, the employer will become more familiar with the requirements. In areas where it is lacking, then the employer needs to think about it a little more.

Construction replied stating that the concern is about “drawings layout or written description showing how and where the horizontal lifeline is to be supported”. HLL are moved frequently, sometimes several times per day. A question was asked, do they have to stop every time they have to install at a new location? It will make it burdensome. The loads to the anchorage, is that the maximum loads or do you have to calculate those loads.

SME (Engineering Firm) agrees that the drawing or layout may be burdensome and that is the reason for allowing a written description of how and where the HLL will be supported.

Cal/OSHA stated that §3212(c)(12)(C) is specific to HLL. The 3 most important things are the loads to the anchor, clearance, and the force on the user. Those three items should be included on the list. In section 3.2 of ANSI Z359.6, the clearances and loads to the worker are not included. The manuals that Cal/OSHA reviewed included clearances as a table, loads to the anchors, but not loads to workers. The load to the worker of 1,800 pounds could seriously injure a worker.

SME (Manufacturer) replied that the force the employee experiences would be controlled by the energy absorption device as part of the lanyard or lifeline. Under ANSI certification, forces experienced by the worker must not exceed 1,800 pounds.

Cal/OSHA stated that he would like the manual to state that the system limits the forces to the worker to less than 1,800 pounds.

Construction representative responded that any manual with a shock absorber would say that.

Cal/OSHA representative responded by stating the lanyard is not part of the complete HLL system. The lanyard by itself may limit the force 1,800 pounds, but when you attach it to the HLL system, once it pays out, the forces may exceed 1,800 lbs.

SME (Engineering Firm) replied that Cal/OSHA is probably referring to a scenario with multiple employees falls. It is like a waterfall effect, where the first person falls, then the anchorage absorbs that energy, then another person falls, and you could get into a point where there is too much energy and fall distances increase and it is beyond the capacity of the energy absorbers.

SME (Manufacturer) replied that the manufacturer's instructions specifies the number of users permitted to use the system with the required intermediate or no intermediates.

General Industry commented on subsection (C) that it should be readily available and strike out "maintained" and "at the location where it is used".

Cal/OSHA stated that they want to be able to look at a paper and match it up to what is being used.

The **Chair** said that "readily available" should address that.

General Industry stated that billboard structures are located at various locations. Employees are there for short duration and they are not carrying the document around with them in a gangbox. Even in a situation where property management has changed hands, someone can get their hands on those documents over a period of time.

Cal/OSHA asked what does "readily available" mean. Is it 1-2 hours?

General Industry replied that for their company, it would be a call to HR and faxing or sending those documents.

Construction said that Cal/OSHA has a document request form and Cal/OSHA has six months to close a case. If the employer does not document then it is a citation.

The **Chair** stated that it is relevant in this situation because inspectors need the documentation to guide their inspection to verify that the items as listed in §3210.1(c)(12)(D) is adhered to.

Construction representative means readily available is not upon request, but within a reasonable time.

The **Chair** said that as a prior Cal/OSHA inspector, she waited for 2 hours for something that was needed during the inspection.

Construction representative stated that if the HLL is in use then that information should be provided within a reasonable time, but for a permanent HLL that is not in use, it is not necessary to have that information readily available.

Cal/OSHA representative agreed that if it is something that is in use, then it should be readily available, otherwise an inspector may just tag it out. If it is not in-use, then requesting the document would be fine.

SME (Engineering Firm) stated that the employees need the information when they are using the HLL, so “readily” should be deleted.

The **construction** representative replied that there is a presumption the employee will read the information before they use it. The responsibility is on the employer to ensure that the employees know what the rules are regardless of the device, whether it is an HLL, skill saw, etc. If you get there that information within 1 hour or 2 hours or the next day and the inspector have pictures that there are 4 guys tied off and document only allows two employees, then that is a violation.

The **Chair** said that if the system systems allows only 2 employees and 4 are tied to the system, then the system should be tagged out.

Construction representative stated that it doesn’t need to be tagged out, it’s just that the employer must permit only 2 employees to use the system.

General Industry suggested that the documents should be used for training and available to the employees while they are in use. The employees need to be trained on the document, but once they have been trained, do they need to carry around that piece of paper.

The **Chair** said that training is required in another section, §3210.3 and it would have to be specific to what the employees will be using.

General Industry stated that in light §3210.1(c)(12)(A) requires the supervision by a competent person.

The **Chair** asked the committee to think about the general effect of the proposal, §3210.1(c)(12) on horizontal lifelines and §3210.3 on fall protection training and think of how soon the documents need to be available.

General Industry stated for their situation, someone must receive the call, scan it and send it. For Cal Trans, how soon will they be able to get that information?

The **Chair** said that the risk to the employer is when an inspector looks at the system and want to verify its components, but the employer cannot provide the documentation, then the inspector may just tag it out.

The **General Industry** representative said then that is fine.

SME (Engineering Firm) said that the supervisor (if there is a supervisor) and the employees need to know all the requirements of the HLL system. For example, the lanyard, the fall arrest force. Some of the lanyards are rated for 900 pounds and other lanyards are rated for 1,800 pounds. They also need to know the number of workers on the span. The inspectors when they go out need to know it because they need to check to see if the HLL system is satisfactory.

The **Chair** was not able to research how the administration law judge has ruled on readily available.

General Industry representative stated that the word “readily” is problematic, because according to the Merriam Webster dictionary, it assumes a willingness to provide if asked for. There is no time constraint.

The **Chair** asked the committee what is the language on the Safety Data Sheets (SDS) as far as the requirement to provide the SDS? If the employee was hospitalized and the medical professional asks for the SDS, what does our orders say?

The committee read the requirements of section 5194. Hazard Communication.

Section 5194

(b) Scope and Application

(3) This section applies to laboratories that primarily provide quality control analyses for manufacturing processes or that produce hazardous chemicals for commercial purposes, and to all other laboratories except those under the direct supervision and regular observation of an individual who has knowledge of the physical hazards, health hazards, and emergency procedures associated with the use of the particular hazardous chemicals involved, and who conveys this knowledge to employees in terms of safe work practices. Such excepted laboratories must also ensure that labels of incoming containers of hazardous chemicals are not removed or defaced pursuant to section 5194(f)(9), and must maintain any safety data sheets that are received with incoming shipments of hazardous chemicals and ensure that they are readily available to laboratory employees pursuant to section 5194(g).

(f) Labels and Other Forms of Warning

(10) The employer shall ensure that workplace labels or other forms of warning are legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift. Employers having employees who speak other languages may add the information in their language to the material presented, as long as the information is presented in English as well.

(g) Safety Data Sheets.

(11) Safety data sheets shall also be made readily available, upon request, to designated representatives, and to the Chief, in accordance with the requirements of section

3204(e). NIOSH and the employee's physician shall also be given access to safety data sheets in the same manner.

The **Chair** asked for comments regarding the list of items in §3210.1(c)(12)(D)

Cal/OSHA asked to add to the list information stating the maximum load to the user, whether it is a statement that it less than 1,800 pounds because they are using a test weight of 310 pounds.

The **Chair** replied that in §3210.1 (c)(12)(A) states the system is required to be designed by a qualified person (engineer) and there is a separate section that requires the force to the user to be less than 1,800 pounds.

SME (Engineering Firm) and other members of the committee offered the following edits in red. It was further edited by the advisory committee members (purple) reflected by the discussion below.

- Type of active systems being used – (i.e., fall arrest or fall restraint)*
- Maximum number of users on the system and the corresponding maximum weight of load capacity for each user, including clothing and tools*
- Maximum factored loads (design loads) Loads to the on each type of anchorages from of the horizontal lifeline
- Maximum fall arrest loads permitted
- Clearances based on the span(s), number and weight of users, type of connecting device and other relevant variables
- Required sag (if any) or required tension in the HLL
- Specification for each component of the system*
- Any testing or inspection required prior to initial and daily use of the system*
- A drawings layout or written description detailing showing how and where the horizontal lifeline is to be supported
- Requirements regarding lanyards including maximum fall arrest load

Discussion

SME (Engineering Firm) Maximum factored loads was suggested to inform the engineer of the loads. For example, if the manufacturer states a 2,500 pounds line tension, then with a factor of safety of 2, then a 5,000 pounds anchor would be required.

SME (Engineering Firms) and Construction expressed that the public may not understand the term factored load.

SME (Engineering Firm) stated that if the term factored load is not included, then the engineer might factor the load again. Currently, there is miscommunication between the fall protection industry and engineers.

SME (Manufacturer) Design loads is the term that is used by manufacturers in their literature.

Some representatives objected to the language in subsection and proposed that the regulation should state to simply follow the manufacturer's requirements.

SME (Engineer) proposed adding "Requirements regarding lanyards including maximum fall arrest load" to address Cal/OSHA's concerns.

Construction representative stated "Requirements regarding lanyards including maximum fall arrest loads" is not necessary because the regulations already require to limit the fall arrest load to less than 1,800 pounds.

SME (Engineering Firms) stated that some HLL systems require much less, for example 900 lbs. If that is a requirement for the HLL, it needs to be provided.

SME (Manufacturer) stated every single SRL in this country is 1,800 lbs or less and ANSI standard are the same way. They have an average arrest force that is less than 1,800 lbs.

SME (Engineering Firm) replied that the concern is about the minimum, a manufacturer who markets their shock absorbing lanyard to 900 pounds, 1,200 pounds and the requirement is only have a factor of safety of 2. Someone may use the wrong lanyard, because they don't know that the HLL requires a special lanyard.

SME (Engineering Firm) restated the concerns of Cal/OSHA, which are anchorages that are woefully inadequate and insufficient fall clearance. The SME attempted to refocus the conversation to address those two concerns.

Cal/OSHA stated that the 1,800 pounds can be removed from this list, because it is required elsewhere.

SME (Manufacturer) 3M stated that the 1,800 pounds limit for arresting force has been there for a long time, but manufactures can make equipment that perform better than that have autonomy to market their product. 3M has SRL that are not 1,800 pounds, labeled, 1,150, 1,175, 1350, so the 2:1 value is a lot less than 1,800, which is automatically be 3,600 lbs.

SME (Engineering Firm) suggested adding "Requirements regarding lanyards including either average fall arrest force or maximum fall arrest systems."

SME (Manufacturer) interjected, personal fall arrest loading is x, but all of this goes back to the user instruction. If the suggestion by the SME (Engineering Firm) prevails, then there was a concern that it would be viewed as manufacturers have the autonomy to use a number less than 1,800 lbs.

SME (Engineering Firm) replied that the users need to know that they are limited to a special type of shock absorbing lanyard, if that is a requirement. If the whole system is based on a load lower than 1,800, and the representative has seen this in practice), the users need to know that. Information regarding special requirements on lanyards should be included. The most

important is the maximum fall arrest loads. The suggestion was to add “requirements regarding lanyards including maximum fall arrest loads” then it was revised to “maximum fall arrest loads of lanyards.

SME (Manufacturer) suggested the wording “maximum fall arrest loads permitted”.

The **Chair** asked for additional clarification by asking what is the hazard?

SME (Engineering Firm) explained, if you have an HLL, and the manufacturer allowed to design factor of safety or 2, let’s say the maximum fall arrest loads e.g. 900 pounds, 1,000 pounds, 1,300 pounds instead of 1,800 pounds, they will not use 1,800. If they can show that if you use it with a particular lanyard and the maximum load on the line is 1,000 pounds, then multiply it by 2 (factor of safety). The problem is they are not designing it for any other types of lanyards, like the ones that exert 1,800 pounds, so they are not designing it for 3,600 pounds (1,800 time factor of safety of 2). The design is for a lot less.

The **Chair** followed up by stating, so the anchorages are not going to be designed for 3,600 lbs.

SME (Engineering Firm) replied, everything including all the components.

SME (Manufacturer) stated that someone can take a system, let’s us say it is rated by 2x. The system certified by our SRLs, for example rated 1,200 pounds maximum arresting force and then someone uses an SRL rated 1,800 maximum arresting force. It should state maximum fall arrest load on the HLL.

General Industry representative suggested adding lanyard, maximum lanyard fall arrest load depending on the HLL, or lanyard requirements.

Construction representative stated that there could be an SRL not just a lanyard.

The **Chair** asked, the manual would indicate the maximum arrest load permitted on the HLL, then the competent person would choose the lanyard, right?

SME (Manufacturer) replied yes and suggested addition “personal” before fall.

Construction representative stated that the section is supposed to be. There is a section that lists information in the ANSI standard and the engineer would refer to those for designing a system. This section is intended for the prefab systems. Now, the elements of this section would need to be explained to someone who may have just a high school education instead of simply going through the manual on how to install the system, on how to use. The manuals that were reviewed by the representative were satisfactory.

SME (Engineering Firm) suggested adding the list to a non-mandatory appendix.

Construction representative stated adding this information in the training section.

General Industry representative referred the committee back to paragraph (c)(12)(A), who installs and who supervises. The representative understands the prior comment, the different

types of people and educational background, but the onus is on qualified and competent person's supervision; thus, the responsibility is not on the lowest level. The list appears, which is an alternative to proposed section 3210.1(c)(12)(C), to be items that have to be present in the manual for the people mentioned in section 3210.1(c)(12)(A) to have available for the competent or qualified person.

The **Chair** replied that the information is not necessarily just for the benefit of the competent or qualified person. As a user of the fall protection, you would want to know how many people are authorized to tie off on that HLL.

The **Construction representative** stated that the information about the number of persons allowed to tie off is in the manual.

The **General Industry** representative stated that the construction representative has not encountered an inadequate manual, but in a different industry he has seen manuals that did not have sufficient information for a product. This section protects against that. If the manual does not contain sufficient information, then it cannot be used. The Honeywell, 3M, Miller, etc, can be used because the proposed list of information is in the manual. The other ones, you cannot use.

The **Construction representative** stated that there are three types of HLL: permanently installed ones hopefully done by a good engineer, the kits made by manufacturers, and wire rope between junk. The proposal should be encouraging the use of these kits and following the manuals is an incentive to not grab the wire rope from the hardware store and clips from China.

The **Chair** said that the proposal is not burdensome for good manufacturers out there. The requirement is something that the competent person should know. The competent person should be able to read the manual and look for all this information so to train their employee who will be using this system.

The **Construction representative** stated that the proposal should regulate the manufacturers and require them to include this in the manual. It is required for SDSs.

Cal/OSHA representative stated that manufacturers would naturally print this information if they knew that this is a requirement.

Construction representative offered a correction "Maximum number of users on the system and the corresponding maximum ~~weight~~ of load capacity for each user, including clothing and tools". The proposal is not intended to limit the weight of the person.

§3210.1(d)(1)(A)2. regarding deceleration distances

The **Chair** said Thomas Kramer who is the current ANSI Chair provided the appropriate deceleration distances. The term "activation distance" was added in the definitions in

subsection(b), because the term is used in Table 1. The definition of the term came from ANSI Z359.0.

Fed OSHA asked where the 3.5 feet deceleration distance came from.

SME replied that the 3.5 feet was generally accepted deceleration distance based on a 220 pounds test weight, fall of 6 feet. The 3.5 feet deceleration distance was generally the performance they could get based on the materials that were available at the time. When ANSI changed the test weights, the deceleration distance was changed to 4 feet. Fed OSHA did not quite understand that ANSI was using a more scientific test weight, and it changed the math.

Outcome:

Activation distance was accepted

The proposed changes were accepted the federal standard.

§3210.1(d)(1)(A)5. regarding the use of Appendix A

~~5. If the personal fall arrest system meets the criteria and protocols in Appendix A to section 3210.1 and is being used by an employee having a combined body and tool weight of less than 310 pounds, the system is considered to be in compliance with the provisions of subsections (d)(1)(A)1. through (d)(1)(A)3. [§1910.140(d)(1)(v)]~~

5. All personal fall arrest, personal fall restraint and positioning device systems purchased or placed in service after [6 months after OAL effective date], shall be labeled as meeting the requirements contained in:

Consensus Standard	Edition
ANSI/ASP Z359.3 Requirements for Lanyards and Positioning Lanyards	2019
ANSI/ASSP Z359.4 Safety Requirements for Assisted-Rescue & Self-Rescue Systems, Subsystems and Components	2013 (R2022)
ANSI/ASSP Z359.9 Personal Equipment for Protection Against Falls -Descent Controllers	2021
ANSI/ASSP Z359.11 Safety Requirements for Full Body Harness	2021
ANIS/ASSP Z359.12 Connecting Components for Fall Arrest Systems	2019
ANSI/ASSP Z359.13 Personal Energy Absorbers & Energy Absorbing Lanyards	2013 (R2022)
ANSI /ASSP Z359.14 Self-Retracting Devices for Personal Fall Arrest & Rescue Systems	2021
ANSI/359.15 Single Requirements for Single Anchor Lifelines and Fall Arresters for Fall Arrest and Rescue Systems	2014
Z359.16 Safety Requirements for Climbing Ladder Fall Arrest System	2016
ANSI/ASSP Z359.18 Safety Requirements for Anchorage Connectors for Active Fall Protection	2017

Outcome:

The proposal was acceptable to the committee.

Action Item: The Chair will consult with legal if it is necessary to specify the edition when the requirement is to use an equipment labeled as meeting the ANSI standard.

Discussion

The **Chair** proposed an alternative to the proposed §3210.1(d)(1)(A)5. modeled after section 1670, which would eliminate the need for Federal Appendix A. A significant amount of edits is required to make Appendix A technically correct. The alternate proposal would require the employer to buy ANSI approved equipment.

Construction representative agreed with the proposal, because it gives the employer a clear direction. They just need equipment labeled as meeting ANSI standards and Appendix A is way more than what the employer would read.

SME (Engineering Firm) stated that overtime ANSI standards would get updated and it may be necessary for the employer to get a letter stating that the new products are as safe as the old standards that are referenced in the regulation.

Construction representative stated that in the past Cal/OSHA has accepted that the new standard is better than the old.

Cal/OSHA replied that it is generally the case, but not always. For example, footwear.

SME (Engineering Firm) followed up by asking if the manufacturer stipulates that their equipment is better than the old standard, would that be acceptable.

Cal/OSHA replied that a statement can be added that it complies with the old the standard as well.

Construction representative comment that even when the new ANSI comes out, the equipment stays in service for longer. For example, cranes in the 70's. The suggestion is to use the statement "applicable standard" instead of naming an edition, because the edition may not be as important, because it is a labeling requirement. The way it is written now is it, has to be labeled as what was enumerated and is restrictive.

SME (Manufacturer) stated that there may be an issue with one of the references, the ANSI Z359.14 for SRLs. The 2021 edition became effective until August 1, 2023, so there are a lot of products in warehouses that meet the 2014 edition. If you write it in as the 2021 edition, then they can only use the 2021 edition. The suggestion was to use both the 2014 and 2021 edition, because manufacturers have until August 1, 2023 to manufacture not to the 2014 edition.

The **Chair** replied that the Table will likely change, because by the time the proposal is Noticed, other editions may be released. The Chair will consult again with the committee if there are changes.

The **construction** representative asked if we can use language to state the equipment is manufactured to the most current ANSI standard.

Construction representative said that the Office of Administrative Law (OAL) typically requires a date and so the alternative of not including the year may not be possible. The Board may do a better job of updating the standards now that they have additional staff.

The **Chair** stated for context, Cal/OSHA has not cited an employer for using equipment to the newer standard. Section 1670 references ANSI standards with revisions in the 1990s and.

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

(l) All personal fall arrest, personal fall restraint and positioning device systems purchased or placed in service after February 1, 1997, shall be labeled as meeting the requirements contained in ANSI A10.14-1991 American National Standard for Construction and Demolition Use, or ANSI Z359.1-1992 American National Standard Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components.

The **Chair** asked the committee if they are agreeable to the concept of removing the federal Appendix D and requiring the employer to purchase ANSI approved equipment.

Fed/OSHA asked how fall personal protective equipment will be provided for employees weighing a combined weight of greater than 310 pounds (including tools). There is text that was in bold that points to Appendix A.

SME (Manufacturer) wanted to confirm that Cal/OSHA currently requires that fall protection equipment comply with ANSI Z359, what code applicable.

Chair replied that the equipment must be labeled as meeting ANSI

SME continues to manufacture product that do not meet the new ANSI standard, but meet the existing standard. They will label those as OSHA approved.

The **Chair** restated that in California, employees can only use ANSI approved equipment per section 1670.

The committee members requested to add Class 2 in the definition section.

Proposal

§3210.1 (d)(1)(A)6.

If the system is used by an employee having a combined body and tool weight of 310 pounds or more and the employer has appropriately modified the criteria and protocols in appendix A, then the system will be deemed to be in compliance with the requirements of paragraphs (d)(1)(i)1 through (d)(1)(A)3).

Outcome

The proposed text was deleted. The Chair with the assistance of the SME(Manufacturer) will propose text on the next meeting.

Discussion:

The **Chair** responded that when the meeting ended last April with the understanding that 3210.1(d)(1)(A)6. was accidentally omitted and needed to be added. However, after further examination, I realized that I was mistaken, so a note in blue was added to the discussion draft.

Outstanding: What does appropriately modifying the criteria mean? Use heavier weight?

The **Chair** sought the assistance of the manufacturer representative to develop language.

The **SME (Manufacturer)(Engineering Firm)** replied that 3M will assist in crafting the language for workers who are outside the scope of ANSI's testing procedures, workers with a combined weight of greater 310 pounds with tools. SME provided background information regarding test weights. When the 220 pounds test mass was used, a 1.4 multiplier was applied to get the (220 * 1.4=308) 310 pounds test weight. In 2006, 2007, 2009, it was changed to a conversion factor of 1.1 (310/1.1=282) which resulted in a 282-pound test weight. Now manufacturers must test to 310 pounds test weight including ANSI Z359.14. The question now is, how do you rate equipment for 420 pounds? 3M tests with a 420 pound mass.

The **Chair** asked what 3M does in situations where an employee with tools exceeds 310 lbs.

SME (Manufacturer) replied that they have lanyards, SRLs, and lanyards that are rate by 3M independently. It is not an ANSI certification. Products with ANSI certification are for 130-310 pounds. With Fed OSHA, manufacturers can certify their product above 310 lbs. Most manufactures stop at 400, 3M at 420, a couple of manufacturers at 450. 3M self certifies to the capacities that we tested for using a ISO 17025 accredited testing and calibration laboratory. 3M provides a declaration of conformity (DOC).

SME (Engineering Firm) agrees that the declaration of conformity is the key document that would indicate it has been tested at a higher weight in an a laboratory. That is the appropriately modified criteria that the Chair is looking for, perhaps using the same Z359 procedures and simply using a higher weight.

SME (Manufacturer) said that in ANSI Z359.7, manufacturers must provide the DOC for every single product that the manufacturer is certifying to for a higher weight. There will be proposed text to consider in the next meeting.

The **Chair** noted that proposed Appendix A will be deleted, because the proposed (d)(1)(A)5.6. will address testing of fall protection equipment for 130-310 lbs (per ANSI) and greater (outside ANSI).

Proposal

Free fall distance of 6 feet

(e) System Use Criteria. [§1910.140(d)(2), *Revisit (e)(2)*]

(1) On any horizontal lifeline that may become a vertical lifeline, the device used to connect to the horizontal lifeline shall be capable of locking in both directions on the lifeline.

[From §1910.140(d)(2)(i), Appendix C of Article 6, Section (e)(2), CSO only applied to suspended scaffolds or similar work platforms.]

(2) Personal fall arrest systems shall be rigged in such a manner that the employee cannot free fall more than 6 feet or contact a lower level or lower level obstacle.

Outcome:

Exception: When it is not feasible or it creates a greater hazard to limit a free fall to six feet, a free fall may be a maximum of 12 feet provided the employer can demonstrate the manufacturer designed the system for the additional free fall distance, tested the system to ensure a maximum arresting force of 1,800 pounds is not exceeded, and that the employee will not contact a lower level or lower level obstacle.

Discussion

SME (Manufacturer) stated, there are industries where employees are exposed to fall heights greater than 6 feet. Steel erection is the most recognized. They are building a structure and there is nothing above. They are walking the beam. Unless they erect a HLL that is elevated, which are few and far between, if you are tied off at your feet, using a 6 feet lanyard, that is a fall of approximately 11 feet before the device engages. That is why §1910.140 allowed exceptions. Most manufactures have a Type 2 or Class II energy absorbing lanyard or SRL designed to handle the increased fall height.

SME (Engineering Firm) A fall more than 6 feet free fall is pretty painful, not just the arresting force, the arresting force is probably higher. Every part of your body is passing an object as you are falling. SME suggested adding a cautionary statement. Some people think that since they

are not hitting the ground that they will be okay. SME cautions against tying-off at feet level. England does not allow tying-off where the line constituent could contact an edge.

The **construction** representative stated that there are also other considerations. HLL in every building and you are bringing the structural member being brought in by the crane. There are other factors that you are dealing with aside from the fall. There is a risk continuum.

General Industry representative accepts that there will situations where free fall may exceed 6 feet and suggested that the language should include “where limiting the freefall to the 6 feet is infeasible...”, instead of saying one or the other, the language should reflect the priority of limiting freefall to 6 feet.

The electrical representative stated there are situations in their industry where free fall could exceed 6 feet.

SME (Manufacturer) recommended that the alternative means of protection, prove infeasibility in excess in 6 feet.

Construction representative stated creates a greater hazard e.g Cranes, rigging, overhead obstruction.

Construction representative suggested adding language “or it creates a greater hazard”, because there are other things to consider such as the hazard of installing a line higher. Examples of situations where it creates a greater hazard include obstructions, other operations such as rigging, instability of the load, where it is safer to tie off below the D-ring.

SME (Engineering Firm) stated that there be a maximum of 12 feet of free fall, because you do not want people designing systems with a free of 18 feet or 24 feet. The manufacturer has to design for that distance allowed. SME “a maximum of 12 feet provided the employer can demonstrate the manufacturer designed the system to allow a free fall of 12 feet, and tested the system”. That may be a little pinchy for the manufacturer, because if the manufacturer wants to design a system for 9 feet.

SME (Manufacturer) replied that it is typically either 6-foot or 12-foot.

SME (Engineering Firm) stated that infeasible is a strong language. Most horizontal lifelines that the SME has seen were lower than the dorsal D-ring. It is possible to design your system so that the line is above the dorsal D-ring, but it is not really practical.

Construction representative was concerned about the hazards of a swing fall and increase fall protection distance. It would be scary to free fall 12 feet with a swing fall.

Construction representative and SME (Engineering Firm) both agreed on language “...the allows additional freefall distance”.

Petroleum representative wanted to discern the responsibility of demonstrating the manufactures design for the additional freefall.

Construction representative stated that demonstrating would be reviewing the manufacturer's manual.

SME (Engineering Firm) stated that the supports that the exception requires the employer to demonstrate infeasibility before availing of the exception. It encourages elevated tie-off points. Foot level tie-offs should be avoided to the extent possible.

Cal/OSHA suggested adding text that requires the employer to demonstrate that the employee will not contact a lower level or lower level obstacle.

Subsection (f)(2)

The Chair informed the committee that subsection (f)(2) will be relocated.

Proposal

§3210.2 Falling Object Protection

§3210.2. Falling Object Protection. [Replaces §3273(e) & (f), §1910.28(c)]

(a) Employees working in locations where there is a risk of receiving head injuries from flying or falling objects and/or electric shock and burns shall wear approved head protection in accordance with section 3381 and: [text from §3381]

(b) The employer shall protect employees from falling objects by implementing one or more of the following:

(1) Erecting toeboards, screens or guardrail systems in accordance with article 2 of the General Industry Safety Orders to prevent objects from falling from higher levels. [§1910.28(c)(2), Moved from §3273(e)(1)(A)]

(A) Where tools, equipment or materials are piled higher than the top of the toeboard, paneling or screening shall be installed from the toeboard to the midrail of the guardrail system and for a length that is sufficient to protect employees below. If the items are piled higher than the midrail, the employer also shall install paneling or screening to the top rail and for a length that is sufficient to protect employees below; and [§1910.29(k)(2)(i)]

(B) All openings in guardrail systems shall be small enough to prevent objects from falling through the opening. [§1910.29(k)(2)(ii)]

(2) Erecting canopy structures and keeping potential falling objects far enough from an edge, hole or opening to prevent them from falling to a lower level. [§1910.28(c)(3)], §3273(e)(1)(A) and (B)]

(A) Canopies used for falling object protection shall be strong enough to prevent collapse and to prevent penetration by falling objects. [§1910.29(k)(3), §1910.28(c)(2), §3273(e)(2)]

Outcome

(b) The employer shall protect employees from falling objects by implementing one or more of the following:

(B) ~~To comply with (A) above all openings~~ ~~All openings in guardrail systems~~ shall be of sufficient size ~~small enough~~ to prevent objects from falling through the opening.

(2) Erecting canopy structures ~~and keeping potential falling objects far from an edge, hole or opening to prevent them from falling to a lower level.~~ [§1910.28(c)(3)], §3273(e)(1)(A) and (B)]

(A) Canopies used for falling object protection shall be strong enough to prevent collapse and to prevent penetration by falling objects.

Action Item

The Chair will review Federal Register to determine the intent of subsection(b)(1)(A) vs (b)(1)(B), sections 3209 and 3295 and propose text for the next meeting.

Discussion

§3210.2(b)(1)(A) and (B)

The **Chair** displayed the proposal and solicited comments from the members.

Cal/OSHA suggested to delete “for a length” from §3210.2(b)(1)(A), because it is confusing.

Construction representative stated that the intent is to install the screen up to the point where the materials are piled high, not to the entire length of the guardrail.

Petroleum representative disagrees with deleting “for a length” because it could be interpreted that the screen must be installed on the entire length of the guardrail system.

Cal/OSHA asked if subsection (b)(1)(B) is referring to opening on the side or the one floor.

Construction representative replied that it is for the side and openings on the floor is discussed later.

The **Chair** replied that (b)(1)(B) is referring to openings in guardrails.

General industry representative asked if it is better to specify the size of the opening than leave it open ended.

The **Chair** replied that the size of the openings would be dependent on the size of the items that could fall.

General Industry representative stated that this would mean that you are adapting it to the work each time. If there is a fixed toeboard or fixed screen that is perforated, then you have a limitation on what you can have out there.

The **Chair** replied that the size of the opening is performance-based standard which leaves it up to the employer to determine the size of screen depending on the size of the items that can potentially fall.

General Industry representative suggested removing the word “head” because you can be injured on your shoulder. It appears that the reason we are saying “head” is because we are talking about head protection. In that same section, it states “shock and burns”. A question was asked if burns refers to electricity or if refer to flames dropping from the sky, such as welding.

Construction representative replied that it could also be burns from electricity. Subsection (b)(1)(B) refers to the opening of the screens because guardrail opening is going to be the same.

Fed OSHA stated that the reason subsection(b)(1)(B) did not specifically require a screens is because an employer may choose to limit the size of the opening by other means such as balusters for larger objects.

Construction representatives were concerned with adding screening to subsection(b)(1)(B) because screening is not part of the guardrail system. Guardrail systems is a protective device for fall protection. Building code guardrails require no more than a 4 inch opening.

General Industry representative stated that the requirements in section 3209 is prescriptive.

(d) Where toeboards are required, they shall be constructed of wood, concrete, metal, or other suitable material. Where constructed of metal grille, mesh shall not exceed 1-inch. The top of the toeboard shall be not less than 3 1/2 inches above the platform, walkway, or other working level and the bottom clearance shall not exceed 1/4-inch.

General Industry representative stated that the holes on the toeboards can be specified. However, there is still a need for a qualifying statement restrict holes to the appropriate material. Subsections (b)(1)(A) and (B) appear to be 2 separate requirements, which is why toe board and paneling are not mentioned in (b)(1)(B). Subsection(b)(1)(B) is about guardrail system requirements and subsection(b)(1)(A) is about the screening requirements.

Construction representative stated that subsection(b)(1)(A) requires screening and subsection(b)(1)(B) talks about how big the openings must be.

General industry representative disagreed and said subsection(b)(1)(B) is only for the guardrail system.

Construction representative asked, what is a guardrail system? They are not a system.

General industry representative said a guardrail system has a guardrail, mid-rail, and post. It can have a baluster. Those components make up a guardrail system.

Construction representative was concerned that screening could be viewed as part of the guardrail system. Subsection (b)(1)(A) does not say anything about the size of the screening and subsection (b)(1)(B) is addressing the size.

Construction representative suggested language for subsection (b)(1)(B) “To comply with (A) above all openings shall be of sufficient size to prevent objects from falling through the opening”.

Construction representative stated that there is nothing defining the size of the object. What if it is sand.

Construction representative replied that the object would vary in size and the size of the opening would depend on what could fall.

General Industry representative asked if we are talking about openings in general or openings in screening. Subsection(b)(1)(B) seem to suggest opening in general and not just the screen. What about the gap where the guardrail terminates?

General Industry representative stated that (b)(1)(A) is talking about material higher than the height of the toeboard. Does subsection(b)(1)(A) specify the size of the opening of the toeboard? There is minimum size requirement for the toeboard, but size of the screen will not be specified. There should be a minimum size for the screen as stated in section 3295.

§3295. Powered Platform

(e) Suspended Equipment

(1) General Requirements

(G) Each working platform of a suspended unit shall be provided with a guardrail system on all sides which shall meet the following requirements:

4. The areas between the guardrail and toeboard on the ends and outboard side, and the area between the midrail and toeboard on the inboard side, shall be closed with a material that is capable of withstanding a load of 100 pounds applied horizontally over any area of one square foot. The material shall have all openings small enough to reject passage of a one inch steel ball and potential falling objects which may be hazardous to persons below;

5. Toeboards shall be capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or horizontal direction at any point along the toeboard;

6. Toeboards shall be three and one-half inches minimum in height from their top edge to the level of the platform floor;

7. Toeboards shall be securely fastened in place at the outermost edge of the platform and have no more than one-half inch clearance above the platform floor; and
8. Toeboards shall be solid or with an opening not over one inch in the greatest dimension.

§3210.2 (a) Canopies

General Industry representative stated that the proposal is different from section 3273(e). There is an additional requirement to keep material away from the edge and erect a canopy.

Construction representative stated that maybe it should be “or”. If you are building a canopy, then you shouldn’t have to keep the material away. It should be screened up or build a canopy.

Construction representative asked what is far enough away from the edge. He asked why you need to keep it far enough away when you have a canopy.

General Industry representative stated that the “and” implies that there is not enough confidence in the canopies alone. Yes, you can erect canopies, but you have to try to keep items away just in case the canopy is not sufficient.

Construction representative stated that the statement far enough from the edge is so vague. There will be arguments whether that should be 2 feet or 4 feet.

General Industry representative stated that keeping the objects far enough away from the edge is not helpful, because the canopy can be protecting pedestrians and workers from objects fall objects much greater heights. If the objects are coming from some where else, bricks falling off the building, how can you keep them from falling off the edge.

Construction representative said that if you have area on the roof and you set something on the center of the roof, it is not going to fall on the edge. If you are talking about a catwalk then this doesn’t make sense at all.

The Chair replied that proposal is providing options to allow employers to select how to protect employees from falling objects.

General Industry representative suggested removing “far enough away”. It seems that if you accidentally kick it, then there is a section to cite.

Cal/OSHA representative said that there may be more things going on. Construction site may need multiple means for protecting from falling objects.

Construction representative stated that section 3273 does not state keeping potential falling objects far enough from an edge.

General Industry representative suggesting adding “erecting canopy structures and controlling tools and materials to prevent them from falling from a lower level”

Construction representative said that it is too specific and too vague at the same time.

Construction representatives preferred language in section 3273, which doesn't specifically state keep objects far enough.

Cal/OSHA representative stated canopy and keeping objects away from the edge is analogous to guardrails and personal fall protection. One is much safer. Canopy is almost full proof if done right. Keeping materials away from the edge is like personal fall protection.

OSHSB representative suggested replacing "and" with "to" to read as "(2) Erecting canopy structures ~~to~~ and keeping potential falling objects..."

Construction representatives replied that the canopy does not prevent objects from falling, it prevents the object from hitting the employees because they are protected by a canopy.

General Industry representative said that the later part of the sentence in subsection (b)(2) is not needed, because subsection (b) mentions shall protect employees from falling objects. The same with subsection (b)(3).

No comments on subsection (c).

Proposed

§3210.3. Fall Protection Training Requirements

§3210.3. Fall Protection Training Requirements. [§1910.30]

[CA does not have a specific fall protection training requirement in CSO, therefore cross reference to a fall protection standard in CSO necessitated the creation of this new section]

(a) Fall hazards. [§1910.30(a)]

(1) Before any employee is exposed to a fall hazard, the employer shall, in accordance with section 3203, provide training for each employee who uses personal fall protection systems or who is required to be trained as specified elsewhere in these Orders. Employers shall ensure employees are trained in the requirements of this subsection on or before [six months after OAL effective date]. [§1910.30(a)(1)]

(2) The employer shall ensure that each employee is trained by a qualified person. [§1910.30(a)(2)]

(3) The employer shall train each employee in at least the following topics: [§1910.30(a)(3)]

(A) The nature of the fall hazards in the work area and how to recognize them; [§1910.30(a)(3)(i)]

(B) The procedures to be followed to minimize those hazards; [§1910.30(a)(3)(ii)]

(C) The correct procedures for installing, inspecting, operating, maintaining and disassembling the personal fall protection systems that the employee uses; and [§1910.30(a)(3)(iii)]

(D) The correct use of personal fall protection systems and equipment specified in subsection (a)(1), including, but not limited to, proper hook-up, anchoring and tie-off techniques and methods of equipment inspection and storage, as specified by the manufacturer. [§1910.30(a)(3)(iv)]

(b) Equipment hazards. [§1910.30(b)]

(1) The employer shall train each employee on or before **[six months after OAL effective date]** in the proper care, inspection, storage and use of equipment covered by this section before an employee uses the equipment. [§1910.30(b)(1)]

(2) The employer shall train each employee who uses a controlled descent apparatus (CDA) in proper rigging and use of the equipment in accordance with section 3286. [§1910.30(b)(3)]

(c) Retraining. The employer shall retrain an employee when the employer has reason to believe the employee does not have the understanding and skill required by subsections (a) and (b). Situations requiring retraining include, but are not limited to, the following: [§1910.30(c)]

(1) When changes in the workplace render previous training obsolete or inadequate; [§1910.30(c)(1)]

(2) When changes in the types of fall protection systems or equipment to be used render previous training obsolete or inadequate; or [§1910.30(c)(2)]

(3) When inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee no longer has the requisite understanding or skill necessary to use equipment or perform the job safely. [§1910.30(c)(3)]

(d) Training shall be understandable. The employer shall provide information and training to each employee in a manner that the employee understands. [§1910.30(d)]

(3) The employer shall train each employee in at least the following topics: [§1910.30(a)(3)]

(A) The nature of the fall hazards in the work area and how to recognize them; [§1910.30(a)(3)(i)]

(B) The procedures to be followed to minimize those hazards; [§1910.30(a)(3)(ii)]

(C) The correct procedures for installing, inspecting, operating, maintaining and disassembling the personal fall protection systems that the employee uses; and [§1910.30(a)(3)(iii)]

Suggested Text

§3210.3 (a)(3)

(C) The procedures for inspecting, care, storage and using the personal fall protection system
(1) For employees who install, disassemble, or maintain fall protection systems, the employee
shall be trained in the correct procedures for installing, inspecting, operating, maintaining and
disassembling the personal fall protection systems that the employee uses; and

Action Item

The Chair will review comments and modify the proposal to be discussed in the next advisory committee meeting.

Discussion

Construction representative suggested postponing the operative date of the section a year after the section is effective.

Subsection(a)

Committee members reviewed the definitions of qualified person in §3207 and competent person in section §3210.1

Construction representative commented subsection (a)(3)(C) on the requirement to train each employee in at least the following topics. There are employees who install it and employees who use the fall protection and they may not be the same group. The intricacies of the installation of the fall protection is not within some of the employees job duties.

Construction representative stated that there used to be competent person training and user training. They are melded together.

The **Chair** acknowledged their comments and agreed that employees should be trained according to their duties.

Construction representative suggested “For employees, who will be installing, the correct procedures....”

Construction representative added, for the user, it would be inspection and use.

The **Chair** asked if the suggestion is to split the training requirements into two categories.

Subsection (b)

Electrical representative suggested removing “proper”

Construction representative suggested deleting “equipment hazards” because the only equipment under the heading is CDA.

Fed/OSHA said that the training in the federal standard is for other topics covered in subpart D. It is inclusive of all the equipment in subpart D, such as ladders, guardrails, scaffolds.

The Chair stated that the CDA may need to be relocated to CDA.

Subsection(c)

Cal/OSHA asked if there is a section on training on when to discard fall protection equipment.

The Chair replied that this will be covered in the subsection will addresses inspection and care.

Cal/OSHA stated that they encountered this in construction. Workers like to use the same equipment for years even though it has deteriorated. It fits them a certain way and they do not want to get rid of it. Cal/OSHA requested to add a subsection to specifically address the retirement of fall protection equipment if it has deteriorated.

The **Chair** replied that proposed section 3210.1(c)(19) addresses Cal/OSHA’s concerns.

Electrical representative stated that subsection (c)(3) appears to be duplicative of subsection (c)

The **Chair** confirmed that we can delete subsection (c)(3)

Subsection(d) is already covered by section 3203.

Proposal

§3210.4. Safety Net Systems.

(a) Where the elevation is 25 feet or more above the ground, water surface or continuous floor level below and when the use of personal fall arrest systems, personal fall restraint systems, positioning device systems or more conventional types of protection are clearly impractical, the exterior and/or interior perimeter of the structure shall be provided with an approved safety net. “Safety net systems.” Safety net systems and their use shall comply with the following provisions: [From CSO §1671, §1910.29(c) 1926 subpart M which means §1926.502(c)]

(1) Safety nets shall be installed as close as practicable under the walking-working surface on which employees are working, but in no case more than 25 feet below such level. When nets are used on bridges, the potential fall area from the walking-working surface to the net shall be unobstructed. [§1926.502(c)(1)]

Outcome:

(a) ~~Where the elevation is 25 feet or more above the ground, water surface or continuous floor level below and when the use of personal fall arrest systems, personal fall restraint systems, positioning device systems or more conventional types of protection are clearly impractical, the exterior and/or interior perimeter of the structure shall be provided with an approved safety net.~~ "Safety net systems." Safety net systems and their use shall comply with the following provisions:

Discussion:

Construction representative recommend to use the language from the Federal standard which does not require the employer to prove that it is impractical.

Fed/OSHA confirmed that they do not have any precluding requirement.

General Industry asked why there is a difference in numbers.

The **Chair** replied that the proposal kept our existing distances.

The **Chair** had a question regarding the discrepancies in testing. ANSI test is a 350 lbs at a height of 30 feet and 400 at 25lbs feet. Fed OSHA's highest possible height where a net is permitted is 30 feet. The forces for testing are: $350 \times 30 = 10,500$ (ANSI), $400 \times 25 = 10,000$. The employer can use the net up to 30 lbs.

The **Chair** asked if the committee wanted to keep the trigger height of 25 feet.

The committee did not perceive this to be a problem, especially since California is keeping that 25 feet fall height limit.

The committee 25 feet.

Construction representative recommended to remove the practicable. It should be a tool that should be available for use. For bridge application, it is probably the best method. The nets manufactured have improved compared to the nets that were available in the seventies.

Cal/OSHA preferred to keep the hierarchy, guardrails, personal fall protection, then nets.

Construction representative replied that safety nets are expensive and difficult to deploy. Safety nets are not readily available. Employers are naturally going to opt for personal fall protection over safety nets. In some applications like bridge work, it is the best tool. There is no need to require the employer to prove that personal fall protection is impractical before they can use safety nets.

SME Manufacturer stated that what he has seen over the years is the employers realized that in order to install the nets, their employees have to wear personal fall protection. The nets are expensive. The primary application where it is used is for bridge decking.

Meeting was adjourned at 3:15 PM

The next meeting will be scheduled sometime in March.